ADJUSTED WATER MANAGEMENT IN RICE CULTIVATION IN XUANZHOU DISTRICT

Document Prepared by Shenzhen CTI International Certification Co., Ltd

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Summary:

The main points included in the validation report are summarized as follows:

- *The main content of the validation and the project*

  The project activity developed in Xuanzhou District, Xuancheng City, Anhui Province, P. R. China, is a Project that change the water regime during the rice cultivation period. It changes continuously flooded to intermittent flooded condition during rice cultivation so that to result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane. The Project involves a total acreage of 14,333 ha for double-cropping rice. With the replacing of the continuously flooded method by intermittent flooded method, the project solves the problems of excessive water used during rice cultivation and expected to decrease 48% of the CH_4 emission. The project is expected to achieve 58,064 tCO_2e of emission reduction annually. The project was allocated with VCS ID 2504.

  The approved CDM methodology AMS-III.AU "Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (version 04.0) is applied to assess the baseline and additionality, also quantify the GHG removals achieved in this project.

- *Validation objective and range*

  The validation objective is an independent assessment by a Third Party of a proposed project activity against all defined criteria set for the registration under the VCS. In order to confirm that the project activity, as documented, is sound reasonable and meets the identified criteria, the validation involves the assessment of: project conformance to VCS standards/programs, project conformance to the applied methodology, including the procedure for the demonstration of additionality specified in the methodology; and likelihood that methods and procedures set out in the project description will generate verifiable GHG data and information when implemented. Validation is a requirement and is seen as necessary to provide assurance to stakeholders of the quality of project and its intended generation of VCUs. Validation is part of the VCS project cycle and will finally result in a conclusion by the executing VVB whether a project activity is valid to be submitted for registration to VCS registry.

- *The means and standards used for validation*

  Validation is conducted using Shenzhen CTI International Certification Co., Ltd (CTI) procedures in line with the requirements specified in the latest version of the VCS Validation and Verification Manual and applying auditing techniques. The validation team assessed the project activity's compliance against the VCS Version 4.1, the selected CDM methodology and the project description. The project is eligible under VCS Project Scope 14 (AFOLU). The validation criteria followed the guidance documents provided by VCS included the following:

  VCS Version 4.1, VCS Program Guide Version 4.0 and the applied CDM methodology "Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (version 04.0).

- *The quantity of findings raised during validation*

  In the course of the validation, 16 Corrective Action Requests (CARs), 4 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

- *Any uncertainties related to the validation*

  There are no restrictions of uncertainty for validation.

- *Overview of the validation conclusion*

  Shanghai Libra Investment & Management Co., Ltd. has commissioned the CTI to carry out the Verified Carbon Standard (VCS) validation of the project, "Adjusted Water Management in Rice Cultivation in Xuanzhou District" (VCS ID 2504) with regard to the relevant requirements of VCS standard Version 4.1. CTI confirms all validation activities including objectives, scope and criteria, level of assurance, project description and monitoring plan adhere to VCS Version 4.1 and all associated updated as documented in this report, are complete.

  CTI concludes that the project activity "Adjusted Water Management in Rice Cultivation in Xuanzhou District" in China, as described in the Project Description version 03 of 24-September-2021, meets all relevant requirements for VCS validation activity and correctly applied the methodology AMS-III.AU Version 04.0. Hence CTI is able to provide positive validation opinion as per the requirement of VCS.

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1 INTRODUCTION

1.1 Objective

Shanghai Libra Investment & Management Co., Ltd. has commissioned the CTI to carry out the Verified Carbon Standard (VCS) validation of the project "Adjusted Water Management in Rice Cultivation in Xuanzhou District" (VCS ID 2504).

The objective of validation is an independent assessment by a Third Party of a proposed project activity against all defined criteria set for the registration under the VCS. In order to confirm that the project activity, as documented, is sound reasonable and meets the identified criteria, the validation involves the assessment of: project conformance to VCS standards/programs, project conformance to the applied methodology, including the procedure for the demonstration of additionality specified in the methodology; and likelihood that methods and procedures set out in the project description will generate verifiable GHG data and information when implemented. Validation is a requirement and is seen as necessary to provide assurance to stakeholders of the quality of project and its intended generation of VCUs. Validation is part of the VCS project cycle and will finally result in a conclusion by the executing VVB whether a project activity is valid to be submitted for registration to VCS registry.

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the project design document (PD) to validate that (a) the project design is actual, (b) the baseline scenario is correctly defined as per the applied methodology and relate tools, (c) the project is additional, (d) the monitoring plan can be implemented and is transparent and adequate and (e) all data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature. The PD is reviewed against the criteria stated in VCS standard Version 4.1 and the approved baseline and monitoring methodology AMS-III.AU version 04.0. The validation was based on the requirements VCS Validation and Verification Manual and VCS programs and VCS standard version 4.1 applying auditing techniques. The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 Level of Assurance

The validation report is based on the VCS-PD, supporting evidences made available to the validator and information collected through performing interviews and during the on-site assessment.

The validation conclusion is assured a reasonable level of assurance.

1.4 Summary Description of the Project

The project is implemented by Hefei Luyu Agricultural Technology Co., Ltd which aims to change the water regime during the rice cultivation period. It changes continuously flooded to intermittent flooded condition during rice cultivation so that to result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane. The Project involves a total acreage of

14,333 ha for double-cropping rice. With the replacing of the continuously flooded method by intermittent flooded method, the project solves the problems of excessive water used during rice cultivation and expected to decrease 48% of the CH_4 emission. The project is expected to achieve 58,064 tCO_2e of emission reduction annually. It is located inside the Xuanzhou District, Xuancheng City, Anhui Province, China.

The baseline scenario is the same to the status prior to the implementation of the project, i.e. continuation of the current practice which is continuously flooded water regime without any organic amendment during rice cultivation in the project fields.

The project activity generates GHG emission reductions by changes continuously flooded to intermittent flooded condition during rice cultivation. Thus the project generates GHG emission reductions and produces financial, social and environmental benefits. The project has resulted in the local sustainable development as described in Section 1 of the PD.

2 VALIDATION PROCESS

2.1 Method and Criteria

A project specific validation plan was developed to guide the validation auditing process to ensure efficiency and effectiveness.

The purpose of the validation is to present a risk assessment for determining the nature and extent of validation procedures necessary to ensure the risk of auditing error is reduces to a reasonable level. According to the ISO14064-3, the criteria are the policy, procedure or requirement used as reference against which evidence is compared. Therefore, validation of the project description and the reported project results were measured for compliance against the following criteria:

The validation method of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the VCS project description (VCS PD)/1/
- A desk review of the VCS PD/1/ submitted by the client and additional supporting documents with the use of customised validation documents checklist
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and related farmers
- Draft validation reporting
- Resolution of Corrective Action Requests (CARs) and Clarification Requests (CLs)
- Final validation reporting
- Technical review
- Final approval of the validation.

The validation criteria consisted of the following:

- VCS Program Guide, v4.0/42/
- VCS Standard, v4.1/43/
- Program Definitions, v4.1/41/
- CDM methodology AMS-III.AU "Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (version 04.0)/4/
- CDM Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, V8.0/35/
- CDM Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities, V4.0/36/
- CDM methodological tool Demonstration of Additionality of Small-scale Project Activities (version 13.1)/37/

The validation process derived from all items in the validation criteria stated above. Field sampling and techniques based on the project parameters, scope and best professional judgement of the validation team in order to meet a reasonable level of assurance.

PP sampling approach

PP has applied a sampling method for the ex ante baseline and local stakeholder survey, details are stated as below,

In the project area of 14,333 ha, there are 4,095 households involved in the project due to rice paddies in the project area belong to these farmers via checking the cooperation agreements signed between the project proponents and all the farmers which ensure the proper development of the project/11/. All the farmers are located in project area in Xuanzhou District, Xuancheng City, Anhui Province, which is a limited area. Simple random sampling approach was selected for this project due to relatively homogenous population being studied, given the similar soil condition and similar cultivation habit of farmers in Xuanzhou District. Therefore, simple random sampling (SRS) approach was followed by the PP to determine the sample size for baseline survey, and it is able to confirm the selection of sampling approach is appropriate as per validation team's local knowledge. Target population is defined as all the 4,095 households with 15,111 farmers included in the project.

As per the applied methodology and PD, a simple random sampling was drawn by the PP from the farmers database/15/ in line with the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities (hereafter can be referred to as the 'sampling guideline') (version 04.0)/36/.

Following "Sampling and Surveys for CDM Project Activities and Programme of Activities" version 08.0/35/ and "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/36/, the verifier checked the sampling results of PP and Anhui Academy of Social Sciences with the following steps:

For determine the baseline, to verify the accuracy and correctness of sampling survey data, verification team has checked the sampling approach as per the "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/36/, this sampling approach found to be appropriate as the farmers are assumed as homogenous based on the experience of Anhui Academy of Social Sciences who conducted the sampling survey.

Via checking the paragraph 12 of 2.1.1 section of the guideline/36/, it confirmed that the Sample size calculation by Simple Random Sampling can be done using following formulae:

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

Where

n	Sample size
N	Total number of farmers
P	Expected proportion, which is defined as 0.75 based on the experience of Anhui Academy of Social Sciences combined with the local condition
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

N is 15,111 as determined of total number of farmers, P is determined as 75%, as per the level of confidence, VVB expects that 90% of the samples taken shall comply with the project requirements.

Hence the *n* is calculated as

$1.645^2*15,111*0.75*(1-0.75)/\{(15,111-1)*0.1^2*0.75^2+1.645^2*0.75*(1-0.75)\}=90$.

The sample size of the baseline survey considering the parameters is calculated in a conservative way, and the least number of the sample size is 90 as above calculation method according to the "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/36/. The sample size calculation process is verified by the validation team and confirmed as in line with the sampling guideline/36/, thus the result is confirmed as correct and reasonable. Furthermore, to be conservative, Anhui Academy of Social Sciences has randomly selected 100 farmer samples to conduct the baseline survey.

An Ex-ante investigation report with investigation of 100 samples/16/ was supplied by the PP, which was compiled base on the survey done by the Anhui Academy of Social Sciences. In the Survey report, name of farmers, location, rice cultivation type, flooding type, rice type, cropping season type etc. were investigated and recorded. Via interview with the PP and representative from Anhui Academy of Social Sciences, it is confirmed that 100 farmers are randomly selected from the 4,095 households with 15,111 farmers list by the simple random sampling (SRS) method. The excel function "randbetween" is employed to choose the farmers sample group. It is able to confirm that the sampling approach was consistent with the related requirements.

VVB sampling approach

The sampling plan during on-site validation is determined considering the accessibility and similitude of the areas and the tool for sampling was referred by validation team for the site validation.

The validation team reviewed the Ex-ante investigation report/16/and crosschecked with the inspection during the on-site period, including 20 random famers interview and related cultivation area visit. Verified whether the sample plan is reasonable to conduct and the implementation and results of the sample survey can be accepted.

As per the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, V8.0/35/ (hereafter referred to as the "sampling standard"), CTI has applied acceptance sampling to verify the results of the ex ante baseline and local stakeholder survey.

Using own professional judgement, it is assumed that the Acceptable Quality Level (AQL) is 1% and the Unacceptable Quality Level (UQL) is 20% for this project. The maximum error of producer's risk is assumed at 5% and consumer's risk is assumed at 10%, in compliance with the sampling standard/35/. Based on these assumptions, the validation team refers to the sampling standard and sampling guideline and found that sample size should be not less than 18 and acceptance number is 1.

To be more conservative, before the on-site visit, CTI determined 20 as the sample size and randomly selected 20 from the survey list of the 100 samples. For the randomly selection of 20, a pre-randomized order of numbers ranging from 1-100 as calculated by Excel's RAND() function was brought to the field and a farmer list prepared in the field. If for example, the first number is 5, then the farmer name that was listed 5th on the farmer list would be the one to be surveyed.

During on-site visit, 20 farmers (total sample size) were chosen by the validation team randomly to check the correctness of data that need to be determined. This considered to be a good practice.

The 20 selected farmers from Ex-ante investigation report/16/ are interviewed and site inspected by validation team from the sampling conducted by the PP. Via the information got during site interview and inspection of the field condition comparing with the PP's data in the sample records/16/, it is found that all information is consistent between each other. No discrepancy is found between the sample records/16/ and the site validation sample results. And all the samples confirmed that they participated in the PP's baseline sampling survey.

As there are no discrepant records, i.e. the discrepant record is less than the acceptance number of 1, the sample records/16/ is accepted as per "Sampling and Surveys for CDM Project Activities and Programme of Activities"/35/.

2.2 Document Review

The VCS PD/1/ and supporting background documents related to the project implementation were reviewed. Documents review was conducted to ensure consistency with and identify any deviation from VCS program requirements. Desk review included an examination of the project design details, baseline scenario, additionality, ex ante and monitoring data and parameters, and ex ante quantification of GHG emission reductions.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design details, baseline scenario, additionality, monitoring or to the basic conditions and technical data.

The references used in the course of this validation are summarized in Appendix 3.

The validation was performed basing on the documents check and site inspection/measurements, refer to the section 3 of this report for the validation process detail and Appendix 3 for corresponding documents review.

2.3 Interviews

The objective of the interview process was to solicit important information from personnel related to project and relevant to the validation process. Onsite interviews and information discussions were conducted with project implementer/I1/, local officer from Agricultural Bureau/I2/, expert from Anhui Academy of Agricultural Sciences /I3/, technicians from local agrotechnical stations/I4/, rice cultivation farmers/I5/ and Project VCS development consultant/I6/. The interviews were performed by the validation team on-site (Hefei City and the project area, in Xuanzhou District, Xuancheng City, Anhui Province, P.R. China) and the following is a list of the main interviewees and subject.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Chen/I1/	Yiliang	Hefei Luyu Agricultural Technology Co., Ltd./Vice General Manager	10-July-2021, &16-July-2021 ~ 18- July - -2021	- Chronological description of the project activity with documents of key steps of the implementation. - Technical details of the project realization, project feasibility, designing, operational life time - Project Boundary - Baseline - Additionality - Eligibility criteria - ER calculation - Monitoring plan and arrangements - Crediting period	Lin Shunrong
2.	Xu/I1/	Biao	Hefei Luyu Agricultural Technology Co., Ltd./Staff			

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
3.	Hu/I1/	Yanmei	Hefei Luyu Agricultural Technology Co., Ltd./Staff		- Project activity starting date - Ownership - local stakeholder consultation - SD indicators	
4.	Fang/I2/	Yusheng	Xuanzhou Agricultural Bureau / Section Staff	16-July-2021		
5.	Guo/I3/	Xiaoying	Anhui Academy of Agricultural Sciences /expert	10-July-2021		
6.	Shi/I3/	Liulin	Anhui Academy of Agricultural Sciences /expert	10-July-2021		
7.	Chen/I4/	Guihua	Local agrotechnical stations/ technicians	16-July-2021	- Baseline Survey - Farmer survey - Stakeholder comments - Agricultural aspects - Environmental aspects - Local Agricultural characteristics - Local Rice cultivation type - Local filed condition - Local farmers' income - Local rice yield - Local flooding condition - Fertilizer utilization - Technical Training	
8.	Qian/I4/	he		16-July-2021		
9.	Zheng/I4/	Banxue		17-July-2021		
10.	Hua/I4/	Yue		18-Juy-2021		
11.	Kong/I4/	Zhirou		18-Juy-2021		
12.	Yang/I5/	Long	Farmers included into project	16-July-2021	- General information of farmer - Field area - Rice type - Cultivation type - Baseline Scenario - Flooding type in baseline - Fertilizer utilization in both baseline and project - Flooding type in project scenario - Rice yield comparison - Technical Training - Field record - Income level	
13.	Feng/I5/	Haoran		16-July-2021		
14.	Chu/I5/	Jia		16-July-2021		
15.	Wu/I5/	Xian		16-July-2021		
16.	Wang/I5/	Fugui		16-July-2021		
17.	Tao/I5/	Qian		16-July-2021		
18.	Xu/I5/	Lingxuan		16-July-2021		
19.	Xu/I5/	Hong		17-July-2021		

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
20.	Jiang/I5/	Meiling		17-July-2021	- Job opportunities	
21.	Wei/I5/	Yuan		17-July-2021		
22.	Wei/I5/	Yuntao		17-July-2021		
23.	Shi/I5/	Xinfei		17-July-2021		
24.	Ma/I5/	Xiaolong		17-July-2021		
25.	Qi/I5/	Minru		18-Juy-2021		
26.	Sun/I5/	Minglu		18-Juy-2021		
27.	He/I5/	Yan		18-Juy-2021		
28.	Kong/I5/	Zhe		18-Juy-2021		
29.	Zhu/I5/	Jingwen		18-Juy-2021		
30.	Zheng/I5/	Zhuyi		18-Juy-2021		
31.	Zhao/I5/	Lan		18-Juy-2021		
32.	Liu/I6/	Ji	Shanghai Libra Investment & Management Co., Ltd./ Technical manager	10-July-2021, &16-July-2021 ~ 18- July - 2021	- Financial aspects - Monitoring period - Project activity starting date - Assumptions - Baseline study assumptions - Additionality - Crediting period - Monitoring plan and implementation - Monitoring measurements - Editorial issues of the VCS PD	
33.	Liu/I6/	Lili				

2.4 Site Inspections

The validation site inspection was conducted on 10-July-2021, 16~18-July-2021. A ground inspection of the project area was conducted during the site visit and members of the validation team interviewed 24 farmers and also visited 24 farmers' cultivation area within the project area. During the site inspection the validation team was accompanied by the project developer, consultant and technicians.

During the site inspection, the project area was inspected and documents evidence were checked, details as following table,

Duration of on-site inspection: 10-July-2021, 16~18-July-2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting Interview with PP, experts,	Office in Hefei Luyu Agricultural Technology Co., Ltd. and laboratory	10-July-2021	Lin Shunrong

	consultant representatives[1], Monitoring instruments check in laboratory	of Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences in Hefei City, Anhui Province, P.R. China		
2	On-site inspection Interview with sampled farmers and technicians	Project Area in Xuanzhou District, Anhui Province, P.R. China	16~18-July-2021	
3	Documents check	Project Area in Xuanzhou District, Anhui Province, P.R. China	18- July - 2021	
4	Finding Summary	Project Area in Xuanzhou District, Anhui Province, P.R. China	18- July - 2021	
5	Close Meeting	Project Area in Xuanzhou District, Anhui Province, P.R. China	18- July - 2021	

Due to this is the validation, the main purpose is to check if the project design and baseline scenario is actual determined in the PD. Thus the validation team interviewed 20 farmers and also visited 20 farmers' cultivation area within the project area plus three baseline reference fields. These areas can represent the characteristics of project area, thus used as sampling area for checking the project design and cultivation and flooding approach. The baseline reference field represent the baseline scenario.
Hence during the site inspection, the 20 sampled areas are determined by the validation team by checking the map of the project location, details as following table,

Table 2-1 Locations for site inspection

Site Visit time	Area	Coordinates		Inspection Results
Project Area				
16-July-2021	Shanhe Village	118.751811°E	31.142114°N	Each area is verified as located in the project boundary by checking the geographical coordinates and KML file. Cultivation and flooding approach are consistent as project design
	Shanhe Village	118.752917°E	31.141311°N	
	Zhanggeng Village	118.727845°E	31.105747°N	
	Zhanggeng Village	118.729008°E	31.107862°N	
	Zhanggeng Village	118.730982°E	31.103810°N	
	Zhanggeng Village	118.731152°E	31.102416°N	
17-July-2021	Shuangtang Village	118.835554°E	30.965357°N	
	Shuangtang Village	118.834134°E	30.965991°N	
	Shuangtang Village	118.835390°E	30.966365°N	
	Shuangtang Village	118.837445°E	30.967035°N	
	Shuangtang Village	118.837332°E	30.966119°N	
	Taiyang Village	118.832821°E	30.974003°N	

[1] Three projects' (2504, 2506, 2507) opening meeting was conducted together on 10-July-2021.

	Taiyang Village	118.832761°E	30.974797°N	
18-July-2021	Yangcun Village	118.834802°E	30.906989°N	
	Yangcun Village	118.849722°E	30.893513°N	
	Yangcun Village	118.849220°E	30.891415°N	
	Shuanghe Community	118.810446°E	30.910991°N	
	Shuanghe Community	118.808729°E	30.912299°N	
	Hebei Village	118.820454°E	30.901913°N	
	Hebei Village	118.827421°E	30.899604°N	
Baseline Reference Field				
18-July-2021	Yangcun Village	118.834802°E	30.906989°N	Cultivation and flooding approach are consistent as the baseline scenario.
		118.834328°E	30.906471°N	
		118.834067°E	30.906519°N	

2.5 Resolution of Findings

Material discrepancies identified in the course of the validation are addressed either as CARs, CLs or FARs.
A Corrective Action Request (CAR) is established where:
The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
The VCS Version 4.1 requirements have not been met;
There is a risk that the emission reductions cannot be monitored or calculated.
A Clarification Request (CL) will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.
A Forward Action Request (FAR) will be issued when certain issues related to project implementation should be reviewed during the next verification.
A detailed list of the CARs CLs and FAR raised and discussed in the course of this validation is included in Appendix 4 of this report.
In the course of the validation 16 Corrective Action Requests (CARs), 4 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

2.5.1 Forward Action Requests

This is the validation, thus there is no FAR raised previously and also there is no FAR raised during this validation.

3 VALIDATION FINDINGS

3.1 Project Details

- **Type of project, technologies and measures implemented, and qualifications of the project**

Type and scope:

Through the onsite visit, interviewing the project developer and reviewing the project design, it was confirmed that the project was implemented to change the water regime during the rice cultivation period. It changes continuously flooded to intermittent flooded condition during rice cultivation so that to result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane. The Project involves a total acreage of 14,333 ha for double-cropping rice.

As per the Appendix 1 Eligible AFOLU project categories in VCS standard Version 4.1/43/, CTI confirmed that the project belongs to one type of AFOLU categories, i.e. Agricultural Land Management (ALM). While eligible ALM activities are those that reduce net GHG emissions on croplands and grasslands by increasing carbon stocks in soils and woody biomass and/or decreasing CO_2, N_2O and/or CH_4 emissions from soils. By checking the project design, CTI confirmed that the project is applicable to one of eligible ALM activities, i.e. Improved Cropland Management (ICM). For ICM, as per the standard, "this category includes practices that demonstrably reduce net GHG emissions of cropland systems by increasing soil carbon stocks, reducing soil N_2O emissions, and/or reducing CH_4 emissions", and through the onsite visit, interviewing the project developer and reviewing the project design, CTI confirmed that the project takes practices to reduce CH_4 emissions of cropland systems by change the water regime during the rice cultivation period from continuously flooded to intermittent flooded condition so as to increase soil carbon stocks, thus CTI verified that the sectoral scope 14: "Agriculture, Forestry, and other Land Use (AFOLU) is applicable to the project.

Furthermore, via checking the email confirmation from VERRA dated on 19-November-2020/3/, CTI verified that VERRA also confirm that Project type is considered an AFOLU project under the VCS Program. This is in accordance with the definitions of eligible AFOLU project categories set out in Appendix 1 of the VCS Standard, v4.1. So although the project applied CDM approved methodology AMS-III.AU: Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation, version 4.0 (which belongs to scope 15 as per the EB's definition), the sectoral scope 14: "Agriculture, Forestry, and other Land Use (AFOLU) is confirmed to be applicable to the project.

It was confirmed that the project is not a grouped project.

Technologies and measures implemented:

The information and descriptions reported in section 1.1 of the VCS PD/1/ have been checked.

Adjusted Water Management in Rice Cultivation in Xuanzhou District (hereinafter referred to as the Project) is a Project that change the water regime during the rice cultivation period. It changes continuously flooded to intermittent flooded condition during rice cultivation so that to result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane. The Project involves a total acreage of 14,333 ha for double-cropping rice.

Via site inspection with rice lands/32/ and interview with farmer representatives/I5/, it is confirmed that before the project implementation, the paddy fields are regarded as an isolate unit and the rice was continuously flooded, and with the project, the cement ditches and reservoirs were constructed to conduct the intermittent flooded water regime during rice cultivation. With the replacing of the continuously flooded

method by intermittent flooded method, the project solves the problems of excessive water used during rice cultivation and expected to decrease 48% of the CH_4 emission.
Via checking the PD/1/, it is confirmed that the scenario existing prior to the implementation of the project as stated in the PD is rice was cultivated by continuously flooded method. The baseline scenario is the same as the scenario existing prior to the implementation of the project activity, which has been confirmed during the site interview with local officer/I2/ and agricultural experts/I3/ and sampled farmers/I5/ and checking the Ex-ante investigation report/16/. Thus it is verified that the baseline scenario is reasonable and correct.
The project activity generates CH_4 emission reductions by build ditches for applying intermittently flooded method in project area, that otherwise continuously flooded method was used in rice paddies, which means fields have standing water throughout the rice growing season and may only dry out for harvest and in this condition, the organic matter in rice soil under flooded condition would emit a large amount of methane (CH_4) because of anaerobic decomposition. Due to the CH_4 in rice paddies is produced by the anaerobic decomposition of organic matter after the flooding, hence through the project that allows the field to drain halts CH_4 production, which happens in anaerobic condition, reducing the total quantity of CH_4 released during the cropping season.
The project will not only generate GHG emission reductions but also save water, increase production thus produce financial, social and environmental benefits.
The expected total emission reduction of the Project in the first crediting periods of 7 years (from 25-February-2018 to 24-February-2025) is 406,448 tCO_2e, and the annual emission reduction is estimated to be 58,064 tCO_2e.
In conclusion, it is verified that the summary description of the project in section 1.1 is in line with the PD template requirements and all the information has been provided and verified as correct.

Eligibility of the project:
The PP has described and justified how the project is eligible under the scope of the VCS Program in PD as per the section 2.1.1 of VCS standard Version 4.1. The assessment is provided as below,

1. The project activity generates GHG emission reductions including CH_4 which belong to the six Kyoto Protocol greenhouse gases which belongs to scope 1) of section 2.1.1 of VCS standard Version 4.1.
2. Via checking the PD of the project, it is verified that the project is implemented to change the water regime during the rice cultivation period. It changes continuously flooded to intermittent flooded condition during rice cultivation so that to result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane, and the additionality is verified as actual, thus there is no assumption of having generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction for this project.
3. Via checking all the excluded project activities in the table, it is verified that this project type is not excluded by the scope of VCS program.

In conclusion, the project is eligible to the scope of the VCS Program.

- **Project design, including eligibility criteria for grouped projects**

The project has not been designed to include a single installation of an activity, multiple project activity instances, or as a grouped project.

- **Project proponent and other entities involved in the project**

The project proponent (Hefei Luyu Agricultural Technology Co., Ltd.) and the contact information reported in section 1.5 of the VCS PD have been confirmed to be correct through checking the business license of the company/12/, the project approval/8/ and interviewing with the PP representative through the on-site visit/I1/.

The other entities involved in the Project (Shanghai Libra Investment & Management Co., Ltd.) and the contact information reported in section 1.6 of the VCS PD have been confirmed to be correct through checking the business license of the Shanghai Libra Investment & Management Co., Ltd./12/ and interviewing the representative of this company during the on-site visit/I6/.

- **Ownership**

The section 1.7 of the PD has been checked, and during the on-site visit and checking the business license/12/ of the participant parties, the government approval of the project/8/, and the carbon reduction project cooperation agreement signed between the farmers and Hefei Luyu Agricultural Technology Co., Ltd./11/, CTI verified that the project developer Hefei Luyu Agricultural Technology Co., Ltd. is a privacy company, who is in charge of the integrated implementation and management of the project. The rice paddies and agricultural fields involved in the project was owned by the farmers which has been confirmed by site interview with farmers/I5/ and local officer from Agricultural Bureau/I2/ and checking the Certification of land rights/10/.

The project proponent is responsible for the comprehensive implementation and management of the project and farmers also have right to authorize Hefei Luyu as a representative of the carbon project owner and Hefei Luyu only has the right to make decisions about the carbon reduction project which is confirmed by checking the carbon reduction project cooperation agreement signed between the farmers and Hefei Luyu Agricultural Technology Co., Ltd./11/ and interview with farmers/I5/.

Furthermore, Hefei Luyu has already sold the carbon project development right to Shanghai Libra which has been verified in the emission reduction purchase agreement/18/, thus Libra leads the development and management of the carbon project.

Hence, based on the above assessment, it is verified that rice paddies and agricultural fields involved in the project was owned by the farmers, the project proponent is responsible for implementation and management of the project, and Shanghai Libra plays roles related to carbon including development and management of the carbon project and buyer of VCUs due to Libra has experiences for develop the carbon project. Furthermore, due to Libra will buy the VCUs of the project, hence to achieve the success of the VCS registration and issuance, Libra participated in compiling the monitoring plan, organizing the training etc. for the carbon development only, which is verified will not have overall control and responsibility for the project itself and also will not violate the project proponent's rights and responsibilities of the project.

- **Project start date**

The project start date is 25-February-2018 which is verified as the date on which the project land preparation was started. Via checking the Construction Contract/14/ and record in the farmer's database/15/, it is verified that the start date is correct and in line with the VCS standard Version 4.1.

- **Project crediting period**

For the VCS crediting period, PP has chosen 21 years renewable crediting period started from 25-February-2018 to 24-February-2039 which is in line with the concept for crediting period in section 3.8.2 of the VCS standard 4.1.

- **Project scale and estimated GHG emission reductions or removals**

The average annual ERs of the project are 58,064 tCO_2e, which is lower than the threshold of large-projects (300,000 tCO_2e per year). Therefore the project falls in the category of "Project" as per definition in VCS standard. And the estimated total Estimated GHG Emission Reductions or Removals during the 1st 7 years of VCS crediting period (25-February-2018 to 24-February-2025) is 406,448 tCO_2e.

- **Project location**

The project site is located in Xuanzhou District, Xuancheng City, Anhui Province P. R. China. The geographical coordinates for the project site are between 118°28' and 119°04' east longitude and between 30°34' and 31°19' north latitude. The location of the project site is verified with on-site investigation by GPS devices and checking the google earth map/45/.

KML file with project boundary is checked as provided/5/, and is verified as consistent with the PD and on-site investigation by GPS devices and checking the google earth map/45/.

- **Conditions before project initiation**

The rice was planted under continuously flooded condition existing prior to the project in project area, the irrigation and drainage ditch of rice paddies was made up of soil, which is not enough to make the irrigation and drainage controllable which has been confirmed by checking the Ex-ante investigation report/16/ and interview with farmers/I5/, the project is the construction of new drainage cement ditch and reservoirs. The conditions prior to project initiation has been validated in the PD to be the same as the baseline scenario identified in the PD section 3.4, i.e. continuation of the current practice which is continuously flooded water regime without any organic amendment during rice cultivation in the project fields in this project.

The baseline scenario is the same as the scenario existing prior to the implementation of the project activity, which has been confirmed during the site interview with local officer/I2/, agricultural experts/I3/ and local farmers/I5/ and checking the Ex-ante investigation report/16/. Thus it is verified that the baseline scenario is reasonable and correct.

Therefore, the project is confirmed not to be implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction.

Due to the project is an AFOLU project, the appropriate information on the climate, hydrology, topography, relevant historic conditions, soils, vegetation and ecosystems including the present and prior environmental conditions of the project area has been provided in PD as assessed as correct and actual via site inspection and checking the public information and checking the Ex-ante investigation report/16/of the project area and also cross-checked by interview with local officer/I2/, agricultural experts/I3/ and local farmers/I5/.

- **Project compliance with applicable laws, statutes and other regulatory frameworks**

The PD has stated that the project is in the field of agriculture, the rice cultivation and flooding is confirmed as in line with the laws and regulations as listed in the PD/31/. For the construction during the construction period, via checking the Inspection and Acceptance Report of the project/9/, it is verified that the construction is in line with the requirement of national laws and regulations as stated in the Inspection and Acceptance Report of the project/9/. Also the project is legally approved by Local government by checking the project approval/8/, which means that the project is in line with the national and local laws and regulations based on the local expertise of the VVB. And as stated in the PD and confirmed by interview with local officer/I2/, CTI verified that the project will be subject to regular inspection by local government during the implementation period to ensure continuous compliance.

In conclusion, the project complies with all relevant local, regional and national laws, statutes and regulatory frameworks in China.

- **Participation under other GHG programs:**

  - Projects registered (or seeking registration) under other GHG program(s)

The project has neither been registered nor seeking registration under any other GHG programs which has been confirmed via checking the UNFCCC/39/, GS/46/, VCS/47/ and other GHG schemes' website. It is verified that the project is seeking registration only in VCS program/47/.

  - Rejection by other GHG programs

The project has neither been rejected by any other GHG programs which has been confirmed via checking the UNFCCC/39/, GS/46/, VCS/47/ and other GHG schemes' website.

- **Other forms of credit:**

  - Emissions trading programs and other binding limits

The project proponent is not part of any emission trading program which has been confirmed via checking the UNFCCC/39/, GS/46/, VCS/47/ and other GHG schemes' website. The net GHG emission reductions from the project will not be used for compliance with emission trading programs or to meet binding limits on GHG emissions. The project activity has not participated under any other GHG programs which has been confirmed via checking the UNFCCC/39/, GS/46/, VCS/47/ and other GHG schemes' website.

  - Other forms of environmental credit sought or received and eligible to be sought or received

Via interview with the project developer/I1/ and based on above assessment, it is confirmed that the project has not created any other form of environmental credit.

- **Additional information relevant to the project, including:**

  - Leakage management for AFOLU projects

According to the applied methodology AMS-III.AU (Version 04.0)/4/ and the demonstration in the PD and section 4.4.5.3 of this report, any effects of the project activity on GHG emissions outside the project boundary are deemed to be negligible and do not have to be considered under this methodology, thus the leakage of the project is zero. Thus no management involved.

  - Commercially sensitive information

It is confirmed that no commercially sensitive information relevant to the project description has been excluded from the public version of the project description.

  - Sustainable development contributions

The Project is confirmed contributing to sustainable development in the following ways which have been stated in the PD:

1. High yield brings extra income and improves the living standard of local farmers (Goal 1 of UN SDG);
2. Increase the rice productivity alleviates hunger problem (Goal 2 of UN SDG);
3. Use a proportion of benefits to improve the local children's education (Goal 4 of UN SDG);

4. Women are given priority for employment and their social status is raised (Goal 5 of UN SDG);
5. Provide more job opportunities for local farmers (Goal 8 of UN SDG);
6. Sequester greenhouse gas and mitigate climate changes (Goal 13 of UN SDG).

Based on above assessment and demonstration, it is concluded that the description in the PD is accurate, complete, and the nature of the project is actual and understandable, and it is confirmed that the project has been implemented as described in the PD via site inspection.

CL 01, CL 02, CL 03, CL 04, CAR 01, CAR 02, CAR 03, CAR 04 were raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.2 Safeguards

3.2.1 No Net Harm

The analysis of the potential negative environmental and socio-economic impacts of the project activity is sufficiently described in PD. The assessment is as below,

It is considered that the environmental impacts and the relevant mitigation methods have been comprehensively described in Section 2.1 of PD including the large amount of construction waste could be generated and construction dust could be produced during the construction period, which will impact on the ecosystem and environment of local area in project area according to the project construction situation and interview with local experts and farmers.

Environmental Impacts- Associated with the interview with local experts and farmers, there was no adverse effect on the ecology, air, water and solid waste, for the project subject to the implementation of pollution mitigation measures during construction period according to the requirements of Xuancheng Municipal Construction Waste Disposal Management Measure/29/. There are no any negative impacts found in the project location during the project implementation.

Measures to mitigate - As per interview with local officer, it is confirmed that the inspectors from construction entity have to carry out supervision work for the environmental impact arisen from the project activity during construction period, made the wastes were uniformly classified and collected and kept water sprayed frequently to reduce dusts. Via interview with the famers/I5/, it is confirmed that they are satisfactory with the environmental protection work carried out.

During the on-site interview, the local farmer/I3/ were interviewed if there was critical impact to their living environment. It is verified that the project activity does not cause adverse effect to their daily life.

Furthermore, via interview with local officer and farmers, it is confirmed that the implementation of the project will improve local socio-economic development through providing a part of funds as subsidies to farmers and providing trainings to technicians and farmers involved in this project which has been verified by checking the funds allocation receipts to farmers/17/ and the training records/25/.

In conclusion, there were some impacts on environment during the construction period which has been demonstrated in the PD, also the proper measurements have been carried out by project implementer to mitigate such impacts.

3.2.2 Local Stakeholder Consultation

A stakeholder survey was carried out by the project developer during June 2017 which was prior to the start date of the project.

Survey questionnaires were distributed to relevant personnel of village representatives, relevant governmental officials, local farmers by the Anhui Academy of Social Sciences in June 2017, totally 100 copies of questionnaires were issued to relevant personnel with 100 pieces of reply received. The stakeholders' background information and comments from questionnaires were summarized and recorded in the PD, Section 2.2. And VVB has confirmed that the survey of 100 farmers is a sufficient sample of all the farmers involved in the project which has been assessed in the section 2.1 of this report.

Via checking the 100 filled questionnaires/23/, it is verified that all respondents knew or heard about the Project. Most of them are supportive of the project construction, and think the Project will bring more benefit than loss through reducing methane emissions, saving water resource and increasing the rice productivity. Most of the respondents are willing to participate in the construction and operation of the project and they have no opinions on the project implementation.

And some respondents have concerns about the construction funds and how to conduct intermittent flooded water regime well, these impacts have already been considered by the PP has taken related mitigation measures through providing a part of funds as subsidies to farmers and providing trainings to technicians and farmers involved in this project which has been verified by checking the funds allocation receipts to farmers/17/ and the training records/25/ so that the project can be implemented successfully.

Finally, it is verified that there is no one thinks that the project will have a negative impact on the local life and environment, local stakeholders are supportive of the project construction by checking the questionnaires/23/, and thus no need to change the project design based on the stakeholder inputs.

For the project implementation, via site inspection checking the Suggestion Book published on the notice board of villages/24/, it is confirmed that there was no comments or suggestions in the book during the implementation period since 2018, and via interview with PP, it is verified that they will check the book regularly and collect all the comments received.

Via interview with the local officer/I2/ and farmers/I5/ during site visit, it is verified that there were no comments and issues from the local stakeholders during the construction and implementation period and the project approved by local government. Hence there is no need to change the project design based on the stakeholder inputs.

Furthermore, due to the project is an AFOLU project, according to the PD template, the special requests for the AFOLU projects have been demonstrated by PP in the PD. Assessment is listed as below,

Through villagers' meetings confirmed by interview with local farmers/I5/ and checking the LSC records/23/, CTI verified that the project design and implementation, risks, costs and benefits are all communicated and informed with local stakeholders.

Informed farmers of all relevant laws and regulations covering workers' rights in the host country by Project implementer and under the supervision of the local agricultural bureau and government confirmed by interview with local officers/I2/

Informed farmers by publishing notification and invitation on the notice board about the process of VCS Program validation and verification and the validation/verification body's site visit confirmed by interview with local farmers/I5/ and checking the notice board during site visit by VVB/32/.

CAR 05, CAR 06 were raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.2.3 Environmental Impact

In China, according to Chinese law "Environmental Impact Assessment Law of the People's Republic of China", it is confirmed that there is no requirement from any environmental impact assessments to the

type of the project. Hence the analysis of the environmental impacts of the project activity is sufficiently described by PP in the PD. The assessment is as below,

Associated with the interview with local experts and farmers, there was no adverse effect on the ecology, air, water and solid waste, for the project subject to the implementation of pollution mitigation measures during construction period according to the requirements of Xuancheng Municipal Construction Waste Disposal Management Measure/29/. There are no any negative impacts found in the project location during the project implementation.

As per interview with local officer, it is confirmed that the inspectors from construction entity have to carry out supervision work for the environmental impact arisen from the project activity during construction period, made the wastes were uniformly classified and collected and kept water sprayed frequently to reduce dusts. Via interview with the famers/I5/, it is confirmed that they are satisfactory with the environmental protection work carried out.

In conclusion, there were some negative impacts on environment during the construction period which has been demonstrated in the PD, also the proper measurements have been carried out by project implementer to mitigate such impacts. And by site inspection of implementation, it is confirmed that there is no obvious negative impacts during the implementation period only if the ditches would be damaged that may impact the water resources, however, with the proper measurements, this situation is unlikely to happen.

In conclusion, both positive and negative impacts to the environment from the project has been demonstrated and verified as actual and reasonable and there are no significant negative impacts to the environment were identified.

CAR 07 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.2.4 Public Comments

The project sought the registration with the VCS Program, according to VCS requirements the Project Description was submitted for public comment period. The project was allocated with VCS ID 2504. The public comment period started on 12-May-2021 and ended on 11-June-2021 (https://registry.verra.org/app/projectDetail/VCS/2504).

No comments were received during this period which has been verified by checking the dedicated webpage.

3.2.5 AFOLU-Specific Safeguards

PD has provided the details of AFOLU-Specific safeguards related to the project and the assessment are demonstrated as below,

- Local stakeholder identification process and the description of results

The PD/1/ states that the stakeholders were identified as all communities, community groups, and other stakeholders who will be directly and indirectly affected by the implementation of the project.

The stakeholders are identified as residents (15,111 farmers within 4,095 local households of which 8,466 are females, accounting for about 56%) involved in the project area who are directly affected by the project activities, Agricultural Bureau of Xuanzhou District that involved in providing the basic techniques of intermittently flooded method, local governments of Xuanzhou District involved in local social and environmental management, and village communities of Xuanzhou District involved in collecting opinions from the respective locals and villages.

Following approaches has been taken to validate the process of stakeholder identification and analysis as step-wised,

On-site inspection and interview

Via on-site inspection, VVB visited the project area and interviewed with the stakeholder representatives from involved farmer, local officers, technicians, local experts. By seeing the project scenario and interview with stakeholders, it is confirmed the project is implemented in project area which impact the 4,095 households in this area, and local government is responsible to the approval and related environmental and social issues, and during the project implementation, the local farmers involved in the project area are trained by the Agricultural Bureau of Xuanzhou District and PP.

Checking the relevant docs and evidence

The stakeholder's identification is confirmed as complete by checking the related docs of project, carbon reduction project cooperation agreement signed between the farmers and Hefei Luyu Agricultural Technology Co., Ltd./11/which define the 4,095 households; Technical Training Record/25/ which are used to prove that techniques provided by the Agricultural Bureau of Xuanzhou District. The Village committees in project area is responsible for collecting opinions from the respective locals and villages with the project proponent by interview with local farmers/I5/.

Therefore, CTI verified that each stakeholder is identified correctly, and relevant analysis and assessment, stakeholder's relevance to project activities in the PD is sufficient.

The list of primary stakeholders is provided in the PD and seems reasonable for a project of this nature. This is was confirmed during the on-site visit and the interview with the local stakeholders.

- Risks to local stakeholders and mitigation measures

The PD/1/ states the overall risks to the stakeholders are low, no major risks have arisen that may cause any loss of project benefits for the local community, climate and biodiversity, so that the long-term viability is assured.

- Risks to local stakeholder resources and mitigation measures

The PD/1/ states the overall risks to the stakeholder resources are low, no major risks have arisen that may cause any loss of project benefits for the local community, climate and biodiversity, so that the long-term viability is assured. Before the project implementation, the PP has got all the agreements from involved farmer as confirmed by checking the approval/8/ and checking the funds allocation receipts to farmers/17/ and interviewed with local farmers/I5/, hence it is verified that project will not impact local stakeholder's property rights without the free, prior and informed consent.

- Processes to ensure ongoing communication and consultation

The PD describes a feedback and grievance redress process; a specific staff in charge of recording and collecting conflicts and grievances of local communities and individual villagers was nominated who is the first responsible for responding to requests from the community which has been confirmed during on-site interview with the project owner.

In addition, by interview with the residents, they confirm that they can either appeal through village representatives or directly to the local forestry bureau for their comments to the project.

PP promised that grievances will be addressed in a reasonable amount of time, usually contacted and discussed with relevant community within 3 days, answered and proposes a solution within 1 week in case of claims or complaints and dealt within 30 days in case of suggestions. The PP declares to be available to adjust the grievance mechanism according the recorded dynamics and evaluation of effectiveness of the process in place.

For the project implementation, via site inspection checking the Suggestion Book published on the notice board of villages/24/, it is confirmed that there was no comments or suggestions in the book during the implementation period since 2018, and via interview with PP, it is verified that they will check the book regularly and collect all the comments received.

In conclusion, the feedback and grievance procedure is properly addressed.

CAR 08 was raised and successfully closed, Refer to Appendix 4 for detail assessment.

3.3 Application of Methodology

3.3.1 Title and Reference

The approved consolidated methodology applied in the project activity is AMS-III.AU–"Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (version 04.0)/4/.
This methodology also refers to the latest approved version of the following tools and guidelines:
TOOL 21 "Demonstration of Additionality of Small-scale Project Activities (version 13.1)"/37/
"Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities" (version 8.0)/35/
"Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities", version 4.0/36/

3.3.2 Applicability

Demonstration regarding the applicability of the methodology, and any tools selected by the project proponent as provided in below table.

Table 3-1 Assessment of Applicability conditions of AMS-III.AU

No.	Applicability conditions	Validation Assessment	Conclusion
1	The methodology comprises technology/measures that result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane. The methodology includes projects such as: (a) Rice farms that change the water regime during the cultivation period from continuously to intermittent flooded conditions and/or a shortened period of flooded conditions; (b) Alternate wetting and drying method and aerobic rice cultivation methods (see	Via checking the Ex-ante investigation report/16/ and interview with farmers/I5/, local experts/I3/ and local officer/I2/, CTI confirmed that the technology utilized by project is type (a) Rice farms that change the water regime during the cultivation period from continuously to intermittent flooded conditions and/or a shortened period of flooded conditions through the construction of cement ditches for controllable irrigation and drainage by site inspection.	Applicable

No.	Applicability conditions	Validation Assessment	Conclusion
	<http://www.knowledgebank.irri.org/water management>); (c) Rice farms that change their rice cultivation practice from transplanted to direct seeded rice		
2	Rice cultivation in the project area is predominantly characterized by irrigated, flooded fields for an extended period of time during the growing season, i.e. farms whose water regimes can be classified as upland or rainfed and deep water are not eligible to apply this methodology. This shall be shown from a representative survey conducted in the geographical region of the proposed project or by using national data. This project area characterization shall also include information on pre-season water regime and applied organic amendments, so that all dynamic parameters as shown in Table 2 are covered by the baseline study.	Via checking the Ex-ante investigation report/16/ and interview with farmers/I5/, local experts/I3/ and local officer/I2/, CTI confirmed that Rice cultivation in the project area is predominantly characterized by irrigated, flooded fields for an extended period during the growing season. Furthermore, this project area characterization also include information on pre-season water regime and applied organic amendments, all dynamic parameters as shown in Table 2 are covered by the baseline study. The representative baseline survey conducted in the geographical region of the proposed project by Anhui Academy of Social Sciences/16/ is verified to confirm this.	Applicable
3	The project rice fields are equipped with controlled irrigation and drainage facilities such that both during dry and wet season, appropriate dry/flooded conditions can be established on the fields	In the proposed project: The rice fields are equipped with controlled irrigation and drainage facilities, thus the intermittently flooded method can be established on the fields. This is verified by site visit and checking the Inspection and Acceptance Report of the project/9/.	Applicable
4	The project activity does not lead to a decrease in rice yield. Likewise, it does not require the farm to switch to a cultivar that has not been grown before	The project only involved in change the water regime during the rice cultivation period that will not lead to a decrease in rice yield and the type of rice planted in this project is very common and no requirement from the project to lead the farm to switch to a cultivar that has not been grown before. This is verified by site visit and interview with farmers representative/I5/ and checking	Applicable

No.	Applicability conditions	Validation Assessment	Conclusion
		the Inspection and Acceptance Report of the project/9/.	
5	Training and technical support during the cropping season that delivers appropriate knowledge in field preparation, irrigation, drainage and use of fertilizer to the farmer is part of the project activity and is to be documented in a verifiable manner (e.g. protocol of trainings, documentation of on-site visits). In particular the project proponent is able to ensure that the farmer by himself or through experienced assistance is able to determine the crop's supplemental N fertilization need. The applied method shall assess the fertilizer needs using for example a leaf color chart or photo sensor or testing stripes. Alternatively a procedure to ensure efficient fertilization considering the specific cultivation conditions in the project area backed by scientific literature or official recommendations shall be used.	Via checking the technical training records/25/, CTI confirmed that the appropriate knowledge in field preparation, irrigation, drainage and use of fertilizer has been provided to the farmers in every February since 2018.	Applicable
6	Project proponents shall assure that the introduced cultivation practice, including the specific cultivation elements, technologies and use of crop protection products, is not subject to any local regulatory restrictions	The project only involved in change the water regime during the rice cultivation period by equipped with controlled irrigation and drainage facilities in project area, which is deemed in line with the local regulatory which has been verified by site interview with local officer/I2/ and expert/I3/ and checking the related laws and regulations/31/.	Applicable
7	Except the case where the default value approach indicated in section 6.1.2 "Emission reductions using IPCC tier 1 approach or default values" is chosen for emission reductions calculations, project proponents have access to infrastructure to measure CH_4 emissions from reference fields using closed chamber method and laboratory analysis	In the PD, the "Emission reductions using IPCC tier 1 approach or default values" is chosen by PP for ex ante emission reductions calculations, and during site inspection, CTI confirmed that the project proponents have installed infrastructure to measure CH_4 emissions from reference fields using closed chamber method and laboratory analysis as the monitoring method for the actual emission reductions calculations.	Applicable
8	Aggregated annual emission reductions of all fields included under one project activity shall be less than or equal to 60 kt CO_2 equivalent	The project is expected to generate 58,064 tCO_2e annually which is less than or equal to 60 kt CO_2 equivalent.	Applicable

No.	Applicability conditions	Validation Assessment	Conclusion
		And PP stressed that if the emission reductions monitored during the verification excesses the threshold, the project proponent will only claim gap of 60,000 tons according to the Applicability of small-scale methodology. This is verified by checking the PD and ER sheet.	
Conclusion: Methodology AMS-III.AU (Version 04.0) is applicable to the project activity.			

In addition, the project meets the applicability conditions of the applied tool as follow table,

Table 3-2 Assessment of Applicability conditions of methodological tool

Tool	Criteria	Validation Assessment	Conclusion
(a) TOOL 21 "Demonstration of Additionality of Small-scale Project Activities (version 13.1)"	The use of the methodological tool "Demonstration of additionality of small-scale project activities" is not mandatory for project participants when proposing new methodologies. Project participants and coordinating/managing entities may propose alternative methods to demonstrate additionality for consideration by the Executive Board.	The project activity uses "Demonstration of additionality of small-scale project activities" for additionality demonstration, thus this tool is applicable.	Applicable
	Project participants and coordinating/managing entities may also apply "TOOL19: Demonstration of additionality of microscale project activities" as applicable.	Expected ER value is beyond the microscale. Hence not applicable to "TOOL19: Demonstration of additionality of microscale project activities"/37/	N/A
Conclusion: All the relevant methodological tools are applicable to the project activity.			

CAR 09 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.3.3 Project Boundary

Based on AMS-III.AU (version 04.0)/4/, the Project boundary for this Project activity includes:

Rice fields where the cultivation method and water regime are changed in the project area in Xuanzhou District, the spatial extent of the project boundary includes all fields that change the cultivation method and water regime in the context of the project activity.

Via site investigation by GPS device and checking the map of the project area/5/, CTI confirmed that the project boundary is correctly defined in line with the applied methodology.

The main emission sources and gases included in the project boundary are determined as per the applied methodology, GHG sources included and excluded from the project boundary is defined as correct and corresponding to the actual status of the project, via on-site inspection and checking the project design in project implementation program/7/, it is verified that all the relevant sources have been selected.

It is concluded that the project boundary and selected sources are correctly justified for the project.

3.3.4 Baseline Scenario

The PD applies the baseline scenario given by section 5.2 of the AMS-III.AU/4/, i.e.
Baseline scenario is the continuation of the current practice e.g. continuously flooded rice cultivation in the project fields without any organic amendment during rice cultivation in the project fields.
Due to the baseline scenario has been given in the applied methodology, there is no need to identify the baseline scenario determined for the project and thus it is verified that identified baseline scenario is justified. Refer to below section for assessment of the project additionality.

3.3.5 Additionality

Due to the project is a small-scale, TOOL 21"Demonstration of Additionality of Small-scale Project Activities (version 13.1)"/37/ is used to demonstrate the additionality.
Demonstration of additionality has been assessed as below:
Based on the applied methodology, it is verified that no barriers identified that would prevent the baseline scenario prior to the implementation of project as listed above. The step below is used to analyze the additionality of the project by conducting an investment barrier analysis and technical barrier analysis using the related methodological tool.
Investment barrier analysis
The investment barrier analysis is conducted in line with the requirement in the tool, due to the baseline scenario has been determined in the methodology, thus it is confirmed that the baseline scenario is a financially more viable alternative to the project activity would have led to higher emissions. Thus only need to demonstrate the investment barrier of the project scenario. And based on the comparison of the living standard of the 4,095 households involved in the project with the investment put into build the cement ditches, CTI confirmed that in the absence of the project activity, the scenario prior would be existed as no farmers would invest the updated drainage and irrigation system due to the poor living conditions. This is verified by on-site interview with the farmers/I5/ and checking the Ex-ante investigation report/16/. Finally, via checking the funds allocation receipts to farmers/17/, it is verified that the project implementer raised fund based on carbon revenue consideration and solved the investment of the project via confirmed by checking the Board meeting minute/13/ and emission reduction purchase agreement/18/.

Technical barrier analysis
The technical barrier analysis is conducted in line with the requirement in the tool, due to the baseline scenario has been determined in the methodology, thus it is confirmed that the baseline scenario is a less technologically advanced alternative to the project activity involves lower risks so would have led to higher emissions, which has been verified by on-site interview with the farmers/I5/ and it is confirmed that without this project, farmers would grow rice by old flooding method, although higher emissions would be resulted. For the project activity, due to the low market share of the new technology adopted in project zone in Xuanzhou District which has confirmed by checking the Ex-ante investigation report/16/, so the project activity faces technical barrier as no farmers have access to advanced technology about intermittently flooded water regime, which requires regularly drainage and irrigation. This is verified by on-site interview with the farmers/I5/ and checking the Ex-ante investigation report/16/.
In conclusion, an explanation to show that the project activity would not have occurred anyway due to at least one of the barriers as listed in the TOOL 21 "Demonstration of Additionality of Small-scale Project Activities (version 13.1)"/37/ have been sufficiently provided, thus the proposed project is additional.

CAR 10 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.3.6 Quantification of GHG Emission Reductions and Removals

For validation of the estimated GHG emission reductions in the PD/1/ and ER calculation sheet/2/, Further, the validation team has downloaded from the UNFCCC website the applicable version of the CDM methodology and all referenced methodological tools/39/.
Via verify the PD, it is confirmed the calculation of ERs is done as per the applied methodology (AMS-III.AU ver. 04.0) with follow steps listed below.
Baseline emissions:
According to the methodology, the baseline scenario is the continuation of the current practice e.g. continuously flooded rice cultivation in the project fields.
Hence baseline emissions shall be calculated on a seasonal basis using the following formula:

$$BE_y = \sum_s BE_s \quad (1)$$

$$\mathrm{BE_y} = \sum_{\mathrm{g=1}}^{\mathrm{G}} \mathrm{EF_{BL,s,g}} \times \mathrm{A_{s,g}} \times 10^{-3} \times \mathrm{GWP_{CH_4}} \quad (2)$$

Where:

$\mathrm{BE_y}$	=	Baseline emissions in year y (tCO_2e)
$\mathrm{BE_s}$	=	Baseline emissions from project fields in season s (tCO_2e)
$\mathrm{EF_{BL,s,g}}$	=	Baseline emissions factor of group g in season s ($kgCH_4$/ha per season)
$\mathrm{A_{s,g}}$	=	Area of project fields of group g in season s (ha)
$\mathrm{GWP_{CH_4}}$	=	Global warming potential of CH_4 (tCO_2e/tCH_4)
g	=	Group g, covers all project fields with the same cultivation pattern (G = total number of groups)

Determination of baseline emission factor on reference fields
As per the applied methodology (AMS-III.AU ver. 04.0), Baseline reference fields shall be set up in a way that they are representative of baseline emissions in the project rice fields. For each group of fields with the same cultivation pattern, as defined with the help of Table 2, at least three reference fields with the same pattern shall be determined in the project area. On these fields, measurements using the closed chamber method shall be carried out, each resulting in an emission factor expressed as $kgCH_4$/ha per season. The seasonally integrated baseline emission factor $EF_{BL,s,g}$ shall be derived as average value from the three measurements for each group.
Via checking the Ex-ante investigation report derived from farmer's information/16/, CTI confirmed that all the surveyed sampled farmers using the same cultivation pattern (Continuously flooded, No organic amendment, soil pH within project area is larger than 5.5, soil organic carbon within the range between 1-3% and climate condition is same) as defined with the help of Table 2 in applied methodology, thus only one group was defined for the project to determine the baseline emission factor on reference fields.
CAR 07 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

Project emissions:

Project emissions consist of the CH_4 emissions, which will still be emitted under the changed cultivation practice. Due to the optimized N fertilization practice (cf. applicability criteria in paragraph 3(d), N fertilizer control), N_2O emissions do not significantly deviate from the baseline emissions and hence are not considered.

CH_4 emissions from project fields are calculated on a seasonal basis as follows

$$PE_y = \sum_s PE_s \quad (3)$$

$$PE_s = \sum_{g=1}^{G} EF_{P,s,g} \times A_{s,g} \times 10^{-3} \times GWP_{CH_4} \quad (4)$$

Where:

PE_y	=	Project emissions in year y (tCO_2e)
PE_s	=	Project emissions from project fields in season s (tCO_2e)
$EF_{P,s,g}$	=	Project emission factor of group g in season s ($kgCH_4$/ha per season)

Determination of project emission factor on reference fields

As per the applied methodology (AMS-III.AU ver. 04.0), the seasonally integrated project emission factor $EF_{P,s,g}$ shall be determined using measurements on at least three project reference fields that fulfill the same conditions as the baseline reference fields, with the difference that they are cultivated according to the defined project cultivation practice. Project reference fields shall be established close to the baseline reference fields and begin with the growing season at the same time. $EF_{P,s,g}$ is the average of the measurement results from the three reference fields.

The project emission factor on reference fields $EF_{P,s,g}$ will be monitored during the monitoring period.

CAR 08 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

Leakage

According to the methodology, any effects of the project activity on GHG emissions outside the project boundary are deemed to be negligible and do not have to be considered under this methodology.

Emission reductions:

$$ER_s = BE_s - PE_s \quad (5)$$

Where:

ER_s	=	Emission reductions in season s (t CO_2e)

Ex ante estimation of emission reductions

As per the applied methodology (AMS-III.AU ver. 04.0), for the ex ante estimation of emission reductions, project participants shall either refer to own field experiments or estimate baseline and project emissions with the help of national data or IPCC tier 1 default values for emission and scaling factors. Hence PP has selected IPCC tier 1 default values for emission and scaling factors for ex ante estimation of emission reductions. The approach has been explained and justified in the PD and assessed as below,

Emission reductions using IPCC tier 1 approach or default values

As an alternative to the reference field approach indicated in paragraphs 12, 13, 16 and 17 of the methodology, project participants calculate emission reductions using Option 1, i.e. Using the IPCC tier 1 approach but undertaking measurements to determine baseline emission factors for continuously flooded fields, as per the following formula:

$$ER_y = EF_{ER} \times A_y \times L_y \times 10^{-3} \times GWP_{CH_4} \quad (6)$$

$$EF_{ER} = EF_{BL} - EF_P \quad (7)$$

$$EF_{BL} = EF_{BL,c} \times SF_{BL,w} \times SF_{BL,p} \times SF_{BL,o} \quad (8)$$

$$EF_P = EF_{BL,c} \times SF_{P,w} \times SF_{P,p} \times SF_{P,o} \quad (9)$$

Where:

ER_y	=	Emission reductions in year y (t CO_2e)
EF_{ER}	=	Adjusted daily emission factor (kgCH_4/ha/day). Alternatively, seasonal emission factor (kg CH_4/ha/season) may be determined
A_y	=	Area of project fields in year y (ha)
L_y	=	Cultivation period of rice in year y (days/year). This is not applicable when seasonal emission factor is determined.
GWP_{CH_4}	=	Global warming potential of CH_4 (t CO_2e/t CH_4) 25 tCO_2/tCH_4 from the Fourth Assessment report, GHG Protocol/33/
EF_{BL}	=	Baseline emission factor (kg CH_4/ha/day) or (kg CH_4/ha/season)
EF_P	=	Project emission factor (kg CH_4/ha/day) or (kg CH_4/ha/season)
$EF_{BL,c}$	=	Baseline emission factor for continuously flooded fields without organic amendments (kg CH_4/ha/day) or (kg CH_4/ha/season)
$SF_{BL,w}$ *or* $SF_{P,w}$	=	Baseline or project scaling factors to account for the differences in water regime during the cultivation period
$SF_{BL,p}$ *or* $SF_{P,p}$	=	Baseline or project scaling factors to account for the differences in water regime during the pre-season before the cultivation period
$SF_{BL,o}$ *or* $SF_{P,o}$	=	Baseline or project scaling factors should vary for both type and amount of organic amendment applied

Determine the value of parameter $EF_{BL,c}$

As per the applied methodology (AMS-III.AU ver. 04.0), the baseline emission factor for continuously flooded fields without organic amendments ($EF_{BL,c}$) shall be either determined ex ante prior to the start of the project activity (in this case the ex ante value should be used to calculate emission reduction during the crediting period) or monitored annually (in this case, the ex post values should be used to calculate emissions reduction during the crediting period).

For this project, as stated in the PD, $EF_{BL,c}$ is determined ex ante prior to the start of the project activity. As per the applied methodology (AMS-III.AU ver. 04.0), at least three reference fields shall be chosen in the project area. On these fields, measurements shall be carried out using the closed chamber method in accordance with the guidance on methane measurement in the appendix of the applied methodology.

Via checking the Appendix. Guidelines for measuring methane emissions from rice fields in the applied methodology (AMS-III.AU ver. 04.0), for determine the ex ante value of $EF_{BL,c}$,

Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI confirmed that the report was carried out by experts from Anhui Agricultural Bureau which is a provincial bureau in the agricultural field and it is confirmed that the experts from this bureau is qualified to implementation of methane measurement in rice fields based on validation team's local expertise. And by checking the report/19/ and interview with the expert from Anhui Academy of Agricultural Sciences /I2/, CTI verified that expert gets the qualification and conducted the lab test in line with the requirement in the methodology.

Furthermore, via checking the detailed plan prepared by PP for methane measurements/20/, CTI verified that before the experts conducted the methane measurement in rice fields, PP provided a plan to experts and this plan included the schedule for the field and laboratory measurements, the logistics that are necessary to get the gas samples to the laboratory and a cropping calendar. The plan also included all reference field specific information regarding location and climate, soil, water management, plant characteristics, fertilizer treatment and organic amendments which is in line with the Appendix. Guidelines for measuring methane emissions from rice fields in the applied methodology (AMS-III.AU ver. 04.0).

For the actual methane measurement on the field, the methods are carried out as below table which is verified in line with the Appendix. Guidelines for measuring methane emissions from rice fields in the applied methodology (AMS-III.AU ver. 04.0). See below table for details assessment,

Table 3-3. On the field - technical options for the chamber design

Feature	Conditions	Justification
Chamber material	Option 1: Non-transparent • Commercially available PVC containers or manufactured chambers (e.g. using galvanized iron); • Painted white or covered with reflective material (to prevent increasing inside temperature); • Only suitable for short-term exposure (typically 30 min) followed by immediate removal from the field	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/ and on-site checked the Chamber, CTI confirmed that the chamber used in this project is fulfill with the material request listed in the applied methodology.
Placement in soil	Option 1: Fixed base • Base made of non-corrosive material and remains in the field for the whole season; • Base should allow tight sealing of the chamber; • Base should have bores in the submerged section to allow water exchange between inside and outside;	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/ and on-site checked the Chamber, CTI confirmed that the chamber used in this project is fulfill with the placement in soil request listed in the applied methodology.

	• Base should be installed at least 24 hours before the first sampling	
Auxiliaries of chamber	• Thermometer for measuring the temperature inside the chamber; • Fan (battery operated) inside the chamber for mix the inside air during sampling; • Sampling port (rubber stopper placed in a bore of the chamber)	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/ and on-site checked the Chamber, CTI confirmed that the auxiliaries of chamber used in this project is fulfill with the request listed in the applied methodology.
Basal area	Rectangular or rounded, but has to cover minimum of four rice hills (ca. 0.1 m^2 minimum)	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/ and on-site checked the Chamber, CTI confirmed that the shape and size of chamber used in this project is fulfill with the request listed in the applied methodology.
Height	Option 1: Fixed height Total height (protruding base + chamber) should exceed plant height	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/ and on-site checked the Chamber, CTI confirmed that the height of chamber used in this project is higher than the plant height that is fulfill with the request listed in the applied methodology.

Table 3-4. On the field – air sampling

Feature	Conditions	Justification
Replicate chambers per plot	Minimum requirement: Three replicate chambers per plot	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/ and on-site checked the Chambers, CTI confirmed that the three replicate chambers were placed in every plot that is fulfill with the request listed in the applied methodology.
Number of air samples per exposure / data	Minimum requirement: Three	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017

points per measurement	samples per exposure	conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI confirmed that there were three samples for every exposure analyzed that is fulfill with the minimum request listed in the applied methodology.
Exposure time	30 minutes	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI confirmed that exposure time is 30 minutes that is fulfill with the request listed in the applied methodology.
Daytime of measurement	Morning	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI confirmed that measuring time was at morning in daytime is 30 minutes from 9.30 – 10.00 a.m. that is fulfill with the request listed in the applied methodology.
Measurement interval	Minimum requirement: once per week	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/ and checking the plan/20/, CTI confirmed that measurement interval period is once per week that is fulfill with the minimum request listed in the applied methodology.
Syringe	Suitability test (leak proof) before measurement Preferably equipped with a lock for ease of handling	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/ and on-site checked the Chambers, CTI confirmed that the syringe with a lock was used in chamber and it is checked for leak proof before every measurement that is fulfill with the request listed in the applied methodology.
Sample storage until analysis	• Storage < 24 h: air samples can remain in syringe; • Storage > 24 h: transfer air samples into evacuated vial,	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI confirmed that the three samples were taken before a laboratory analysis was performed, so the samples were stored in the evacuated vials that is fulfill with the request listed in the applied methodology.

	store with slight overpressure	

Table 3-5. Laboratory analysis

Feature	Conditions	Justification
Method	Gas Chromatograph with flame ionization detector (FID)	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI confirmed that the FID is used in laboratory analysis
Injection	Direct injection or with multi-port valve and sample loop	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI confirmed that the direct injection method is used in laboratory analysis
Column	Packed (e.g. molecular sieve) or capillary column	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI confirmed that the packed column is used in laboratory analysis
Calibration	With certified standard gas each day of analysis before and after the analyses are done	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI confirmed that the calibration is conducted as per request of the methodology in laboratory analysis.

Thus via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, CTI verified that the measurement methane results are correct, and based on the "Calculation of the emission rate for a plot (reference field)" in the Appendix. Guidelines for measuring methane emissions from rice fields in the applied methodology (AMS-III.AU ver. 04.0),

The mass of CH_4 emissions for a plot (reference field) is calculated by formular

$$m_{CH_{4,t}} = c_{CH_{4,t}} \times V_{chamber} \times M_{CH_4} \times \frac{1atm}{R \times T_t \times 1000} \quad (10)$$

Where:

m_{CH_4} = Mass of CH_4 in chamber at time t (mg)

t	=	Point of time of sample (e.g. 0,15,30 in case of three samples within 30 minutes)
$c_{CH_{4,t}}$	=	CH_4 concentration in chamber at time t, from gas analysis (ppm)
$V_{Chamber}$	=	Chamber volume (L)
M_{CH_4}	=	Molar mass of CH_4: 16g/mol
$1atm$	=	Assume constant pressure of 1atm, unless pressure measurement is installed
R	=	Universal gas constant: 0.08206 L atm/K^{-1} x mol^{-1}
T_t	=	Temperature at time t (K)

(1) Determine the slope of the line of best fit for the values of over time with the help of Excel:

$$s = \frac{\Delta m_{CH_4}}{\Delta t} \tag{11}$$

Where:

s	=	Slope of line of best fit (mg/min)

(2) Calculate the emission rate per hour for one chamber measurement:

$$RE_{ch} = s \times \frac{60min}{A_{chamber}} \tag{12}$$

Where:

RE_{ch}	=	Emission rate of chamber ch (mg/h x m^2)
ch	=	Index for replicate chamber on a plot
$A_{chamber}$	=	Chamber area (m^2)

(3) Calculate the average emission rate of a chamber measurement per plot:

$$RE_{plot} = \frac{\sum_{ch=1}^{Ch} RE_{ch}}{Ch} \tag{13}$$

Where:

RE_{plot}	=	Average emission rate of a plot (mg/h x m^2)
ch	=	Number of replicate chambers per plot

(4) Further procedure: from the average emission rates per plot of each chamber measurement, derive the seasonally integrated emission factor by integration of the measurement results over the season length. The simplest way of integration is multiplying the emission rate with the number of hours of the measurement interval (e.g. one week) and accumulating the results of every measurement interval over the season. Convert from mg/m^2 to kg/ha by multiplying with 0.01. So, the final integrated results of RE_{plot} with the unit of (kg/season/ha)

in the three reference fields is equal to $EF_{BL,c}$ (kgCH4/season/ha) which are summarized in Table 3-6 below.

Table 3-6 RE_{plot} (kg/season/ha) in reference fields

Plot No.	Early Season			Second Season		
	RE_{plot} (mg/h x m²)	Hours over the season	RE_{plot} (kg/season/ha)	RE_{plot} (mg/h x m²)	Hours over the season	RE_{plot} (kg/season/ha)
Plot 1	5.73	2,928 hours (122 days)	167.78	5.98	2,760 hours (115 days)	165.12
Plot 2	5.88		172.22	6.09		168.19
Plot 3	5.89		172.47	6.05		167.01
Average	5.83		170.82	6.04		166.77

Hence, based on above calculation process, and via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017 conducted by Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences/19/, it is verified that the baseline emission factor for continuously flooded fields without organic amendments ($EF_{BL,c}$) is 170.82 kg CH4/ha/season for early season and 166.77 kg CH4/ha/season for second season as used in the PD is correct and actual.

Determine the value of parameter $SF_{BL,w}$ *or* $SF_{P,w}$

Via the methodology, the IPCC default values for $SF_{BL,w}$ *or* $SF_{P,w}$ are as following table

Table 3-4. IPCC default values for $SF_{BL,w}$ *or* $SF_{P,w}$

Water regime during the cultivation period		$SF_{BL,w}$ or $SF_{P,w}$
Irrigated	Continuously flooded	1
	Intermittently flooded - single aeration	0.60
	Intermittently flooded - multiple aeration	0.52

Via Ex-ante investigation report/16/ and interview with farmer/I5/, CTI verified that the water regime is continuously flooded in baseline scenario, and via site inspection and checking the Inspection and Acceptance Report of the project/9/, CTI confirmed that the water regime of this project activity is intermittently flooded with multiple aeration as defined in the methodology, hence $SF_{BL,w}$ is 1 and $SF_{P,w}$ is 0.52.

Determine the value of parameter $SF_{BL,p}$ *or* $SF_{P,p}$

Via the methodology, the IPCC default values for $SF_{BL,p}$ *or* $SF_{P,p}$ are as following table

Table 3-5. IPCC default values for $SF_{BL,p}$ *or* $SF_{P,p}$

Water regime during the cultivation period	$SF_{BL,p}$ or $SF_{P,p}$
Non flooded pre-season < 180 days (indicating double cropping)	1
Non flooded pre-season > 180 days (indicating single cropping)	0.68

Via checking the Ex-ante investigation report/16/, CTI verified that all the rice cultivation is double cropping in project area, hence $SF_{BL,p}$ and $SF_{P,p}$ are 1.

Determine the value of parameter $SF_{BL,o}$ *or* $SF_{P,o}$

Via the methodology, the IPCC default for $SF_{BL,o}$ *or* $SF_{P,o}$ is calculated as follows,

$$SF_o = \left(1 + \sum_i ROA_i \times CFOA_i\right)^{0.59} \quad (14)$$

Where:

ROA_i	=	Application rate of organic amendment type *i*, in dry weight for straw and fresh weight for others, tonne ha^{-1}. 5 tonne/ha of straw is assumed as the baseline quantity of organic amendment, because the value of leftover straw after harvest is in the range of 3 tonne/ha (when harvested manually to the ground level, leaving very little stubble and the root residues) to 7 tonne/ha (harvested mechanically leaving behind large amount of crop residues on the field)
$CFOA_i$	=	Conversion factor for organic amendment type i (in terms of its relative effect with respect to straw applied shortly before cultivation. 0.29 is used for a single crop and 1.0 for a double crop

Via the Ex-ante investigation report/16/, Inspection and Acceptance Report of the project/9/ and interview with farmer/I5/, CTI verified that no organic amendments are applied under both baseline and project scenario, so ROA_i is 0 and thus based on above formular, $SF_{BL,o}$ and $SF_{P,o}$ are 1.

In conclusion, based on above values for each parameter for determine the ex ante of emission reduction calculation, the CTI verified that result in PD are correct for the ex ante ER values during the first 7 crediting period.

The estimated amount of GHG emission reductions of the project is 406,448 tCO_2e during the 1st crediting period (7 years) from 25-February-2018 to 24-February-2025, resulting in estimated average annual emission reductions of 58,064 tCO_2e.

The ER calculation sheet/2/ has been duly checked. Further it has been checked whether the results have been correctly calculated in PD for determination of ex-ante ER. The validation team has further checked the PD against the latest version of the applicable methodology for consistency.

CAR 11, CAR 12 and CAR 13 were raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.3.7 Methodology Deviations

There are no any methodology deviations applied to the project.

3.3.8 Monitoring Plan

1. Data and parameters available at validation

Please refer to the following tables for assessment of each parameter determined ex-ante:

A_y	Area of project fields in year y
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is field measurement, determined by collecting the project field sizes in a project database. The size of project fields are determined by GPS or satellite data.
Correct value provided?	Yes – 14,333 ha

	Derived from GPS results measured by Xuanzhou Agricultural Bureau /6/
Has this value been verified?	Yes. The value has been verified against the data source. And the areas for sampled farmers have been verified by site interview with farmers and measuring by GPS device during site inspection.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

GWP_{CH4}	Global warming potential of CH_4
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is IPCC's *Fourth Assessment report, GHG Protocol* which are appropriate/33/
Correct value provided?	Yes – 25 tCO_2e/ tCH_4
Has this value been verified?	Yes. It is a default value from IPCC/27/. The value has been verified against the data source
Choice of data correctly justified?	Yes
Measurement method correctly described?	Yes, any future revision of the IPCC's assessment report should be taken account.

$EF_{BL,c}$	Seasonal baseline emission factor for continuously flooded fields without organic amendments
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in 2017/19/ which is verified as appropriate. Refer to above section "Determine the value of parameter $EF_{BL,c}$" for assessment details.
Correct value provided?	Yes – (1) 170.82 kg CH_4/ha/season for early season rice; (2) 166.77 kg CH_4/ha/ season for later season rice
Has this value been verified?	Yes. The values are verified as correct and calculated as per the applied methodology. Refer to above section "Determine the value of parameter $EF_{BL,c}$" for assessment details.
Choice of data correctly justified?	Yes. The justification of choice has been clearly stated in the PD by PP which is verified as in line with the applied methodology.
Measurement method correctly described?	N/A

$SF_{BL,w}$	Baseline scaling factors to account for the differences in water regime during the cultivation period
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/27/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –1 is adopted due to the rice is cultivated under continuously flooded condition in baseline scenario Refer to above section "Determine the value of parameter $SF_{BL,w}$ or $SF_{P,w}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/27/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{P,w}$	Project scaling factors to account for the differences in water regime during the cultivation period
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/27/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –0.52 is adopted due to the rice is cultivated under intermittently flooded condition in baseline scenario Refer to above section "Determine the value of parameter $SF_{BL,w}$ or $SF_{P,w}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/27/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{BL,p}$	Baseline scaling factors to account for the differences in water regime in the pre-season before the cultivation period.
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/27/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –1 is adopted due to cultivation mechanism in rice filed is double cropping in baseline scenario Refer to above section "Determine the value of parameter $SF_{BL,p}$ or $SF_{P,p}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/27/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{P,p}$	Project scaling factors to account for the differences in water regime in the pre-season before the cultivation period.
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/27/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –1 is adopted due to cultivation mechanism in rice filed is double cropping in project scenario Refer to above section "Determine the value of parameter $SF_{BL,p}$ or $SF_{P,p}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/27/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{BL,o}$	Baseline scaling factors should vary for both type and amount of organic amendment applied
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/27/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –1 is adopted due to no organic amendments are applied under baseline scenario, so ROA_i is 0 and thus based on calculation formular, $SF_{BL,o}$ is 1. Refer to above section "Determine the value of parameter $SF_{BL,o}$ or $SF_{P,o}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/27/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{P,o}$	Project scaling factors should vary for both type and amount of organic amendment applied
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/27/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –1 is adopted due to no organic amendments are applied under project scenario, so ROA_i is 0 and thus based on calculation formular, $SF_{p,o}$ is 1. Refer to above section "Determine the value of parameter $SF_{BL,o}$ or $SF_{P,o}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/27/. The value has been verified against the data source.

Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

CAR 14 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

2. Data and Parameters Monitored

The monitoring parameters required by the methodology and applicable tools for the project are summarized in the below table.

$A_{s,g}$	Aggregated project area in a given season s
Title in line with Methodology?	Yes
Ex-ante Value	Not used for ex ante ER calculation
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	Yes–to determine by collecting the project field sizes in a project database
Correct value provided?	N/A
Has this value been verified?	N/A
Choice of data correctly justified?	Yes –to determine by collecting the project field sizes in a project database which is in line with the applied methodology and only compliant farms are considered
Measurement method correctly described?	Yes – Field measurement. The size of project fields shall be determined by GPS or satellite data. Should such technologies not be available, established field size measurement approaches shall be used provided that uncertainties are taken into account in a conservative manner which is in line with the applied methodology.
Monitoring frequency correctly described?	Every season - verified as per the applied methodology
Monitoring equipment correctly described?	GPS or satellite data - verified as per the applied methodology
QA/QC procedure correctly described?	Yes General guidelines for SSC CDM methodologies will be referred
Purpose of data?	BE_s calculation

$EF_{BL,s,g}$	Baseline emission factor of group g in a given season s
Title in line with Methodology?	Yes
Ex-ante Value	Not used for ex ante ER calculation
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	Yes - Field measurements in baseline reference fields
Correct value provided?	N/A
Has this value been verified?	N/A
Choice of data correctly justified?	Yes –Field measurements in baseline reference fields as per the applied methodology

Measurement method correctly described?	Yes –Field measurements in baseline reference fields as per instructions in the appendix (Guidelines for measuring methane emissions from rice fields) and IPCC 2006, volume 4, chapter 5.5/27/ as per the applied methodology
Monitoring frequency correctly described?	Obtained from the calculation of the emission rate for baseline reference fields according to the requirements in the Appendix of methodology, and the $C_{CH4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings is derived from the laboratory analysis. Regular measurements as per closed chamber method guidance, seasonally integrated - verified as per the applied methodology
Monitoring equipment correctly described?	Closed chamber and also devices in laboratory - verified as per the applied methodology
QA/QC procedure correctly described?	Yes The implementation of methane measurement in rice fields shall be conducted by technicians trained by experts and the laboratory should get ISO/IEC 17025/26/ certificate. All the data should be cross-checked by technicians and experts. The QA/QC procedure is verified as appropriate and in line with the requirement of Appendix in methodology.
Purpose of data?	BE_s calculation

$EF_{P,s,g}$	Project emission factor of group g in a given season s
Title in line with Methodology?	Yes
Ex-ante Value	Not used for ex ante ER calculation
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	Yes - Field measurements in project reference fields
Correct value provided?	N/A
Has this value been verified?	N/A
Choice of data correctly justified?	Yes –Field measurements in project reference fields as per the applied methodology
Measurement method correctly described?	Yes –Field measurements in project reference fields as per instructions in the appendix (Guidelines for measuring methane emissions from rice fields) and IPCC 2006, volume 4, chapter 5.5/27/ as per the applied methodology
Monitoring frequency correctly described?	Obtained from the calculation of the emission rate for baseline reference fields according to the requirements in the Appendix of methodology, and the $C_{CH4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings is derived from the laboratory analysis.

	Regular measurements as per closed chamber method guidance, seasonally integrated - verified as per the applied methodology
Monitoring equipment correctly described?	Closed chamber and also devices in laboratory - verified as per the applied methodology
QA/QC procedure correctly described?	Yes The implementation of methane measurement in rice fields shall be conducted by technicians trained by experts and the laboratory should get ISO/IEC 17025/26/ certificate. All the data should be cross-checked by technicians and experts. The QA/QC procedure is verified as appropriate and in line with the requirement of Appendix in methodology.
Purpose of data?	PE_s calculation

CAR 15 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

3. Monitoring plan

The validation team has checked the monitoring plan of the PD against the applied methodology.

The monitoring plan in the PD has been designed to comply with the latest applicable version of the methodology (AMS-III.AU version 04.0).

Data and parameters to be monitored as above tables are confirmed in line with the methodology, also corresponding to the formula used for ER calculation.

Monitoring process

1) Monitoring of farmers' compliance with project cultivation practice (determination of $A_{s,g}$)

The monitoring plan designed in the PD for monitoring of farmers' compliance with project cultivation practice is checked by validation team, CTI confirmed that the description is in line with the applied methodology.

The project database with all 4,095 participated rice farmer households' identification/15/ including name and address of the rice farmer, size of the field and additional farm specific information have been provided to the validation team, CTI confirmed that the PP has set up a database that allow an unambiguous identification of participating rice farm, and this database will be used as the basis for PP to conduct the sampling method as stated below.

As per the requirement in the applied methodology, a cultivation logbook shall be maintained for all project fields, hence all the 4,095 participated rice farmer households will fill the logbooks as per the requirement in the methodology.

As per the request from the applied methodology, the reporting and verification shall be done on the basis of samples of the log-books from the farmers, according to the latest version of the "Standard for sampling and surveys for CDM project activities and programme of activities" (version 08.0), hence PP has established a sampling method following this standard and the sampling size is verified as correct and PP has used 90/10 confidence/precision as the criteria for the reliability of sampling efforts for small-scale project activity is deemed as in line with the requirement of the sampling standard/35/.

313 samples will be selected according to stratified sampling method in 3 towns, 1 street and 3 villages based on the numbers determined for each town calculated by the weight of total farmers numbers of each town in project area.

And then for sample selection of each town, a random sampling method will be used for determine the famers sample in each town and finally the randomly selected 313 samples will be defined.

Then during cultivation season, the selected farmers' logbooks including all parameters that are part of the project cultivation practice at least covering as follow

(a) Sowing (date),

(b) Fertilizer, organic amendments, and crop protection application (date and amount);

(c) Water regime on the field (e.g. "dry/moist/flooded") and dates where the water regime is changed from one status to another,

(d) Yield

(e) Whether they have followed fertilization recommendations provided with the introduction of the adjusted water management practice

2) Monitoring of baseline and project emissions (determination of $EF_{BL,s,g}$ and $EF_{p,s,g}$)

For ex post emission reduction calculation, as per the applied methodology AMS-III.AU Version 04.0, and formular listed (1)-(5) of this report, the monitored parameters of $EF_{BL,s,g}$ and $EF_{p,s,g}$ need to be measured as per the instructions in the Appendix (Guidelines for measuring methane emissions from rice fields) of the applied methodology and IPCC 2006, volume 4, chapter 5.5.

Via checking the monitoring plan for the two monitoring parameters listed in the PD, CTI confirmed that the plan is in line with the requirement of the Appendix (Guidelines for measuring methane emissions from rice fields) of the applied methodology. All the requirements in Appendix have been considered by PP in the monitoring plan and CTI confirmed that the monitored parameters of $EF_{BL,s,g}$ and $EF_{p,s,g}$ will be measured correctly and conservatively.

3) Other element of the monitoring plan

The monitoring team will take the overall monitoring responsibility in the whole monitoring process which has been confirmed during the site interview with the representatives from monitoring team which consists of the project proponent/I1/, Shanghai Libra Investment Management Co., Ltd/I6/, technicians/I4/ and experts from the agricultural bureau/I2/.

Also the Shanghai Libra Investment Management Co., Ltd will establish cultivation logbooks template for the farmers to be monitored within the project boundary to collect and record monitoring data which has been confirmed by interview with the monitoring team members. And the final monitoring results will be double-checked by experts of the agricultural bureau. The roles and responsibilities of the project owner and monitoring team has been defined in the monitoring plan and verified as reasonable and achievable.

The determination of project and baseline reference fields and installation of closed chamber will fulfil the requirement in the methodology. Due to the air samples will be analyzed by certified laboratory, hence no calibration of equipment is needed and the certification of the laboratory will be provided during the verification.

The QA/QC procedure is checked and verified by CTI as correct and reasonable, the results will be cross-checked with the agricultural bureau experts. And monitoring equipment will be updated if there are new versions or more efficient monitoring tools available to keep the data more accurate.

Monitoring team will take actions to maintains or will displace the broken chamber if any malfunction, and the monitoring data will be calculated conservatively for emission calculations during the troubleshooting period.

All data files of monitoring will be archived electronically. All the relevant data records will be kept by the Project owner at least two years after the end of the last crediting period of the project activity.

Besides, based on conducted interviews with related personnel the validation team has assessed the feasibility of the monitoring plan.

Based on interview with site personnel and validation team's local and sectoral knowledge, the measurement methods, recording procedures, equipment installation and maintenance and QA/QC procedures described in the monitoring plan are feasible in China and can fully meet the requirements of the methodology. No difficulties are anticipated in implementing the operational and management structure nor the monitoring plan as a whole.

CAR 16 was raised and successfully closed. Refer to Appendix 4 for detail assessment

3.4 Non-Permanence Risk Analysis

Non-permanence risk analysis only needs to be applied to GHG removals or avoided emissions through carbon sinks. Project activities generating emissions reductions of N_2O, CH_4 or fossil-derived CO_2 are not subject to buffer withholding, since these GHG benefits cannot be reversed.
Since the project only focuses on GHG reductions of CH_4, the project is not subject to buffer withholding.

4 VALIDATION CONCLUSION

Shanghai Libra Investment & Management Co., Ltd. has commissioned the CTI to carry out the Verified Carbon Standard (VCS) validation of the project activity Adjusted Water Management in Rice Cultivation in Xuanzhou District (VCS ID 2504), with regard to the relevant requirements for VCS Version 4.1.

The review of the project design documentation and the subsequent follow-up interviews have provided CTI with sufficient evidence to determine the fulfilment of stated criteria.

In the course of the validation 16 Corrective Action Requests (CARs), 4 Clarification Requests (CLs) were raised and successfully closed. No Forwarded Action Requests (FARs) was raised.

The review of the project design documentation and additional documents related to baseline and monitoring methodology and subsequent background investigation have provided the CTI with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarized as follows:

- the baseline scenario is correctly defined as per the applied methodology and relate tools;
- the project is additional;
- all data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature;
- a reasonable level of assurance has been applied.
- the monitoring plan in the validated PD is as per the applied methodology AMS-III.AU (version 04.0);
- the project has been implemented and operated as per the VCS PD;
- the project complies with the validation criteria for projects set out in VCS Version 4.1;
- The calculation of the ex ante emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 406,448 tCO_2e are most likely to be achieved within the 1st 7 years crediting period started from 25-February-2018.

The conclusions of this report show, that the project, as it was described in the project description, is in line with all criteria applicable for the validation against the VCS standard Version 4.1 without any qualifications or limitations.

Lin Shunrong	Zhou Lu
CTI	CTI
Validation Team Leader	Final Approval
16-December-2021	16-December-2021

APPENDIX 1: ABBREVIATIONS

Abbreviations	Full texts
AFOLU	Agriculture, Forestry and Other Land Use
ALM	Agricultural Land Management
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CCER	China Certified Emission Reduction
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
CP	Certification Program // Crediting Period
DverR	Draft Verification Report
EIA	Environmental Impact Assessement
ER	Emission Reduction
ETS	Emission Trading Scheme
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GS	Gold Standard
ICM	Improved Cropland Management
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
PD	Project Description
PP	Project Participant
PRC	Post Registration Change
QA/QC	Quality Assurance / Quality Control
REDD	Reduced Emissions from Deforestation and Degradation
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit
VVB	Validation/Verification Body
XLS	Emission Reduction Calculation Spread Sheet

APPENDIX 2: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Ms. Shunrong LIN

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	√	√	√	√	√	√

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 14: Afforestation and reforestation	TA 14.1: Afforestation and reforestation
SS 15: Agriculture	TA 15.1: Agriculture

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by: Wu Lin

Wu LIN

Technical Competent Manager

Shenzhen, 01/01/2021

Mr. Shun YAN

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	-	-	-	-	-	√

Scope	Technical Area
SS 14: Afforestation and reforestation	TA 14.1: Afforestation and reforestation

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by: Wu Lin

Wu LIN

Technical Competent Manager

Shenzhen, 01/01/2021

Ms. Guolian WANG

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	√	√	√	√	√	√

Scope	Technical Area
SS 1: Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
SS 3: Energy demand	TA 3.1: Energy demand
SS 4: Manufacturing industries	TA 4.1. Cement and lime production
SS 5: Chemical industry	TA 5.1: Chemical industry
	TA 5.2: Caprolactam, nitric and adipic acid
SS 11: Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride	TA 11.1: Emissions of fluorinated gases
	TA 11.2: Refrigerant gas production
SS 12: Solvents use	TA 12.1: Chemical industry

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by: Wu Lin

Wu LIN

Technical Competent Manager

Shenzhen, 01/08/2020

APPENDIX 3: DOCUMENTS REVIEWED OR REFERENCED

No	Author	Title	References to the document	Provider
1.	Shanghai Libra Investment & Management Co., Ltd	Project Description	VCS project description (VCS PD) for the project "Adjusted Water Management in Rice Cultivation in Xuanzhou District" Draft version 01, dated 15-April-2021 Version 02, dated 21-July-2021 Final version 03, dated 24-September-2021 after VERRA review	Project Owner
2.	Shanghai Libra Investment & Management Co., Ltd.	Emission Reduction Calculation Sheets	Emission Reduction Calculation sheets (related to PD) Draft version 01, dated 15-April-2021 Final version 02, dated 21-July-2021	Project Owner
3.	VERRA	Email confirmation of scope	Email confirmation from VERRA dated on 19-November-2020 for the project scope is determined as AFOLU	Project Owner
4.	UNFCCC	Applied methodology	Approved CDM methodology AMS-III.AU: "Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (version 04.0)	UNFCCC Website
5.	Project Owner	KML file	KML file with project boundary	Project Owner
6.	Xuanzhou Agricultural Bureau	GPS results	GPS results measured by Xuanzhou Agricultural Bureau for project field sizes	Project Owner
7.	Xuanzhou Agricultural Bureau	Project implementation program/7/	Project implementation program of Xuanzhou District in September 2017	Project Owner
8.	Xuancheng City Agriculture Commission	Project approval	Project approval issued on 23-October-2017	Project Owner
9.	Xuancheng City Agriculture Commission	Inspection and Acceptance Report	Inspection and Acceptance Report of the project dated 14-February-2018	Project Owner
10.	Xuanzhou District Municipal Bureau of Land and Resources	Certification of land rights	Certification of land rights issued on 20-February-2018	Project Owner
11.	PP and farmers	Cooperation agreements	Cooperation agreements signed between the project proponents and all the farmers which ensure the proper development of the project	Project Owner
12.	Hefei City Market Supervision and Administration	Business License	Business License of Hefei Luyu Agricultural Technology Co., Ltd.	Project Owner

No	Author	Title	References to the document	Provider
13.	Project Owner	Board meeting minute	Board meeting minute for project to be developed as VCS project on 29-May-2017	Project Owner
14.	Xuanzhou District Agriculture Committee and Xuancheng Wanjiang Water Conservancy Engineering Co., Ltd.	Construction Contract	Construction Contract for Xuanzhou District signed between Xuanzhou District Agriculture Committee and Xuancheng Wanjiang Water Conservancy Engineering Co., Ltd. on 03-November-2017	Project Owner
15.	Project Owner	Farmers database	Information of all the 4,095 farmers included in the project	Project Owner
16.	Anhui Provincial Academy of Social Sciences	Ex-ante investigation report	Ex-ante investigation report with investigation project area, baseline scenario, cultivation practices, including 100 farmer samples in baseline scenario period issued in June 2017	Project Owner
17.	Project Owner and farmers	Funds allocation receipts	Funds allocation receipts to farmers	Project Owner
18.	Hefei Luyu Agricultural Technology Co., Ltd and Shanghai Libra Investment & Management Co., Ltd.	Emission reduction purchase agreement	Emission reduction purchase agreement signed between Hefei Luyu Agricultural Technology Co., Ltd and Shanghai Libra Investment & Management Co., Ltd. on 05-June-2017	Project Owner
19.	Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences - Laboratory	Report of Measuring Methane	Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Xuanzhou District in August 2017 and November 2017	Project Owner
20.	Project Owner	Plan for methane measurements	Detailed plan prepared by PP for methane measurements in January 2017	Project Owner
21.	Hefei Luyu Agricultural Technology Co., Ltd. and employments	Labor contract	Labor contracts signed between Hefei Luyu Agricultural Technology Co., Ltd. and employments	Project Owner
22.	Shanghai Libra Investment & Management Co., Ltd.	Monitoring Manual	Monitoring and QC Manual for this project in Sep. 2017	Project Owner
23.	Anhui Academy of Social Sciences	Local stakeholder	100 filled questionnaires distributed to relevant personnel of village representatives, relevant	Project Owner

No	Author	Title	References to the document	Provider
		consultation records	governmental officials, local farmers by the Anhui Academy of Social Sciences in June 2017	
24.	Project Owner	Suggestion Book	Suggestion Book published on the notice board of villages	Project Owner
25.	Hefei Luyu Agricultural Technology Co., Ltd.	Technical Training Records	Technical Training Records to Technicians and in January 2018, January 2019 and January 2020 including training records and participants records. Technical Training Records to Farmers in February 2018, February 2019 and February 2020 including training records and participants records.	Project Owner
26.	Institute of Agricultural Engineering, Anhui Academy of Agricultural Sciences	Lab Certificate	ISO/IEC 17025 certificate for laboratory	Project Owner
27.	Intergovernmental Panel on Climate Change	IPCC Guidelines	2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	www.ipcc-nggip.iges.or.jp
28.	IPCC	IPCC publications	www.ipcc-nggip.iges.or.jp	Website
29.	Xuanzhou District Management Bureau	Waste Disposal Management Measure	Xuancheng Municipal Construction Waste Disposal Management Measure http://www.jzlj.org.cn/Item/Show.asp?m=1&d=2840	Public website
30.	National Government	Air Pollution law	Law of the People's Republic of China on Prevention and Control of Air Pollution	Public website
31.	National or local Government	National Laws and Regulations	PRC Constitution, PRC Agricultural Law, Law of the PRC on Land Administration, Implementing Regulations of the Law of the PRC on Land Administration, Law of the PRC on Rural Land Contracting, PRC Production Safety Law, and PRC Labour Law. National Master Plan for High Standard Farmland Construction National Plan for the Construction of High Standard Farmland for Comprehensive Agricultural Development Guidance on the National Demonstration Project of High Standard Farmland Construction Comprehensive Agricultural Development Construction Standard of National Agricultural Comprehensive	Public Website

No	Author	Title	References to the document	Provider
			Development of High Standard Farmland Construction Demonstration Project (Trial) (National Agricultural Office [2009] No.163) Design Specification for Irrigation and Drainage Engineering (GB50288-1999) Technical Specification for Water-saving Irrigation Engineering (GB/T50363-2006)	
32.	On-site Validation team	Photographs of Project Site	Photographs of project area, ditches, reservoirs, chambers, etc. taken by validation team during the on-site validation	On-site Validation team
33.	COP	4/CMP.7	4/CMP.7 default value for CH_4 GWP	UNFCCC
34.	Xuanzhou District Government	Weather reports	http://www.xuanzhou.gov.cn/	Website
35.	UNFCCC	Standard for Sampling and Surveys	CDM Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, V8.0	UNFCCC Website
36.	UNFCCC	Guideline for Sampling and Surveys	CDM Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities, V4.0	UNFCCC Website
37.	UNFCCC	CDM Methodological Tool	CDM methodological tool Demonstration of Additionality of Small-scale Project Activities (version 13.1)	UNFCCC Website
38.	VERRA	Project Description Template	VCS-Project-Description-Template-v4.0	VERRA
39.	UNFCCC	UNFCCC	http://cdm.unfccc.int	Website
40.	VERRA	Registration and Issuance Process version 4.0	Registration and Issuance Process version 4.0	VCS website
41.	VERRA	VCS Program Definitions	VCS Program Definitions, v4.1	VCS website
42.	VERRA	VCS Program Guide	VCS Program Guide, v4.0	VCS website
43.	VERRA	VCS Standard	VCS Standard, v4.1	VCS website
44.	China CER Exchange Info-platform	China CER	http://cdm.ccchina.org.cn/ccer.aspx	Website
45.	Google	Google Earth Map	earth.google.com	Website
46.	GS	Gold Standard	http://www.goldstandard.org/	Website
47.	VCS	VCS	https://verra.org/project/vcs-program/	Website

APPENDIX 4: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

Table 1.Remaining FAR from validation and/or previous verification

FAR ID	*n.a*	Section no.		Date:
Description of FAR				
Project participant response (1st round)				Date:
Documentation provided by project participant (1st round)				
☐	Changes in the PD	Section(s):		New version No.:
☐	Changes in MR	Section(s):		New version No.:
☐	Changes in XLS	Worksheet(s):		New version No.:
☐	Other:			
DOE assessment (1st round)				Date:
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☐ The finding is closed			

Table 2.CL from this validation

CL ID	01	Section no.	1.2	Date : 18/07/2021
Description of CL				
For the scope of the project, why the project is applicable to AFOLU scope is not clarified as per the VCS standard 4.1.				
Project participant response				Date : 21/07/2021
In the previous version of PD, the scope of the project just be simply claimed. In the latest version, the scope has been demonstrated and explained combined with the actual situation of the project from three points, as required by Appendix 1 in VCS standard, 4.1.				
Documentation provided by project participant				
/1/- version 02				
DOE assessment				Date: 22/07/2021
As per the Appendix 1 Eligible AFOLU project categories in VCS standard Version 4.1/43/, CTI confirmed that the project belongs to one type of AFOLU categories, i.e. Agricultural Land Management (ALM). While eligible ALM activities are those that reduce net GHG emissions on croplands and grasslands by increasing carbon stocks in soils and woody biomass and/or decreasing CO_2, N_2O and/or CH_4 emissions from soils. By checking the project design, CTI confirmed that the project is applicable to one of eligible ALM activities, i.e. Improved Cropland Management (ICM). For ICM, as per the standard, "this category includes practices that demonstrably reduce net GHG emissions of cropland systems by increasing soil carbon stocks, reducing soil N_2O emissions, and/or reducing CH_4 emissions", and through the onsite visit, interviewing the project developer and reviewing the project design, CTI confirmed that the project takes practices to reduce CH_4 emissions of cropland systems by change the water regime during the rice cultivation period from continuously flooded to intermittent flooded condition so as to increase soil carbon stocks, thus CTI verified that the sectoral scope 14: "Agriculture, Forestry, and other Land Use (AFOLU) is applicable to the project. CL 01 is closed.				

CL ID	02	Section no.	1.3	Date : 18/07/2021
Description of CL				
For the eligibility of the project, how the project is eligible under the scope of the VCS Program is not justified as per the VCS standard 4.1.				
Project participant response				Date : 21/07/2021
The eligibility of the project is justified as follows in the latest version of PD. According to the Section 2.1.1 of VCS Standard version 4.1, this project activity meets two of the scopes of the VCS program: 1) The six Kyoto Protocol greenhouse gases; and 3) Project activities supported by a methodology approved under a VCS approved GHG program, unless explicitly excluded under the terms of Verra approval. Accordingly, this project produces methane (CH_4) emission reductions, which is one kind of the six Kyoto Protocol GHGs. Besides, this project activity is supported by the CDM small-scale methodology: Methane emission reduction by adjusted water management practice in rice cultivation which is approved under a VCS approved GHG program – United Nations Clean Development Mechanism and it is not explicitly excluded under the terms of Verra approval. Therefore, this project is eligible under the scope of VCS program				
Documentation provided by project participant				
/1/- version 02				
DOE assessment				Date: 22/07/2021
The PP has described and justified how the project is eligible under the scope of the VCS Program in PD as per the section 2.1.1 of VCS standard Version 4.1. The assessment is provided as below, 1. The project activity generates GHG emission reductions including CH_4 which belong to the six Kyoto Protocol greenhouse gases which belongs to scope 1) of section 2.1.1 of VCS standard Version 4.1. 2. "The scope of the VCS Program excludes projects that can reasonably be assumed to have generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction." Via checking the PD of the project, it is verified that the project is implemented to change the water regime during the rice cultivation period. It changes continuously flooded to intermittent flooded condition during rice cultivation so that to result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane, and the additionality is verified as actual, thus there is no assumption of having generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction for this project. 3. The VCS Program also excludes some of the project activities under the circumstances indicated in Table 1 of section 2.1.1 of VCS standard Version 4.1, via checking all the excluded project activities in the table, it is verified that this project type is not excluded by the scope of VCS program. In conclusion, the project is eligible to the scope of the VCS Program. CL 02 is closed.				

CL ID	03	Section no.	1.7	Date : 18/07/2021
Description of CL				
The ownership of the project is not clarified clearly, the function of each party involved is not clarified.				
Project participant response				Date : 21/07/2021
During the construction period, Xuanzhou Agricultural Bureau was the main manager, with the cooperation and participation of Hefei Luyu Agricultural Technology Co., Ltd. (hereafter referred to as Hefei Luyu), of the construction of ditches and reservoirs, while the local farmers were hired to build the ditches and reservoirs. During the operation period, Hefei Luyu is responsible for supervising technicians to patrol and maintain the ditches and reservoirs. Furthermore, these farmers also have right to authorize Hefei Luyu as a representative of the carbon project owner and Hefei Luyu only has the right to make decisions about the carbon reduction project. However, Hefei Luyu has already sold the carbon project development right to Shanghai Libra. Therefore, Libra leads the development and management of the carbon project, including compiling the monitoring plan, organizing the training,				

etc.	
Documentation provided by project participant	
/1/- version 02	
DOE assessment	**Date:** 22/07/2021
The section 1.7 of the PD has been checked, and during the on-site visit and checking the business license/12/ of the participant parties, the government approval of the project/8/, and the carbon reduction project cooperation agreement signed between the farmers and Hefei Luyu Agricultural Technology Co., Ltd./11/, CTI verified that the project developer Hefei Luyu Agricultural Technology Co., Ltd. is a privacy company, who is in charge of the integrated implementation and management of the project. The rice paddies and agricultural fields involved in the project was owned by the farmers which has been confirmed by site interview with farmers/I5/ and local officer from Agricultural Bureau/I2/ and checking the Certification of land rights/10/. The project proponent is responsible for the comprehensive implementation and management of the project and farmers also have right to authorize Hefei Luyu as a representative of the carbon project owner and Hefei Luyu only has the right to make decisions about the carbon reduction project which is confirmed by checking the carbon reduction project cooperation agreement signed between the farmers and Hefei Luyu Agricultural Technology Co., Ltd./11/ and interview with farmers/I5/. Furthermore, Hefei Luyu has already sold the carbon project development right to Shanghai Libra which has been verified in the emission reduction purchase agreement/18/, thus Libra leads the development and management of the carbon project. CL 03 is closed.	

CL ID	04	**Section no.**	1.8	**Date :** 18/07/2021
Description of CL				
For the project start date, how the determination of project start date in line with the VCS standard 4.1 is not justified.				
Project participant response				**Date :** 21/07/2021
According to VCS standard, the project start date is the date on which activities that lead to the generation of GHG emission reductions or removals are implemented (e.g., preparing land for seeding, planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans). For this project, according to the requirements of the AMS-III.AU methodology applied, an entire cropping season is started from land preparation and the emission reduction calculation is also started this day. So, the project start date is 25-February-2018 when the land preparation was started.				
Documentation provided by project participant				
/1/- version 02 farmers database/15/				
DOE assessment				**Date:** 22/07/2021
As per the concept in VCS standard Version 4.1, the project start date of an AFOLU project is the date on which activities that led to the generation of GHG emission reductions or removals are implemented (e.g., preparing land for seeding, planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans). The project start date is 25-February-2018 which is verified as the date on which the project land preparation was started. Via checking the farmers database/15/, it is verified that the start date is correct and in line with the VCS standard. CL 04 is closed.				

Table 3.CAR from this validation

CAR ID	01	**Section no.**	1.1	**Date :** 18/07/2021
Description of CAR				
The summary description of the project is not complete as the technical description of project is missing.				

Project participant response	Date : 21/07/2021
The missing description of the project is added as below in the latest version of PD. The technical description of project Within the project boundary, every farmer's household owning the paddy fields is regarded as an isolate unit. With the project implementation, the cement ditches, reservoirs and relevant technical training are provided for these farmers to help them conduct the intermittent flooded water regime during rice cultivation, which replaces the traditional continuously flooded method. During rice cultivation, controllable irrigation and drainage according to rice growth requirements can not only save water resources, but also reduce methane emission from soil organic matter under anaerobic conditions (in the flooded state).	
Documentation provided by project participant	
/1/- version 02	
DOE assessment	Date: 22/07/2021
The PD is checked as revised, CTI verified that the technology summary description of the project is correct and complete according to the template request. The information and descriptions reported in section 1.1 of the VCS PD/1/ have been checked. Adjusted Water Management in Rice Cultivation in Xuanzhou District (hereinafter referred to as the Project) is a Project that change the water regime during the rice cultivation period. It changes continuously flooded to intermittent flooded condition during rice cultivation so that to result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane. The Project involves a total acreage of 14,333 ha for double-cropping rice. Via site inspection with rice lands/32/ and interview with farmer representatives/I5/, it is confirmed that before the project implementation, the paddy fields is regarded as an isolate unit and the rice was continuously flooded, and with the project, the cement ditches and reservoirs were constructed to conduct the intermittent flooded water regime during rice cultivation. With the replacing of the continuously flooded method by intermittent flooded method, the project solves the problems of excessive water used during rice cultivation and expected to decrease 48% of the CH_4 emission. CAR 01 is closed.	

CAR ID	02	Section no.	1.11	Date : 18/07/2021
Description of CAR				
For the section 1.11, the description of the project is not complete as per the PD template, the special information for the AFOLU project is not provided.				
Project participant response				Date : 21/07/2021
The project is conducted in Xuanzhou District, with a total population of nearly 870,000. All the rice paddies belong to the farmers. During the construction period, Xuanzhou Agricultural Bureau was the main manager, with the cooperation and participation of Hefei Luyu, of the construction of ditches and reservoirs, while the local farmers were hired to build the ditches and reservoirs. During the operation period, Hefei Luyu is responsible for supervising technicians to patrol and maintain the ditches and reservoirs. Besides, Hefei Luyu has been fully authorized by all the farmers to act as the carbon project proponent. Also, Hefei Luyu has already sold the project development right to Shanghai Libra Investment & Management Co.,Ltd (hereafter referred to as Shanghai Libra). So, Shanghai Libra is leading the carbon project development and management, including compiling the Monitoring and Quality Control Manual, organizing the training, etc. Moreover, the local agricultural bureau is responsible for technical training. Farmers are the main operators to practice intermittently flooded water regime and supposed to record the cultivation logbooks. The technicians should carry out monthly inspections according to the requirements of Monitoring and Quality Control Manual. The profit from this carbon reduction project is shared with farmers. The implementation of the project activity generates 58,064 tCO_2e/year and contributes to 6 SDGs. This project is not located within a jurisdiction covered by a jurisdictional REDD+ program.				
Documentation provided by project participant				
/1/- version 02				
DOE assessment				Date: 22/07/2021

The PD is checked as revised, CTI verified that description of the project is complete as per the PD template, the special information for the AFOLU project is provided. Refer to section 3.1 of this report for detail assessment. CAR 02 is closed.

CAR ID	03	Section no.	1.11	Date : 18/07/2021
Description of CAR				
For the section 1.11, the milestone table is not complete, baseline survey, PD published and site visit time are all missing.				
Project participant response				Date : 21/07/2021
The milestone table has been completed, while the time of baseline survey, PD published and site visit has been added into the table.				
Documentation provided by project participant				
/1/- version 02				
DOE assessment				Date: 22/07/2021
The PD is checked as revised, CTI verified that milestone table is complete, baseline survey, PD published and site visit time are all added. Refer to section 3.1 of this report for detail assessment. CAR 03 is closed.				

CAR ID	04	Section no.	1.17	Date : 18/07/2021
Description of CAR				
For the section 1.17, related to the SDG impacts, the description of the actual impacts are not accurate, the exact figure need to be specified.				
Project participant response				Date : 21/07/2021
All the actual figures and information has been provided in the latest version of PD for SDG impacts.				
Documentation provided by project participant				
/1/- version 02 /17/ /21/ /23/				
DOE assessment				Date: 22/07/2021
The PD is checked as revised, the Project is confirmed contributing to sustainable development in the following ways which have been stated in the PD: 1. High yield brings extra income and improves the living standard of local farmers (Goal 1 of UN SDG); 2. Increase the rice productivity alleviates hunger problem (Goal 2 of UN SDG); 3. Use a proportion of benefits to improve the local children's education (Goal 4 of UN SDG); 4. Women are given priority for employment and their social status is raised (Goal 5 of UN SDG); 5. Provide more job opportunities for local farmers (Goal 8 of UN SDG); 6. Sequester greenhouse gas and mitigate climate changes (Goal 13 of UN SDG). For the impacts for each SDG, the actual figures have been confirmed as added and confirmed as actual and reasonable via checking the evidence/17/,/21/,/23/ and on-site interview with local stakeholders. CAR 04 is closed.				

CAR ID	05	Section no.	2.2	Date : 18/07/2021
Description of CAR				
For the section 2.2, the following finding are issued,				

1. The 100 stakeholders' background information need to be provided. 2. The mechanism for on-going communication with local stakeholders is not provided.	
Project participant response	**Date :** 21/07/2021
All the missing information has been provided in the latest version of PD as follows. 1. The 100 stakeholders' background information has been provided as table in the latest version of PD, including the nationality, educational level, career, gender and age-bracket. 2. The mechanism for on-going communication with local stakeholders is provided as follows. There is a Suggestion Book published with the phone number of contact person on the notice board in each of villages throughout the lifetime of the project. Stakeholders can write their comments or suggestions in the book anytime anonymously as they wish. The project proponent will check the book regularly and collect all the comments received. Besides, the technicians as the project monitoring executor have surveyed the project area. The distance from one village to another is so short that the locals can talk directly to the technicians or even the local agricultural bureaus if they have any opinions. Meanwhile, technicians would also pay a regular visit to the villages and collect comments if any.	
Documentation provided by project participant	
/1/- version 02 Questionnaires/23/	
DOE assessment	**Date:** 22/07/2021
The PD is checked as revised, CTI verified that 1. The 100 stakeholders' background information has been provided. 2. The mechanism for on-going communication with local stakeholders is provided. Refer to Section 3.2.2 of this report for detail assessment. CAR 05 is closed.	

CAR ID	06	**Section no.**	2.2	**Date :** 18/07/2021
Description of CAR				
For the section 2.2, the description of the communication is not complete as per the PD template, the special information for the AFOLU project is not provided.				
Project participant response				**Date :** 21/07/2021
All the missing information has been provided in the latest version of PD as follows. In the project planning phase, the villagers have been communicated about the design, implementation, the potential risks, costs, and benefits of the project through villagers' meetings. Also, the representative of Hefei Luyu, under the supervision of the local agricultural bureau and government, has also informed farmers of all relevant laws and regulations covering workers' rights in the host country. The process of VCS Program validation and verification and the validation/verification body's site visit should be required to inform the farmers by publishing it on the notice board also with the contact person's information. If there is any negative feedback, a meeting will be immediately held in the village.				
Documentation provided by project participant				
/1/- version 02 Questionnaires/23/				
DOE assessment				**Date:** 22/07/2021
The PD is checked as revised, CTI verified that the description of the communication is complete as per the PD template, the special information for the AFOLU project is provided. Refer to Section 3.2.2 of this report for detail assessment. CAR 06 is closed.				

CAR ID	07	**Section no.**	2.3	**Date :** 18/07/2021
Description of CAR				
For the section 2.3, the summary of any environmental impact assessments carried out with respect to the project is not provided.				
Project participant response				**Date :** 21/07/2021

According to the Environmental Impact Assessment Law of the People's Republic of China, this project does not require any environmental impact assessments. The environmental impacts, both positive and negative, produced during construction and operation of this project activity and the mitigation of negative impact are summarized as table in the latest version of PD.
Documentation provided by project participant
/1/- version 02 Xuancheng Municipal Construction Waste Disposal Management Measure/29/
DOE assessment **Date:** 22/07/2021
The PD is checked as revised, CTI verified that the summary of any environmental impact assessments carried out with respect to the project is provided. In China, according to Chinese law "Environmental Impact Assessment Law of the People's Republic of China", it is confirmed that there is no requirement from any environmental impact assessments to the type of the project. Hence the analysis of the environmental impacts of the project activity is sufficiently described by PP in the PD. The assessment is as below, Associated with the interview with local experts and farmers, there was no adverse effect on the ecology, air, water and solid waste, for the project subject to the implementation of pollution mitigation measures during construction period according to the requirements of Xuancheng Municipal Construction Waste Disposal Management Measure/29/. There are no any negative impacts found in the project location during the project implementation. As per interview with local officer, it is confirmed that the inspectors from construction entity have to carry out supervision work for the environmental impact arisen from the project activity during construction period, made the wastes were uniformly classified and collected and kept water sprayed frequently to reduce dusts. Via interview with the famers/I5/, it is confirmed that they are satisfactory with the environmental protection work carried out. In conclusion, there were some negative impacts on environment during the construction period which has been demonstrated in the PD, also the proper measurements have been carried out by project implementer to mitigate such impacts. And by site inspection of implementation, it is confirmed that there are no obvious negative impacts during the implementation period only if the ditches would be damaged that may impact the water resources, however, with the proper measurements, this situation is unlikely to happen. In conclusion, both positive and negative impacts to the environment from the project has been demonstrated and verified as actual and reasonable and there are no significant negative impacts to the environment were identified. CAR 07 is closed.

CAR ID	08	**Section no.**	2.5	**Date :** 18/07/2021
Description of CAR				
For the section 2.5, the descriptions of the risks to local stakeholder resources and processes to ensure ongoing communication are not provided as per the PD template.				
Project participant response				**Date :** 21/07/2021
Prior to the project implementation, these soil ditches cannot be controlled by irrigation and drainage, so rice has to be cultivated under the conditions of continuously flooded method, which leads to a lower productivity and the poor income of local farmers. After the construction of the cement ditches, farmers volunteered to conduct intermittent flooded water regime, because it allowed them to irrigate and drain the rice according to its growth needs, resulting in higher yields. Besides, the 14,333 ha of construction land within the project has been agricultural land since 2005, which has been proved by Xuanzhou Agricultural Bureau. In addition, this project activity only adjusts the water regime during rice cultivation but not changes the type of land use, therefore, the project would not impact local stakeholder's property rights without the free, prior and informed consent.				
Documentation provided by project participant				
/1/- version 02 Project approval/8/ Funds allocation receipts/17/				

DOE assessment	Date: 22/07/2021
The PD is checked as revised, CTI verified that the PD states the overall risks to the stakeholder resources are low, no major risks have arisen that may cause any loss of project benefits for the local community, climate and biodiversity, so that the long-term viability is assured. Before the project implementation, the PP has got all the agreements from involved farmer as confirmed by checking the approval/8/ and checking the funds allocation receipts to farmers/17/ and interviewed with local farmers/I5/, hence it is verified that project will not impact local stakeholder's property rights without the free, prior and informed consent. In conclusion, the feedback and grievance procedure is properly addressed. CAR 08 is closed.	

CAR ID	09	Section no.	3.2	Date : 18/07/2021
Description of CAR				
For the section 3,2, the justification of the applicability to the TOOL 21"Demonstration of Additionality of Small-scale Project Activities (version 13.1)" is not provided.				
Project participant response				Date : 21/07/2021
The conclusion of Tool 21 is applicable to the proposed activity is provided.				
Documentation provided by project participant				
/1/- version 02				
DOE assessment				Date: 22/07/2021
The PD is checked as revised, the conclusion is added. CTI verified that the TOOL 21"Demonstration of Additionality of Small-scale Project Activities (version 13.1)" is applicable to the project. Refer to section 3.3.2 of this report for detail assessment. CAR 09 is closed.				

CAR ID	10	Section no.	3.5	Date : 18/07/2021
Description of CAR				
For the section 3,5, the following finding are issued, 1. How the additionality of the project is demonstrated in line with the TOOL 21"Demonstration of Additionality of Small-scale Project Activities (version 13.1)" is not demonstrated. 2. The analysis of investment barrier is not in line with the tool and actual data is not provided for comparison with supporting sources. 3. The analysis of technical barrier is not in line with the tool. 4. If the project is additional is not concluded.				
Project participant response				Date : 21/07/2021
1. The additionality of the project is demonstrated in line with the TOOL 21"Demonstration of Additionality of Small-scale Project Activities (version 13.1)" as follows in the latest version of PD. According to TOOL 21 "Demonstration of Additionality of Small-scale Project Activities (version 13.1), project participant shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers: a) Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions; b) Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions; c) Barrier due to the prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions; d) Other barriers: without the project activity, for another specific reason identifies by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher. Project activity would not have occurred due to investment barrier and technological barrier as analyzed below.				

2. The analysis of investment barrier and the actual data is provided as follows.
   - Investment barrier

In the absence of the project activity, the living standard of famers in Xuanzhou District is poor and the economy is depressed, so it is difficult for them to build the cement ditches for timely drainage and irrigation according to the growth need of rice. According to implementation plan, the government shall invest 3,500 CNY/ha of irrigation and drainage ditches for the construction of high standard farmland, while the farmers should raise no less than 20% of the government's investment, that is, nearly 700 CNY/ha. According to the results of investigation report, the living balance of local farmers is only CNY 15,500 per year. Therefore, without external investment, farmers cannot afford the economic pressure of self-financing part to build the cement ditches, which could result in continuation of continuously flooded water regime during rice cultivation. So, the baseline scenario is a financially more viable alternative to the project activity but would have led to higher emissions.

3. The analysis of technological barrier is provided as follows.
   - Technological barrier

The original water regime used during rice cultivation in baseline scenario, continuously flooded method, is less technologically advanced, because it only requires that the fields should be flooded throughout the whole season and there is no need to pay close attention to the growth status of rice for appropriate drainage and irrigation. Thus, simple soil ditches are enough in baseline scenario so that 96.8% famers within the project zone practiced continuously flooded method during rice cultivation, which means the new technology, intermittent flooded water regime, has a low market share.

4. the project is additional is included as follows.

In general, this project has both investment and technological barriers, so it is additional.

Documentation provided by project participant

/1/- version 02

DOE assessment	**Date:** 22/07/2021

The PD is checked as revised, CTI verified that

1. The additionality of the project is demonstrated in line with the TOOL 21"Demonstration of Additionality of Small-scale Project Activities (version 13.1)".
2. The analysis of investment barrier is in line with the tool and actual data is provided for comparison with supporting sources.
3. The analysis of technical barrier is in line with the tool.
4. The project is additional is concluded.

Refer to section 3.3.5 of this report for detail assessment.

CAR 10 is closed.

CAR ID	11	**Section no.**	4.1	**Date :** 18/07/2021

Description of CAR

For the section 4.1,

1. How the group of the project is defined is not specified as per the methodology.
2. Description of Determination of baseline emission factor on reference fields is not provided as per the methodology.

Project participant response	**Date :** 21/07/2021

1. The group of the project is defined as follows.
   In this project, all the dynamic and statistic parameters of rice paddies within the project area are the same, according to the ex ante investigation report, which can be summarized as follows.

No.	Parameter	Type	Conditions within the project area
1	Water regime – on-season	Dynamic	Continuously flooded
2	Water regime – pre-season		Flooded
3	Organic amendment		No organic amendment
4	Soil pH	Static	The soil pH within project area is 5.5~7.4, which is in the range of larger than 5.5.
5	Soil organic carbon		The soil organic carbon is 2.53% which is in the

			range between 1% and 3%.
6	Climate		According to the Rice Almanac (Third Edition, 2002), the project zone, Xuanzhou District, lies in agroecological zones 7 (AEZs), which is warm/cool humid subtropics with summer rainfall.

Therefore, all fields within project area have the same cultivation pattern and there is only one group in this project.

2. The description of determination of baseline emission factor on reference fields is provided according to the methodology as follows.

1) Baseline reference fields shall be set up in a way that they are representative of baseline emission in the project rice fields. For each group of fields with the same cultivation pattern, as defined with the help of Table above, at least three reference fields with the same pattern shall be determined in the project area. On these fields, measurements using the closed chamber method shall be carried out, each resulting in an emission factor expressed as $kgCH_4/ha$ per season. The seasonally integrated baseline emission factor $EF_{BL,s,g}$ shall be derived as average value from the three measurements for each group.

Documentation provided by project participant

/1/- version 02

DOE assessment | **Date:** 22/07/2021

The PD is checked as revised, CTI verified that

1. How the group of the project is defined is specified as per the methodology.
2. Description of Determination of baseline emission factor on reference fields is provided as per the methodology.

Refer to section 3.3.6 of this report for detail assessment.

CAR 11 is closed.

CAR ID	12	Section no.	4.2	Date : 18/07/2021

Description of CAR

For the section 4.2, description of Determination of project emission factor on reference fields is not provided as per the methodology.

Project participant response | **Date :** 21/07/2021

Determination of project emission factor on reference fields is added in PD.

The seasonally integrated project emission factor $EF_{P,s,g}$ shall be determined using measurements on at least three project reference fields that fulfil the same conditions as the baseline reference fields, with the difference that they are cultivated according to the defined project cultivation practice. Project reference fields shall be established close to the baseline reference fields and begin with the growing season at the same time. $EF_{P,s,g}$ is the average of the measurement results from the three reference fields. There is only one group for all rice paddies in this project, so a total of three project reference fields were established about 1.5km away from the baseline reference fields and began with the growing season at the same time.

Documentation provided by project participant

/1/- version 02

DOE assessment | **Date:** 22/07/2021

The PD is checked as revised, CTI verified that description of Determination of project emission factor on reference fields is provided as per the methodology.

Refer to section 3.3.6 of this report for detail assessment.

CAR 12 is closed.

CAR ID	13	Section no.	4.4	Date : 18/07/2021

Description of CAR

For the section 4.4,

1. For ex ante estimation of ER, process for determination of $EF_{BL,c}$ is not completely in line with the

requirement of the Appendix in applied methodology.

2. For determination of $SF_{BL,p}$ and $SF_{P,p}$, how to prove the rice cultivation is double cropping as per the requirement of methodology "For regions/countries where it can be demonstrated by official government data or peer-reviewed literature that double cropping is practiced" is not specified.
3. For determination of $SF_{BL,o}$ and $SF_{P,o}$, the value is not calculated as per the formular in the methodology and the values of two parameters are not correct.
4. For the information summarized table, L_y, $SF_{BL,o}$ and $SF_{P,o}$ are missing.

Project participant response	Date : 21/07/2021

1. According to the guidance on methane measurement in the appendix of AMS-III.AU Methodology, the following requirements should be met.
   The implementation of methane measurement in rice fields requires the involvement of experts in this field or at least experienced staff trained by experts (i.e. from research institutions). These guidelines cannot replace expertise in setting up chamber measurements. They rather set minimum requirements that serve for standardizing the conditions under which methane emissions are measured for projects under this methodology.
   The closed chamber measurement requires the involvement of technicians trained by experts from Anhui Academy of Agricultural Sciences under the jurisdiction of the Anhui Agricultural Bureau. Anhui Academy of Agricultural Sciences is a comprehensive agricultural research institution directly under the provincial government. The expert who is the leader of the experiment has a doctoral degree and her field of study is rice cultivation and GHG monitoring. The expert set up the chamber measurements on 07-March-2017 for the early season and 10-July-2017 for the second season, respectively. The base is embedded just before transplanting, and the first gas sampling began on the second day after transplanting, followed by sampling every 7 days. After sampling, the gas is stored in the evacuated vial, and the samples collected after three times should be taken together for laboratory analysis.
   Project proponents shall prepare a detailed plan for the seasonal methane measurements before the start of the season. The plan shall include the schedule for the field and laboratory measurements, the logistics that are necessary to get the gas samples to the laboratory and a cropping calendar. The plan shall also include all reference field specific information regarding location and climate, soil, water management, plant characteristics, fertilizer treatment and organic amendments.
2. For determination of $SF_{BL,p}$ and $SF_{P,p}$, the ex ante investigation report of Xuanzhou District in 2017 from Anhui Academy of Social Sciences is used to demonstrate that the rice cultivation is double cropping within the project area.
3. Accordingly, since no amendments are applied under both baseline and project scenario, $SF_{BL,o}$ and $SF_{P,o}$ are calculated as follows according to the Methodology.

$$SF_o = \left(1 + \sum_i ROA_i \times CFOA_i\right)^{0.59}$$

   There are no organic amendments applied under both baseline and project scenario, so ROA_i=0 and both$SF_{BL,o}$ and $SF_{P,o}$ are 1.
4. For the information summarized table, L_y, $SF_{BL,o}$ and $SF_{P,o}$ have been added in the latest version of PD.

Documentation provided by project participant
/1/- version 02

DOE assessment	Date: 22/07/2021

The PD is checked as revised, CTI verified that

1. Process for determination of $EF_{BL,c}$ is completely in line with the requirement of the Appendix in applied methodology for ex ante estimation of ER.
2. The rice cultivation is proved as double cropping as per the requirement of methodology "For regions/countries where it can be demonstrated by official government data or peer-reviewed literature that double cropping is practiced".
3. The value is calculated as per the formular in the methodology and the values for determination

of $SF_{BL,o}$ and $SF_{P,o}$, are correct. 4. L_y, $SF_{BL,o}$ and $SF_{P,o}$ are added into the information summarized table. Refer to section 3.3.6 of this report for detail assessment. CAR 13 is closed.

CAR ID	14	Section no.	5.1	Date : 18/07/2021
Description of CAR				
For the section 5.1, the following findings are issued, 1. Due to there is no Data and Parameters Available at Validation listed in the methodology, the explanation of why some parameters are listed in this section is not provided. 2. For A_y, source of data is not in line with the methodology, and how the data is measured is not specified. 3. For GWP_{CH4}, measurement methods and procedures applied is provided as per VCS standard 4.1. 4. For $EF_{BL,c}$, justification of choice of data is not in line with the requirement of the methodology related to ex ante determination of this parameter. 5. Parameters of $SF_{BL,o}$ and $SF_{P,o}$ are missing.				
Project participant response				Date : 21/07/2021
1. The explanation has been provided in the latest version of PD as follows. According to the methodology, there is no pre-determined data, as long as the monitoring data, but the ex ante calculation method was used in determining $EF_{BL,c}$, and the Ay used to calculate the ex ante emission reduction is only used in the ex ante calculation formula, so the relevant ex ante calculation data are listed in this section. 2. For A_y, the data is determined by collecting the project field sizes in a project database. The size of project fields is determined by GPS or satellite data. 3. In the latest version of PD, the measurement methods and procedures applied for GWP_{CH4} is updated to any future revision of the IPCC's assessment report should be taken account. 4. The methodology provides two kinds of methods, which are ex ante calculation and monitoring. The project proponent chose the ex ante calculation method, and then conducted methane measurement according to the requirements in the Appendix according to the requirements of the ex ante calculation method, and finally obtained the above value according to the calculation method in the Appendix of methodology. 5. Parameters of $SF_{BL,o}$ and $SF_{P,o}$ have been added in the latest version of PD.				
Documentation provided by project participant				
/1/- version 02				
DOE assessment				Date: 22/07/2021
The PD is checked as revised, CTI verified that 1. The explanation of ex ante determined parameters are listed in section 5.1 is provided. 2. Source of data for A_y is in line with the methodology, and how the data is measured is specified. 3. For GWP_{CH4}, the measurement methods and procedures applied is updated to any future revision of the IPCC's assessment report should be taken account which is verified as appropriate and in line with the requirement of VCS standard 4.1. 4. Justification of choice of data is in line with the requirement of the methodology related to ex ante determination of $EF_{BL,c}$. 5. Parameters of $SF_{BL,o}$ and $SF_{P,o}$ are added in line with the methodology. Refer to section 3.3.8 of this report for detail assessment. CAR 14 is closed.				

CAR ID	15	Section no.	5.2	Date : 18/07/2021
Description of CAR				
For the section 5.2, the following findings are issued, 1. For $A_{s,g}$, description of measurement methods is not in line with the methodology, monitoring equipment is not clearly determined. 2. For $EF_{BL,s,g}$ and $EF_{P,s,g}$ frequency of monitoring is not in line with the requirement of the				

methodology, monitoring equipment are not complete, QA/QC procedure is not complete, the description of laboratory for gas analysis is not specified.	
Project participant response	**Date :** 21/07/2021
1. The size of project fields shall be determined by GPS. Should such technologies not be available, established field size measurement approaches shall be used provided that uncertainties are taken into account in a conservative manner. And the monitoring equipment is GPS. 2. $EF_{BL,s,g}$ and $EF_{P,s,g}$ are obtained from the calculation of the emission rate for baseline reference fields according to the requirements in the Appendix of methodology, and the $C_{CH4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings is derived from the laboratory analysis. Closed chamber and also devices in laboratory will be used as monitoring equipment and The implementation of methane measurement in rice fields shall be conducted by technicians trained by experts from Anhui Academy of Agricultural Sciences. Besides, the laboratory analysis is also conducted in this institution which owned an ISO/IEC 17025 certificate.	
Documentation provided by project participant	
/1/- version 02	
DOE assessment	**Date:** 22/07/2021
The PD is checked as revised, CTI verified that 1. Description of measurement methods for $A_{s,g}$, is in line with the methodology, monitoring equipment is added in line with the methodology. 2. Frequency of monitoring for $EF_{BL,s,g}$ and $EF_{P,s,g}$ is in line with the requirement of the methodology, monitoring equipment are complete, QA/QC procedure is complete, the description of laboratory for gas analysis is specified. Refer to section 3.3.8 of this report for detail assessment. CAR 15 is closed.	

CAR ID	16	**Section no.**	5.3	**Date :** 18/07/2021
Description of CAR				
For the section 5.3, the following findings are issued, 1. For Monitoring of farmers' compliance with project cultivation practice, the description is not in line with the requirements of the applied methodology. 2. For Monitoring of baseline and project emissions, the process of measuring methane value and calculation of $EF_{BL,s,g}$ and $EF_{P,s,g,}$ is not provided as per the applied methodology. 3. Monitoring frequency is not provided for each monitoring parameter and is not in line with the requirement of the methodology. 4. The information of monitoring equipment installation and calibration and related requirement for the laboratory is not provided.				
Project participant response				**Date :** 21/07/2021
1. The description of monitoring of farmers' compliance with project cultivation practice is added as follows in the latest version of PD. Project proponent has established a database which holds data and information of these 4,095 households involved in this project activity, which contains the name, ID number, address of the head of the household, size of the field, completion date of construction, the starting date of rice season. Therefore, the sampling of logbooks is based on the database. 2. For Monitoring of baseline and project emissions, the process of measuring methane value and calculation of $EF_{BL,s,g}$ and $EF_{P,s,g}$, has been provided as per the applied methodology. In this project, there is only one field group, thus, three baseline reference fields and project reference fields should be selected respectively for methane emission measurement. Besides, project reference fields shall be established close to the baseline reference fields and begin with the growing season at the same time as required by the methodology that the measurements on project and baseline reference fields are carries out in an equal manner and simultaneously. The emission is the average of the measurement results from the three reference fields. The seasonally integrated emission factor $EF_{BL,s,g}$ (baseline) and $EF_{P,s,g}$ (project) shall be derived as average value from the three measurements for each group.				

	Hefei Luyu, as the project proponent, prepares a detailed plan for the seasonal methane measurements before the start of the season. The plan for field measurement and laboratory analysis is shown in the latest version of PD. The implementation of methane measurement in both baseline and project reference fields is involved by the experts from Anhui Academy of Agricultural Sciences which is an institution owned the certificate to do the laboratory analysis. The expert who is the leader of the experiment has a doctoral degree and her field of study is agricultural environmental engineering. 3. Monitoring frequency has been provided for each monitoring parameter in the latest version of PD as follows. The monitoring frequency should be determined according to the methodology requirements for each parameter in the project after the project registration in order to ensure the continuity of the benefits. Firstly, the aggregated project area in a given season s ($A_{s,g}$) is required to be monitored by technicians for every season. Should farmers relevantly deviate from the defined project cultivation practice, so that their fields cannot be deemed to be represented by the reference fields any more, those fields shall not be taken into account for the determination of the aggregated project area $A_{s,g}$ of that season. Secondly, baseline and project emission factor of group g in a given season s ($EF_{BL,s,g}$ and $EF_{P,s,g}$) are obtained from the calculation of the emission rate for baseline reference fields according to the requirements in the Appendix of methodology, and the $C_{CH4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings is derived from the laboratory analysis. So, technicians should do the on-field sampling one a week, while the laboratory analysis is conducted by experts from Anhui Academy of Agricultural Sciences every three times of samplings. It is an institution owned the certificate to do the laboratory analysis and the expert who is the leader of the experiment has a doctoral degree and her field of study is rice cultivation and GHG monitoring. Therefore, the accuracy of monitoring results can be guaranteed. 4. The information of monitoring equipment installation and calibration and related requirement for the laboratory has been provided as follows in the latest version of PD. The installation and calibration of the closed chamber and laboratory analysis shall be in accordance with the requirements in the Appendix of methodology (shown in Table 5-6~5-8 of Section 5.2 above). The equipment used in this project has been qualified by China National Accreditation Service for Conformity Assessment. Among them, FID has been judged to be qualified by the Regulations of Calibrate Metrological Verification (JJG 700-2016). And the syringe, evacuated vial and the closed chamber used in this project have been judged to be qualified by the application requirement of CNAS-CL01 Accreditation Criteria for Testing and Calibrating Laboratory Competencies (CNAS-CL52_2014).
Documentation provided by project participant	
/1/- version 02	
DOE assessment	**Date:** 22/07/2021
The PD is checked as revised, CTI verified that 1. The description of monitoring of farmers' compliance with project cultivation practice is in line with the requirements of the applied methodology. 2. The process of measuring methane value and calculation of $EF_{BL,s,g}$ and $EF_{P,s,g,}$ is provided as per the applied methodology for Monitoring of baseline and project emissions. 3. Monitoring frequency is provided for each monitoring parameter and is in line with the requirement of the methodology. 4. The information of monitoring equipment installation and calibration and related requirement for the laboratory is provided. CAR 16 is closed.	

Table 4. FAR from this validation

FAR ID	N/A	Section No.	-	Date: -
Description of FAR				

Project participant response	Date: -
Documentation provided by project participant	
DOE assessment	Date: