



**Verified Carbon
Standard**

SHANXI DANFENG IFM PROJECT



Project title	Shanxi Danfeng IFM Project
Project ID	4843
Crediting period	01-Sep-2021 to 31-Aug-2121
Original date of issue	30-Nov-2023
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Prepared by	Guangdong Shuangtanda Technology Co., Ltd

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1 PROJECT DETAILS

1.1 Summary Description of the Project

The Shanxi Danfeng IFM Project (hereafter “the project activity”) is implemented in Danfeng County, Shangluo City, Shanxi Province of China by Danfeng County Construction Development Group Co., Ltd (hereafter “the project proponent”). The geo-coordinate of the project proponent is 110°7'E -110°49'E and 33°21'N - 33°5'N, the total area is 240,740 ha, which includes the IFM project.

The project activity quantifies the GHG emission reductions and removals generated from improving forest management practices to increase the carbon stock on land by extending the rotation age of a forest or patch of forest before harvesting. By extending the age at which trees are cut, projects increase the average carbon stock on the land and remove more emissions from the atmosphere.

The area of the project activity is 10,900.72 ha, including 2,222 sub-compartments spreading over Caichuan Town, Dihua Town, Huapingzi Town, Longjuzhai Town, Luanzhuang Town, Shangshan Forest Farm, Shang Town, Tieyupu Town, Wuguan Town, Yuling Town of Shanxi Danfeng. All these forests are state-owned forests or collective-owned, and have the legal right to forest ownership. The species involved in the project is Pitch Pine.

Moreover, expected GHG reductions corresponds to an annual average of 20,748 tCO₂, so for the lifetime of 100 years it could demonstrate reductions up to 2,074,846 tCO₂.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation/ verification	/	VCS	/	/

1.3 Sectoral Scope and Project Type

Sectoral scope	Agriculture, forestry and other land use (AFOLU)
AFOLU project category	Improved Forest Management (IFM)
Project activity type	Extension in rotation age (ERA)

1.4 Project Eligibility

1.4.1 General eligibility

The proposed project meets all of the requirements set forth in the VCS standard, VCS program and VCS methodology VM0003: Improved Forest Management Through Extension of Rotation Age (Ver 1.3). To describe and justify how the project is eligible under the scope of the VCS Program, we use the criteria listed in the section 2.1.1 of the VCS standard, V4.5, outlined in detail in the table below:

Table 1: Project eligibility and justification according to Verra Standard

VCS Standard Scope	Fulfilled (Yes/No)	Justification
The Seven Kyoto Protocol greenhouse gases.	Yes	The project increases CO ₂ removals.CO ₂ is Kyoto Protocol greenhouse gases.
Ozone-depleting substances	Not Applicable	The proposed project activity does not involve any Ozone depleting substances.
Project activities supported by a methodology approved under the VCS Program through the methodology approval process.	Yes	The proposed project activity is supported by the VCS methodology VM0003: Improved Forest Management Through Extension of Rotation Age (Ver 1.3) which is approved under the VCS Program through the methodology approval process.
Project activities supported by a methodology approved under a VCS approved GHG program, unless explicitly excluded under the terms of Verra approval.	Yes	The proposed project activity supported by a methodology approved under the terms of Verra approval.
Jurisdictional REDD+ programs and nested REDD+ projects as set out in the VCS Program document Jurisdictional and Nested REDD+ (JNR) Requirements.	Not Applicable	This is not a Jurisdictional REDD+ program nor a nested REDD+ project, hence this eligibility criterion is not applicable.

1.4.2 AFOLU project eligibility

Eligible IFM (Improved Forest Management) activities are those that increase carbon sequestration and/or reduce GHG emissions on forest lands managed for wood products such as sawtimber, pulpwood and fuelwood by increasing biomass carbon stocks through improving forest management practices. The baseline and project scenarios for the project area shall qualify as forests remaining as forests, such as set out in the 2019 Refinement to the 2006 IPCC Guidelines for National GHG Inventories, and the project area shall be designated, sanctioned or approved for wood product management by a national or local regulatory body (e.g., as logging concessions or plantations).

According to the VCS Standard v4.5¹, for Improved Forest Management (IFM), Through various sanctioned forest management activities may be changed to increase carbon stocks and/or reduce emissions. Thus, the project is eligible under the scopes of the VCS Program Version 4.5.

Extension in rotation age (ERA) through improving forest management practices to increase the carbon stock on land by extending the rotation age of a forest or patch of forest before harvesting. By extending the age at which trees are cut, projects increase the average carbon stock on the land and remove more emissions from the atmosphere.

- The project meets all applicable rules and requirements set out under the VCS Program;
- The project applies a methodology eligible under the VCS Program;
- The implementation of this project activity does not lead to the violation of any applicable law;
- This is an eligible AFOLU project category under the VCS Program: Improved Forest Management (IFM);
- This project is not located within a jurisdiction covered by a jurisdictional REDD+ program;
- Implementation partners are identified in the project activity;
- This project does not convert native ecosystems to generate GHG. The project area only contains native forested land for a minimum of 10 years before the project start date;
- This project does not occur on wetlands and does not drain native ecosystems or degrade hydrological functions;

¹ <https://verra.org/wp-content/uploads/2023/08/VCS-Standard-v4.5.pdf>

- Non-performance risk will be analysed in accordance with the VCS Program document AFOLU.

The project complies with the applicability conditions of an approved VCS Methodology (VM0003). The project design and its implementation do not violate any Chinese laws. Therefore, the project is eligible under the scope of the VCS Program.

1.4.3 Transfer project eligibility

This project is not a transfer project.

1.5 Project Design

- ☐ Single location or installation
- ☒ Multiple locations or project activity instances (but not a grouped project)
- ☐ Grouped project

1.5.1 Grouped project design

This project is not relevant to the grouped project.

1.6 Project Proponent

Organization name	Danfeng County Construction Development Group Co., Ltd
Contact person	Yongle Zhang
Title	Project Manager
Address	Shanxi Province, Shangluo City, Danfeng County, north of the east extension of Jiangbin North Road
Telephone	+86 13991499380
Email	danfenglyth@163.com

Organization name	Guangzhou Guotan Assets Management Co., Ltd
Contact person	Kezhi Chen
Title	General manager

Address	Room 1105, Building 16, Tian An Headquarters Center, No. 555 Panyu Avenue North, Donghuan Street, Panyu District, Guangzhou, China
Telephone	+86 020 22885839
Email	guotanzichan@163.com

1.7 Other Entities Involved in the Project

Organization name	Guangdong Shuangtanda Technology Co., Ltd
Role in the project	Project Consultant
Contact person	Fulin Mao
Title	Deputy General Manager
Address	Building 16, Tian An Headquarters Center, No. 555 Panyu Avenue North, Donghuan Street, Panyu District, Guangzhou, China
Telephone	+86 17322218846
Email	flmao@gdstdkj.com

1.8 Ownership

The ownership of the forest land in the project belongs to the village collective and farmers, which has been confirmed by the local government and Danfeng County Forestry Bureau. Since this forest land are all legal, and the ownership is clear, there is no dispute over land ownership in the project site.

The project proponent is Danfeng County Construction Development Group Co., Ltd while the local farmers who participated in the project and involve an extension in rotation age were receive financial rewards.

During the crediting period, the project proponent is responsible for supervising inspections by technicians to ensure that farmers comply with the appropriate conservation measures. In addition, the farmers who own the rights to the forest land authorize the project proponent to act as the representative of the project and to take full responsibility for the development of the forest, and the relevant agreements are signed.

Guangdong Shuangtanda Technology Co., Ltd are responsible for helping project proponent in the development and management of carbon projects, including preparing monitoring plans, organizing training, etc.

1.9 Project Start Date

Project start date	01-Sep-2021
Justification	The start of the project is 01-Sep-2021, as evidenced by documents issued by the local government.

1.10 Project Crediting Period

Crediting period	<input type="checkbox"/> Seven years, twice renewable <input type="checkbox"/> Ten years, fixed <input checked="" type="checkbox"/> Other
Start and end date of first or fixed crediting period	01-Sep-2021 to 31-Aug-2121

1.11 Project Scale and Estimated GHG Emission Reductions or Removals

☒ < 300,000 tCO₂e/year (project)

☐ ≥ 300,000 tCO₂e/year (large project)

Years	Estimated GHG emission reductions or removals (tCO ₂ e)
01-Sep-2021-31-Aug-2022	52,058
01-Sep-2022-31-Aug-2023	55,751
01-Sep-2023-31-Aug-2024	59,709
01-Sep-2024-31-Aug-2025	52,202
01-Sep-2025-31-Aug-2026	55,224
01-Sep-2026-31-Aug-2027	58,131
01-Sep-2027-31-Aug-2028	61,482
01-Sep-2028-31-Aug-2029	65,028

01-Sep-2029-31-Aug-2030	57,515
01-Sep-2030-31-Aug-2031	60,286
01-Sep-2031-31-Aug-2032	62,919
01-Sep-2032-31-Aug-2033	65,940
01-Sep-2033-31-Aug-2034	69,107
01-Sep-2034-31-Aug-2035	61,555
01-Sep-2035-31-Aug-2036	64,066
01-Sep-2036-31-Aug-2037	66,429
01-Sep-2037-31-Aug-2038	69,132
01-Sep-2038-31-Aug-2039	71,947
01-Sep-2039-31-Aug-2040	64,644
01-Sep-2040-31-Aug-2041	66,912
01-Sep-2041-31-Aug-2042	69,030
01-Sep-2042-31-Aug-2043	71,448
01-Sep-2043-31-Aug-2044	73,949
01-Sep-2044-31-Aug-2045	67,158
01-Sep-2045-31-Aug-2046	33,496
01-Sep-2046-31-Aug-2047	69,912
01-Sep-2047-31-Aug-2048	71,537
01-Sep-2048-31-Aug-2049	73,754
01-Sep-2049-31-Aug-2050	67,362
01-Sep-2050-31-Aug-2051	69,222
01-Sep-2051-31-Aug-2052	71,135
01-Sep-2052-31-Aug-2053	73,103
01-Sep-2053-31-Aug-2054	-1,412,207
01-Sep-2054-31-Aug-2055	23,523

01-Sep-2055-31-Aug-2056	4,089
01-Sep-2056-31-Aug-2057	4,823
01-Sep-2057-31-Aug-2058	5,682
01-Sep-2058-31-Aug-2059	6,686
01-Sep-2059-31-Aug-2060	7,857
01-Sep-2060-31-Aug-2061	9,232
01-Sep-2061-31-Aug-2062	10,836
01-Sep-2062-31-Aug-2063	12,394
01-Sep-2063-31-Aug-2064	14,496
01-Sep-2064-31-Aug-2065	16,946
01-Sep-2065-31-Aug-2066	19,811
01-Sep-2066-31-Aug-2067	23,152
01-Sep-2067-31-Aug-2068	26,724
01-Sep-2068-31-Aug-2069	31,209
01-Sep-2069-31-Aug-2070	36,444
01-Sep-2070-31-Aug-2071	30,433
01-Sep-2071-31-Aug-2072	34,071
01-Sep-2072-31-Aug-2073	37,805
01-Sep-2073-31-Aug-2074	42,303
01-Sep-2074-31-Aug-2075	47,334
01-Sep-2075-31-Aug-2076	40,325
01-Sep-2076-31-Aug-2077	43,967
01-Sep-2077-31-Aug-2078	47,609
01-Sep-2078-31-Aug-2079	51,892
01-Sep-2079-31-Aug-2080	56,562
01-Sep-2080-31-Aug-2081	48,877

01-Sep-2081-31-Aug-2082	52,058
01-Sep-2082-31-Aug-2083	55,751
01-Sep-2083-31-Aug-2084	59,709
01-Sep-2084-31-Aug-2085	52,202
01-Sep-2085-31-Aug-2086	55,224
01-Sep-2086-31-Aug-2087	58,131
01-Sep-2087-31-Aug-2088	61,482
01-Sep-2088-31-Aug-2089	65,028
01-Sep-2089-31-Aug-2090	57,515
01-Sep-2090-31-Aug-2091	60,286
01-Sep-2091-31-Aug-2092	62,919
01-Sep-2092-31-Aug-2093	65,940
01-Sep-2093-31-Aug-2094	69,107
01-Sep-2094-31-Aug-2095	61,555
01-Sep-2095-31-Aug-2096	64,066
01-Sep-2096-31-Aug-2097	66,429
01-Sep-2097-31-Aug-2098	69,132
01-Sep-2098-31-Aug-2099	71,947
01-Sep-2099-31-Aug-2100	64,644
01-Sep-2100-31-Aug-2101	66,912
01-Sep-2101-31-Aug-2102	69,030
01-Sep-2102-31-Aug-2103	71,448
01-Sep-2103-31-Aug-2104	73,949
01-Sep-2104-31-Aug-2105	67,158
01-Sep-2105-31-Aug-2106	33,496
01-Sep-2106-31-Aug-2107	69,912

01-Sep-2107-31-Aug-2108	71,537
01-Sep-2108-31-Aug-2109	73,754
01-Sep-2109-31-Aug-2110	67,362
01-Sep-2110-31-Aug-2111	69,222
01-Sep-2111-31-Aug-2112	71,135
01-Sep-2112-31-Aug-2113	73,103
01-Sep-2113-31-Aug-2114	-1,412,207
01-Sep-2114-31-Aug-2115	23,523
01-Sep-2115-31-Aug-2116	4,089
01-Sep-2116-31-Aug-2117	4,823
01-Sep-2117-31-Aug-2118	5,682
01-Sep-2118-31-Aug-2119	6,686
01-Sep-2119-31-Aug-2120	7,857
01-Sep-2120-31-Aug-2121	9,232
Total estimated ERs	2,074,846
Total number of crediting years	100
Average annual ERs	20,748

1.12 Description of the Project Activity

The Improved Forest Management (IFM) project activity is located in Danfeng County, Shangluo City, Shanxi Province of China. The project is not located within the jurisdiction covered by the REDD+ program with jurisdiction. The annual mean temperature is 13.8°C. The annual mean precipitation is 400 mm-2000 mm.

The project activity includes the Improved Forest Management (IFM) of the forests in 2222 sub-compartments spreading over Caichuan Town, Dihua Town, Huapingzi Town, Longjuzhai Town, Luanzhuang Town, Shangshan Forest Farm, Shang Town, Tieyupu Town, Wuguan Town, Yuling Town of Danfeng County by extending the age at which trees are cut, projects increase the average carbon stock on the land and remove more emissions from the atmosphere. All the sub-compartments had the legal right to harvest issued by local forest bureau before the implementation of the project activity. Before 2021, they were all

forests which the trees could be logged and sold once reached the cutting rotation age based on a timber harvest plan. After 2021, they are all converted to protected forests. The KML file of the small class in the project area is shown below.

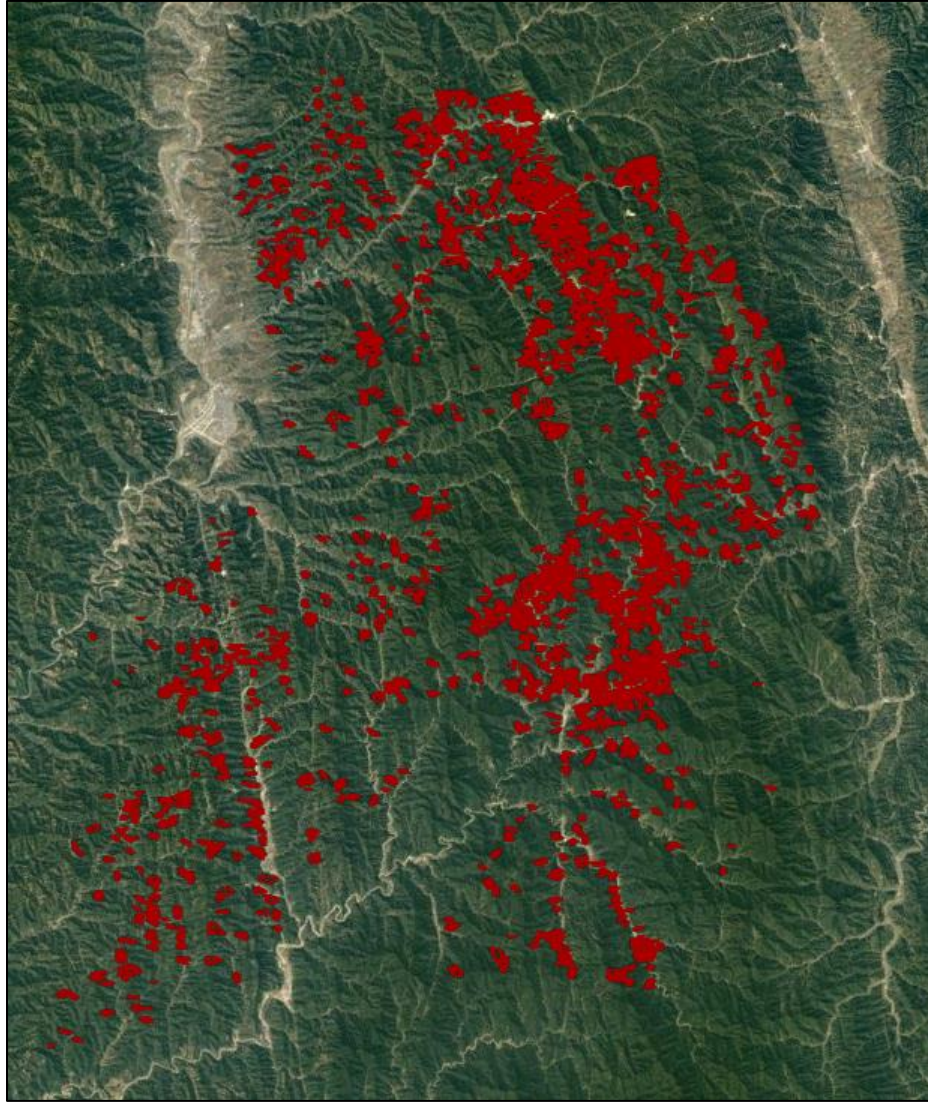


Figure 1 : The diagram of the project boundary

Table 2: Land parcels of the project

Parcel number	Department	Serial number	Area(ha)
1	Caichuan Town	CCT	2672.62
2	Dihua Town	DHT	230.93

3	Huapingzi Town	HPZT	348.50
4	Longjuzhai Town	LJZT	781.76
5	Luanzhuang Town	LZT	3018.49
6	Shangshan Forest Farm	SSFF	102.34
7	Shang Town	ST	199.92
8	Tieyupu Town	TYPT	816.75
9	Wuguan Town	WGT	575.90
10	Yuling Town	YLT	2153.51
Total			10900.72

The purpose of strata is to improve accuracy and reduce the sampling cost. The strata are usually based on the tree species, age and canopy density, but it does not mean all these factors should be considered for all projects, more strata mean more workload and cost. For this project, the factor of species for strata could reduce the variation within the same stratum and reach the accuracy level of 90% under certain degree of freedom. So, the strata are reasonable and feasible.

All sub-compartment were divided into two strata based on the age of the tree species

Serial number of strata	Tree specie	Area (ha)	Source
1	Pitch pine	10610.23	Database of the forest second class investigation by Danfeng County Forestry Bureau
2	Pitch pine	290.49	
Total		10900.72	

The implementation of the project activity includes extending the rotation age of a forest or patch of forest before harvesting in the parcels mentioned above. After the activity, trees could be logged based on a longer rotation age and then the carbon stocks could be increased. Therefore, net GHG emission reductions/removals resulting from the implementation of IFM projects aimed at the protection of forests that would be logged based on a shorter rotation age in the absence of carbon finance could be earned by the project activity.

The project will promote local sustainable development by extending the rotation age of a forest or patch of forest before harvesting. Major contributions of the project are as follows:

- (1) The implementation of the project will keep controlling soil and water erosion and land degradation in the project area.
- (2) The implementation of the project will keep biodiversity conservation by maintain forest cover and nature habitat connectivity.
- (3) The implementation of the project will absorb and fix carbon dioxide every year by extending the rotation age of a forest or patch of forest, and reduce GHG emission.
- (4) The implementation of the project will generate income for the local farmers by regular forest management. Local people's standard of living has been developed.

1.13 Project Location

The project is located in Danfeng County, Shangluo City, Shanxi Province of China. The geo-coordinate range of the project proponent is 110°7'E -110°49'E and 33°21'N - 33°5'N. There are 2222 sub-compartments spreading over Caichuan Town, Dihua Town, Huapingzi Town, Longjuzhai Town, Luanzhuang Town, Shangshan Forest Farm, Shang Town, Tieyupu Town, Wuguan Town, Yuling Town of Danfeng County by extending the age at which trees are cut,

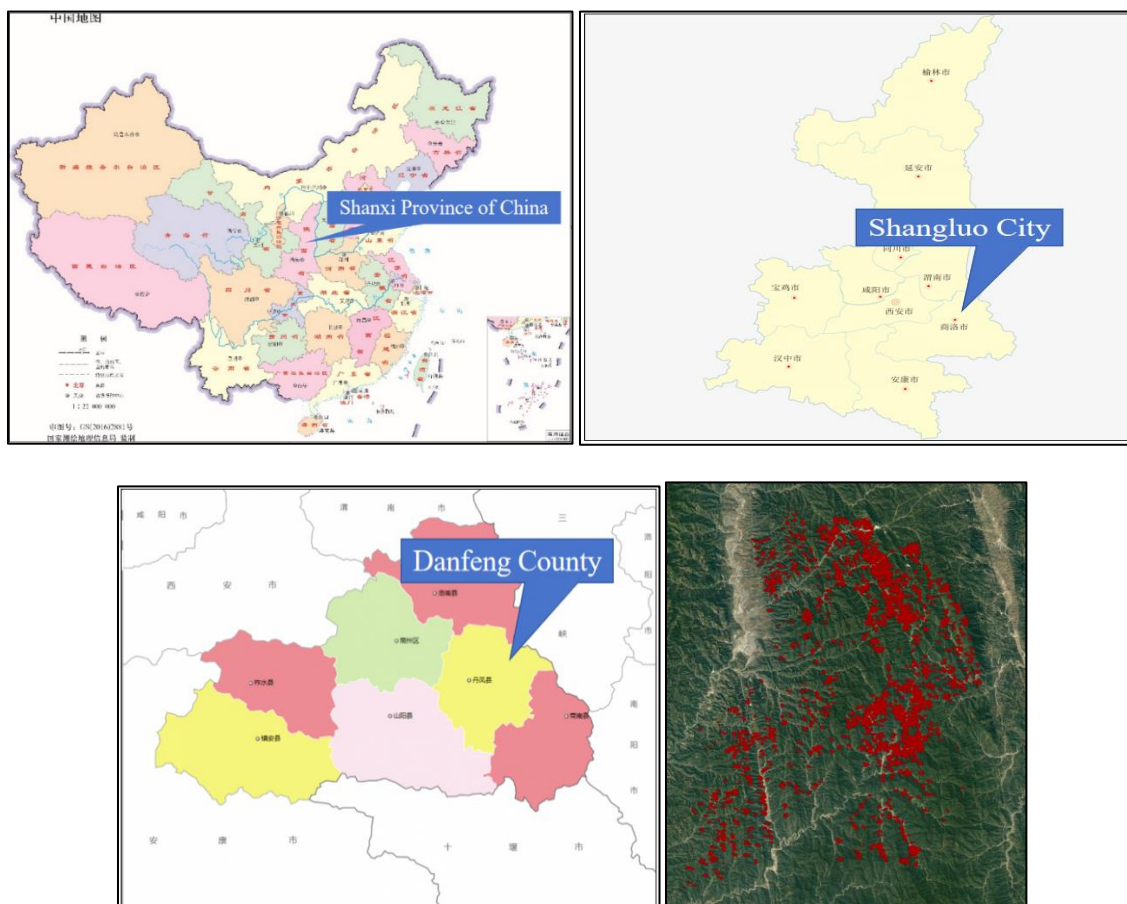


Figure 2: The project location and project zone

1.14 Conditions Prior to Project Initiation

Prior to formal implementation of the project, rotational logging of Pitch pine was conducted every 50 years in the project area.

The baseline scenario is the same as the conditions existing prior to the project initiation, please refer to Section 3.4 (Baseline Scenario)

- The project area is located in Danfeng County, Shangluo City, Shanxi Province, China;
- The ecosystem type in the project area is forest ecosystem, which has been used as plantation forests and does not involve peat forests or wetlands;
- The historical land types in the project area have been planted as plantation forests, with local villagers planting Pitch pine on their land and commercially harvesting it when it reaches the age of rotation for economic gain;
- The terrain of Danfeng County is dominated by mountains and hills, with less flat land. The climate is characterized by the transition from cool subtropical zone to warm temperate zone, and the area around the Python Ridge in the north is characterized by warm temperate mountainous climate with large vertical differences. The rivers in the territory belong to two major water systems, most of which belong to the Yangtze River system, and a small part belongs to the Nanluo River system, a tributary of the Yellow River. Soil types include 7 soil classes, 14 subclasses, 24 soil genera and 78 soil species.

1.15 Compliance with Laws, Statutes and Other Regulatory Frameworks

Project activities are intended to follow all applicable legal and regulatory requirements of local, city and national policies. There are no laws today in China that prevent the implementation of the proposed project activity. The proposed project activity adheres to the following laws:

- The Forest Law of People's Republic of China²: which say that the protection, cultivation and utilization of forest resources should respect nature, conform to nature, and adhere to the principles of ecological priority, protection priority, combination of conservation and sustainable development. The purpose of this project is to protect the forest to be cut down and obtain more ecological value, which is in line with legal regulations;

² https://www.mee.gov.cn/ywgz/fgbz/fl/202106/t20210608_836755.shtml

- Regulations on the Implementation of the Forest Law of the People's Republic of China³: which states that to formulate long-term forestry plans, the following principles must be followed: (1) Protect the ecological environment and promote sustainable economic development; (2) Based on existing forest resources; (3) Coordinate with the overall land use planning, soil and water conservation planning, urban planning, and village and market town planning. This project activity protects the existing forest resources and protects the forests to be felled, which is conducive to sustainable development and complies with legal requirements;
- Shanxi Province Forest Management Regulations⁴: According to the law, the local forestry bureau issued the forest right certificate and have the right to set out the cutting quota in the harvest plan, and the forest owner have the right to decide their harvest amount, which could not be more than the cutting quota. The project has complied with the above regulations and laws during construction period and will be under regular inspection by local government during the implementation of the project activity to ensure the continuous compliance. The project activity was approved by the local forestry bureau which is a state-appointed forest law enforcement agency. All these forests are state-owned forests or privately-owned forests or collective-owned forests, and have the legal right to forest ownership. There were no illegal activities in the project site, such as illegal logging, illegal grazing, deforestation, quarrying, sand mining, soil mining and other activities that destroy forest.

1.16 Double Counting and Participation under Other GHG Programs

1.16.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.16.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.16.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

³ https://www.gov.cn/zhengce/202203/content_3338145.htm

⁴ http://lyj.shaanxi.gov.cn/zfxgk/zcjd/201208/t20120822_2030427.html

☐ Yes ☒ No

1.17 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.17.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the VCS Program Definitions for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.17.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the VCS Program Definitions for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.17.3 Supply Chain (Scope 3) Emissions


Do the project activities specified in Section 1.12 affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

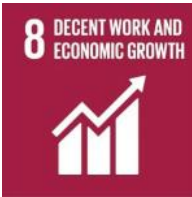

☐ Yes ☒ No

1.18 Sustainable Development Contributions

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

During the implementation of the project, it is estimated to achieve 3 SDGs as follows:

	<p>The project area is located in Danfeng County, 10900.72 ha of forest is to be protected. The project will generate GHG emission removals and mitigate climate change. It is estimated that the project will generate GHG emission removals of the 2,074,846 tCO₂e in 100 years. Accounting Period of 100 years, with average annual GHG emission removals of 20,748 tCO₂e. Through this project, it is possible to demonstrate that China is taking specific afforestation activities to achieve sustainable development climate action goals.</p>
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	<p>Creating new job opportunities and contributing to local economic prosperity. In particular, the job opportunities offered to them will significantly change their living style and build community capacity in gender and sustainable forest management. By being trained with the skills and participating the community activities together with other employees, women may gain more happiness compares to doing housework only, thus positive welfare outcomes for local households are more likely to be expected. Through this project, it can illustrate China's goal of achieving sustainable development, decent work and economic growth by helping people in poverty-stricken areas to create jobs and provide wages through specific protect trees activities.</p>
	<p>Protect the sustainable use of terrestrial ecosystems, combat desertification, halt and reverse land degradation and halt the loss of biodiversity. Through this project, it can be shown that China is achieving the goal of sustainable development of protecting terrestrial life through specific forest protection activities to protect biodiversity and increase animal habitats.</p>

China has adopted the 2030 Agenda for Sustainable Development and announced that the country will hit peak emissions before 2030 and for carbon neutrality by 2060. According to the latest 2021 report⁵ of Implementation of the 2030 Agenda for Sustainable Development in China, China will actively promote the integration of the 2030 Agenda with the 14th Five-Year Plan and other national development strategies, and focus on promoting high-quality development, social coordination, and harmonious coexistence between people and nature in terms of economic development, innovation drive, people's well-being, and green ecology. In particular, the proposed project activities directly contribute to 3 of the 4 goals:

- Promoting high-quality economic development: the project contributes: The project is to carry out long-term forest protection in an underdeveloped region by increasing forest stock and absorbing carbon dioxide, which will result in the formation of VCUs to be traded, providing a more adequate source of funding for local forest protection activities, and at the same time improving local healthcare, education, etc., and the development of China's national-level poverty-stricken counties.
- Promote people's well-being and comprehensive development: the project is committed to generating extra income for the local rural communities with non-discriminatory practices and a safe working environment. The project framework and activities have been designed and established under a framework of social impact that not only includes income generating opportunities but follows a long-term plan of community

⁵ https://www.fmprc.gov.cn/mfa_eng/topics_665678/2030kcxzfzyc/

engagement and indirect sustainable development activities, aimed at creating a prosperous environment.

- Promoting green development and human-nature harmony: The project assists local communities in scientific forest conservation to prevent the destruction of forest resources while improving the quality of the local environment. At the same time, the project conveys the concept of green development to farmers through project activities and training, contributes to building a harmonious relationship between people and nature, and further helps the national government to cope with climate change and achieve the goal of carbon peaking by 2030 and carbon neutrality by 2060.

1.19 Additional Information Relevant to the Project

1.19.1 Leakage Management

Based on conservative estimates, the project has a leakage of 10%, as described in the analysis in Section 4.3.

1.19.2 Commercially Sensitive Information

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

1.19.3 Further Information

There is no further information that may have a bearing on the eligibility of the project, the net GHG emission reductions or removals, or the quantification of the project's net GHG emission reductions or removals.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	The local stakeholder mainly includes the farmers involved in the project, the local households live near by the project and the local government.
Legal or customary tenure/access rights	The forest woods tenure rights belong to the individual and are entrusted to the Project Proponent, and the final VCU's received are distributed by the Project Proponent. The forest rights of the project are clear and free from conflicts.
Stakeholder diversity and changes over time	The project area is inhabited by a number of ethnic groups, who live in harmony with each other without any conflict, and over time, the various stakeholders have become more communicative and harmonious as a result of the project's advancement.
Expected changes in well-being	The project is expected to generate positive socio-economic impacts for the surrounding communities. At a minimum, the same number of personnel will be hired from the communities for the conservation project as are currently employed in the logging operation. Jobs will include forest rangers, eco-guides, research and monitoring assistants and other support staff. Forest rangers will regularly patrol the project area, particularly its fluvial access routes, to detect and deter illegal logging, hunting and encroachment.
Location of stakeholders	Danfeng County, Shangluo City, Shanxi Province of China. See section 1.13 for details.

Location of resources	Danfeng County, Shangluo City, Shanxi Province of China. See section 1.13 for details.
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2.1.2 Stakeholder Consultation and Ongoing Communication

Date of stakeholder consultation	14/09/2020
Stakeholder engagement process	<p>Prior to the implementation of the project, the local forestry Bureau held a mobilization meeting about the project activities. The local forestry bureau informed the representatives of each stakeholder to participate the meeting through the forestry stations of each township. The mobilization meeting was held in Sep 2020. The project proponent presented: what the project activity was, the benefit of the local stakeholders, the risks, costs and benefits the project might bring to local stakeholders, the relevant laws and regulations, the rights of workers, the process of VCS Program validation and verification and the validation/verification body's site visit, etc in the meeting. All the local stakeholders were excited and indicated that they would support the project activity.</p>
Consultation outcome	<p>During the implementation of the project, the local forestry bureau would continue to conduct a questionnaire survey among stakeholders to understand their opinions. Since the project is running normally, local stakeholders have no opinion. The local forestry bureau also conducts regular training on ecological forest conservation for stakeholders to ensure better implementation of the project.</p> <p>The local stakeholders paid close attention to the progress of the project activity. During the implementation of the project, training lectures of related to the project activity, community meetings and interviews were held many times, which were enthusiastically attended by local stakeholders.</p> <ul style="list-style-type: none"> • The project design and implementation, including the results of monitoring. • It will be announced by the local forestry bureau.

	<ul style="list-style-type: none"> • The risks, costs and benefits the project may bring to local stakeholders. • PP has entered into agreements with various local stakeholders of the project, which are supervised by the local forestry bureau. • All relevant laws and regulations covering workers' rights in the host country. • The local forestry bureau has publicized to the local stakeholders of the project. • The process of VCS Program validation and verification and the validation/verification body's site visit.
Ongoing communication	<p>The project owner has a dedicated project partnership specialist to ensure ongoing communication with the stakeholders and to address any issues that may arise. All stakeholder input will be categorized and considered throughout the entire life cycle of the project. Management will also make adjustments accordingly. During the course of the project, project proponents will maintain direct communication with community members and relevant stakeholders through their on-site project staff. This will establish a commitment to communication and consultation to keep stakeholders informed of project activities, including restoration, maintenance, monitoring, and verification processes. On-site project staff will maintain regular (usually quarterly) communication with other stakeholders through face-to-face meetings. In addition, project staff will actively listen to suggestions from any identified community members or other stakeholder groups and report them to the project proponents in a timely manner. The project owner will address feedback in a timely manner and will publicize options and results.</p>
Stakeholder input	<p>No comments received.</p>

2.1.3 Free Prior and Informed Consent

Obtaining consent	<p>Stakeholder meetings gathered opinions from different representatives about the project design and their participation</p>
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	willingness. The results showed that all stakeholders agreed to the development of the project.
Outcome of FPIC	<p>Prior to the implementation of the project, the project proponent and local forestry Bureau held a mobilization meeting about the project activities. The local forestry bureau informed the representatives of each stakeholder to participate the meeting through the forestry stations of each township. The project proponent presented: what the project activity was, the benefit of the local stakeholders, the risks, costs and benefits the project might bring to local stakeholders, the relevant laws and regulations, the rights of workers, the process of VCS Program validation and verification and the validation/verification body's site visit, etc in the meeting. Then the stakeholders were consulted for their opinions on the project implementation. According to the meeting minutes, all local stakeholders agreed that the project implementation would lead to a better local environment, which would help to improve their living environment with no risks brought.</p> <p>During the project implementation, local stakeholders will be able to obtain timber for their daily lives through forest tending and managing rather than logging based on the shorter rotation age, without changing their daily lives. At the same time, extending the rotation age before harvesting requires people to keep working on forest management and conservation, and villagers are involved in daily patrols of the forest as part-time patrollers, which provides more jobs for local stakeholders.</p>

2.1.4 Grievance Redress Procedure

Development process	<p>Processes to ensure ongoing communication and consultation with local stakeholders, including a grievance redress procedure to resolve any conflicts which may arise between the project proponent and local stakeholders.</p> <p>PRA (Participatory Rural Appraisal) will be done every two years, and the local government resolves any conflicts which may arise between the project proponent and local stakeholders according to the relevant law.</p>
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Grievance redress procedure	<p>If there is a conflict of interest between the parties, the stakeholders can appeal through the village representative or directly to the owner of the project, 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.</p> <p>The PP 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. Upon receipt of the patrolman's report, the project owner 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.</p>
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2.1.5 Public Comments

Comments received	Actions taken
No public comments received	Project proponent will take due account of any and all comments received during the consultation. PP will be either update the project design or demonstrate the insignificance or irrelevance of the comment, and demonstrate to the validation/verification body what action it has taken.

2.2 Risks to Stakeholders and the Environment

	Risks identified	Mitigation or preventative measure taken
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Risks to stakeholder participation	No risk identified	According to agreement between PP and local stakeholders, there is no risk to local stakeholders due to the project implementation. Due to investment risks during the implementation of the project, Danfeng County Construction Development Group Co., Ltd entrusts Guangzhou Guotan Assets Management Co., Ltd. to make consulting and investment for the project. If the project is not successfully registered as a VCS project, the risk of investment failure will be fully borne by Guangzhou Guotan Assets Management Co., Ltd. During the project implementation, the project area will not be used for commercial logging. PP actively coordinate relevant management unit, relying on existing rich forest resources and folk customs, actively participate in the development area, forest tourism, ecological guide, support type characteristic diet forest, increase the income of the stakeholders in the project.
Working conditions	No risk identified	Workers have been trained in first aid and have taken out commercial insurance prior to the official start of the project
Safety of women and girls	No risk identified	According to Chapter II of the Labour Law of the People's Republic of China ⁶ , workers are not discriminated against in employment on the basis of their ethnic group, race, sex or religious belief. Women enjoy equal rights with men in employment, and employers are prohibited from recruiting minors under the age of 16. As the supervisor of the project, the local forestry Bureau supervised that all parties of the project did not violate laws during the implementation of the project, including labour and criminal laws, so as to avoid discrimination (gender/age/religion) and sexual harassment.

⁶ http://www.mohrss.gov.cn/xgk2020/fdzdgknr/zcfg/fl/202011/t20201102_394625.html

Safety of minority and marginalized groups, including children	No risk identified	Local governments regulate these offenses and provide penalties for offenders and protection for victims.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	No risk identified	The project only extends the rotation age of forest, a process that does not produce pollutants.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Discrimination and sexual harassment	<p>The Chinese Government has always attached great importance to anti-discrimination and anti-sexual harassment legislation, and has taken a series of measures to strengthen the formulation and implementation of relevant laws and regulations. First, the Constitution of the People's Republic of China clearly stipulates citizens' rights to personal freedom, equality and democracy, providing legal safeguards against discrimination and sexual harassment. Second, the Chinese Government has also enacted the Law⁷ of the People's Republic of China on the Protection of the Rights and Interests of Women, the Law⁸ of the People's Republic of China on the Protection of Minors, and the Law⁹ of the People's Republic of China on the Protection of the Rights and Interests of the Elderly, in order to protect the rights and interests of different groups of people in the areas of employment, education and medical care. In addition, the Chinese Government has introduced corresponding regulations and policies in specific areas, such as the Regulations on Personnel Management in Public Institutions and the Special Regulations on the Labor Protection of Female Workers and</p>
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⁷ https://www.gov.cn/guoqing/2021-10/29/content_5647634.htm

⁸ https://www.gov.cn/xinwen/2020-10/18/content_5552113.htm

⁹ https://www.gov.cn/guoqing/2021-10/29/content_5647622.htm

	<p>Employees. Finally, the Chinese Government is also actively carrying out publicity, education and training activities to raise public awareness and consciousness of anti-discrimination and sexual harassment. In short, China's anti-discrimination and anti-sexual harassment legislation and policies and measures are constantly being developed and improved, laying a solid foundation for promoting social justice and safeguarding people's legitimate rights and interests.</p>
Management experience	<p>Workers are professionally trained before starting their jobs, and patrol requirements are clearly defined in the quality control program developed by the project owner.</p>
Gender equity in labor and work	<ul style="list-style-type: none"> • Equal pay for men and women for equal work. The Constitution stipulates that the State protects the rights and interests of women and that men and women receive equal pay for equal work. The Law¹⁰ on the Protection of Rights and Interests of Women stipulates that men and women are equal in the allocation of housing and the enjoyment of welfare benefits. • Men and women are equal in employment, and enterprises may not discriminate against women when recruiting. The Law on the Protection of Rights and Interests of Women provides that the State guarantees that women enjoy equal labor rights with men. When recruiting workers, except for types of work or positions that are not suitable for women, enterprises may not refuse to recruit women or raise the recruitment standards for women on the basis of their gender. According to the Regulations on the Labor¹¹ Protection of Female Workers and Employees, no unit that is suitable for women to perform labor shall refuse to recruit female workers. They may not reduce a female worker's basic salary or terminate her labor contract during her pregnancy, childbirth, or breastfeeding period. • It is prohibited to arrange for female workers to engage in high-intensity labor. The Law on the Protection of Rights and Interests of Women stipulates that: any unit shall, in accordance with the characteristics of women and in accordance with the law, protect the safety and health of women at work and in the course of their

¹⁰ https://www.gov.cn/guoqing/2021-10/29/content_5647634.htm

¹¹ https://www.mee.gov.cn/zcwj/gwywj/202001/t20200114_759336.shtml

	labor, and shall not make arrangements for work and labor that are unsuitable for women. According to and: it is prohibited to arrange for female workers to engage in underground work in mines, work of the fourth level of physical labor intensity as prescribed by the State, and other work that is taboo to engage in.
Human trafficking, forced labor, and child labor	The penalty for child labor ¹² under China's Child Labor Prohibition Regulations is a fine and financial compensation for the child's guardian. Article 240 of the Criminal Law. Anyone who abducts or traffics women or children shall be sentenced to fixed-term imprisonment of not less than five years and not more than 10 years and shall be fined. Where the circumstances are particularly serious, the penalty is death and confiscation of property. Therefore, there will be no trafficking of women and children and no child labor in this project.

2.3.2 Human Rights

All the actions of the stakeholder meeting are decided by a democratic vote of the stakeholders. All information is open and transparent. If there is any violation of human rights treaties such as gender discrimination, racial discrimination, child labor, actually disabled people, etc. in this project, the local governments will immediately step in and take protective measures, and the local governments is also a stakeholder.

2.3.3 Indigenous Peoples and Cultural Heritage

Cultural Heritage is not covered in the project area.

2.3.4 Property Rights

Rights to territories and resources	Ownership of forest land is vested in the State, and the right to use forest land, forest woods, and the ownership of forest woods is vested in the collective or individual.
Respect for property rights	After confirmation of ownership, the corresponding property rights are protected by Chinese law.

2.3.5 Benefit Sharing

¹² https://www.gov.cn/gongbao/content/2002/content_61798.htm

Process used to design the benefit sharing plan	At a stakeholder meeting, stakeholders work together to develop a benefit-sharing agreement and provide input on the benefit-sharing agreement, then stakeholders vote on those inputs, and finally the voted benefit-sharing agreement is publicized.
Summary of the benefit sharing plan	VCUS will be issued to the project owner's account, the project owner will be in accordance with the agreement signed with the village collectives for the distribution of benefits, the village collectives and then distributed to the hands of the villagers, the whole process by the project owner is also supervised by the local government.
Approval and dissemination of benefit sharing plan	The approval process is conducted through a democratic vote at a stakeholder meeting, and the Benefit Sharing Plan approval process and specific plans are posted on bulletin boards in village government, street offices, and other places to publicize the process.

2.4 Ecosystem Health

	Risks identified	Mitigation or preventative measure taken
Impacts on biodiversity and ecosystems	No risk identified	The improved forest management by extending rotation of age of forest is not expected to result in any negative environmental impacts. On the contrary, the reduced anthropogenic disturbance under continued conservation management will ensure a sustainable habitat for the currently present biodiversity and provide a sustainable optimal provision of the ecosystem service.
Soil degradation and soil erosion	No risk identified	Managing forest effectively, so that it can control soil and water erosion and land degradation, prevent rocky desertification.
Water consumption and stress	No risk identified	The forest grows naturally in the project, so there is no water stress.

Usage of fertilizers	No risk identified	The forest grows naturally in the project, so fertilization is not required.
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2.4.1 Rare, Threatened, and Endangered species

Is the project located in or adjacent to habitats for rare, threatened, or endangered species?

☐ Yes

☒ No

2.4.2 Introduction of species

It's not applicable. The tree species involved in this project is native species.

2.4.3 Ecosystem conversion

The project has been forested, so no ecosystem conversion has occurred.

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	VM0003	VM0003 Methodology for Improved Forest Management through Extension of Rotation Age.	1.3
TOOL	VT0001	VT0001 Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities.	3.0
TOOL	VT0004	VT0004 AFOLU Non-Permanence Risk Tool.	4.1
TOOL	CDM	Calculation of the number of sample plots for measurements within A/R CDM project activities.	2.1

3.2 Applicability of Methodology

Methodology ID	Applicability condition	Justification of compliance
VM0003	Forest management in both baseline and project scenarios involves harvesting techniques such as clear cuts, patch cuts, seed trees, continuous thinning, or group selection practices.	There are planned timber harvests before and after extending rotation of age both in the baseline scenario and project scenarios.

VM0003	Forests which are not subject to timber harvesting, or managed without an objective for earning revenue through timber harvesting in the baseline scenario are not eligible under this methodology.	The forests are subject to timber harvesting, or managed with an objective for earning revenue through timber harvesting in the baseline scenario.
VM0003	<p>Prior to the first verification event, the project area must meet one of the following conditions:</p> <p>a) Certified by Forest Stewardship Council (FSC); or</p> <p>b) Subject to an easement, or equivalent instrument, recorded against the deed of property that prohibits commercial harvesting for the duration of the crediting period unless later certified by FSC.</p>	According to Notice on the development of Shanxi Danfeng IFM (Extended Rotation Period) project, commercial logging in the project area is prohibited and protected by scientific means unless FSC certification is obtained.
VM0003	Project proponents must define the minimum project length in the project description.	Proposed project length is 100 years.
VM0003	The project does not encompass managed peat forests and the proportion of wetlands are not expected to change as part of the project.	The project will not encompass peat forests and wetlands are not expected to be changed.
VM0003	Project proponents must have a projection of management practices in both with- and without-project scenarios.	Management practices in the without project scenario are set in the forest management plans for the next years and will be projected accordingly to fulfill project length. Management practices in the

		project scenario will be detailed prior project Validation.
VM0003	Where fire is used as part of forest management, fire control measures such as installation of firebreaks or back-burning must be taken to ensure fire does not spread outside the project area that is, no biomass burning is permitted to occur beyond the project area due to forest management activities.	Current forest management plans do not include forest fire in their prescriptions. However, management plans include forest fire management and preventive actions.
VM0003	There must be no leakage through activity shifting to other lands owned or managed by project proponents outside the boundary of the project area.	The project proponent has no forestland other than the forestland in the project area.
VT0001	AFOLU activities the same or similar to the proposed project activity on the land within the proposed project boundary performed with or without being registered as the VCS AFOLU project shall not lead to violation of any applicable law even if the law is not enforced.	All projects are in conformity with law.
VT0001	The use of this tool to determine additionality requires the baseline methodology to provide for a stepwise approach justifying the determination of the most plausible baseline scenario. Project proponent(s)\ proposing new baseline methodologies shall ensure consistency between the determination of a baseline	The baseline methodology uses a stepwise approach justifying the determination of the most plausible baseline scenario. And project proponent proposing new baseline methodologies ensure consistency between the determination of a baseline scenario and the determination of additionality of a project activity.

	scenario and the determination of additionality of a project activity.	
VT0004	The legal right to harvest must pre-exist the implementation of the project. The legal right to harvest must be issued by a relevant government body, define a legal allocation of rights to a forest timber resource, and include a plan for forest management that includes a definition of the spatial extent of the forest, the volume of the timber resource to be extracted and a description of harvesting practices. Rights to forest management must be demonstrated by documentary proof of legal permissibility for timber harvest, intent to harvest and a description of the timber resource. This proof must be issued by the relevant (governmental) regulatory body that has designated, sanctioned or approved the project area (or areas) for forest management	The forestland involved in this project has legal rights, which can be clearly proved by the forest rights certificate issued by the government. Prior to the commencement of the project, the project harvesting design has been completed and approved in accordance with the harvesting quota document issued by the government.
VT0004	The project site is representative of other forestlands harvested in the country within the past two years.	The project site has been within the Danfeng County forest harvesting license prior to the start of the project and has harvesting records.
VT0004	The project site is within commercially viable distance to existing transport networks and a port for timber export or a mill for timber processing.	Before the project began, the project site had been engaged in timber production activities, so it has a relatively convenient transportation network.

VT0004	A valid and verifiable government-approved timber management plan for harvesting the project area.	Every year, the Forestry Bureau of Danfeng County will issue a "Notice on Forest Harvesting Management", which stipulates the annual harvesting limit and time.
CDM TOOL	Calculation of the number of sample plots.	This tool has no internal applicability conditions, so the project can use this tool to calculate the number of sample plots for measurements.

3.3 Project Boundary

The change in carbon stocks at the baseline scenario has been defined in section 4.3, and the selected carbon pool to be monitored are listed as below:

Table 3: Selected Carbon Pools in the Baseline and Project Scenario

Carbon Pools	Selected?	Justification/Explanation
Above-ground biomass	Yes	Major carbon pool subjected to the project activity.
Below-ground biomass	Yes	Below-ground biomass stock is expected to increase due to the implementation of the VCS IFM project activity. Belowground biomass subsequent to harvest is not assessed with the conservative assumption of immediate emission.
Dead wood	No	Conservatively excluded per the requirements of VM0003.
Litter	No	According to methodology, this carbon pool is not included.
Soil organic carbon	No	According to methodology, this carbon pool is not included.

Carbon Pools	Selected?	Justification/Explanation
Wood products	Yes	This stock may increase or decrease (compared to baseline) due to implementation of the project activity.

Table 4: Selected GHG Sources in the Baseline and Project Scenario

Source		Gas	Included?	Justification/Explanation
Baseline	Burning of biomass	CO ₂	Excluded	Carbon stock decreases due to burning are accounted as a carbon stock change.
		CH ₄	Included	Non-CO ₂ gas emitted from biomass burning
		N ₂ O	Excluded	Potential emissions are negligible.
Project	Burning of biomass	CO ₂	Excluded	Carbon stock decreases due to burning are accounted as a carbon stock change.
		CH ₄	Included	Non-CO ₂ gas emitted from biomass burning
		N ₂ O	Excluded	Potential emissions are negligible.

The project boundary includes areas where improved forest management has been carried out, and the following project design boundary incorporates greenhouse gas emission considerations.

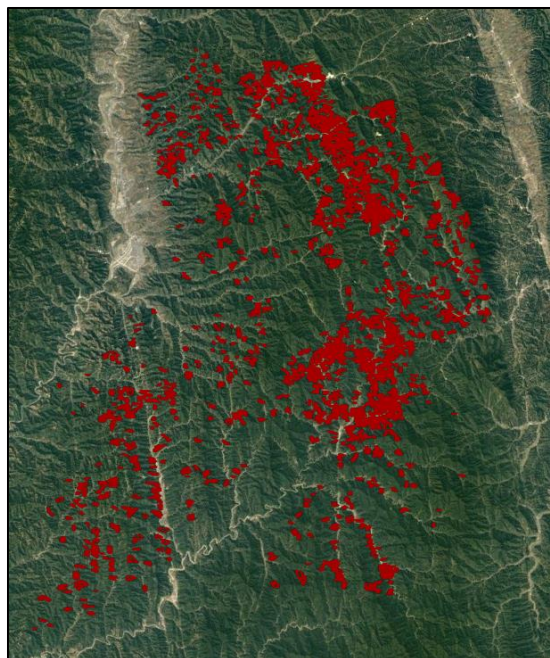


Figure 3: project boundary

3.4 Baseline Scenario

As per section 6.3 of VM0003 methodology, four scenarios must be identified together with the most likely land use at the project start time. The four scenarios are:

- Continuation of the pre-project forest management (Historical Baseline);
- Legal requirements for forest management in the region (Legal Baseline);
- Common practice forest management in the region (Common Practice Baseline); and
- Forest management as model under the project but in the absence of registration as an IFM project activity.

Historical Baseline

Forest owners do not maintain historical records of forest management of at least 20 years before project start date, nor there exists evidence that management practices have surpassed the legal rules. Therefore, it is not possible to select the Historical Baseline.

Legal Baseline

Danfeng County abides by the laws of the People's Republic of China and will not change as a result of the project. Therefore, Legal Baseline does not apply as the baseline scenario.

Common Practice Baseline

It is a common practice in the project area to select the prescribed species and age of trees to be harvested in accordance with the harvesting limits issued by the FDA, and the species involved in this project is the Pitch pine.

According to the "Tree Harvesting Age in All Provinces of China", the harvesting age of oil pine is 50 years, which was confirmed by Danfeng County staff.

A detailed list of commercial species and groups will be enlisted prior project validation. Common Practice Baseline will be validated by an external consultant prior project validation.

Project Activity Scenario

The simulated timber rotation in the project scenario extends the rotation age by 10 years, sacrificing short-term profits in exchange for climate benefits such as increasing the forest's carbon storage and removing greenhouse gases from the atmosphere. Thus, in the absence of the carbon credit income provided by the VCS IFM registry, the project scenario activities provide a much lower financial return than the Common Practice Baseline scenario.

3.5 Additionality

3.5.1 Regulatory Surplus

Is the project located in an UNFCCC Annex 1 or Non-Annex 1 country?

- ☐ Annex 1 country ☒ Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

- ☐ Yes ☒ No

3.5.2 Additionality Methods

Additionality was determined using version 3.0 of the VCS tool for the demonstration and assessment of additionality in VCS agriculture, forestry and other land use (AFOLU) project activities.

The following four steps are applied for the project:

Step 1: Identification of alternative land use scenarios to the proposed VCS AFOLU project activity:

This step serves to identify alternative land use scenarios to the proposed VCS AFOLU project activity(s) that could be the baseline scenario, through the following sub-steps:

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

1. Identify realistic and credible land-use scenarios that would have occurred on the land within the proposed project boundary in the absence of the AFOLU project activity under the VCS.

The scenarios should be feasible for the project area considering relevant national and/or sectoral policies and circumstances, such as historical land uses, practices and economic trends.

The identified land use scenarios shall at least include:

- 1) Same as baseline scenario with rotations every 50 years.
- 2) Project activity on the land within the project boundary performed without being registered as the VCS AFOLU project
- 3) If applicable, activities similar to the proposed project activity on at least part of the land within the project boundary of the proposed VCS AFOLU project at a rate resulting from:
 - Legal requirements; or
 - Extrapolate similar activities in the geographical area under similar socioeconomic and ecological conditions to the proposed VCS AFOLU project activity which cover a period began a decade earlier than the project start date.

For 3), the lands within the project boundary of the proposed VCS AFOLU project are all with the same legal requirements and there is no legal requirement to extend the tree rotation age. At the same time, within the project boundary, it is common practice to manage forests according to the original rotation age of the timber. So, the 3) is not applicable.

2. All identified land use scenarios must be credible. All land-uses within the boundary of the proposed VCS AFOLU project that are currently existing or that existed at some time in the period beginning ten years prior to the project start date but no longer exist, may be deemed realistic and credible. For all other land use scenarios, credibility shall be justified. The justification shall include elements of spatial planning information (if applicable) or legal requirements and may include assessment of economic feasibility of the proposed land use scenario.

The 1) and 2) identified land-use scenarios that would have occurred on the land within the proposed project boundary in the absence of the AFOLU project activity under the VCS are realistic and credible, as all land-uses within the boundary of the project activity that existed in the period beginning ten years prior to the project start date.

3. Outcome of Sub-step 1a:

The identified land use scenarios include the two below:

- 1) Same as baseline scenario with rotations every 50 years.
- 2) Project activity on the land within the project boundary performed without being registered as the VCS AFOLU project.

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

1. The scenarios are feasible for the project area considering Forest Law of People's Republic of China. Therefore, the 2 identified realistic and credible alternative land used scenarios that could have occurred on the land within the project boundary of the VCS AFOLU project are listed below.
2. Outcome of Sub-step 1b:

- 1) Same as baseline scenario with rotations every 50 years.
- 2) Project activity on the land within the project boundary performed without being registered as the VCS AFOLU project.

Sub-step 1c. Selection of the baseline scenario.

The most likely alternative to the project would be to continue the baseline scenario from before the project started, with a rotation of the pitch pine every 50 years. However, it is possible that the rotation will be shorter, as according to the harvesting limit document, etc., harvesting can be applied for when the diameter at breast height exceeds 5 cm, and the earlier the harvesting is carried out and sold, the higher the profit can be, so there may be a shortening of the harvesting cycle due to the increase in profitability.

Step 2: Investment Analysis:

The VCS Additionality Tool requires that either step 2 (investment analysis) or step 3 (barrier analysis) be undertaken (or both). The barrier analysis was selected, and the analysis is completed below.

Step 3: Barriers analysis:

This step maybe performed instead of investment analysis.

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

1. Barriers due to prevailing practice:

No project activity of extending the rotation age is currently operational in the host country or region. Longer harvesting cycles are not considered by forest owners because it is a new concept and has not yet been practiced in the region. Without advocacy and organization by the project proponent, forest owners will manage their

forests according to common rotation cycles. As a longer cycle would lead to reduced short-term profits in absence of carbon finance, it is unattractive for local Decision makers to extending the rotation age.

2. Lack of organization of local communities:

For local forest owners, managing their forests according to the common rotation cycle has been a long-standing practice, and the process is familiar and can be carried out without centralized organization. The proposed project activity requires project proponent to integrate all forest users within the project boundary to strengthen forest management and obtain FSC certification, which may require project proponent to bear the management and operational costs. Without carbon finance, the organization of project activities would be unsustainable.

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

1. For land use scenario 1) identified in Sub-step 1b, it will not be prevented by the barrier identified in Sub-step 3a and is a viable alternative, as the practice is equivalent to the most likely scenario of continuing the current harvesting practices.
2. For land use scenario 2) identified in Sub-step 1b, it will be prevented by the barrier identified in Sub-step 3a and is not a viable alternative.

Therefore, the baseline scenario is that the current land use approach is an alternative land use scenario and the identified barriers would not prevent project implementation.

Step 4: Common practice analysis:

According to the “Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities” (version 3.0). “Similar activities are defined as that which are of similar scale, take place in a comparable environment, inter alia, with respect to the regulatory framework and are undertaken in the relevant geographical area, subject to further guidance by the underlying methodology”.

Sub-step 4a: Analyze other activities similar to the proposed project activity.

China has a vast territory, the development policies and economic environment for projects in each province of China are not same. The investment climate varies considerably from province to province depending on the local conditions. The Project is located in Shanxi Province. However, the geographic and geomorphic conditions are totally different in the whole province. Therefore, only activities in Shanxi Province are included in the analysis.

Firstly, publicly available statistics were collected, then the websites for such GHG emission reduction mechanisms were searched, i.e. VCS¹³, CDM¹⁴, GS¹⁵, to exclude the registered projects, there is no other IFM project had been implemented in “Shanxi Province” beginning 10 years prior to the project start date.

Sub-step 4b: Discuss any similar Options that are occurring.

As determined with the independent information above there are no types of harvesting management occurring within the project boundary that are similar to the management employed in the project scenario. Because the project is unique with respect to the VCS regulatory framework and the harvesting practices employed within the Project Boundary, it is considered additional.

3.6 Methodology Deviations

The project meets all the requirements of the methodology, there is no deviation of the project activity.

The project and project monitoring plan meet all of the requirements of the applied methodology and does not deviate from the baseline scenario, additionality determination, or inclusion of project GHG sources, sinks and reservoirs.

¹³ <https://verra.org/>

¹⁴ <https://cdm.unfccc.int/>

¹⁵ <https://www.goldstandard.org/>

4 QUANTIFICATION OF ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

Carbon Stock Changes in the Baseline

$\Delta C_{BSL_{AG|BG}}$ was estimated using the Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3), which has been proven to work in China with high accuracy¹⁶. All model inputs and outputs would be available for inspection by the validator. The baseline was model over 100 years.

Baseline Net GHG Removals by Sinks

The baseline net removals are averaged over a model 100-year period to remove fluctuations and the impact of fluctuations on the difference between the baseline and the project cases.

The baseline net GHG Removals by sinks will be determined as:

$$\Delta C_{BSL} = \Delta C_{BSL_P} - GHG_{BSL_E} \quad (1)$$

where:

ΔC_{BSL}	Baseline net greenhouse gas removals by sinks (t CO ₂ e)
ΔC_{BSL_P}	Carbon stock changes in all pools in the baseline scenario (t CO ₂ e)
GHG_{BSL_E}	Greenhouse gas emissions as a result of forest management activities within the project area in the baseline scenario (t CO ₂ e)

As biomass burning is the only emissions source required to be calculated under the protocol, and no biomass burning is carried out in baseline scenario, baseline CO₂e (and non-CO₂e) emissions as result of forest management activities are calculated as zero, so, $GHG_{BSL_E}=0$.

$$\Delta C_{BSL_P} = \Delta C_{BSL_{tree}} + \Delta C_{BSL_{DW}} + \Delta C_{BSL_{WP}} \quad (2)$$

where:

¹⁶ <http://cdmd.cnki.com.cn/article/cdmd-82201-1013378635.htm>

$\Delta C_{BSL_{tree}}$	Carbon stock changes in above-ground and below-ground biomass of trees in the baseline scenario (t CO ₂ e)
$\Delta C_{BSL_{DW}}$	Carbon stock changes in dead wood in the baseline scenario (t CO ₂ e)
$\Delta C_{BSL_{WP}}$	Carbon stock changes in wood products in the baseline scenario (t CO ₂ e)

Conservatively, dead wood can be ruled out, so, $C_{BSL_{DW}}=0$. Carbon storage is expected to be reduced more in the baseline scenario than in the project scenario.

$$\Delta C_{BSL_{tree}} = \frac{\left(\sum_{i=1}^{M_B} \Delta C_{BSL_{AG|BG,i100}} \times \frac{44}{12} \right)}{100} \times t^* \quad (3)$$

where:

$\Delta C_{BSL_{AG BG,i100}}$	Summed annual net carbon stock change in above-ground and below-ground biomass for stratum i summed over the 100-year modeled baseline (t C)
i	1, 2, 3, ..., MB strata in the baseline scenario
t	1, 2, 3, ..., t* years elapsed since the start of the IFM project activity
$\frac{44}{12}$	Ratio of molecular weight of CO ₂ to carbon (t CO ₂ e t C ⁻¹)

4.2 Project Emissions

According to the applied methodology VM0003 (Version 1.3), The actual net greenhouse gas removals must be estimated using the equations in section 8.5. When applying these equations for the ex-ante calculation of net anthropogenic GHG removals by sinks, project participants must provide estimates of the values of those parameters that are not available before the start of monitoring activities. Project proponents must retain a conservative approach in making these estimates.

$$\Delta C_{ACTUAL} = \Delta C_P - GHG_E \quad (4)$$

where:

ΔC_{ACTUAL}	Actual net greenhouse gas removals by sinks (t CO ₂ e)
ΔC_P	Sum of the changes in above-ground biomass, dead wood and wood products in the project scenario (t CO ₂ e)

GHG_E Increase in GHG emissions as a result of implementation of the proposed IFM project activity within the project area (t CO₂e)

Estimation of changes in the carbon stock

The verifiable changes in the carbon stock in tree above-ground biomass, dead wood and wood products are estimated using the following approach.

$$\Delta C_P = \sum_{t=1}^{t^*} \Delta C_t \times \frac{44}{12} \quad (5)$$

where:

ΔC_P Annual change in carbon stock in all selected carbon pools for year t (t C yr⁻¹)

ΔC_t must be estimated using the following equation

$$\Delta C_t = \sum_{i=1}^{M_{PS}} (\Delta C_{AG,i,t} + \Delta C_{BG,i,t} + \Delta C_{DW,i,t} + \Delta C_{WP,i,t}) \quad (6)$$

where:

$\Delta C_{AG,i,t}$ Annual carbon stock change in above-ground biomass of trees for stratum i; may be an average over the monitoring period (t C yr⁻¹)

$\Delta C_{BG,i,t}$ Annual carbon stock change in below-ground biomass of trees for stratum i; may be an average over the monitoring period (t C yr⁻¹)

$\Delta C_{DW,i,t}$ Annual change in the dead wood carbon pool for stratum i; may be an average over the monitoring period (t C yr⁻¹)

$\Delta C_{WP,i,t}$ Annual change in the wood products carbon pool for stratum i; may be an average over the monitoring period (t C yr⁻¹)

Tree Biomass

The average carbon storage of aboveground biomass per unit area was estimated based on the measured data of the plot, the biomass expansion factors (BEF) method was selected for this project to estimate aboveground biomass.

Convert the volume of the commercial component of the trees into the mean plot level carbon stock biomass of the commercial component of trees via wood density and carbon fraction:

$$CV_{AB_{sp,i,t}} = \sum_{j=1}^{S_{PS}} \sum_{l=1}^{N_{j,i,sp,t}} (V_{l,j,i,sp,t} \times D_j \times CF_j) \quad (7)$$

where:

$CV_{AB,sp,i,t}$ Carbon stock of the commercial component of trees in plot sp in stratum i at time t (t C)

$V_{l,j,i,sp,t}$ Merchantable volume of tree l of species j in plot sp in stratum i at time t (m³)

Calculate the carbon stock in the commercial component of the trees for each stratum:

$$CV_{AB,i,t} = \sum_{sp=1}^{P_i} \frac{10000}{Ap} \times CV_{AB,sp,i,t} \quad (8)$$

where:

$CV_{AB,i,t}$ Carbon stock of the commercial component of trees in stratum i at time t (t C ha⁻¹)

Ap Area of sample plot (m²)

sp 1, 2, 3, ..., P_i sample plots in stratum i in the project scenario

Convert the mean carbon stock in the commercial component of the trees for each stratum into the total carbon stock in above-ground biomass via the BEF:

$$C_{AB,i,t} = CV_{AB,i,t} \times BEF \quad (9)$$

where:

$C_{AB,i,t}$ Carbon stock in above-ground biomass of trees in stratum i at time t (t C ha⁻¹)

BEF Biomass expansion factor for conversion of merchantable biomass to total above-ground tree biomass (dimensionless)

Calculate the carbon stock in below-ground biomass of all trees present in stratum i at time t:

$$C_{BB,i,t} = C_{AB,i,t} \times R \quad (10)$$

where:

$C_{BB,i,t}$ Carbon stock in below-ground biomass of trees in stratum i at time t (t C ha⁻¹)

R Root-shoot ratio appropriate for biomass stock (dimensionless)

Calculate the mean carbon stock in tree biomass for each stratum:

$$C_{tree,i,t} = A_i \times (C_{AB,i,t} + C_{BB,i,t}) \quad (11)$$

where:

$C_{tree,i,t}$ Carbon stock in trees in stratum i at time t (t C)

A_i Area of stratum i (ha)

Calculate the mean carbon stock change:

$$\Delta C_{AG,i,t} + \Delta C_{BG,i,t} = \frac{C_{tree,i,t_2} - C_{tree,i,t_1}}{T} \quad (12)$$

where:

$\Delta C_{AG,i,t}$ Annual carbon stock change in above-ground biomass of trees for stratum i (t C yr⁻¹)

$\Delta C_{BG,i,t}$ Annual carbon stock change in below-ground biomass of trees for stratum i (t C yr⁻¹)

T Number of years between monitoring time t_1 and t_2 ($T = t_2 - t_1$) (yr.)

Wood Products

The average carbon storage of aboveground biomass per unit area was estimated based on the measured data of the plot, the Winjum et al. method was selected for this project to wood products biomass.

$$EXC_{WP,ty} = \sum_{h=1}^{HPS} \sum_{j=1}^{SPS} (V_{ex,h,ty,j} \times D_j \times CF_j) \quad (13)$$

where:

$EXC_{WP,ty}$ Summed stock of extracted biomass carbon from within the project area for class of wood product ty (t C)

$V_{ex,h,ty,j}$ Volume of timber extracted from within the project area during harvest h for species j and wood product class ty (m³)

Calculate the total carbon in harvested timber that enters the wood products pool based on mill efficiencies and product disposition percentages.

$$C_{Mill,ty} = \sum_{s,w,oir,p}^{ty} EXC_{WP,ty} \times (1 - WW) \quad (14)$$

where:

$C_{Mill,ty}$	Summed stock of carbon remaining in wood products of class ty from within the project area after milling (t C)
$EXC_{WP,ty}$	Summed stock of biomass carbon extracted from within the project area for class of wood product ty (t C)
WW	Wood waste fraction based on mill efficiency
s, w, oir, p	Wood product categories: sawnwood, wood-based panels, other industrial roundwood, and paper and paperboard
ty	Wood product class, defined here as sawnwood, wood-based panels, other industrial roundwood, paper and paper board

Estimation of GHG emissions within the project area

The change in GHG emissions as a result of the implementation of the proposed IFM project activity within the project area can be estimated as:

$$GHG_{PSE} = \sum_{t=1}^{t^*} (E_{PS_{BiomassBurn,t}}) \quad (15)$$

where:

GHG_{PSE}	Greenhouse gas emissions as a result of forest management activities within the project area in the project scenario (t CO ₂ e)
$E_{PS_{BiomassBurn,t}}$	Non-CO ₂ emissions due to biomass burning as part of forest management during year t in the project scenario (t CO ₂ e)
t	1, 2, 3, ..., t* years elapsed since the start of the IFM project activity

4.3 Leakage Emissions

Under the applicability conditions of VM0003 and the VCS standard, the only type of leakage emissions calculated for the project are GHG emissions due to market effects resulting from a shift in harvests through time.

Per VM0003 market effects leakage is defined as: Total GHG emissions due to impacts of project on timber supply and demand.

The impact of the project on timber supply was calculated as:

$$LK_{MarketEffects} = LF_{ME} \times (\Delta C_{ACTUAL} - \Delta C_{BSL}) \quad (16)$$

where:

$LK_{MarketEffects}$ Total GHG emissions due to market effects leakage through decreased timber harvest (t CO₂e)

LF_{ME} Leakage factor for market effects calculations (dimensionless)

Since the rotation within the project was extended by 10 years compared to the baseline scenario, and the rotation time was moderately extended (10 years), the cutting volume changed in each time period, but during the project life cycle, the total amount of wood harvested changed less than 25%, so $LK_{ME}=0.1$.

4.4 Estimated GHG Emission Reductions and Carbon Dioxide Removals

The net anthropogenic GHG removals by sinks is the actual net GHG removals by sinks minus the baseline net GHG removals by sinks minus leakage. Therefore, the following general formula is used to calculate the net anthropogenic GHG removals by sinks of an IFM project activity (C_{IFM}).

$$C_{IFM} = \Delta C_{ACTUAL} - \Delta C_{BSL} - LK \quad (17)$$

where:

C_{IFM} Net anthropogenic greenhouse gas reductions and removals (t CO₂e)

Calculation of Uncertainty

Sources of uncertainty for results obtained with the CBM-CFS3 can be grouped into several categories, including user data that have been imported or entered into the model, ecological parameters that have been applied to the user's data, incorrectly specified or excluded processes, and model algorithms.

Sources of uncertainty related to user data that have been imported or entered into the model may pertain to forest inventories, merchantable volume yield curves, data describing forest management and disturbance activities, and any values or parameters substituted in place of CBM-CFS3 default values and parameters.

It is the user's responsibility to determine and reduce uncertainties related to these data. In order to conservatively estimate the carbon sink of the project, the uncertainty in the baseline scenario was set at 10%.

After comprehensive calculation, the uncertainty under the project scenario is 3.20%.

$$C_{IFM|ERROR} = \sqrt{Uncertainty_{BSL}^2 + Uncertainty_p^2} \quad (18)$$

where:

$C_{IFM|ERROR}$ Total uncertainty for IFM project (%)

$Uncertainty_{BSL}^2$ Total uncertainty in baseline scenario (%)

$Uncertainty_p^2$ Total uncertainty in the with-project scenario (%)

Uncertainty Deduction

Where $C_{IFM|ERROR}$ is greater than 10 percent of C_{IFM} , the conservatively adjusted value C_{IFM_adj} is calculated as follows to account for uncertainty:

$$C_{IFM_adj} = C_{IFM} \times (1 - Discountfactor) \quad (19)$$

where:

C_{IFM_adj} Net anthropogenic greenhouse gas emissions and removals by sinks, adjusted for uncertainty where $C_{IFM|ERROR}$ is greater than 10 percent of C_{IFM} (tCO₂e)

$Discountfactor$ Discount factor to be applied for calculating the conservativeness deduction (%)

Determine the discount factor using the following equation:

$$Discountfactor = \frac{C_{IFM_ERROR}}{t_{10\%}} \times t_{66\%} \quad (20)$$

where:

$t_{10\%}$ t-value for the two-sided 90 percent confidence interval, approximately 1.6449 (dimensionless)

$t_{66\%}$ t-value for a one-sided 66.67 percent confidence interval, approximately 0.4307 (dimensionless)

Calculation of VCUs

To estimate the amount of VCUs to be issued at time $t = t_2$ (date of verification) for monitoring period $T = t_2 - t_1$, this methodology uses the following equation:

$$VCUs = (C_{IFM,t_2} - C_{IFM,t_1}) - BRR \quad (21)$$

where:

$VCUs$	Number of Verified Carbon Units
C_{IFM,t_2}	Net anthropogenic greenhouse gas removals by sinks, as estimated for $t^* = t_2$ (t CO ₂ e)
C_{IFM,t_1}	Net anthropogenic greenhouse gas removals by sinks, as estimated for $t^* = t_1$ (t CO ₂ e)
BRR	Portion of carbon credits to be withheld as a buffer reserve

Therefore, the emission reduction detail is listed:

Vintage period	Estimated baseline emissions (tCO ₂ e)	Estimated project emissions (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated reduction VCUs (tCO ₂ e)	Estimated removal VCUs (tCO ₂ e)	Estimated total VCUs (tCO ₂ e)
01-Sep-2021-31-Aug-2022	282.61	60,038	3.20%	53,780	52,058	46,852
01-Sep-2022-31-Aug-2023	282.61	64,277	3.20%	57,595	55,751	50,176
01-Sep-2023-31-Aug-2024	282.61	68,820	3.20%	61,684	59,709	53,738
01-Sep-2024-31-Aug-2025	282.61	60,203	3.20%	53,928	52,202	46,982
01-Sep-2025-31-Aug-2026	282.61	63,672	3.20%	57,050	55,224	49,702
01-Sep-2026-31-Aug-2027	282.61	67,008	3.20%	60,053	58,131	52,318
01-Sep-2027-31-Aug-2028	282.61	70,855	3.20%	63,515	61,482	55,334
01-Sep-2028-31-Aug-2029	282.61	74,925	3.20%	67,178	65,028	58,525

01-Sep-2029-31-Aug-2030	282.61	66,301	3.20%	59,417	57,515	51,764
01-Sep-2030-31-Aug-2031	282.61	69,483	3.20%	62,280	60,286	54,257
01-Sep-2031-31-Aug-2032	282.61	72,505	3.20%	65,000	62,919	56,627
01-Sep-2032-31-Aug-2033	282.61	75,973	3.20%	68,121	65,940	59,346
01-Sep-2033-31-Aug-2034	282.61	79,607	3.20%	71,392	69,107	62,196
01-Sep-2034-31-Aug-2035	282.61	70,939	3.20%	63,591	61,555	55,400
01-Sep-2035-31-Aug-2036	282.61	73,821	3.20%	66,185	64,066	57,659
01-Sep-2036-31-Aug-2037	282.61	76,534	3.20%	68,626	66,429	59,786
01-Sep-2037-31-Aug-2038	282.61	79,636	3.20%	71,418	69,132	62,219
01-Sep-2038-31-Aug-2039	282.61	82,867	3.20%	74,326	71,947	64,752
01-Sep-2039-31-Aug-2040	282.61	74,485	3.20%	66,782	64,644	58,180
01-Sep-2040-31-Aug-2041	282.61	77,088	3.20%	69,125	66,912	60,221

01-Sep-2041-31-Aug-2042	282.61	79,519	3.20%	71,313	69,030	62,127
01-Sep-2042-31-Aug-2043	282.61	82,295	3.20%	73,811	71,448	64,303
01-Sep-2043-31-Aug-2044	282.61	85,166	3.20%	76,395	73,949	66,554
01-Sep-2044-31-Aug-2045	282.61	77,370	3.20%	69,379	67,158	60,442
01-Sep-2045-31-Aug-2046	282.61	38,731	3.20%	34,604	33,496	30,146
01-Sep-2046-31-Aug-2047	282.61	80,531	3.20%	72,224	69,912	62,921
01-Sep-2047-31-Aug-2048	282.61	82,397	3.20%	73,903	71,537	64,383
01-Sep-2048-31-Aug-2049	282.61	84,942	3.20%	76,193	73,754	66,379
01-Sep-2049-31-Aug-2050	282.61	77,605	3.20%	69,590	67,362	60,626
01-Sep-2050-31-Aug-2051	282.61	79,739	3.20%	71,511	69,222	62,300
01-Sep-2051-31-Aug-2052	282.61	81,935	3.20%	73,487	71,135	64,022
01-Sep-2052-31-Aug-2053	282.61	84,194	3.20%	75,520	73,103	65,793

01-Sep-2053-31-Aug-2054	282.61	-1,458,626	3.20%	-1,458,909	-1,412,207	0
01-Sep-2054-31-Aug-2055	282.61	27,284	3.20%	24,301	23,523	21,171
01-Sep-2055-31-Aug-2056	282.61	4,976	3.20%	4,224	4,089	3,680
01-Sep-2056-31-Aug-2057	282.61	5,819	3.20%	4,983	4,823	4,341
01-Sep-2057-31-Aug-2058	282.61	6,805	3.20%	5,870	5,682	5,114
01-Sep-2058-31-Aug-2059	282.61	7,957	3.20%	6,907	6,686	6,017
01-Sep-2059-31-Aug-2060	282.61	9,302	3.20%	8,117	7,857	7,071
01-Sep-2060-31-Aug-2061	282.61	10,879	3.20%	9,537	9,232	8,309
01-Sep-2061-31-Aug-2062	282.61	12,720	3.20%	11,194	10,836	9,752
01-Sep-2062-31-Aug-2063	282.61	14,509	3.20%	12,804	12,394	11,155
01-Sep-2063-31-Aug-2064	282.61	16,922	3.20%	14,975	14,496	13,046
01-Sep-2064-31-Aug-2065	282.61	19,734	3.20%	17,506	16,946	15,251

01-Sep-2065-31-Aug-2066	282.61	23,023	3.20%	20,466	19,811	17,830
01-Sep-2066-31-Aug-2067	282.61	26,858	3.20%	23,918	23,152	20,837
01-Sep-2067-31-Aug-2068	282.61	30,958	3.20%	27,608	26,724	24,052
01-Sep-2068-31-Aug-2069	282.61	36,106	3.20%	32,241	31,209	28,088
01-Sep-2069-31-Aug-2070	282.61	42,115	3.20%	37,649	36,444	32,800
01-Sep-2070-31-Aug-2071	282.61	35,215	3.20%	31,439	30,433	27,390
01-Sep-2071-31-Aug-2072	282.61	39,391	3.20%	35,198	34,071	30,664
01-Sep-2072-31-Aug-2073	282.61	43,677	3.20%	39,055	37,805	34,025
01-Sep-2073-31-Aug-2074	282.61	48,840	3.20%	43,702	42,303	38,073
01-Sep-2074-31-Aug-2075	282.61	54,615	3.20%	48,899	47,334	42,601
01-Sep-2075-31-Aug-2076	282.61	46,570	3.20%	41,659	40,325	36,293
01-Sep-2076-31-Aug-2077	282.61	50,750	3.20%	45,421	43,967	39,570

01-Sep-2077-31-Aug-2078	282.61	54,930	3.20%	49,183	47,609	42,848
01-Sep-2078-31-Aug-2079	282.61	59,847	3.20%	53,608	51,892	46,703
01-Sep-2079-31-Aug-2080	282.61	65,208	3.20%	58,433	56,562	50,906
01-Sep-2080-31-Aug-2081	282.61	56,386	3.20%	50,493	48,877	43,989
01-Sep-2081-31-Aug-2082	282.61	60,038	3.20%	53,780	52,058	46,852
01-Sep-2082-31-Aug-2083	282.61	64,277	3.20%	57,595	55,751	50,176
01-Sep-2083-31-Aug-2084	282.61	68,820	3.20%	61,684	59,709	53,738
01-Sep-2084-31-Aug-2085	282.61	60,203	3.20%	53,928	52,202	46,982
01-Sep-2085-31-Aug-2086	282.61	63,672	3.20%	57,050	55,224	49,702
01-Sep-2086-31-Aug-2087	282.61	67,008	3.20%	60,053	58,131	52,318
01-Sep-2087-31-Aug-2088	282.61	70,855	3.20%	63,515	61,482	55,334
01-Sep-2088-31-Aug-2089	282.61	74,925	3.20%	67,178	65,028	58,525

01-Sep-2089-31-Aug-2090	282.61	66,301	3.20%	59,417	57,515	51,764
01-Sep-2090-31-Aug-2091	282.61	69,483	3.20%	62,280	60,286	54,257
01-Sep-2091-31-Aug-2092	282.61	72,505	3.20%	65,000	62,919	56,627
01-Sep-2092-31-Aug-2093	282.61	75,973	3.20%	68,121	65,940	59,346
01-Sep-2093-31-Aug-2094	282.61	79,607	3.20%	71,392	69,107	62,196
01-Sep-2094-31-Aug-2095	282.61	70,939	3.20%	63,591	61,555	55,400
01-Sep-2095-31-Aug-2096	282.61	73,821	3.20%	66,185	64,066	57,659
01-Sep-2096-31-Aug-2097	282.61	76,534	3.20%	68,626	66,429	59,786
01-Sep-2097-31-Aug-2098	282.61	79,636	3.20%	71,418	69,132	62,219
01-Sep-2098-31-Aug-2099	282.61	82,867	3.20%	74,326	71,947	64,752
01-Sep-2099-31-Aug-2100	282.61	74,485	3.20%	66,782	64,644	58,180
01-Sep-2100-31-Aug-2101	282.61	77,088	3.20%	69,125	66,912	60,221

01-Sep-2101-31-Aug-2102	282.61	79,519	3.20%	71,313	69,030	62,127
01-Sep-2102-31-Aug-2103	282.61	82,295	3.20%	73,811	71,448	64,303
01-Sep-2103-31-Aug-2104	282.61	85,166	3.20%	76,395	73,949	66,554
01-Sep-2104-31-Aug-2105	282.61	77,370	3.20%	69,379	67,158	60,442
01-Sep-2105-31-Aug-2106	282.61	38,731	3.20%	34,604	33,496	30,146
01-Sep-2106-31-Aug-2107	282.61	80,531	3.20%	72,224	69,912	62,921
01-Sep-2107-31-Aug-2108	282.61	82,397	3.20%	73,903	71,537	64,383
01-Sep-2108-31-Aug-2109	282.61	84,942	3.20%	76,193	73,754	66,379
01-Sep-2109-31-Aug-2110	282.61	77,605	3.20%	69,590	67,362	60,626
01-Sep-2110-31-Aug-2111	282.61	79,739	3.20%	71,511	69,222	62,300
01-Sep-2111-31-Aug-2112	282.61	81,935	3.20%	73,487	71,135	64,022
01-Sep-2112-31-Aug-2113	282.61	84,194	3.20%	75,520	73,103	65,793

01-Sep-2113-31-Aug-2114	282.61	-1,458,626	3.20%	-1,458,909	-1,412,207	0
01-Sep-2114-31-Aug-2115	282.61	27,284	3.20%	24,301	23,523	21,171
01-Sep-2115-31-Aug-2116	282.61	4,976	3.20%	4,224	4,089	3,680
01-Sep-2116-31-Aug-2117	282.61	5,819	3.20%	4,983	4,823	4,341
01-Sep-2117-31-Aug-2118	282.61	6,805	3.20%	5,870	5,682	5,114
01-Sep-2118-31-Aug-2119	282.61	7,957	3.20%	6,907	6,686	6,017
01-Sep-2119-31-Aug-2120	282.61	9,302	3.20%	8,117	7,857	7,071
01-Sep-2120-31-Aug-2121	282.61	10,879	3.20%	9,537	9,232	8,309
Total	28,261.16	2,734,088		2,143,463	2,074,846	4,409,339
Average	282.61	27,341		21,435	20,748	44,093

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	CF _j
Data unit	t C t ⁻¹ d.m.
Description	Carbon fraction of biomass for species j
Source of data	Methodology for voluntary greenhouse gas emission reduction projects issued by China - afforestation carbon sinks (CCER-14-001-V01)
Value applied	0.5184
Justification of choice of data or description of measurement methods and procedures applied	The data is from publicly available official source
Purpose of data	Calculation of baseline and project carbon storage
Comments	N/A

Data / Parameter	D _j
Data unit	t d.m. m ⁻³
Description	Basic wood density of species j
Source of data	Methodology for voluntary greenhouse gas emission reduction projects issued by China - afforestation carbon sinks (CCER-14-001-V01)
Value applied	0.4243

Justification of choice of data or description of measurement methods and procedures applied	The data is from publicly available official source
Purpose of data	Calculation of baseline and project carbon storage
Comments	N/A

Data / Parameter	BEF
Data unit	Dimensionless
Description	Biomass expansion factor for conversion of merchantable biomass to total above-ground tree biomass
Source of data	Methodology for voluntary greenhouse gas emission reduction projects issued by China - afforestation carbon sinks (CCER-14-001-V01)
Value applied	1.8359
Justification of choice of data or description of measurement methods and procedures applied	The data is from publicly available official source
Purpose of data	Calculation of carbon stocking from inventory measurements
Comments	N/A

Data / Parameter	R
Data unit	Dimensionless

Description	Root-shoot ratio appropriate for biomass increment based on forest type or biome
Source of data	Methodology for voluntary greenhouse gas emission reduction projects issued by China - afforestation carbon sinks (CCER-14-001-V01)
Value applied	0.2349
Justification of choice of data or description of measurement methods and procedures applied	The data is from publicly available official source
Purpose of data	Calculation of project and baseline emissions
Comments	N/A

Data / Parameter	WW
Data unit	Dimensionless
Description	Fraction of extracted biomass effectively emitted to the atmosphere during production
Source of data	Methodology for VM0003
Value applied	0.24
Justification of choice of data or description of measurement methods and procedures applied	The data is from publicly available official source
Purpose of data	Calculation of project emissions

Comments	N/A
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5.2 Data and Parameters Monitored

Data / Parameter	A_i
Data unit	ha
Description	Area of stratum i
Source of data	Monitoring of strata and stand boundaries must be done preferably using a Geographic Information System (GIS), which allows for integrating data from different sources (including GPS coordinates and Remote Sensing data)
Description of measurement methods and procedures to be applied	Remote Sensing data
Frequency of monitoring/recording	Before every verification event
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures prescribed under National Forest Inventory are applied
Purpose of data	The parameter is used to calculate actual net GHG removals
Calculation method	Calculated in Arc GIS
Comments	N/A

Data / Parameter	A_p
Data unit	m ²
Description	Area of sample plot

Source of data	Recording and archiving of size of sample plots
Description of measurement methods and procedures to be applied	Standard operating procedures (SOPs) prescribed under national forest inventory are applied. The measure is in line with LY/T 2253- 2014
Frequency of monitoring/recording	Before every verification event
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures prescribed under National Forest Inventory are applied
Purpose of data	The parameter is used to calculate actual net GHG removals
Calculation method	Documentation requirements
Comments	N/A

Data / Parameter	DBH
Data unit	cm
Description	Diameter at breast height of tree
Source of data	On site measuring on the sample spot
Description of measurement methods and procedures to be applied	The National Forest Resource Continuous Investigation Technical Regulation issued by the State Forestry Bureau has detailed requirement of the measurement method
Frequency of monitoring/recording	Before every verification event
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures prescribed under National Forest Inventory are applied

Purpose of data	The parameter is used to calculate actual net GHG removals.
Calculation method	Leather Ruler Measurement
Comments	N/A

Data / Parameter	H
Data unit	m
Description	Height of tree
Source of data	On site measuring on the sample spot
Description of measurement methods and procedures to be applied	The National Forest Resource Continuous Investigation Technical Regulation issued by the State Forestry Bureau has detailed requirement of the measurement method
Frequency of monitoring/recording	Before every verification event
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures prescribed under National Forest Inventory are applied
Purpose of data	The parameter is used to calculate actual net GHG removals.
Calculation method	Leather Ruler Measurement
Comments	N/A

Data / Parameter	T
Data unit	year
Description	Number of years between monitoring time t1 and t2 ($T = t2 - t1$) (yr.)

Source of data	Monitoring reports
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	Yearly
QA/QC procedures to be applied	Validated monitoring reports
Purpose of data	Calculation of emission reductions
Calculation method	N/A
Comments	N/A

5.3 Monitoring Plan

Describe the process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters set out in Section 5.2 (Data and Parameters Monitored) above.

Operation and management structure:

The local residents and communities will be responsible for daily supervision and data management during the project implementation while the project proponent will oversee the whole working group. A monitoring group will be established by project proponent to carry out the monitoring work. The structure of the monitoring group is as follows:

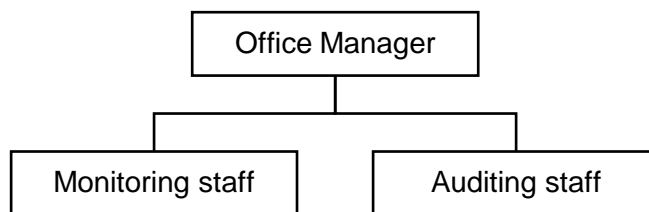


Figure 4 Organization structure of the monitoring team

The project monitoring plan seeks to collect all the data needed to calculate and report on the implementation and impacts of the project. In particular, in the context of carbon accounting, the adoption of the project activity is assessed and monitored in order to obtain data that can be used to estimate changes in forest carbon stocks and calculations, to obtain more accurate data for model calibration, and to obtain more precise data on emission reductions.

Organization and Responsibilities:

Monitoring staff and Auditing staff consisted of technicians and experts from Guangzhou Guotan Assets Management Co., Ltd, Danfeng County Construction Development Group Co., Ltd and the Danfeng County Forestry Bureau, respectively. The technicians and experts from the Danfeng County Forestry Bureau ensured that monitoring was carried out on a regular basis to obtain relevant data. Guangzhou Guotan Assets Management Co., Ltd supported the monitoring and was responsible for coordinating the monitoring. Guangzhou Guotan Assets Management Co., Ltd supported the monitoring by coordinating and implementing the monitoring activities of its field staff, modeling the GHG emission reductions, and preparing the emission reduction calculation tables and monitoring reports.

Sampling:

A stratified random sampling approach is applied where sample unit are defined based on key parameters that impact carbon stocks or essential parameters. Post stratification is used whenever deemed appropriate.

Quality assurance and control:

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

A systematic internal review and correction process will be used to assure/control the quality. The technicians are required to collect the relevant data once a month and cross check the data with experts. Similarly, the process of monitoring is also supervised by experts. When they find some unusual data, they will feed back to technicians and then correct the data before shared it with.

Guangzhou Guotan Assets Management Co., Ltd. will draft the monitoring report based on the raw data and cross check with the Danfeng County Forestry Bureau experts. If there are not any further comments from the experts, Guangzhou Guotan Assets Management Co., Ltd. will finalize the report. All parties are required to reply any questions raised within 30 days.

APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

Not commercially sensitive.