



ADJUSTED WATER MANAGEMENT IN RICE CULTIVATION IN TONGCHENG CITY



Document Prepared By Shenzhen CTI International Certification Co., Ltd

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Summary:

- **A brief description of the verification and the project**

The project activity developed in Tongcheng 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 13,228 ha for double-cropping rice. The project started operation on 10-February-2018 and it was registered as a VCS project activity with the Ref. No. 2362.

- **The purpose and scope of verification**

The objective of the verification is to have an independent review ex-post determination by a VVB (Validation and Verification Body) of the monitored GHG emission reductions that have occurred as a result of the implementation of the project activity during a defined monitoring period.

- **The monitoring period**

This is the 1st monitoring period started from 10-February-2018 to 31-December-2020.

- **The method and criteria used for verification**

Verification is conducted using Shenzhen CTI International Certification Co., Ltd procedures in line with the requirements specified in the latest version of the VCS Validation and Verification Manual and applying auditing techniques. The verification team assessed the project activity's compliance against the VCS Version 4.1, the selected CDM methodology and the project monitoring report. The project is eligible under Project Scope 14(AFOLU). The verification 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 "AMS-III.AU. Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (Version 04.0).

- **The number of findings raised during verification**

In the course of the verification, 5 Corrective Action Requests (CARs), 14 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

- **Any uncertainties associated with the verification**

There are no restrictions of uncertainty.

- **Summary of the verification conclusion**

Shanghai Libra Investment & Management Co., Ltd. has commissioned the Shenzhen CTI International Certification Co., Ltd to carry out the Verified Carbon Standard (VCS) 1st periodical verification of the project, "Adjusted Water Management in Rice Cultivation in Tongcheng City" (PL2362) with regard to the relevant requirements of VCS standard Version 4.1. CTI confirms all verification activities including objectives, scope and criteria, level of assurance, monitoring and monitoring report 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 Tongcheng City" in China, as described in the Monitoring Report version 03 of 19-July-2021, meets all relevant requirements for VCS verification activity and correctly applied the methodology AMS-III.AU. version 04.0. Hence CTI is able to certify that the GHG emission reduction from the project during the monitoring period from 10-February-2018 to 31-December-2020 amount to 180,000 tCO₂e.

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1. INTRODUCTION

1.1 Objective

Shanghai Libra Investment & Management Co., Ltd. has commissioned the Shenzhen CTI International Certification Co., Ltd to carry out the Verified Carbon Standard (VCS) 1st periodical verification of the project for the monitoring period from 10-February-2018 to 31-December-2020. The objective of verification is to have an independent review ex-post determination by a VVB of the monitored GHG emission reductions that have occurred as a result of the project activity implemented during a defined monitoring period. The evaluation is done against the requirements of the VCS Version 4.1 based on the monitoring report. In order to confirm that the GHG emission reductions sound reasonable and meet the identified criteria, the verification involves the assessment of monitoring plan conformance to VCS rules and applied methodology. Verification is requirement and is seen as necessary to provide assurance on the generation of VCUs.

1.2 Scope and Criteria

The scope of the verification is to verify that: (a) the actual monitoring system and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; (b) the GHG emission reductions data and express a conclusion with a reasonable level of assurance about whether he reported GHG emission reductions data are free from material misstatement; (c) the reported GHG emissions data is sufficiently supported by evidence. Verification shall ensure that the reported GHG emission reductions are complete and accurate in accordance with the applicable VCS criteria in order to be certified. Verification is conducted using CTI procedures in line with the requirements specified in the VCS Program and ISO14064-3 requirements and applying auditing techniques. Verification team assessed and determines that the implementation and operation of the project activity, and steps to report GHG emission reductions comply with the VCS rules. The verification involved a document review of relevant documentation and interview with the project participants. Verification is not meant to provide any consultancy towards the project participants; however, stated request for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

All GHG sinks, sources and GHG emissions equal to or greater than 5% of the total GHG assertions are considered. The project as generated average of 58,582 VCUs per year, and therefore can be considered as a normal project per the VCS rules, in regards to its scale, subject to a 5% materiality threshold.

The assessment was conducted to provide a reasonable level of assurance of compliance against the defined audit criteria and materiality threshold within the audit scope. Based on the audit

findings the verification statement reasonably assures that the GHG assertion is materially correct and is a fair representation of the GHG data and information.

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 13,228 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 CH₄ emission. The project activity generates GHG emission reductions by changes continuously flooded to intermittent flooded condition during rice cultivation, in the monitoring period from 10-February-2018 to 31-December-2020, the total verified carbon units (VCUs) achieved in the monitoring period are 180,000 tCO₂e, which has been verified by on-site inspection, and checking the related documentations, interview with the project implementer.

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 Monitoring Report. The project was registered as a VCS project activity with the Ref. No. 2362 on 10-March-2021/4/ and the emission reductions have been certified as verified carbon units (VCUs) for this monitoring period.

2. VERIFICATION PROCESS

2.1 Method and Criteria

A project specific Verification and monitoring plan was developed to guide the verification auditing process to ensure efficiency and effectiveness. The purpose of the verification is to present a risk assessment for determining the nature and extent of validation procedures necessary to ensure the risk of auditing error is reduced 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, verification of the monitoring plan and the reported project results were measured for compliance against the following criteria:

- VCS Standard, v4.1/47/
- VCS Program Guide, v4.0/46/
- VCS Program Definitions, v4.1/45/
- AFOLU Non-Permanence Risk Tool, v4.0/43/
- CDM methodology AMS-III.AU "Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (version 04.0)/39/
- CDM Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, V8.0/40/
- CDM Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities, V4.0/41/

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

- Contract review
- Appointment of team members and technical reviewers
- A desk review of the VCS Monitoring Report/1/ submitted by the client and additional supporting documents with the use of customized verification documents checklist
- Verification planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and related farmers, technicians
- Draft verification reporting
- Resolution of Corrective Action Requests (CARs) and Clarification Requests (CLs)

- Final verification reporting
- Technical review
- Final approval of the verification.

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

Sampling approaches have been utilized by PP and VVB during this verification.

PP sampling approach

PP has applied a sampling method for monitoring of farmers' compliance with project cultivation practice (determination of $A_{s,g}$), details are stated as below,

The project database with all 4,410 participated rice farmer households' identification/22/ including name and address of the rice farmer, size of the field and additional farm specific information, PP has set up a database that allow an unambiguous identification of participating rice farm, and as per the applied methodology, a cultivation logbook shall be maintained for all project fields, thus all the farmers are required by PP to complete the logbooks. But the reporting and verification shall be done on the basis of samples of the log-books from the farmers. Then the database/22/ has been used as the basis for PP to conduct the sampling method as stated below.

As per the requests from 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), 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/40/.

314 samples have been selected according to stratified sampling method in 9 towns based on the numbers determined for each town calculated by the weight of total farmers numbers of each town in project area which is verified as in line with the numbers determined in PD and in line with the requirement of the sampling standard/40/. And then for sample selection of each town, a random sampling method has been used for determine the famers sample in each town and finally the randomly selected 314 samples has been defined. Due to this monitoring period covered nearly three years, project proponents randomly selected 314 samples at the beginning of each year during this monitoring period, that means total 942 samples were selected for this monitoring period to determine whether the project fields were cultivated according to the project cultivation practice as defined by the project activity.

The selected sampled farmers' logbooks/10/ including all parameters that are part of the project cultivation practice during cultivation season have been checked, CTI confirmed that 942 farmers are randomly selected from the 4,410 households 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 verification is determined taking into account the accessibility and similitude of the areas and the tool for sampling was referred by verification team for the site verification.

The verification team reviewed the farmers' logbooks/10/ and cross-checked with the inspection during the on-site period, including 26 random famers interview and related cultivation area visit. Verified whether the sample approach 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, V8.0/40/ (hereafter referred to as the "sampling standard"), CTI has applied acceptance sampling to verify the monitoring results of farmers' compliance with project cultivation practice (determination of $A_{s,g}$) based on farmers' logbooks/10/.

Using own professional judgement, it is assumed that the Acceptable Quality Level (AQL) is 1% and the Unacceptable Quality Level (UQL) is 15% for this project. The maximum error of producer's risk is assumed at 10% and consumer's risk is assumed at 10%, in compliance with the sampling standard/40/. Based on these assumptions, the verification team refers to the sampling standard and sampling guideline and found that sample size should be not less than 25 and acceptance number is 1.

To be more conservative, before the on-site visit, CTI determined 26 as the sample size and randomly selected 26 from the survey list of the 942 samples. For the randomly selection of 26, a pre-randomized order of numbers ranging from 1-942 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's name that was listed 5th on the farmer list would be the one to be surveyed.

During on-site visit, 26 farmers (total sample size) were chosen by the verification team randomly to check the logbook's and interview them together with site and cultivation practice inspection, so that the project cultivation practice for determination of correctness of data $A_{s,g}$ can be verified. This considered to be a good practice.

The 26 selected farmers from 942 samples were interviewed, site and cultivation practice inspected by verification team from the sampling conducted by the PP. Via the information got during site interview and inspection of the cultivation practice comparing with the PP's data in the sample records of logbooks/10/, it is found that all information is consistent between each other. No discrepancy is found between the sample records/10/ and the site verification sample results. And all the samples confirmed that they have required by PP to complete the logbooks which the template was provided by PP.

As there are no discrepant records, i.e. the discrepant record is less than the acceptance number of 1, the sample records/23/ is accepted as per "Sampling and Surveys for CDM Project Activities and Programme of Activities"/40/.

2.2 Document Review

The VCS MR/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 details, data and parameters, and quantification of GHG emission reductions.

Furthermore, the verification team used additional documentation by third parties like host party legislation, technical reports referring to the monitoring or to the basic conditions and technical data.

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

The verification was performed basing on the documents check and site inspection/measurements, refer to the section 4 of this report for the verification process detail and 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 verification 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 verification team on-site (within the project area, in Tongcheng 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	12/04/2021~15/04/2021	- Chronological description of the project activity with documents of key steps of the implementation. - Technical details of the project realization, designing, operational life time - Project Boundary - Eligibility criteria - ER calculation - Monitoring system and arrangements - Crediting period - QA/QC - Ownership - local stakeholder consultation - SD indicators - Training - Non Permanence Risk - Sampling survey	Lin Shunrong
2.	Xu/I1/	Biao	Hefei Luyu Agricultural Technology Co., Ltd./Staff	12/04/2021~15/04/2021		
3.	Hu/I1/	Yanmei	Hefei Luyu Agricultural Technology Co., Ltd./Staff	12/04/2021~15/04/2021		
4.	Wang/I2/	Qusheng	Tongcheng Agricultural Bureau / Section Staff	15/04/2021	- Technical details of the project implementation - Cultivation practice - Farmer survey - Local Agricultural characteristics - Local filed condition - Local farmers' income	
5.	Wan/I2/	Yin				

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
6.	Guo/I3/	Xiaoying	Anhui Academy of Agricultural Sciences /expert	12/04/2021, 15/04/2021	- Field measurement - Laboratory analysis - Reference fields - Local rice yield - Fertilizer utilization	
7.	Shi/I3/	Liulin	Anhui Academy of Agricultural Sciences /expert	12/04/2021, 15/04/2021	- Local flooding condition - Stakeholder comments - Agricultural aspects - Environmental aspects	
8.	Wang/I4/	Yong	Local agrotechnical stations/ technicians	13/04/2021	- Farmer survey - Logbook check	
9.	Wu /I4/	Yunxiu		13/04/2021	- Stakeholder comments	
10.	Xu /I4/	Mingxiu		14/04/2021	- Local Agricultural characteristics	
11.	Yang /I4/	Shengxiu		14/04/2021	- Fertilizer utilization	
12.	Zhao /I4/	Mingyuan		15/04/2021	- Technical Training - Income level - Job opportunities	
13.	Wang/I5/	Deshun	Farmers with logbooks	13/04/2021	- General information of farmer - Field area	
14.	Sun/I5/	Chonggao		13/04/2021	- Rice type	
15.	Wang/I5/	Xingyou		13/04/2021	- Cultivation practice	
16.	Ren/I5/	Ping		13/04/2021	- Fertilizer utilization in both baseline and project	
17.	Ren/I5/	Darong		13/04/2021	- Flooding type in project scenario	
18.	Ren/I5/	Mingzhi		13/04/2021	- Rice yield comparison	
19.	Zhu /I5/	Xingfu		13/04/2021	- Technical Training - logbook	
20.	Wang/I5/	Xingming		13/04/2021		
21.	Wu/I5/	Changmei		13/04/2021		
22.	Xie/I5/	Fuquan		13/04/2021		
23.	Lei/I5/	Dehua		14/04/2021		
24.	Du/I5/	Hongxue		14/04/2021		
25.	Wu/I5/	Zhengjun		14/04/2021		
26.	Yang/I5/	Zhengqian		14/04/2021		
27.	Cai/I5/	Jinxi		14/04/2021		
28.	Xu/I5/	Mingxun		14/04/2021		

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
29.	Shao/I5/	Wenbing		15/04/2021		
30.	Yu/I5/	Daokun		15/04/2021		
31.	Wang/I5/	Nengfang		15/04/2021		
32.	Wang/I5/	Nengquan		15/04/2021		
33.	Wang/I5/	Xiyong		15/04/2021		
34.	Wang/I5/	Xianyou		15/04/2021		
35.	Ruan/I5/	Zhongzheng		15/04/2021		
36.	Wang /I5/	Jun		15/04/2021		
37.	Li/I5/	Xianyong		15/04/2021		
38.	Chen/I5/	Enwu		15/04/2021		
39.	Liu/I6/	Ji	Shanghai Libra Investment & Management Co., Ltd./ Technical manager	12/04/2021~15/04/2021	- Monitoring period - Project activity starting date - Assumptions - ER calculation - Crediting period - Reference fields - Monitoring system and implementation - Monitoring measurements - Editorial issues of the VCS MR	
40.	Liu/I6/	Lili				

2.4 Site Inspections

The verification site inspection was conducted on 12-April-2021~15-April-2021. A ground inspection of the project plan was conducted during the site visit and the verification team interviewed project implementer/I1/, local officer from Agricultural Bureau/I2/, expert from Anhui Academy of Agricultural Sciences and Anhui Academy of Social Sciences/I3/, technicians from local agrotechnical stations/I4/, rice cultivation farmers/I5/ and Project VCS development consultant/I6/.

During the site inspection, the reference fields for both baseline and project scenarios were inspected, the sampled farmers and technicians, experts were interviewed, the monitoring equipment in laboratory was checked and documents evidence were checked, details as following table,

Duration of on-site inspection: 12-April-2021~15-April-2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting Interview with representatives as	Office in Hefei Luyu Agricultural Technology Co., Ltd. and laboratory of Institution of Agricultural Engineering,	12-April-2021	Lin Shunrong

	listed in above table Monitoring instruments check in laboratory	Anhui Academy of Agricultural Sciences in Hefei City, Anhui Province, P.R. China		
2	Documents check	Office in Hefei Luyu Agricultural Technology Co., Ltd. in Hefei City, Anhui Province, P.R. China	12-April-2021	Lin Shunrong
3	On-site inspection of project areas and reference fields Interview with sampled farmers and technicians, experts	Project Area in Tongcheng City, Anhui Province, P.R. China	13-April-2021 ~ 15-April-2021	Lin Shunrong
4	Finding Summary	Project Area in Tongcheng City, Anhui Province, P.R. China	15-April-2021	Lin Shunrong
5	Close Meeting	Project Area in Tongcheng City, Anhui Province, P.R. China	15-April-2021	Lin Shunrong

During the site inspection, total six baseline and project reference fields were checked, the 6 plot areas are determined by the verification team by checking the map of the project location, details as following table,

Table 2-1 Locations for site inspection with reference fields

Site Visit time	Area	Coordinates		Inspection Results
Baseline Scenario Reference fields				
14-April-2021	Fudong Village in Kongcheng Town	117°084391 N	31°093982 E	The baseline reference fields were selected that they are representative of baseline scenario where double-cropping rice was planted by continuously flooded method without any organic amendments, and the geographical coordinates of three fields were verified as consistent with the MR by GPS device used by VVB. Also the chambers were confirmed as installed on the fields.
		117°084196 N	31°093763 E	
		117°084622 N	31°093550 E	
Project Scenario Reference fields				

14-April-2021	Fudong Village in Kongcheng Town	117°088144 N	31°092255 E	The measurements on project and baseline reference fields were carried out in an equal manner and simultaneously. The project reference fields were selected that they are representative of project scenario where double-cropping rice was planted by intermittent flooded method without any organic amendments, and the geographical coordinates of three fields were verified as consistent with the MR by GPS device used by VVB. Also the chambers were confirmed as installed on the fields.
		117°087650 N	31°091829 E	
		117°087587 N	31°091764 E	

Furthermore, during the site inspection, VVB also visited 26 farmers' cultivation area within the project area and interviewed with them about the information in logbooks. Hence during the site inspection, the 26 sampled areas are determined by the verification team by checking the map of the project location, details as following table,

Table 2-2 Locations for famer's area

Site Visit time	Area	Coordinates		Inspection Results
Project Area				
13-April-2021	Shapu Village	116.728606 E	30.87989 N	Each area is verified as located in the project boundary by checking the grographical coordinates and KML file.
	Shapu Village	116.7359964 E	30.86391416 N	
	Shapu Village	116.7418305 E	30.85479819 N	
	Shapu Village	116.7602636 E	30.85857637 N	
	Shapu Village	116.722535 E	30.86332299 N	
	Shapu Village	116.7171969 E	30.87196342 N	Cultivation and flooding approach are consistent as project design
	Shapu Village	116.7374055 E	30.87304216 N	
	Xucao Village	116.7350279 E	30.84832398 N	
	Xucao Village	116.7239999 E	30.84534002 N	Cultivation practice is confirmed as
	Xucao Village	116.7423532 E	30.83904653 N	
	Yanggong Village	116.963239 E	30.85468541 N	

14-April-2021	Xuzui Village	116.9838934 E	30.85170853 N	same to the logbooks
	Golden Deer Village	116.967548 E	30.95445276 N	
	Wanyuan village	116.8346183 E	30.96673031 N	
	Wanyuan village	116.8392944 E	30.96301972 N	
	Gaogang Village	116.8511398 E	30.94190342 N	
15-April-2021	Wangdian Village	117.0068419 E	31.07939775 N	
	Gujing Village	117.0377638 E	30.97972476 N	
	Fudong Village	117.0893833 E	31.08911968 N	
	Shuanghe Village	117.0262985 E	30.98746134 N	
	Zhendong Village	117.0567593 E	31.01774394 N	
	Jiunian village	117.0582064 E	31.09175593 N	
	Lianshan Village	117.0988977 E	31.1073131 N	
	Lianshan Village	117.0777546 E	31.10789315 N	
	Shuangdian Village	117.0662733 E	30.81451297 N	
	Zhuqiao Village	117.0394476 E	30.92436401 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 first verification.

A detailed list of the CARs CLs and FAR raised and discussed in the course of this verification is included in Appendix 4 of this report.

In the course of the verification, 5 Corrective Action Requests (CARs), 14 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in Appendix 4 of the report.

2.5.1 Forward Action Requests

This is the 1st periodical verification, and there is no FAR raised in the validation report/6/.

2.6 Eligibility for Validation Activities

The VVB Shenzhen CTI International Certification Co., Ltd holds accreditation for both validation and verification for the relevant sectoral scope 14 (AFOLU).

3. VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project only sought the registration with the VCS Program in and validation was conducted by VVB and has been successfully registered in VCS Program with the Ref. No. 2362 on 10-March-2021/4/.

The project has neither been registered nor seeking registration under any other GHG programs which has been confirmed via checking the UNFCCC/3/, GS/50/, VCS/4/ and other GHG schemes' website. CTI verified that the project is only participated in VCS program/4/.

3.2 Methodology Deviations

During the monitoring period, there are no methodology deviations.

3.3 Project Description Deviations

During the monitoring period, there are no project description deviations related to the significant change.

3.4 Grouped Project

This section is not applicable as the project is not a grouped project.

4. VERIFICATION FINDINGS

4.1 Project Implementation Status

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 13,228 ha for double-cropping rice.

As per the Appendix 1 Eligible AFOLU project categories in VCS standard version 4.1/47/ and the validation report/6/, CTI confirmed that the project belongs to one type of AFOLU categories, i.e. Agricultural Land Management (ALM), the project is applicable to one of eligible ALM activities, i.e. Improved Cropland Management (ICM).

Via site inspection with rice lands/38/ and interview with farmer representatives/15/, CTI 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 CH₄ emission.

Via checking the MR/1/, CTI confirmed that the project activity generates CH₄ 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 (CH₄) because of anaerobic decomposition. Due to the CH₄ 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 CH₄ production, which happens in anaerobic condition, reducing the total quantity of CH₄ released during the cropping season.

On the basis of site visit and the reviewed project monitoring report and other supporting docs, it can be confirmed that w.r.t. the realized technology, the project cement ditches and reservoirs, as well as the monitoring and metering equipment, the project has been implemented and operated as applied methodology and monitoring plan described in the registered PD/5/.

This verification covers the period from 10-February-2018 to 31-December-2020 (including both days). The Project involves a total acreage of 13,228 ha for double-cropping rice, therefore, 180,000 tCO₂e emission reductions are achieved during this monitoring period.

The construction of high standard rice fields commenced on 18-November-2017 and its start date was on 10-February-2018, which has been confirmed in the project database with all 4,410 participated rice farmer households' identification/22/ against the registered Validation Report/6/.

VVB confirmed that the activities commenced before the monitoring period and during this monitoring period have been stated in the MR. Via site inspection of the project site and interview with the sampled farmers, VVB confirmed that the main activities commenced before the monitoring period including built high-standard rice paddies, provided trainings to technicians and farmers and the rice cultivation used

continuously flooded water regime, while after the project implementation, the construction of high-standard farmland would no longer to be continued and with the completion of the project, the rice cultivation apply intermittent flooded water regime and the trainings were provided to technicians and farmers continuously during this monitoring period. Hence, VVB confirmed that whether activities commenced before the monitoring period continue to be implemented have been demonstrated clearly in the MR.

As part of the site visit the Verification Team was able to confirm that the project implementation is in accordance with the project description contained in the registered PD/5/. There are no any material discrepancies between project implementation and the project description.

The project was registered as a VCS project activity with the VCS Ref. No. 2362 on 10-March-2021/4/, with 21 years renewable crediting period started from 10-February-2018 to 09-February-2039 under VCS Program.

The project has neither been registered and rejected nor seeking registration under any other GHG programs which has been confirmed via checking the UNFCCC/3/, GS/50/, VCS/4/ and other GHG schemes' website. It is verified that the project is seeking registration only in VCS program/4/.

The project proponent is not part of any emission trading program which has been confirmed via checking the UNFCCC/3/, GS/50/, VCS/4/ and other GHG schemes' website. The net GHG emission reductions during this monitoring period from the project was not 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/3/, GS/50/, VCS/4/ and other GHG schemes' website.

This monitoring period (10-February-2018 to 31-December-2020) is the 1st monitoring period belongs to first 7-year crediting period from 10-February-2018 to 09-February-2025 (both days included).

Details of the project location are given in table 3-1 below:

Table 3-1: Project Location

No.	Project Location
Host Country	China
Region:	Anhui Province
Project location address:	Tongcheng City ¹ of Anqing City
Latitude:	30 ° 40'N to 31 ° 16'N
Longitude:	116 ° 40'E to 117 ° 09'E

The location of the project site is verified with on-site investigation by GPS devices and checking the google earth map/49/.

KML file with project boundary is checked as provided/7/, and is verified as consistent with the MR and on-site investigation by GPS devices and checking the google earth map/49/.

¹ Tongcheng City is a prefecture-level city within Anqing City of Anhui Province

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)/39/. Also refers to the latest approved version of the following tools and guidelines:

“Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities” (version 8.0)/40/

“Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities”, version 4.0/41/.

Via on-site inspection and interview with the project implementer, CTI verified that the project contributes the sustainable development through the following aspects:

- *High yield brings extra income and improves the living standard of local farmers (Goal 1 of UN SDG) – verified by checking the employment contracts/26/ and monthly payroll to the technicians/27/;*
- *Increase the rice productivity alleviates hunger problem (Goal 2 of UN SDG) – verified by interview with local farmers/15/ and checking the farmers’ log-books/10/;*
- *Use a proportion of benefits to improve the local children’s education (Goal 4 of UN SDG) – verified by interview with local officers/12/ and checking the Records and photo evidence related to the book donation activity in Tongcheng by the project owner/28/;*
- *Women are given priority for employment and their social status is raised (Goal 5 of UN SDG) – verified by checking the employment contracts/26/ and monthly payroll to the technicians/27/;*
- *Provide more job opportunities for local farmers (Goal 8 of UN SDG) – verified by checking the employment contracts/26/ and interview with technicians/14/;*
- *Sequester greenhouse gas and mitigate climate changes (Goal 13 of UN SDG) – verified by checking the Emission Reduction Calculation sheet/2/.*

Via checking the validation report/6/, CTI verified that there is no any previously validated methodology deviations.

In conclusion, Verification Team was able to confirm that the project implementation is in accordance with the project description contained in the registered PD/5/.

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

4.2 Safeguards

4.2.1 No Net Harm

The analysis of the potential negative environmental and socio-economic impacts of the project activity is sufficiently described in MR/1/ and the impacts are verified as consistent with the PD/5/. The assessment is as below,

Environmental impacts - It is considered that the environmental impacts have been comprehensively described in Section 2.1 of MR including the excessive use of fertilizer and pesticide could cause pollution to soil and surface water if farmers do not control the amount of fertilizer and pesticide well during cultivation in the operation period, which will impact on the ecosystem and environment of local area in project area according to the project operation situation and interview with local experts/I3/, technicians/I4/ and farmers/I5/.

Environmental impacts mitigation actions - Associated with the interview with local experts/I3/, technicians/I4/ and farmers/I5/ and checking the Technical Guidelines for Intermittently Flooded Rice Cultivation Method/I3/, CTI confirmed that technicians patrolled the rice paddies every week and instructed the farmers how to use the optimal amount of fertilizer according to the technical guidelines. Hence CTI verified that there were no excessive use of fertilizer and pesticide and no any negative impacts found in the project location during this monitoring period.

Socio-economic impacts - It is considered that the Socio-economic impacts have been comprehensively described in Section 2.1 of MR including the cement ditches and reservoirs were badly damaged without long-term maintenance in the operation period, which will impact on the life safety of farmers and even result in reduced rice production and thus reduced farmers' income according to the project operation situation and interview with local experts/I3/, technicians/I4/ and farmers/I5/.

Socio-economic impacts mitigation actions - Associated with the interview with local experts/I3/, technicians/I4/ and farmers/I5/ and checking the Technical Guidelines for Intermittently Flooded Rice Cultivation Method/I3/, CTI confirmed that technicians patrolled the rice paddies every week and farmers could immediately call the technician if a ditch broke down in their fields and the technicians can solve the problem within one hour and appeal to local agricultural bureau to activate the emergency mechanism if can't solve by themselves. Furthermore, via checking the farmers' log-books/I0/ and confirmed by local officers/I2/ and technicians/I4/, CTI verified that there were no any damaged ditches and reservoirs found in the project location during this monitoring period.

In conclusion, there were some potential impacts on environment and socio-economic during the operation period which has been demonstrated in the MR/I1/, however the proper measurements and mitigation actions have been carried out by project implementer to mitigate such impacts and there is no net harm occurred during this monitoring period.

CAR 01 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

4.2.2 Local Stakeholder Consultation

A stakeholder consultations survey including questionnaires and stakeholder meetings was carried out by the project developer during this monitoring period to present local stakeholders' opinions on the implementation of project and their willingness to participate.

Prior to the verification, the notice of meeting has been posted on the bulletin board in each village which has been verified by checking the photo of posted notice/I29/ and this is also checked during site inspection. And via checking the local stakeholder consultation (LSC) records/I31/, CTI confirmed that 34 villagers, the representatives of village committee, agricultural bureau and government representatives attended the stakeholders' meeting which was organized by the project proponent and the agricultural bureau at the Tongcheng Agricultural Bureau on 10-March-2021.

Besides, questionnaire survey was conducted to collect the views of stakeholders before the project verification from November to December in 2020, questionnaires were distributed to relevant personnel of village representatives, relevant governmental officials and local farmers, totally 70 copies of questionnaires were issued to relevant personnel with 70 pieces of reply received. The stakeholders' background information and comments from questionnaires were summarized and recorded in the MR, Section 2.2.

Via checking the 70 filled questionnaires/31/, CTI verified that all respondents knew about the Project. Most of them have enjoyed benefits during the project operation, and thought the project bring benefit including 1) create jobs; 2) get more benefits from selling carbon credits; 3) reduce methane emissions, save water resource and increase the rice productivity; and 4) improve the social status of women by hiring them to be technicians. Most of the respondents are willing to participate in the operation and training of the project and they have no negative opinions on the project implementation during this monitoring period.

Finally, CTI verified that there is no one thinks that the project has a negative impact on the local life and environment, local stakeholders are supportive of the project operation by checking the questionnaires/31/, and thus no need to change the project implementation based on the stakeholder inputs.

For the continuous communication mechanism, via site inspection checking the Suggestion Book published on the notice board of villages/32/, CTI confirmed that there was no comments or suggestions in the book during this monitoring period, and via interview with PP, CTI verified that they have checked the book regularly and collect all the comments received if any.

Via interview with the technicians/14/ and farmers/15/ during site visit, CTI verified that there were no comments from the local villagers issued to the technicians who are responsible for the communication during this monitoring period. Hence there is no need to change the project implementation based on the stakeholder inputs and comments.

In addition, based on above assessment, CTI confirmed that there were no negative opinions received on the project implementation during this monitoring period, however, local stakeholders have also been communicated on some positive opinions during this monitoring period as listed in the MR, Section 2.2, which is verified by CTI by checking the meeting records and questionnaires/31/.

AFOLU Specific

Due to the project is an AFOLU project, according to the MR template/42/ request, below are assessed of how the project has communicated the following with local stakeholders,

- *The results of project implementation, including the results of monitoring.*

Prior to the verification, the notice of LSC meeting and results of project implementation, including the results of monitoring has been posted on the bulletin board in each village which has been verified by checking the photo of posted notice/29/ and this is also checked during site inspection.

- *Any changes, where relevant, to risks, costs and benefits the project may bring to local stakeholders.*

Through villagers' meetings and questionnaires survey confirmed by interview with local farmers/15/ and checking the LSC records/31/

- *Any changes, where relevant, to relevant laws and regulations covering workers' right in the host country.*

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/ and local farmers/I5/.

- *The process of VCS Program verification and the validation/verification body's site visit.*

Informed farmers by publishing notification and invitation on the notice board about the process of VCS Program verification and the validation/verification body's site visit confirmed by interview with local farmers/I5/ and checking the photo of posted notice/29/.

In conclusion, there were no negative opinions received from local stakeholders on the project implementation during this monitoring period, therefore, it is verified that the project continues to communicate the necessary relevant information about the project implementation and the process of VCS Program verification during this monitoring period.

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

4.3 AFOLU-Specific Safeguards

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

- Activities implemented to mitigate risks

The local stakeholders has been identified in the registered PD/5/. So based on the site inspection and interview with the local technicians/I4/ and farmers/I5/, CTI confirmed that local stakeholders identified the potential risks due to project implementation is that the farmers may encounter dangers when checking the rice in the filed like slipping and falling. The mitigation activities are confirmed as in place via site inspection and checking the technical training records/33/, CTI verified that the stakeholders acknowledged the risks and they were trained annually to reduce the risks and injuries. Via interview with the local technicians/I4/ and farmers/I5/, CTI confirmed that no risks occurred during this monitoring period, thus the mitigation activities were not utilized.

- Any updates to the property and land use rights

As verified in the validation report/6/, during the on-site visit and checking the business license/20/ of the participant parties, the government approval of the project/16/, and the carbon reduction project cooperation agreement signed between the farmers and Hefei Luyu Agricultural Technology Co., Ltd./19/, CTI verified that 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/18/.

As verified in the validation report/6/, CTI confirmed that a stakeholder survey was carried out by the project developer during June 2017 which was prior to the start date of the project,

and based on the survey results, CTI 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 the project has obtained the free, prior and informed consent of the affected parties and the project does not encroach on private property, community property or government property.

For this monitoring period, via site interview with farmers/15/ and local officer from Agricultural Bureau/12/, CTI confirmed that there were no any updates to the property and land use rights of the local stakeholders and the evidence of Certification of land rights/18/ was provided to prove that the project has not negatively impacted such rights of farmers.

Furthermore, considering the project type and implementation method, CTI verified that the land use type is not changed due to the implementation of the project and no land occupation involved thus no compensation or return happened in this monitoring period.

- Processes used to communicate and consult

The registered PD/5/ 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 working 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 continuous communication mechanism, via site inspection checking the Suggestion Book published on the notice board of villages/32/, CTI confirmed that there was no comments or suggestions in the book during this monitoring period, and via interview with PP, CTI verified that they have checked the book regularly and collect all the comments received if any.

Via interview with the technicians/14/ and farmers/15/ during site visit, CTI verified that there were no comments from the local villagers issued to the technicians who are responsible for the communication during this monitoring period. In addition, based on above assessment, CTI confirmed that there were no negative opinions received on the project implementation during this monitoring period, however, local stakeholders have also been communicated on some positive opinions during this monitoring period as listed in the MR, Section 2.2, which is verified by CTI by checking the meeting records and questionnaires/31/.

Therefore, the feedback and grievance procedure is properly addressed and no any conflicts were raised via the established grievance redress procedure.

In conclusion, project proponent has taken the appropriate measures to ensure that the project has not created negative impacts on local stakeholders and mitigated such impacts if occurred. And based on

above assessment, CTI verified that the project has no negative impacts on local stakeholders during this monitoring period.

CAR 04 was raised and successfully closed, Refer to Appendix 4 for detail assessment.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

4.4.1 Assessment of Data and parameters Available at Validation

By means of comparison of the MR/1/ and the ER calculation/2/ with the registered PD/5/, the verification team has checked whether all parameters fixed ex-ante have been applied correctly.

The parameters that are fixed ex ante are following:

Parameters	Source of data	Values applied	Demonstration by Verification team
A _y - Area of project fields in year y	Determined by collecting the project field sizes in a project database. The size of project fields is determined by GPS or satellite data	13,228 ha	This is an ex-ante fixed value as listed in the PD/5/ and derived from GPS results measured by Tongcheng Agricultural Bureau/8/ which has been verified during the validation process/6/.
GWP _{CH₄} - Global warming potential of CH ₄	28 tCO ₂ e/tCH ₄ from IPCC's Fifth Assessment report, GHG Protocol	28tCO ₂ e/tCH ₄	25 tCO ₂ e/tCH ₄ from IPCC's Fourth Assessment report, GHG Protocol/35/ is an ex-ante value as listed in the PD/5/, and according to the PD, any future revision of the IPCC's assessment report should be taken account. Then based on the requirement 3.14.4 of VCS Standard 4.1/47/, projects that complete validation on or before 31 July 2021 may use GWP values from AR4 for ex-ante emission reduction estimates, though such projects shall use GWP values from AR5/36/ for ex-post calculations. So 28tCO ₂ e/tCH ₄ from IPCC's Fifth Assessment report, GHG Protocol/36/ is applicable to this monitoring period and in compliance with the VCS Standard 4.1/47/.
EF _{BL,c} - Seasonal baseline emission factor for continuously flooded fields without organic amendments	The source is Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in	(1) 1.5 kg CH ₄ /ha/day or 180 kg CH ₄ /ha/season for early season rice; (2) 1.51 kg CH ₄ /ha/day or 157.04 kg	This is an ex-ante fixed value as listed in the PD/5/ and derived from Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Tongcheng City in 2017/24/ which has been verified during the validation process/6/.

	Tongcheng City in 2017/24/	CH ₄ /ha/ season for later season rice	This value is used for ex ante emission reduction calculation thus not used for the ex-post emission reduction calculation during this monitoring period.
$SF_{BL,w}$ - Baseline scaling factors to account for the differences in water regime during the cultivation period	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/34/	1	This is an ex-ante fixed value as listed in the PD/5/ and derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories/34/ which has been verified during the validation process/6/. This value is used for ex ante emission reduction calculation thus not used for the ex-post emission reduction calculation during this monitoring period.
$SF_{p,w}$ - Project scaling factors to account for the differences in water regime during the cultivation period	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/34/	0.52	This is an ex-ante fixed value as listed in the PD/5/ and derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories/34/ which has been verified during the validation process/6/. This value is used for ex ante emission reduction calculation thus not used for the ex-post emission reduction calculation during this monitoring period.
$SF_{BL,p}$ - Baseline scaling factors to account for the differences in water regime in the pre-season before the cultivation period	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/34/	1	This is an ex-ante fixed value as listed in the PD/5/ and derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories/34/ which has been verified during the validation process/6/. This value is used for ex ante emission reduction calculation thus not used for the ex-post emission reduction calculation during this monitoring period.
$SF_{p,p}$ - Project scaling factors to account for the differences in water regime in the pre-season before the cultivation period	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/34/	1	This is an ex-ante fixed value as listed in the PD/5/ and derived from 2006 IPCC Guidelines for National Greenhouse Gas Inventories/34/ which has been verified during the validation process/6/. This value is used for ex ante emission reduction calculation thus not used for the ex-post emission reduction calculation during this monitoring period.
$SF_{BL,o}$ - Baseline scaling factors should vary for both type and	Calculated in PD/5/	1	This is an ex-ante calculated value as listed in the PD/5/ which has been verified during the validation process/6/.

amount of organic amendment applied			This value is used for ex ante emission reduction calculation thus not used for the ex-post emission reduction calculation during this monitoring period.
$SF_{p,o}$ - Project scaling factors should vary for both type and amount of organic amendment applied	Calculated in PD/5/	1	This is an ex-ante calculated value as listed in the PD/5/ which has been verified during the validation process/6/. This value is used for ex ante emission reduction calculation thus not used for the ex-post emission reduction calculation during this monitoring period.

In conclusion, the parameter fixed ex ante has been indicated in the registered PD/5/. And the MR is checked as in line with the PD.

4.4.2 Assessment of Data and parameters Monitored

During the verification all relevant monitoring parameters as listed in PD/5/ have been verified and summarized in the below table.

$A_{s,g}$	Aggregated project area in a given season s
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes – ha
Appropriate description?	Yes
Monitored Value?	13,228 for both early and later season rice in the project area during this monitoring period
Correct value provided?	Yes
Source clearly referenced? (appropriate?)	Yes—it is monitored by collecting the project field sizes in a project database with farmers information/22/, and the size of each household's rice field in the database is determined by using GPS by Tongcheng Agricultural Bureau which has been confirmed by interview with officers from Tongcheng Agricultural Bureau.
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. The compliant farms are determined by checking the farmers' log-books/10/.
Measurement method and procedures correctly described?	Yes – Field measurement and by checking the farmers' log-books/10/. The size of project fields has been determined by GPS data during field measurement. And every week, the technicians are required to check whether the project fields recorded in the database are cultivated by intermittent flooded method with the help of the logbooks/10/. At the end of each cropping season, the technicians submitted the Fact Sheets on Rice Cultivation/11/ in terms of the information got from sampled logbooks.
Calculation method?	Yes – Sum of area of each compliant household's rice fields
Monitoring frequency correctly described?	Every season - verified as per PD and the applied methodology
Monitoring equipment correctly described?	GPS measuring equipment - verified as per PD and the applied methodology

	The model, precision and calibration information of the equipment used has been provided, the compass was calibrated by placing the equipment horizontally and vertically before use, and the automatic calibration of the barometer was turned on before use, which has been verified as actual by checking the Instruction of GPS Measuring Equipment/25/, thus it is confirmed that the calibration for this equipment was valid for this monitoring period.
QA/QC procedure correctly described?	Yes-General guidelines for SSC CDM methodologies has been referred. The project field sizes derived from the project database with farmers information/22/ was cross-checked with the farmers' log-books/10/ to determine the final compliant household's rice fields for this monitoring period.
Purpose of data?	BE _s and PE _s calculation
Comments?	Via checking the farmers' log-books/10/, CTI confirmed that all the farmers cultivated double-cropping rice with intermittent flooded water regime in this monitoring period are involved, and only these farmers' farm were compliant.

EF _{BL,s,g}	Baseline emission factor of group g in a given season s			
Title in line with Methodology?	Yes			
Data unit correctly expressed?	Yes – kg CH ₄ /ha per season			
Appropriate description?	Yes			
Monitored Value?	Categories	EF _{BL,s,g} (kg CH ₄ /ha/season)		
		2018	2019	2020
	Early season	186.96	191.25	186.66
	Later season	182.04	178.20	182.04
Correct value provided?	Yes			
Source clearly referenced? (appropriate?)	Yes—it is monitored by field measurements in baseline reference fields and analyzed in the laboratory. During the field measurements in baseline reference fields, the gas samples were taken from closed chambers, then all gas samples were stored in evacuated vial and sent to laboratory for analysis. And the final result of EF _{BL,s,g} for each season is calculated by the analysis results as per the method in PD and applied methodology.			
Choice of data correctly justified?	Yes –field measurements in baseline reference fields and analyzed in the laboratory as per PD and applied methodology			
Measurement method and procedures 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 5.5/34/ as per PD and applied methodology			
Calculation method?	Yes- Refer to equations in below section 4.4.3 for calculation process which is verified in line with PD and applied methodology			
Monitoring frequency correctly described?	Regular measurements in three baseline reference fields, three closed chambers were placed in each field and samples were measured three times a week from each closed chamber, all gas samples taken from closed chambers were stored in evacuated vial and sent to laboratory for analysis - verified as per the PD and applied methodology. Obtained from the calculation of the emission rate for baseline reference fields according to the requirements in the Appendix of			

	methodology, and the $C_{CH_4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings is derived from the laboratory analysis. Refer to section 4.4.3 for detail assessment.
Monitoring equipment correctly described?	Closed chambers in fields and FID (gas chromatography with flame ionization detector) in laboratory- verified as per PD and the applied methodology For the closed chambers installed in the three baseline reference fields, via site inspection and checking the devices, it is confirmed that the chambers are installed in line with the requirement in methodology as assessed in table 4-1, and by considering this type of the equipment, there is no accuracy and calibration requested. For the FID, the model, column and calibration information of the equipment used has been provided, the FID was calibrated with certified standard gas each day of analysis before and after the analyses, via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/13/, CTI confirmed that the calibration is conducted in line with certified standard gas each day of analysis before and after the analyses as per request of the methodology in laboratory analysis.
QA/QC procedure correctly described?	The implementation of methane measurement in rice fields was conducted by technicians trained by experts and the laboratory was checked getting valid ISO/IEC 17025 certificate/15/. All the data were 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
Comments?	-

EF _{P,s,g}	Project emission factor of group g in a given season s			
Title in line with Methodology?	Yes			
Data unit correctly expressed?	Yes –kg CH ₄ /ha per season			
Appropriate description?	Yes			
Monitored Value?	Categories	EF _{P,s,g} (kg CH ₄ /ha/season)		
		2018	2019	2020
	Early season	97.22	99.45	97.06
	Later season	94.66	92.66	94.66
Correct value provided?	Yes			
Source clearly referenced? (appropriate?)	Yes—it is monitored by field measurements in project reference fields and analyzed in the laboratory. During the field measurements in project reference fields, the gas samples were taken from closed chambers, then all gas samples were stored in evacuated vial and sent to laboratory for analysis. And the final result of EF _{P,s,g} for each season is calculated by the analysis results as per the method in PD and applied methodology.			
Choice of data correctly justified?	Yes –field measurements in project reference fields and analyzed in the laboratory as per PD and applied methodology			
Measurement method and procedures 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 5.5/34/ as per PD and applied methodology			
Calculation method?	Yes- Refer to equations in below section 4.4.3 for calculation process which is verified in line with PD and applied methodology			

Monitoring frequency correctly described?	Regular measurements in three project reference fields, three closed chambers were placed in each field and samples were measured three times a week from each closed chamber, all gas samples taken from closed chambers were stored in evacuated vial and sent to laboratory for analysis - verified as per the PD and applied methodology. Obtained from the calculation of the emission rate for project reference fields according to the requirements in the Appendix of methodology, and the $C_{CH_4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings is derived from the laboratory analysis. Refer to section 4.4.3 for detail assessment.
Monitoring equipment correctly described?	Closed chambers in fields and FID (gas chromatography with flame ionization detector) in laboratory- verified as per PD and the applied methodology For the closed chambers installed in the three project reference fields, via site inspection and checking the devices, it is confirmed that the chambers are installed in line with the requirement in methodology as assessed in table 4-1, and by considering this type of the equipment, there is no accuracy and calibration requested. For the FID, the model, column and calibration information of the equipment used has been provided, the FID was calibrated with certified standard gas each day of analysis before and after the analyses, via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/13/, CTI confirmed that the calibration is conducted in line with certified standard gas each day of analysis before and after the analyses as per request of the methodology in laboratory analysis.
QA/QC procedure correctly described?	The implementation of methane measurement in rice fields was conducted by technicians trained by experts and the laboratory was checked getting valid ISO/IEC 17025 certificate/15/. All the data were 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
Comments?	-

In conclusion, CTI confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with PD, applied methodology, all applicable standards and relevant requirements.

CL 05, CL 06 and CL 07 were raised and successfully closed. Refer to Appendix 4 for detail assessment.

4.4.3 Assessment of in Compliance with monitoring plan

By means of comparison of the MR with the applied CDM methodology and all VCS standards' requirements.

The verification team has checked whether the monitoring implementation during this monitoring period is in compliance with the monitoring plan in PD and related requirements of the applied methodology/tools.

The verification team has checked the monitoring system in MR against the applied methodology and monitoring plan of the PD.

The monitoring system has been operated as per the monitoring plan in the PD as in compliance 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 PD and applied methodology, also corresponding to the formula used for ER calculation.

Monitoring team

Via the MR and PD, the monitoring team consists of the project proponent, Shanghai Libra Investment Management Co., Ltd, technicians and experts from the agricultural bureau, and by site inspection with the representatives from these parties, CTI confirmed that the roles of the team have been clearly defined and the responsibilities have been implemented by monitoring team sufficiently.

Furthermore, for the analysis of emission rate of gas sampling on field, a laboratory with relevant certificate conducted test and the measurement team was led by an expert who has a doctoral degree and field of study is agricultural environmental engineering which is verified by checking the CV of the expert/14/. Therefore, CTI verified that the monitoring system was well implemented by monitoring team to ensure the monitoring results are correct and accurate.

Monitoring process

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

The monitoring method in the MR for monitoring of farmers' compliance with project cultivation practice is checked by verification team, CTI confirmed that the description is in line with the PD and applied monitoring methodology.

The project database with all 4,410 participated rice farmer households' identification/22/ including name and address of the rice farmer, size of the field and additional farm specific information have been provided to the verification team, CTI confirmed that the PP has set up a database that allow an unambiguous identification of participating rice farm, and as per the applied methodology, a cultivation logbook shall be maintained for all project fields, thus all the farmers are required by PP to complete the logbooks. But the reporting and verification shall be done on the basis of samples of the log-books from the farmers. Then the database/22/ has been used as the basis for PP to conduct the sampling method as stated below.

As per the requests from 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/40/.

314 samples have been selected according to stratified sampling method in 9 towns based on the numbers determined for each town calculated by the weight of total farmers numbers of each town in project area which is verified as in line with the numbers determined in PD and in line with the requirement of the sampling standard/40/.

And then for sample selection of each town, a random sampling method has been used for determine the famers sample in each town and finally the randomly selected 314 samples has been defined.

Due to this monitoring period covered nearly three years, project proponents randomly selected 314 samples at the beginning of each year during this monitoring period, that means total 942 samples were selected for this monitoring period to determine whether the project fields were cultivated according to the project cultivation practice as defined by the project activity.

After collecting the sampled logbooks each year by technicians, the expert from local agriculture bureau checked and verified the information and then finally send to PP to complete the MR.

The selected sampled farmers' logbooks/10/ including all parameters that are part of the project cultivation practice during cultivation season have been checked, CTI confirmed that the logbooks/10/ covered information 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

During the site visit, CTI applied acceptance sampling approach to verify the results of farmer's logbooks as per the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, V8.0/40/. Refer to section 2.1 for details of the VVB sampling approach.

Via checking the results listed in sampled farmers' logbooks/10/, CTI verified that the monitoring of farmers' compliance with project cultivation practice is in line with the monitoring plan in PD/5/ and applied methodology, and CTI confirmed that all the project reference fields are cultivated in a way that they represent the ranges of cultivation practice elements on the project fields in a conservative manner with respect to methane emissions. There were no farmers relevantly deviate from the defined project cultivation practice and thus all the farmer's fields can be deemed to be represented by the reference fields, and all the farmer's fields shall be taken into account for the determination of the aggregated project area of that season $A_{s,g}$, that means that the final monitoring result of $A_{s,g}$ during this monitoring period is verified as correct.

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

a. Requirement

For ex post emission reduction calculation, as per the PD/5/ and applied methodology AMS-III.AU Version 04.0, 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.

b. Plan

As per the methodology, the PP has prepared a detailed plan for the seasonal methane measurements before the start of each season, via checking the plan/9/, CTI confirmed that the 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, all reference field specific information regarding location and climate, soil, water management, plant characteristics, fertilizer treatment and organic amendments, it is verified that the plan was prepared in compliance with the requirements in the applied methodology.

c. Reference fields

Besides, via checking the description of determination of the reference fields in MR/1/, it is confirmed that the project proponents have made sure that the measurements on project and baseline reference fields are carried out in an equal manner and simultaneously.

The details information of baseline and project reference fields have been listed in the MR clearly which is verified as actual by checking the methane measurement and calculation reports/12/ and site inspection by checking the fields identification, location, area size, geological coordinates, type of rice, climate etc. CTI concluded that the both the baseline and project reference fields have been set up in a way that represent baseline and project emissions in the project rice fields. For the only one group with the same cultivation pattern for this project during this monitoring period, there were three reference fields with the same pattern have been determined in the project area for baseline and project reference fields respectively which is confirmed as in line with the applied methodology.

Due to all fields within project area have the same cultivation pattern which has been verified in the farmer's logbooks/10/ and it is confirmed that only one group in this project for this monitoring period. In line with the applied methodology, 3 baseline reference fields and 3 project reference fields were set in the project area, respectively, which are fixed rice paddies with area of around 0.3 ha. The determination of the reference fields is confirmed as reasonable by site interview with the expert/13/.

d. Measurements on the fields

For the actual implementation of methane measurement in rice fields during this monitoring period, via checking the methane measurement and calculation reports in both baseline and project reference fields for six seasons (two seasons each year)/12/, CTI confirmed that the measurements have been conducted by technicians trained by expert from Anhui Academy of Agricultural Sciences in these fields using the closed chamber method in both baseline and project rice fields. Based on local expertise from verification team, CTI confirmed that Anhui Academy of Agricultural Sciences is a comprehensive agricultural research institution directly controlled under the provincial government, there are 14 professional sub-institutes including rice. And Via checking the CV of these experts/14/, CTI confirmed that the experts work in the research institution and their fields of study is rice. Thus the requirement for implementation of methane measurement in rice fields of the methodology is satisfied. Refer to below tables for detail assessment of the monitoring methods.

Table 4-1. 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 on-site checked the six chambers, CTI confirmed that the chambers used in this project is made of PVC materials covered with reflective material to prevent the increasing inside temperature. And as confirmed by expert who conducted the measurement/I3/, CTI confirmed that the chambers only put just before the sampling and then removed after 30 mins of sampling which fulfilled with the material request listed in the PD and 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; - Base should be installed at least 24 hours before the first sampling	Via on-site checked the six chambers, CTI confirmed that the chambers' base used in this project is fixed made of non-corrosive PVC material and was embedded before transplantation, remaining in the field for the whole season. Base allows tight sealing of the chamber and has bores in the submerged section to allow water exchange. And as confirmed by expert who conducted the measurement/I3/, CTI confirmed that the first sampling was taken 24 hours after the base installation which fulfill with the placement in soil request listed in the applied methodology.
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 on-site checked the six chambers, CTI confirmed that the auxiliaries of chambers used in this project is a thermometer and a fan inside the chamber and the sampling port is set on the top of the chamber which fulfill with the request listed in the PD and applied methodology.
Basal area	Rectangular or rounded, but has to cover minimum of four rice hills (ca. 0.1 m² minimum)	Via on-site checked the six chambers, CTI confirmed that the shape and size of base used in this project rectangular and installed covering four rice hills (0.25 m²)

		which fulfill with the request listed in the PD and applied methodology.
Height	Option 1: Fixed height Total height (protruding base + chamber) should exceed plant height	Via on-site checked the six chambers, CTI confirmed that the total height of chamber and base is 1.5 meters which is higher than the largest plant height of 1.2m as confirmed by expert thus is fulfill with the request listed in the PD and applied methodology.

Table 4-2. On the field – air sampling

Feature	Conditions	Justification
Replicate chambers per plot	Minimum requirement: Three replicate chambers per plot	Via on-site checked the six chambers, CTI confirmed that the three replicate chambers were placed in one plot (only one group) for both baseline and project reference fields that fulfill with the request listed in the PD and applied methodology.
Number of air samples per exposure / data points per measurement	Minimum requirement: Three samples per exposure	Via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/I3/, CTI confirmed that there were three samples for every exposure analyzed that fulfill with the minimum request listed in the PD and applied methodology.
Exposure time	30 minutes	Via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/I3/, CTI confirmed that exposure time is 30 minutes that fulfill with the request listed in the PD and applied methodology.
Daytime of measurement	Morning	Via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/I3/, CTI confirmed that measuring time was at morning in daytime is 30 minutes that fulfill with the request listed in the PD and applied methodology.
Measurement interval	Minimum requirement: once per week	Via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/I3/, 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 methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/13/ and on-site checked the six chambers, CTI confirmed that the syringe with a lock was used in chamber and it is checked for leak proof before every measurement that fulfill with the request listed in the PD and applied methodology.
Sample storage until analysis	- Storage < 24 h: air samples can remain in syringe; - Storage > 24 h: transfer air samples into evacuated vial, store with slight overpressure	Via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/13/, CTI confirmed that the three samples were taken before a laboratory analysis was performed, so the samples were stored in the evacuated vials that fulfill with the request listed in the PD and applied methodology.

During the site visit, the expert showed how to take gas samples on the field, also the closed chambers have been checked, CTI verified that the installation of chambers and gas exposure process is in line with the plan/9/ and applied methodology. In conclusion, CTI confirmed that the chambers were installed correctly and air samplings were taken correctly.

e. Laboratory analysis

After the gas samples sent to the laboratory, the analysis was conducted by the qualified expert with calibrated devices. Refer to below tables for detail assessment of the Laboratory analysis methods.

Table 4-3. Laboratory analysis

Feature	Conditions	Justification
Method	Gas Chromatograph with flame ionization detector (FID)	Via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/13/, CTI confirmed that the FID is used in laboratory analysis.
Injection	Direct injection or with multi-port valve and sample loop	Via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/13/, CTI confirmed that the direct injection method is used in laboratory analysis.
Column	Packed (e.g. molecular sieve) or capillary column	Via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/13/, CTI confirmed that the packed column is used in laboratory analysis
Calibration	With certified standard gas each day of	Via checking the methane measurement and calculation reports/12/ for this monitoring period and

	analysis before and after the analyses are done	site interview with expert/13/, CTI confirmed that the calibration is conducted in line with certified standard gas each day of analysis before and after the analyses as per request of the methodology in laboratory analysis
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For the certificate of laboratory and calibration information of equipment, refer to below section 4.4.4 for detail assessment.

Via checking the methane measurement and calculation reports/12/ for this monitoring period, CTI confirmed that the measurements in fields and analysis in laboratory were all carried out in line with the requirement in PD and applied methodology. And after this step, the concentration of methane in the gas samples $C_{CH_4,t}$ were obtained.

f. Calculations

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 below formulars,

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

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/ $K^{-1} \times mol^{-1}$
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:

$$s = \frac{\Delta m_{CH_4}}{\Delta t} \quad (2)$$

Where:

s	=	Slope of line of best fit (mg/min)
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(2) Calculate the emission rate per hour for one chamber measurement:

$$RE_{ch} = s \times \frac{60min}{A_{chamber}} \quad (3)$$

Where:

RE_{ch}	=	Emission rate of chamber ch (mg/h × 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:

$$RE_{plot} = \frac{\sum_{ch=1}^{Ch} RE_{ch}}{Ch} \quad (4)$$

Where:

RE_{plot}	=	Average emission rate of a plot (mg/h × 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/m² to kg/ha by multiplying with 0.01.

So, the final integrated results of with the $EF_{BL,s,g}$ and $EF_{p,s,g}$ (kgCH₄/season/ha) in the three reference fields for both baseline and project is calculated based on above formulars for this monitoring period.

Via checking the methane measurement and calculation reports/12/ for this monitoring period, CTI confirmed that the calculation results of $EF_{BL,s,g}$ and $EF_{p,s,g}$ (kgCH₄/season/ha) listed in the MR is consistent with the methane measurement and calculation reports listed in the 6 methane measurement and calculation reports for 6 different seasons in this monitoring period.

Monitoring frequency

The monitoring frequency for three monitored parameters $A_{s,g}$, $EF_{BL,s,g}$ and $EF_{p,s,g}$ are confirmed as all in line with the requirement in the applied methodology and PD/5/.

Data management

All the data collected for this monitoring period were archived electronically which has been confirmed by checking the electronical evidence and will be archived at least two years after the end of the last crediting period of the project activity.

QA/QC

The QA/QC procedure for this monitoring period is checked and verified by CTI as correct and reasonable, the monitoring results have been conducted or cross-checked by agricultural bureau experts. The monitoring equipment will be updated if there are new versions or more efficient monitoring tools available to keep the data more accurate. Via site inspection, CTI verified that the monitoring equipment used are the efficient monitoring tools.

Emergency procedure

Monitoring team will take actions to deal with missing data due to negligence and improper operation and maintain or will replace the broken chamber if any malfunction, also pay close attention to weather forecasts during rice planting, and the monitoring data will be calculated conservatively for emission calculations during the troubleshooting period.

By site interview with monitoring staff and experts and checking the related evidence for data/10/,/12/, CTI verified that no emergency situations have been occurred. Thus no emergency procedure was used for this monitoring period.

Based on above assessment, CTI verified that the monitoring system complies with the applied methodology and the monitoring plan and all applied procedures are completely in compliance to the methodology AMS-III.AU. (version 04.0) and PD.

CL 08, CL 09, CL 10, CL 11, CL 12 and CL 13 were raised and successfully closed. Refer to Appendix 4 for detail assessment.

4.4.4 Compliance with the calibration frequency requirements for measuring instruments

During the verification the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is in line with the requirements of the registered PD/5/ and/or the applicable calibration standards.

The information of monitoring equipment used for monitoring in this monitoring period is listed in PD and the calibration information has been assessed in above section 4.4.2 in each monitoring parameter table.

Via site inspection of the above monitoring devices, it is confirmed that the GPS measuring equipment and Chambers are not applicable to the calibration frequency requirements. And for the FID in laboratory, the device was checked by VVB during site visit and via checking the methane measurement and calculation reports/12/ for this monitoring period and site interview with expert/13/, CTI confirmed that the calibration is conducted in line with certified standard gas each day of analysis before and after the analyses as per request of the methodology in laboratory analysis. Thus CTI verified that the FID was calibrated in compliance with the calibration frequency requirements as defined in applied methodology.

Furthermore, via checking the certificate of laboratory named Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences/15/, CTI confirmed that the laboratory get ISO/IEC 17025 certificate issued by China National Accreditation Service (CNAS) with authorized scope of Gas Chromatograph and Gas Collection Chamber Items. Hence CTI verified that the two key monitoring parameters $EF_{BL,s,g}$ and $EF_{p,s,g}$ were measured and calculated by certified lab, thus the results in the methane measurement and calculation reports/12/ issued by laboratory named Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences are verified and certified as correct and credible.

In conclusion, the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan in PD. Based on that the VVB can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.

4.4.5 Assessment of data and calculation of emission reductions or net removals

4.4.5.1 Calculation of baseline GHG emissions or removals

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 is calculated on a seasonal basis using the following formula:

$$BE_y = \sum_s BE_s \quad (5)$$

$$BE_s = \sum_{g=1}^G EF_{BL,s,g} \times A_{s,g} \times 10^{-3} \times GWP_{CH_4} \quad (6)$$

Where:

BE_y	=	Baseline emissions in year y (tCO ₂ e)
BE_s	=	Baseline emissions from project fields in season s (tCO ₂ e)
$EF_{BL,s,g}$	=	Baseline emissions factor of group g in season s (kgCH ₄ /ha per season)
$A_{s,g}$	=	Area of project fields of group g in season s (ha)
GWP_{CH_4}	=	Global warming potential of CH ₄ (tCO ₂ e/tCH ₄)
g	=	Group g, covers all project fields with the same cultivation pattern (G = total number of groups)

During this monitoring period covered three years from 2018 to 2020, there are total 6 seasons, and based on the assessment of the farmers' logbooks/10/, it is confirmed that there was only one group defined. And based on the above assessment in section 4.4.2, 4.4.3 and 4.4.4, CTI verified that the parameters $A_{s,g}$ and $EF_{BL,s,g}$ were monitored in line with the PD and applied methodology.

Via checking the results in the methane measurement and calculation reports/12/ issued by laboratory named Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences, CTI confirmed that via the measurement results of C_{CH_4} , based on the formulars of (1) to (4) listed in this report, the Average emission rate of a plot RE_{plot} was calculated and final integrated results of RE_{plot} with the unit of (kg/season/ha) in the three reference fields is equal to $EF_{BL,s,g}$ (kgCH₄/season/ha) which are summarized in Table 4-4 below,

Table 4-4 RE_{plot} (kg/season/ha) in baseline reference fields during this monitoring period

from 2018 to 2020

Year	Category	Early Season			Later Season		
		RE_{plot} (mg/h × m ²)	Hours over the season	RE_{plot} (kg/season /ha)	RE_{plot} (mg/h × m ²)	Hours over the season	RE_{plot} (kg/season /ha)
2018	Plot 1	6.09		179.86	6.57		174.93
	Plot 2	6.56		193.52	6.81		181.29

	Plot 3	6.35	2,952 hours (123 days)	187.51	7.13	2,664 hours (111 days)	189.90
	Average	6.33		186.96	6.83		182.04
2019	Plot 1	6.43	3,000 hours (125 days)	192.96	7.07	2, 592 hours (108 days)	183.19
	Plot 2	6.04		181.13	6.52		169.01
	Plot 3	6.66		199.66	7.04		182.40
	Average	6.38		191.25	6.87		178.20
2020	Plot 1	6.43	2,928 hours (122 days)	188.33	6.80	2,664 hours (111 days)	181.17
	Plot 2	6.04		176.78	6.71		178.76
	Plot 3	6.66		194.87	6.99		186.19
	Average	6.38		186.66	6.83		182.04

Therefore, the baseline emission factors of group g in season s $EF_{BL,s,g}$ are summarized as follow table:

Table 4-5 $EF_{BL,s,g}$ (kg CH₄/season/ha) in baseline reference fields during this monitoring period from 2018 to 2020

Year	2018		2019		2020	
Season	Early Season	Later Season	Early Season	Later Season	Early Season	Later Season
$EF_{BL,s,g}$ (kgCH ₄ /season/ha)	186.96	182.04	191.25	178.20	186.66	182.04

Finally, based on the above values of $EF_{BL,s,g}$ and formular (5) and (6), the baseline emissions BE_y (tCO₂e) during the period from 2018 to 2020 is calculated in below table,

Table 4-6 BE_y calculation during this monitoring period from 2018 to 2020

Year	2018		2019		2020	
Season	Early Season	Later Season	Early Season	Later Season	Early Season	Later Season
$EF_{BL,s,g}$ (kgCH ₄ /season/ha)	186.96	182.04	191.25	178.20	186.66	182.04
GWP_{CH_4} (t CO ₂ e/t CH ₄)	28	28	28	28	28	28
$A_{s,g}$ (ha)	13,228	13,228	13,228	13,228	13,228	13,228
BE_s (tCO ₂ e)	69,247.150	67,424.710	70,835.941	66,002.440	69,135.884	67,424.702
Annual Total BE_y (tCO₂e)	136,671.86		136,838.381		136,560.586	

In conclusion, the calculations of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission calculations have been justified. Appropriate emission factors, GWPs and other reference values have been correctly applied. No

errors, miscalculations, omissions, misstatements or incomplete information has been identified. It can be confirmed that the baseline calculation is overall correct.

4.4.5.2 Calculation of project GHG emissions or actual net GHG removals by sinks

According to the methodology, the project emissions within the project boundary is calculated on a seasonal basis using the following formula:

$$PE_y = \sum_s PE_s \quad (7)$$

$$PE_s = \sum_{g=1}^G EF_{P,s,g} \times A_{s,g} \times 10^{-3} \times GWP_{CH_4} \quad (8)$$

Where:

- PE_y = Project emissions in year y (tCO₂e)
 PE_s = Project emissions from project fields in season s (tCO₂e)
 $EF_{P,s,g}$ = Project emission factor of group g in season s (kgCH₄/ha per season)

During this monitoring period covered three years from 2018 to 2020, there are total 6 seasons, and based on the assessment of the farmers' logbooks/10/, it is confirmed that there was only one group defined. And based on the above assessment in section 4.4.2, 4.4.3 and 4.4.4, CTI verified that the parameters $A_{s,g}$ and $EF_{P,s,g}$ were monitored in line with the PD and applied methodology.

Via checking the results in the methane measurement and calculation reports/12/ issued by laboratory named Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences, CTI confirmed that via the measurement results of C_{CH4}, based on the formulars of (1) to (4) listed in this report, the Average emission rate of a plot RE_{plot} was calculated and final integrated results of RE_{plot} with the unit of (kg/season/ha) in the three reference fields is equal to $EF_{P,s,g}$ (kgCH₄/season/ha) which are summarized in Table 4-4 below,

Table 4-4 RE_{plot} (kg/season/ha) in project reference fields during this monitoring period from 2018 to 2020

Year	Category	Early Season			Later Season		
		RE_{plot} (mg/h × m ²)	Hours over the season	RE_{plot} (kg/season /ha)	RE_{plot} (mg/h × m ²)	Hours over the season	RE_{plot} (kg/season /ha)
2018	Plot 1	3.32	2,952 hours (123 days)	97.98	3.93	2,664 hours (111 days)	104.64
	Plot 2	3.42		100.91	3.20		85.23
	Plot 3	3.14		92.77	3.53		94.11
	Average	3.29		97.22	3.55		94.66
2019	Plot 1	3.42	3,000 hours (125 days)	102.59	3.55	2,592 hours (108 days)	92.02
	Plot 2	3.29		98.85	3.47		89.91
	Plot 3	3.23		96.91	3.71		96.06
	Average	3.31		99.45	3.58		92.66

2020	Plot 1	3.24	2,928 hours (122 days)	94.80	3.50	2,664 hours (111 days)	93.31
	Plot 2	3.26		95.54	3.75		99.85
	Plot 3	3.44		100.85	3.41		90.82
	Average	3.32		97.06	3.55		94.66

Therefore, the project emission factors of group g in season s $EF_{P,s,g}$ are summarized as follow table:

Table 4-5 $EF_{P,s,g}$ (kg CH₄/season/ha) in project reference fields during this monitoring period

from 2018 to 2020

Year	2018		2019		2020	
Season	Early Season	Later Season	Early Season	Later Season	Early Season	Later Season
$EF_{P,s,g}$ (kgCH ₄ /season/ha)	97.22	94.66	99.45	92.66	97.06	94.66

Finally, based on the above values of $EF_{P,s,g}$ and formular (5) and (6), the project emissions PE_y (tCO₂e) during the period from 2018 to 2020 is calculated in below table,

Table 4-6 PE_y calculation during this monitoring period from 2018 to 2020

Year	2018		2019		2020	
Season	Early Season	Later Season	Early Season	Later Season	Early Season	Later Season
$EF_{P,s,g}$ (kgCH ₄ /season/ha)	97.22	94.66	99.45	92.66	97.06	94.66
GWP_{CH_4} (t CO ₂ e/t CH ₄)	28	28	28	28	28	28
$A_{s,g}$ (ha)	13,228	13,228	13,228	13,228	13,228	13,228
PE_s (tCO ₂ e)	36,008.444	35,060.851	36,834.688	34,319.975	35,951.283	35,059.261
Annual Total PE_y (tCO₂e)	71,069.295		71,154.663		71,010.544	

In conclusion, the calculations of project GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized project. Any assumptions used in emission calculations have been justified. Appropriate emission factors, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information has been identified. It can be confirmed that the project calculation is overall correct.

4.4.5.3 Calculation of leakage GHG emissions

In accordance with AMS-III.AU. ver. 04.0, registered PD and validation report, any effects of the project activity on GHG emissions outside the project boundary are deemed to be negligible and do not considered under this methodology, hence leakage does not need to be considered in this project.

CTI confirmed that the no leakage emissions for this monitoring period ($LE_y = 0$).

4.4.5.4 Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

The verification team has checked the MR includes a summary table of the emission reductions calculation.

Summary of emission reductions during the monitoring period,

$$ER_s = BE_s - PE_s \quad (9)$$

Where:

ER_s = Emission reductions in season s (t CO₂e)

BE_s = Baseline emissions from baseline fields in season s (tCO₂e)

PE_s = Project emissions from project fields in season s (tCO₂e)

Hence, the emission reduction during this monitoring period from 2018 to 2020 are summarized in the table below

Table 4-7 Emission Reductions Calculation during this monitoring period from 2018 to 2020

Year	2018		2019		2020	
Season	Early Season	Later Season	Early Season	Later Season	Early Season	Later Season
BE_s (tCO ₂ e)	69,247.150	67,424.710	70,835.941	66,002.440	69,135.884	67,424.702
PE_s (tCO ₂ e)	36,008.444	35,060.851	36,834.688	34,319.975	35,951.283	35,059.261
ER_s (tCO ₂ e)	33,238.705	32,363.859	34,001.253	31,682.466	33,184.601	32,365.441
Annual Total ER (tCO₂e)	65,602.564		65,683.719		65,550.042	

Parameters Period	Baseline Emissions BE_y (tCO ₂ e)	Project Emissions PE_y (tCO ₂ e)	Leakage Emissions LE_y (tCO ₂ e)	Net GHG emission reductions or removals ER (tCO ₂ e)
10-February-2018~ 31-December-2018	136,672	71,069	0	65,603
01-January-2019~ 31 December-2019	136,838	71,155	0	65,683
01-January-2020~ 31 December-2020	136,561	71,011	0	65,550
Total	410,071	213,235	0	196,836

All the figures as per the monitoring report were cross-checked by the verification team against basic monitored data. Refer to section 4.4.1 and 4.4.2 of this report for assessment details.

Furthermore, based on the assessment of applicability conditions in applied methodology as stated in the validation report/6/, it is confirmed that aggregated annual emission reductions of all fields included under this project activity shall be less than or equal to 60 kt CO₂ equivalent that should not exceed the threshold required in the small-scale methodology. Via checking the MR, ER sheet comparing with the registered PD/5/, it is confirmed that the reason for exceeding is due to the update of GWP_{CH₄} from ex-ante determined value of 25 tCO₂e/CH₄ to 28 tCO₂e/CH₄ which in compliance with the VCS standard, version 4.1/47/. Hence, as per the request of the applied small-scale methodology, the PP shall only claim the ER value equal to 60 kt CO₂ equivalent at most which has been listed as below table,

Parameters Period	Net GHG emission reductions or removals <i>ER</i> claimed
	(tCO ₂ e)
10-February-2018~ 31-December-2018	60,000
01-January-2019~ 31 December-2019	60,000
01-January-2020~ 31 December-2020	60,000
Total	180,000

Therefore, for the total 1st Monitoring period from 10-February-2018 to 31-December-2020 180,000 tCO₂e equivalent of credits eligible for issuance as VCU.

Via checking the values in MR/1/ against the ER calculation sheet/2/, CTI confirmed that the emission reductions calculation is overall correct.

4.4.5.5 Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PD

The comparison of actual values of the monitoring period with the estimations in the registered PD has been carried out by VVB.

As per the PD, VVB confirmed that the ex-ante calculation of ER was conducted based on different equations comparing with ex-post calculation of ER. The ex-ante calculation of ER was calculated based on the ex-ante determined EF_{BL,c} and scaling factors derived from IPCC or default in the applied methodology, hence there is no direct comparison method between the ex-ante and ex-post calculation of ER. Then the VVB has calculated an ex-ante calculation of ER by using the ex-post EF_{BL,s,g} to replace the EF_{BL,c}, and also change the GWP_{CH₄} from 28 tCO₂e/CH₄ to 25 tCO₂e/CH₄ but still using the ex-ante calculation method of ER in the PD, then the estimated ER value for this monitoring period was finally calculated as 175,745 tCO₂e and thus the ex-post determined value (175,746 tCO₂e if using the GWP_{CH₄} of 25 tCO₂e/CH₄) during this monitoring period was found to fit very good to the ex-ante estimated value.

PP has listed the comparison result in the ER sheet/2/, and the related reason has been clarified in the ER sheet which is verified as correct and reasonable by CTI.

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

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Refer to section 4.4 above for the detail assessment of each monitoring parameters and Appendix 3 for the supporting evidence used to determine the GHG emission reductions.

For each reported data, the evidence is provided and verified as sufficient and quality is appropriate. Also, the cross-checks have been performed on the reported data with different source of evidence. The information flow from data generation and aggregation, to recording, calculation and final transposition into the monitoring report has been assessed by VVB in section 4.4 for each parameter and also the calibration have been conducted as per the frequency of monitoring equipment defined in the registered PD.

Therefore, it is concluded that the evidence provided are verified as sufficient and quality is appropriate and thus the evidence can be used to determine the GHG emission reductions and removals for this monitoring period.

4.6 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 N₂O, CH₄ or fossil-derived CO₂ are not subject to buffer withholding, since these GHG benefits cannot be reversed.

Since the project only focuses on GHG reductions of CH₄, the project is not subject to buffer withholding.

5. VERIFICATION CONCLUSION

Shanghai Libra Investment & Management Co., Ltd. has commissioned the Shenzhen CTI International Certification Co., Ltd to carry out the Verified Carbon Standard (VCS) 1st periodic verification of the project activity Adjusted Water Management in Rice Cultivation in Tongcheng City, VCS Ref. No. 2362 for the period 10-February-2018 to 31-December-2020, with regard to the relevant requirements for VCS Version 4.1.

Based on the documented evidence and corroborated by an on-site assessment, CTI can confirm that:

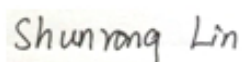
- the project has been implemented and operated as per the registered PD;
- there is no project description deviation identified for this monitoring period;
- the project complies with the verification criteria for projects set out in VCS Version 4.1;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS requirement;
- the monitoring is in place as per the applied monitoring methodology;
- the monitoring complies with the monitoring plan in the validated PD;

It is certified that the GHG emission reductions from the project during the monitoring period amount as follows:

Verification period: From 10-February-2018 to 31-December-2020

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
10-February-2018~31-December-2018	136,672	71,069	0	60,000
01-January-2019~31 December-2019	136,838	71,155	0	60,000
01-January-2020~31 December-2020	136,561	71,011	0	60,000
Total	410,071	213,235	0	60,000



Lin Shunrong
CTI
Verification Team Leader
20-July-2021



Zhou Lu
CTI
Final Approval
20-July-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
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
CP	Certification Program // Crediting Period
DverR	Draft Verification Report
EIA	Environmental Impact Assessment
ER	Emission Reduction
ETS	Emission Trading Scheme
FAR	Forward Action Request
FID	Gas chromatography with flame ionization detector
FverR	Final Verification Report
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
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

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.	Monitoring Report	Monitoring Report for the 1 st monitoring period Draft version 01, dated 01-April-2021 Final version 02, dated 26-May-2021 submitted to VERRA Final version 03, dated 19-July-2021 after VERRA review	Project Owner
2.	Shanghai Libra Investment & Management Co., Ltd.	Emission Reduction Calculation Sheet	Emission Reduction Calculation sheets (related to MR) Draft version 01, dated 01-April-2021 Final version 02, dated 26-May-2021 submitted to VERRA Final version 03, dated 19-July-2021 after VERRA review	Project Owner
3.	UNFCCC	UNFCCC	http://cdm.unfccc.int	Website
4.	VCS	VCS	https://verra.org/project/vcs-program/	Website
5.	Shanghai Libra Investment & Management Co., Ltd	Project Description	VCS project description (VCS PD) for the project, version 02, dated 11-January-2021	Project Owner
6.	CTI	Validation report	VCS Validation report for the project, version 1.0, dated 12-January-2021	CTI
7.	Project Owner	KML file	KML file with project boundary	Project Owner
8.	Tongcheng Agricultural Bureau	GPS results	GPS results measured by Tongcheng Agricultural Bureau for project field sizes	Project Owner
9.	Project Owner	Seasonal methane measurements plan	Plan for the seasonal methane measurements	Project Owner
10.	Farmers	Farmers' log-books	Farmers' log-books from 942 sampled farmers selected for monitoring A _{s,g} during this monitoring period.	Project Owner
11.	Technicians	Fact Sheets	Fact Sheets on Rice Cultivation in Tongcheng City from 2018 to 2020	Project Owner
12.	Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences	Methane measurement and calculation reports	Six seasons' measurement and calculation reports during year 2018 to 2020 1. 2018 early season issued in August 2018 2. 2018 later season issued in November 2018 3. 2019 early season issued in August 2019	Project Owner

No	Author	Title	References to the document	Provider
			4. 2019 later season issued in November 2019 5. 2020 early season issued in August 2020 6. 2020 later season issued in November 2020	
13.	Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences	Technical Guidelines	Technical Guidelines for Intermittently Flooded Rice Cultivation Method issued in February 2018	Project Owner
14.	Experts	CV of the experts	CV of the expert who conducted laboratory analysis	Project Owner
15.	China National Accreditation Service (CNAS)	Certificate of laboratory	Certificate of laboratory named Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences with ISO/IEC 17025 certificate dated on 04-February-2016 valid to 03-February-2022	Project Owner
16.	Anqing City Agriculture and Rural Bureau	Project approval	Project approval issued on 22-October-2017	Project Owner
17.	Anqing City Agriculture and Rural Bureau	Inspection and Acceptance Report	Inspection and Acceptance Report of the project dated 05-February-2018	Project Owner
18.	Tongcheng City Agriculture and Rural Bureau	Certification of land rights	Certification of land rights issued on 09-December-2020	Project Owner
19.	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
20.	Hefei City Market Supervision and Administration	Business License	Business License of Hefei Luyu Agricultural Technology Co., Ltd.	Project Owner
21.	Tongcheng City Agriculture and Rural Bureau and Anhui Xiangying Municipal Group Co., Ltd.	Construction Contract	Construction Contract signed on 01-January-2017	Project Owner
22.	Project Owner	Farmers database	Information of all the 4,410 farmers included in the project	Project Owner
23.	Anhui Provincial Academy of Social Sciences	Baseline survey report	Baseline survey report with investigation of 100 farmer samples in June 2017	Project Owner
24.	Institute of Agricultural Engineering, Anhui Academy	Report of Measuring Methane	Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in	Project Owner

No	Author	Title	References to the document	Provider
	of Agricultural Sciences Laboratory		Tongcheng City in August 2017 and November 2017	
25.	Unistrong	Instruction of GPS	Instruction of GPS Measuring Equipment	Project Owner
26.	Project Owner and employments	Employment contracts	Employment contracts signed between Hefei Luyu Agricultural Technology Co., Ltd. and employments	Project Owner
27.	Project Owner	Monthly payroll to the technicians	Monthly payroll to the technicians during this monitoring period	Project Owner
28.	Project Owner	Records and photo evidence	Records and photo evidence related to the book donation activity in Tongcheng by the project owner	Project Owner
29.	Project Owner	Photo of posted notice	Photo of posted notice of meeting on the bulletin board in each village	Project Owner
30.	Shanghai Libra Investment & Management Co., Ltd.	Monitoring Manual	Monitoring and QC Manual for this project in Sep. 2017	Project Owner
31.	Agricultural bureau at the Tongcheng Agricultural Bureau and project owner	Local stakeholder consultation records	- Meeting minutes on 10-March-2021 - Attendance Register List on 10-March-2021 70 filled questionnaires distributed to relevant personnel of village representatives, relevant governmental officials, local farmers during this monitoring period	Project Owner
32.	Project Owner	Suggestion Book	Suggestion Book published on the notice board of villages	Project Owner
33.	Hefei Luyu Agricultural Technology Co., Ltd.	Technical Training Records	Technical Training Records to Technicians and Farmers in 2018, 2019 and 2020 including training records and participants records	Project Owner
34.	Intergovernmental Panel on Climate Change	IPCC Guidelines	2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	www.ipcc-nggip.iges.or.jp
35.	Intergovernmental Panel on Climate Change	AR4	IPCC's Fourth Assessment report, GHG Protocol	www.ipcc-nggip.iges.or.jp
36.	Intergovernmental Panel on Climate Change	AR5	IPCC's Fifth Assessment report, GHG Protocol	www.ipcc-nggip.iges.or.jp
37.	National Government	Air Pollution law	Law of the People's Republic of China on Prevention and Control of Air Pollution	Public website
38.	On-site Validation team	Photographs of Project Site	Photographs of project area, reference fields, rice, ditches, reservoirs, chambers, bases etc. taken by	On-site Verification team

No	Author	Title	References to the document	Provider
			verification team during the on-site validation	
39.	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
40.	UNFCCC	Standard for Sampling and Surveys	CDM Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, V8.0	UNFCCC Website
41.	UNFCCC	Guideline for Sampling and Surveys	CDM Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities, V4.0	UNFCCC Website
42.	VERRA	Monitoring Report Template	VCS- Monitoring-Report -Template-v4.0	VERRA
43.	VERRA	Non-Permanence Risk Tool	AFOLU Non-Permanence Risk Tool, Version 4.0 https://verra.org/project/vcs-program/rules-and-requirements/	VCS website
44.	VERRA	Registration and Issuance Process version 4.0	Registration and Issuance Process version 4.0	VCS website
45.	VERRA	VCS Program Definitions	VCS Program Definitions, v4.1	VCS website
46.	VERRA	VCS Program Guide	VCS Program Guide, v4.0	VCS website
47.	VERRA	VCS Standard	VCS Standard, v4.1	VCS website
48.	China CER Exchange Info-platform	China CER	http://cdm.ccchina.org.cn/ccer.aspx	Website
49.	Google	Google Earth Map	earth.google.com	Website
50.	GS	Gold Standard	http://www.goldstandard.org/	Website
51.	IPCC	IPCC publications	www.ipcc-nggip.iges.or.jp	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)			
VVB assessment (1st round)			Date:

Table 2. CL from this verification

CL ID	01	Section no.	1.1	Date : 22/04/2021
Description of CL				
- The completion time of high standard rice fields construction is not provided. - It stated that the land preparation of the early season in 2018 was started on 10-February-2018 and harvest of early season in 2018 was started on 28-June-2018, however, it is not clear that all the involved farms have the same time for preparation and harvest.				
Project participant response				Date : 17/05/2021
- The completion time of high standard rice fields construction was provided in the updated version of MR, which is the period from 29 January to 3 February in 2018. - The dates provided are the earliest time of land preparation and harvest in 2018 and the dates of land preparation in Tongcheng City in 2018 for all 4,410 households have been recorded in database. Besides, the dates of land preparation and harvest for each household of 4,410 are different have been stated in the updated version of MR.				
Documentation provided by project participant				
/1/- version 02 /22/ /17/				
VVB assessment				Date: 20/05/2021
- The revised MR is checked, CTI confirmed that the completion time of high standard rice fields construction is provided which is verified as correct by checking the Inspection and Acceptance Report/17/. - The revised MR is checked, CTI confirmed that the land preparation of the early season in 2018 was started earliest on 10-February-2018 and harvest of early season in 2018 was started earliest on 28-June-2018, and the actual time of land preparation and harvest for each household is verified by checking the farmers database/22/.				
CL 01 is closed.				

CL ID	02	Section no.	3.1	Date : 22/04/2021
Description of CL				
A conclusion of if any information on events that may impact the GHG emission reductions or removals and monitoring happened during this monitoring period is not clarified.				
Project participant response				Date : 17/05/2021

The conclusion that no events that may impact the GHG emission reductions or removals and monitoring happened during this monitoring period has been provided in the updated version of MR.	
Documentation provided by project participant	
/1/- version 02	
VVB assessment	Date: 20/05/2021
The revised MR is checked, it is confirmed that the conclusion is provided accordingly. Via site inspection and checking all the supporting evidence as listed in Appendix 3, VVB confirmed that there was no any event that may impact the GHG emission reductions or removals and monitoring happened during this monitoring period for this project. CL 02 is closed.	

CL ID	03	Section no.	3.1	Date : 22/04/2021
Description of CL				
As per the MR template, it requests that “For AFOLU projects, where no new project activities that lead to the intended GHG benefit commenced during the monitoring period, discuss whether project activities that commenced prior to the monitoring period continued to be implemented during the monitoring period.” However, the related clarification is missing.				
Project participant response				Date : 17/05/2021
In the updated version of MR, it stated that no new activities that lead to the intended GHG benefit commenced during this monitoring period. All the rice paddies of 13,228 ha have been planted with intermittent flooded water regime over the period from 2018 to 2020.				
Documentation provided by project participant				
/1/- version 02				
VVB assessment				Date: 20/05/2021
The revised MR is checked, CTI confirmed that the related information has been added. Via the PD and during site visit, CTI verified that no new activities that lead to the intended GHG benefit commenced during this monitoring period, On the basis of site visit and the reviewed project monitoring report and other supporting docs, it can be confirmed that w.r.t. the realized technology, the project cement ditches and reservoirs, as well as the monitoring and metering equipment, the project has been implemented and operated as applied methodology and monitoring plan described in the registered PD/5/. CL 03 is closed.				

CL ID	04	Section no.	3.1	Date : 22/04/2021
Description of CL				
As per the MR template, it requests that “Where applicable, describe how leakage and non-permanence risk factors are being monitored and managed for AFOLU projects.”, however, the related clarification is not provided.				
Project participant response				Date : 17/05/2021
In the updated version of MR, it stated that, according to the applied methodology AMS-III.AU (version 4.0), any effects of the project activity on GHG emissions outside the project boundary are deemed to be negligible and do not considered under this methodology. So, leakage does not need to be considered in this project.				
Documentation provided by project participant				
/1/- version 02				
VVB assessment				Date: 20/05/2021
The revised MR is checked, CTI confirmed that the description of how the leakage is being monitored and managed for AFOLU projects has been added. As the validated PD, the leakage does not need to be considered in this project. CL 04 is closed.				

CL ID	05	Section no.	4.2	Date : 22/04/2021
Description of CL				
For the monitoring parameter $A_{s,g}$,				
1. For the monitoring method, only the options listed in PD are provided, however, the actual measurement methods and procedures applied in this monitoring period is not clarified. 2. The detail information of the monitoring equipment is missing, including type, accuracy and calibration etc. 3. The QA/QC procedures applied for this monitoring period is not clarified. 4. The related evidence for supporting the value of $A_{s,g}$ is not clarified.				
Project participant response				Date : 17/05/2021
The relevant information has been updated in MR as follows.				
1. The actual measurement methods and procedures applied in this monitoring period are combining the field size measured by GPS from Tongcheng Agricultural Bureau in database and the technicians' monitoring. The size of each household's rice field is determined by using GPS by Tongcheng Agricultural Bureau and provided to project proponent, which then makes a database. The technicians use this database to monitor and check each household in it. Every week, the technicians are required to check whether the project fields recorded in the database are cultivated by intermittent flooded method with the help of the logbooks. Finally, technicians should submit the Fact Sheets on Rice Cultivation in Tongcheng City from 2018 to 2020. 2. The figure and detailed information of GPS measuring equipment used by Tongcheng Agricultural Bureau are provided in MR. 3. According to requirement described in Quality assurance/Quality control of General guidelines for SSC CDM methodologies, the monitoring of aggregated project area in a given season s ($A_{s,g}$) was divided into two sections. The first section is that the technicians checked whether the project fields recorded in the database are cultivated by intermittent flooded method with the help of the logbooks every week. Secondly, the size of each household's rice field is provided by Tongcheng Agricultural Bureau to the project proponent, which then makes a database. The technicians used this database to monitor and check each household in it. At the end of each cropping season, the technicians submitted the Fact Sheets on Rice Cultivation in Tongcheng City from 2018 to 2020. In terms of the sampling of logbooks, 314 households were sampled as required (please refer to the relevant part in Section 4.3 for details). The parameter was used to calculate the baseline emissions from project fields in season s (BE_s) and the project emissions from project fields in season s (PE_s). 4. According to the Fact Sheets on Rice Cultivation in Tongcheng City from 2018 to 2020 submitted by technicians and the sampled cultivation logbooks collected from households, all the farmers households cultivated double-cropping rice with intermittent flooded water regime in this monitoring period.				
Documentation provided by project participant				
/1/- version 02				
VVB assessment				Date: 20/05/2021
1. The revised MR is checked, CTI confirmed that the actual measurement methods and procedures applied in this monitoring period is clarified. 2. The revised MR is checked, CTI confirmed that the detail information of the monitoring equipment is provided, including type, accuracy and calibration etc. 3. The revised MR is checked, CTI confirmed that the QA/QC procedures applied for this monitoring period is clarified. 4. The revised MR is checked, CTI confirmed that the related evidence for supporting the value of $A_{s,g}$ is clarified and provided. Refer to section 4.4.2 of this report for detail assessment. CL 05 is closed.				

CL ID	06	Section no.	4.2	Date : 22/04/2021
Description of CL				

For the monitoring parameter $EF_{BL,s,g}$,

1. The size and selection of gas samplings is not clarified.
2. The detail information of the monitoring equipment including chambers and device in laboratory is missing, including type, accuracy and calibration etc.
3. The QA/QC procedures applied for this monitoring period is not clarified clearly for both field measurements, laboratory analysis, and cross check.
4. The certificate of laboratory is not clarified.
5. The calculation method for $EF_{BL,s,g}$ is not clarified
6. The related evidence for supporting the value of $EF_{BL,s,g}$ is not clarified.

Project participant response

Date : 17/05/2021

The detailed information of monitoring parameter $EF_{BL,s,g}$ has been provided in the updated MR as follows.

1. It was obtained from the calculation of the emission rate for baseline reference fields according to the requirements in the Appendix of methodology (please refer to calculation of the emission rate for a plot (reference field) below for details), and the $C_{CH_4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings was derived from the laboratory analysis. Since there are only one group in this project, three baseline reference fields where rice is cultivated by continuously flooded method are needed to measure the gas samples. Three closed chambers should be placed in each field and samples should be measured three times a week from each closed chamber. Therefore, the number of gas samples gained during this monitoring period is summarized as follows.

Year	2018		2019		2020	
Season	early	later	early	later	early	later
Times of gas sampling	18	17	19	16	18	17
Number of gas samples	486	459	513	432	486	459

2. There are two sets of monitoring equipment involved. Firstly, the gas samples were measured by using the closed chambers (shown in MR). Then, all the samples should be analyzed in laboratory by FID (gas chromatography with flame ionization detector) (shown in MR).

The parameters of the FID used in laboratory analysis are shown in the table below.

Parameter	Information
Model	Agilent 7890B GS System
Injection	Direct injection
Column	Packed (Filling: 60/80,13X)
Calibration	With certified standard gas each day of analysis before and after the analyses are done (the concentration of the certified standard gas: 5.11ppm)

3. The technicians trained by expert from Anhui Academy of Agricultural Sciences should do gas sampling once a week. As mentioned above, three closed chambers were placed in each baseline reference field and each chamber was sampled three times at a time. Therefore, there were 27 gas samples a week. All these gas samples were stored in evacuated vial and then sent to laboratory for analysis by FID.
4. The laboratory analysis was also conducted in this institution which owned an ISO/IEC 17025 certificate, which is issued by China National Accreditation Commission for Conformity Assessment. The validity of this certificate is from 4-February-2016 to 3-February-2022. Also, the 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). All the technicians are rigorously trained by expert before they started gas sampling. Once the expert finds abnormal data, it is immediately verified with the technicians. If data is wrong, it will be discarded according to the actual situation. Thus, the quality of this data can be assured and controlled.
5. It was calculated by using the equation (1) ~ (4) in MR.
6. After the gas samples are gained from field measurements in baseline reference fields and analyzed in laboratory, the results were recorded in The Report of Measuring Methane Emission

Rate of Double-cropping Rice Paddies with Different Water Regime by Closed Chamber in Tongcheng City from 2018 to 2020.	
Documentation provided by project participant	
/1/- version 02	
VVB assessment	Date: 20/05/2021
1. The revised MR is checked, CTI confirmed that the size and selection of gas samplings is provided. 2. The revised MR is checked, CTI confirmed that the detail information of the monitoring equipment including chambers and device in laboratory is provided including type, accuracy and calibration etc. 3. The revised MR is checked, CTI confirmed that the QA/QC procedures applied for this monitoring period is clarified clearly for both field measurements, laboratory analysis, and cross check. 4. The revised MR is checked, CTI confirmed that the certificate of laboratory is provided. 5. The revised MR is checked, CTI confirmed that the calculation method for $EF_{BL,s,g}$ is clarified 6. The revised MR is checked, CTI confirmed that the related evidence for supporting the value of $EF_{BL,s,g}$ is clarified. Refer to section 4.4.2 of this report for detail assessment. CL 06 is closed.	

CL ID	07	Section no.	4.2	Date : 22/04/2021																												
Description of CL																																
For the monitoring parameter $EF_{p,s,g}$,																																
1. The size and selection of gas samplings is not clarified. 2. The detail information of the monitoring equipment including chambers and device in laboratory is missing, including type, accuracy and calibration etc. 3. The QA/QC procedures applied for this monitoring period is not clarified clearly for both field measurements, laboratory analysis, and cross check. 4. The certificate of laboratory is not clarified. 5. The calculation method for $EF_{p,s,g}$ is not clarified 6. The related evidence for supporting the value of $EF_{p,s,g}$ is not clarified.																																
Project participant response				Date : 17/05/2021																												
1. It was obtained from the calculation of the emission rate for project reference fields according to the requirements in the Appendix of methodology (please refer to Calculation Method of Parameter $EF_{BL,s,g}$ mentioned above for details), and the $C_{CH_4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings was derived from the laboratory analysis. Since there are only one group in this project, three project reference fields where rice is cultivated by intermittent flooded method are needed to measure the gas samples. Three closed chambers should be placed in each field and samples should be measured three times a week from each closed chamber. Therefore, the number of gas samples gained during this monitoring period is summarized as follows. <table><tr><td>Year</td><td colspan="2">2018</td><td colspan="2">2019</td><td colspan="2">2020</td></tr><tr><td>Season</td><td>early</td><td>later</td><td>early</td><td>later</td><td>early</td><td>later</td></tr><tr><td>Times of gas sampling</td><td>18</td><td>17</td><td>19</td><td>16</td><td>18</td><td>17</td></tr><tr><td>Number of gas samples</td><td>486</td><td>459</td><td>513</td><td>432</td><td>486</td><td>459</td></tr></table> 2. There are two sets of monitoring equipment involved. Firstly, the gas samples were measured by using the closed chambers (shown in MR). Then, all the samples should be analyzed in laboratory by FID (gas chromatography with flame ionization detector) (shown in MR). And the parameters of the FID used in laboratory analysis are shown in the table above in CL 06 (Please refer to Monitoring Equipment of Parameter $EF_{BL,s,g}$ for details). 3. The technicians trained by expert from Anhui Academy of Agricultural Sciences should do gas sampling once a week. As mentioned above, three closed chambers were placed in each baseline reference field and each chamber was sampled three times at a time. Therefore, there were 27 gas samples a week. All these gas samples were stored in evacuated vial and then sent to laboratory for analysis by FID.					Year	2018		2019		2020		Season	early	later	early	later	early	later	Times of gas sampling	18	17	19	16	18	17	Number of gas samples	486	459	513	432	486	459
Year	2018		2019		2020																											
Season	early	later	early	later	early	later																										
Times of gas sampling	18	17	19	16	18	17																										
Number of gas samples	486	459	513	432	486	459																										

4. The laboratory analysis was also conducted in this institution which owned an ISO/IEC 17025 certificate, which is issued by China National Accreditation Commission for Conformity Assessment. The validity of this certificate is from 4-February-2016 to 3-February-2022. Also, the 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). All the technicians are rigorously trained by expert before they started gas sampling. Once the expert finds abnormal data, it is immediately verified with the technicians. If data is wrong, it will be discarded according to the actual situation. Thus, the quality of this data can be assured and controlled.
5. It was calculated by using the equation (1) ~ (4) in MR.
6. After the gas samples are gained from field measurements in project reference fields and analyzed in laboratory, the results were record in The Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Different Water Regime by Closed Chamber in Tongcheng City from 2018 to 2020.

Documentation provided by project participant

/1/- version 02

VVB assessment
Date: 20/05/2021

1. The revised MR is checked, CTI confirmed that the size and selection of gas samplings is provided.
2. The revised MR is checked, CTI confirmed that the detail information of the monitoring equipment including chambers and device in laboratory is provided including type, accuracy and calibration etc.
3. The revised MR is checked, CTI confirmed that the QA/QC procedures applied for this monitoring period is clarified clearly for both field measurements, laboratory analysis, and cross check.
4. The revised MR is checked, CTI confirmed that the certificate of laboratory is provided.
5. The revised MR is checked, CTI confirmed that the calculation method for $EF_{P,s,g}$ is clarified
6. The revised MR is checked, CTI confirmed that the related evidence for supporting the value of $EF_{P,s,g}$ is clarified.

Refer to section 4.4.2 of this report for detail assessment.

CL 06 is closed.

CL ID	08	Section no.	4.3	Date	22/04/2021
Description of CL					
For the monitoring process of $A_{s,g}$, the actual monitoring actions including monitoring time, charged person, sample size, cross check the sample survey results and finally determine the value for this monitoring period are not clarified.					
Project participant response					Date : 17/05/2021
The monitoring process of $A_{s,g}$ has been clarified in the updated MR as follows. Therefore, all fields within project area have the same cultivation pattern and there is only one group in this project. Then, in January 2018, before the cropping season started, 3 baseline reference fields and 3 project reference fields were set in Fudong Village, Kongcheng Town, respectively, which are fixed rice paddies with area of around 0.3 ha. The reason of choosing these reference fields is that the expert from Anhui Academy of Agricultural Bureau believed that these fields were representative of the baseline scenario and project scenario in all of the parameters mentioned above. The measurements on project and baseline reference fields were carried out in an equal manner and simultaneously. The baseline reference fields were selected that they are representative of baseline scenario where double-cropping rice was planted by continuously flooded method without any organic amendments, while the project reference fields were selected that they are representative of project scenario where double-cropping rice was planted by intermittent flooded method without any organic amendments. During the first 7-year crediting period, these fields would always be used as baseline and project reference fields and will not be changed.					
Documentation provided by project participant					
/1/- version 02					
VVB assessment					Date: 20/05/2021

The revised MR is checked, CTI confirmed that the monitoring process of $A_{s,g}$ including the actual monitoring actions, monitoring time, charged person, sample size, cross check the sample survey results and finally determine the value for this monitoring period are all clarified.
Refer to section 4.4.3 of this report for detail assessment.
CL 08 is closed.

CL ID	09	Section no.	4.3	Date : 22/04/2021
Description of CL				
- For the monitoring process of $EF_{BL,s,g}$ and $EF_{p,s,g}$, the actual monitoring actions are not clarified. - The information of detailed plan for the seasonal methane measurements listed in table 4-6 is not in line with the requirements to the plan in the applied methodology.				
Project participant response				Date : 17/05/2021
- For the monitoring process of $EF_{BL,s,g}$ and $EF_{p,s,g}$, the actual monitoring actions have been clarified as follows in the updated MR. As mentioned above, three baseline reference fields and three project reference fields were selected in Fudong Village, Kongcheng Town, and the project reference fields are 2km away from baseline reference fields. Besides, the measurements on project and baseline reference fields were carried out in an equal manner and simultaneously. Three replicate bases were placed in each reference fields just before rice transplanting (i.e. in March from 2018 to 2020 and please refer to Section 5.1 and Section 5.2 in MR for details). The first gas sampling was conducted by technicians 24 hours after transplanting. Then, technicians conducted the gas sampling in both baseline and project reference fields once a week and the last sampling were taken just before harvest (see details in Table 5-1 and Table 5-2 in MR). During every sampling, the technicians covered the chamber on the base for half an hour and took three samples from each chamber. Then, the technicians could gain 54 samples at a time from all baseline and project reference fields and took the gas samples to laboratory. After three times of sampling have been taken, all 162 gas samples would be analysed by FID in laboratory to obtain CH_4 concentration in chamber at time t ($c_{CH_4,t}$) that can be used to calculate average emission rate of a plot (reference field) in $mg/h \times m^2$. After that, from the average emission rates per plot of each chamber measurement, the seasonally integrated emission factors were derived by integration of the measurement results over the season length, which means multiplying the emission rate with the number of hours of the measurement interval and accumulating the results of every measurement interval over the season. Finally, the seasonally integrated baseline emission factor $EF_{BL,s,g}$ and project emission factor $EF_{p,s,g}$ were derived as average value from the replicate three measurements for baseline reference fields and project reference fields. Please refer to Section 5.1 and Section 5.2 in MR for detailed process of calculation. - Hefei Luyu, as the project proponent, entrusted Anhui Academy of Agricultural Sciences with preparing a detailed plan for the methane measurements before the start of the monitoring period. As mentioned above, the logics that are necessary to do field measurement and laboratory analysis as well as the cropping calendar are similar, so Hefei Luyu entrusted Anhui Academy of Agricultural Sciences to prepare a detailed plan in January 2018 before the start of the project. The plan has included the schedule for the field and laboratory measurements, the logistics that are necessary to get the gas samples to laboratory and a cropping calendar. Please refer to the Table 4-1 in MR for all reference fields' specific information.				
Documentation provided by project participant				
/1/- version 02				
VVB assessment				Date: 20/05/2021
- The revised MR is checked, CTI confirmed that the actual monitoring actions taken are clarified for the monitoring process of $EF_{BL,s,g}$ and $EF_{p,s,g}$. - The revised MR is checked, CTI confirmed that the information of detailed plan for the seasonal methane measurements listed in table 4-6 is updated to in line with the requirements to the plan in the applied methodology. Refer to section 4.4.3 of this report for detail assessment. CL 08 is closed.				

CL ID	10	Section no.	4.3	Date : 22/04/2021
Description of CL				
The actual test and measurement conducted in the laboratory is not clarified. The related equipment and certificate of lab is not clarified.				
Project participant response				Date : 17/05/2021
The information has been clarified as follows in the updated MR. During this monitoring period, the laboratory analysis was done in Anhui Academy of Agricultural Bureau, which has the laboratory accreditation certificate issued 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). The validity of this certificate is from 4-February-2016 to 3-February-2022. 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). The FID used in laboratory analysis were calibrated in accordance with the requirements in the Appendix of methodology (shown in Table 4-2~4-4 of Section 4.3 above) with certified standard gas each day of analysis before and after the analyses are done (the concentration of the certified standard gas: 5.11ppm).				
Documentation provided by project participant				
/1/- version 02 /15/ /12/				
VVB assessment				Date: 20/05/2021
The revised MR is checked, CTI confirmed that the actual test and measurement conducted in the laboratory is clarified and the related equipment and certificate of lab is clarified. Via checking the methane measurement and calculation reports/12/, CTI confirmed that the actual test and measurement conducted in the laboratory are correctly provided. Via checking the certificate of laboratory named Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences/15/, CTI confirmed that the laboratory get ISO/IEC 17025 certificate issued by China National Accreditation Service (CNAS) with authorized scope of Gas Chromatograph and Gas Collection Chamber Items. Hence CTI verified that the two key monitoring parameters $EF_{BL,s,g}$ and $EF_{p,s,g}$ were measured and calculated by certified lab, thus the results in the methane measurement and calculation reports/12/ issued by laboratory named Institution of Agricultural Engineering, Anhui Academy of Agricultural Sciences are verified and certified as correct and credible. Refer to section 4.4.3 and 4.4.4 of this report for detail assessment. CL 10 is closed.				

CL ID	11	Section no.	4.3	Date : 22/04/2021
Description of CL				
The actual monitoring process for measuring and calculation the final result of $EF_{BL,s,g}$ and $EF_{p,s,g}$ for this monitoring period is not clarified. There is no detail process to describe from selection of reference filed to finally get the results of $EF_{BL,s,g}$ and $EF_{p,s,g}$.				
Project participant response				Date : 17/05/2021

The actual monitoring process for measuring and calculation the final result of $EF_{BL,s,g}$ and $EF_{p,s,g}$ for this monitoring period has been clarified as follows in updated MR.

In combination with the experimental requirements and the area of the local high-standard farmland, the expert selected three baseline reference fields and three project reference fields in Fudong Village, respectively, which represents the baseline and project scenario well in terms of the parameters listed above (shown in the Monitoring Process in MR). Firstly, the technicians buried the base in the fields before transplanting, and plant 4 rice hills in the base area (as shown in the figure 3 below).

The base size is $0.5m \times 0.5m$, so the requirement of covering $0.1m^2$ minimum was guaranteed. The first sampling was taken the next day after transplanting, and then once a week. At each sampling, the closed chamber was mounted on the base for 30 minutes and then three gas samples were gained by technicians. The gas samples were transferred into evacuated vial for storage. After the field sampling has been completed 3 times, all gas samples were sent to the laboratory for FID analysis. Finally, the expert calculated the final result by Equation (1) ~ (4) in MR, and then the report was finished by expert at the end of each cropping season. Please refer to Section 4.2 in MR for specific number of gas samples gained from field measurement.

Taking early season rice of double cropping in 2018 as an example, the detailed process and final results of monitoring in both baseline and project reference fields are described as follows, including the schedule, personnel and equipment involved in field gas collection, laboratory analysis and report preparation.

Early season rice of double cropping in 2018			
Time	Activity	Equipment	Personnel
5 March	Land preparation	----	Farmers
7 March	Base was buried and transplantation	Base	Technicians and Farmers
8 March	The first sampling	Closed chamber	Technicians
15 March	The second sampling		
22 March	The third sampling		
23 March	Laboratory Analysis	FID	Expert
29 March	The fourth sampling	Closed chamber	Technicians
5 April	The fifth sampling		
12 April	The sixth sampling		
13 April	Laboratory Analysis	FID	Expert
19 April	The seventh sampling	Closed chamber	Technicians
26 April	The eighth sampling		
3 May	The ninth sampling		
4 May	Laboratory Analysis	FID	Expert
10 May	The tenth sampling	Closed chamber	Technicians
17 May	The eleventh sampling		
24 May	The twelfth sampling		
25 May	Laboratory Analysis	FID	Expert
31 May	The thirteenth sampling	Closed chamber	Technicians
7 June	The fourth sampling		
14 June	The fifth sampling		
15 June	Laboratory Analysis	FID	Expert
21 June	The sixth sampling	Closed chamber	Technicians
28 June	The seventh sampling		
5 July	The last on-site sampling and then harvest		
6 July	Laboratory Analysis	FID	Expert

1 August	The Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Different Water Regime by Closed Chamber in Tongcheng City in 2018	----	Expert
Since the measurements on project and baseline reference fields are carried out in an equal manner and simultaneously, the schedule of measurements and laboratory analysis, and the number of gas samples collected from baseline and project reference fields are the same.			
Documentation provided by project participant			
/1/- version 02			
VVB assessment			Date: 20/05/2021
The revised MR is checked, CTI confirmed that the actual monitoring process for measuring and calculation the final result of $EF_{BL,s,g}$ and $EF_{p,s,g}$ for this monitoring period is clarified. The detail process to describe from selection of reference field to finally get the results of $EF_{BL,s,g}$ and $EF_{p,s,g}$ have been provided in MR by PP which is in line with the request of applied methodology and PD. Refer to section 4.4.3 of this report for detail assessment. CL 11 is closed.			

CL ID	12	Section no.	4.3	Date : 22/04/2021
Description of CL				
The actual calculation process from gas samples to final results of $EF_{BL,s,g}$ and $EF_{p,s,g}$ is not clarified.				
Project participant response				Date : 17/05/2021
The actual calculation process from gas samples to final results of $EF_{BL,s,g}$ and $EF_{p,s,g}$ has been clarified as the equation (1)~(4) above in the updated MR.				
Documentation provided by project participant				
/1/- version 02				
VVB assessment				Date: 20/05/2021
The revised MR is checked, CTI confirmed that the actual calculation process from gas samples to final results of $EF_{BL,s,g}$ and $EF_{p,s,g}$ have been provided in MR by PP which is in line with the request of applied methodology and PD. Refer to section 4.4.3 of this report for detail assessment. CL 12 is closed.				

CL ID	13	Section no.	4.3	Date : 22/04/2021
Description of CL				
The actual emergency procedure applied for this monitoring period is not clarified.				
Project participant response				Date : 17/05/2021
The actual emergency procedure applied for this monitoring period has been clarified as follows. During this monitoring period, Shanghai Libra have trained the technicians to check that the base is in good condition before installation, and to check that the closed chamber can be used properly before each sampling. So far, no equipment damage has occurred, as well as the extreme weather.				
Documentation provided by project participant				
/1/- version 02 /10/ /12/				
VVB assessment				Date: 20/05/2021
The revised MR is checked, CTI confirmed that the actual emergency procedure applied for this monitoring period is clarified. Monitoring team will take actions to deal with missing data due to negligence and improper operation and maintain or will replace the broken chamber if any malfunction, also pay close attention to weather forecasts during rice planting, and the monitoring data will be calculated conservatively for emission calculations during the troubleshooting period. By site interview with monitoring staff and experts and checking the related evidence for				

data/10/,/12/, CTI verified that no emergency situations have been occurred. Thus no emergency procedure was used for this monitoring period.
CL 13 is closed.

CL ID	14	Section no.	-	Date : 22/04/2021
Description of CL				
There is no information of comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PD in ER sheet, and the reason of actual is higher than estimated value is not clarified.				
Project participant response				Date : 17/05/2021
The comparison of actual GHG emission reductions with estimates in registered PD in ER sheet and the interpretation have been provided in the ER sheet as follows.				
1. The ex-ante emission reductions were calculated by monitoring the baseline emission factor for continuously flooded fields without organic amendments ($EF_{BL,c}$, $kgCH_4/ha \cdot season$) combined with the IPCC tier 1 default values for emission and scaling factors as shown above, while the post-emission reductions were calculated by monitoring the emission factors in both baseline and project reference fields. The ex-ante value was gained by estimation, while the ex-post value was closer to the actual occurrence, so the difference between the two is normal.				
2. As mentioned in the reason 1, the calculation methods of ER used in PD and MR are different. The emission factor used in PD was the $EF_{BL,c}$ (baseline emission factor for continuously flooded fields without organic amendments for the whole season, while those used in MR were $EF_{BL,s,g}$ (baseline emission factor of group g in season s) and $EF_{P,s,g}$ (project emission factor of group g in season s). Thus, a simple comparison between these parameters are meaningless.				
3. Combined with the above two reasons, the values of $EF_{BL,s,g}$ and $EF_{P,s,g}$ measured from 2018 to 2020 were put into the ex-ante calculation method used in PD, and the obtained values were shown in Table 4 above. It can be seen from Table 4 that there is not much difference between the ex-ante value and the post value calculated by the same method, so the ER value in this monitoring period is reasonable and credible.				
Documentation provided by project participant				
/2/- version 02				
VVB assessment				Date: 20/05/2021
The comparison of actual values of the monitoring period with the estimations in the registered PD has been carried out by VVB.				
As per the PD, VVB confirmed that the ex-ante calculation of ER was conducted based on different equations comparing with ex-post calculation of ER. The ex-ante calculation of ER was calculated based on the ex-ante determined $EF_{BL,c}$ and scaling factors derived from IPCC or default in the applied methodology, hence there is no direct comparison method between the ex-ante and ex-post calculation of ER. Then the VVB has calculated an ex-ante calculation of ER by using the ex-post $EF_{BL,s,g}$ to replace the $EF_{BL,c}$ but still using the ex-ante calculation method of ER in the PD, then the estimated ER value for this monitoring period was finally calculated as 175,745 tCO _{2e} and thus the ex-post determined value of 180,000 tCO _{2e} during this monitoring period was found to fit very good to the ex-ante estimated value.				
PP has listed the comparison result in the ER sheet/2/, and the related reason has been clarified in the ER sheet which is verified as correct and reasonable by CTI.				
CL 14 is closed.				

Table 3. CAR from this verification

CAR ID	01	Section no.	2.1	Date : 22/04/2021
Description of CAR				
1. The actual environmental impacts and related actions mitigated during this monitoring period is not provided.				
2. The actual socio-economic impacts and related actions mitigated during this monitoring period is not provided.				

Project participant response	Date : 17/05/2021
The information has been provided as follows in the updated MR. - For the actual environmental impacts and related actions mitigated during this monitoring period, there was no excessive use of fertilizer and pesticide during this monitoring period. - For the actual socio-economic impacts and related actions mitigated during this monitoring period, there was no damage to the ditches and reservoirs during this monitoring period	
Documentation provided by project participant	
/1/- version 02 /13/ /10/	
VVB assessment	Date: 20/05/2021
The revised MR is checked, CTI confirmed that the actual environmental impacts and related actions mitigated during this monitoring period is provided. Associated with the interview with local experts/I3/, technicians/I4/ and farmers/I5/ and checking the Technical Guidelines for Intermittently Flooded Rice Cultivation Method/I3/, CTI confirmed that technicians patrolled the rice paddies every week and instructed the farmers how to use the optimal amount of fertilizer according to the technical guidelines. Hence CTI verified that there were no excessive use of fertilizer and pesticide and no any negative impacts found in the project location during this monitoring period. In addition, associated with the interview with local experts/I3/, technicians/I4/ and farmers/I5/ and checking the Technical Guidelines for Intermittently Flooded Rice Cultivation Method/I3/, CTI confirmed that technicians patrolled the rice paddies every week and farmers could immediately call the technician if a ditch broke down in their fields and the technicians can solve the problem within one hour and appeal to local agricultural bureau to activate the emergency mechanism if can't solve by themselves. Furthermore, via checking the farmers' log-books/I0/ and confirmed by local officers/I2/ and technicians/I4/, CTI verified that there were no any damaged ditches and reservoirs found in the project location during this monitoring period. CAR 01 is closed.	

CAR ID	02	Section no.	2.1	Date : 22/04/2021
Description of CAR				
The category of 70 local stakeholders who filled the questionnaires is not provided.				
Project participant response				Date : 17/05/2021
The background of 70 local stakeholders who filled the questionnaires has been provided as follows in the updated MR.				
Categories		Proportion		
Nationality		19% of them are Hui and the rest are Han.		
Educational Level		11.4% and 14.3% are at the primary and high school levels, respectively, with the rest are all at the junior high school level.		
Career		Mostly farmers, only 7% work for factories and 4% are village officials		
Gender		84% are female and 16% are male.		
Age-bracket		30~55 years old		
Documentation provided by project participant				
/1/- version 02				
VVB assessment				Date: 20/05/2021
The revised MR is checked, CTI confirmed that the category of 70 local stakeholders who filled the questionnaires is provided which is verified as actual and correct by checking the filled questionnaires/31/.				
CAR 02 is closed.				

CAR ID	03	Section no.	2.2	Date : 22/04/2021
Description of CAR				
The demonstration of how the project has communicated with local stakeholders specifically for AFOLU				

project is not provided as per the MR template.	
Project participant response	Date : 17/05/2021
The demonstration of how the project has communicated with local stakeholders specifically for AFOLU project has been provided in updated MR. On the other hand, the stakeholders have also been communicated on the followings during this monitoring period. • The results of project implementation, including the results of monitoring. • During this monitoring period, since the project has been running for three years, 13,228 ha rice paddies have been equipped with reservoirs and cement ditches to conduct controllable drainage and irrigation, where water regime applied during rice cultivation has been changed from continuously flooded method to intermittent flooded method. In this case, the rice productivity has been increased by about 15% and 180,000 t CO₂e emission has been reduced. All the ditches and reservoirs were operating well without damages and farmers were familiar with the intermittent flooded water regime gradually because of the project. • Any changes to risks, costs and benefits the project may bring to local stakeholders. • In the stakeholders meeting before the project start, project proponent once explained the potential costs, risks, and benefits the project may bring to local stakeholders. During this monitoring period, there were not any changes to all the risks, costs and benefits that the project proponent has communicate with the stakeholders. Moreover, through the daily visits of technicians, the potential costs, risks and benefits of this project were conveyed and explained to relevant villagers and stakeholders again for further feedback. • Any changes to relevant laws and regulations covering workers' right in the host country • Also, in this monitoring period, there were no changes to the relevant laws and regulations which have been informed the stakeholders by the representative of Hefei Luyu before the project started, covering workers' rights in the host country. • The process of VCS Program verification and the validation/verification body's site visit. Once the project has been registered, the registered version of project description, monitoring manual and monitoring plan in both Chinese and English have been posted on every 157 village's notice board. A brief summary of project location, project registration date, expected annual emission reduction, monitoring period and expected verification date has also been posted for stakeholders. After this monitoring report had been submitted to the VVB, the monitoring plan, manual and the Chinese version monitoring report summary were posted on these villages' notice board, too. Moreover, the on-site verification was from 12-April-2021 to 15-April-2021, and when the project proponent and Shanghai libra knew the specific time of on-site visit, the technicians started to invited the farmers to participate in the on-site stakeholder's interview by means of door-to-door announcements and meeting notice posted. The mobile phone number of contact person of the project were also published on the meeting notice so the villagers can directly reflect any problem about the project.	
Documentation provided by project participant	
/1/- version 02 /29/ /31/	
VVB assessment	Date: 20/05/2021
The revised MR is checked, CTI confirmed that the demonstration of how the project has communicated with local stakeholders specifically for AFOLU project is provided as per the MR template. Due to the project is an AFOLU project, according to the MR template/42/ request, below are assessed of how the project has communicated the following with local stakeholders, • <i>The results of project implementation, including the results of monitoring.</i> Prior to the verification, the notice of LSC meeting and results of project implementation, including the results of monitoring has been posted on the bulletin board in each village which has been verified by checking the photo of posted notice/29/ and this is also checked during site inspection.	

- Any changes, where relevant, to risks, costs and benefits the project may bring to local stakeholders. Through villagers' meetings and questionnaires survey confirmed by interview with local farmers/I5/ and checking the LSC records/31/ - Any changes, where relevant, to relevant laws and regulations covering workers' right in the host country. 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/ and local farmers/I5/. - The process of VCS Program verification and the validation/verification body's site visit. Informed farmers by publishing notification and invitation on the notice board about the process of VCS Program verification and the validation/verification body's site visit confirmed by interview with local farmers/I5/ and checking the photo of posted notice/29/. In conclusion, there were no negative opinions received from local stakeholders on the project implementation during this monitoring period, therefore, it is verified that the project continues to communicate the necessary relevant information about the project implementation and the process of VCS Program verification during this monitoring period. CAR 03 is closed.
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CAR ID	04	Section no.	2.3	Date : 22/04/2021
Description of CAR				
1. The measures to mitigate the potential risks to stakeholders such as slipping while checking the rice in the field are not provided. 2. The actual risks occurred to the stakeholders during this monitoring period are not provided.				
Project participant response				Date : 17/05/2021
The related information has been provided in updated MR as follows. 1. Firstly, all these potential risks were told to the stakeholders in advance and some simple first aid measures were taught to farmers during every training since 2018 to reduce the injuries. Secondly, working in extreme weather was strictly prohibited. In extreme weather conditions, farmers and technicians were not allowed to work outdoors in the fields. All the work must be carried out under the premise of safeguarding personal safety. Thirdly, the proponent has also equipped technicians and farmers with helmet, antiskid shoes, windbreakers and other equipment to ensure their safety. Lastly, once the injuries happen, the injured should be sent to the hospital for immediate treatment and all the medical expenses will be paid by the project proponent. 2. No risks occurred during this monitoring period has been stated in updated MR.				
Documentation provided by project participant				
/1/- version 02				
VVB assessment				Date: 20/05/2021
1. The revised MR is checked, CTI confirmed that the measures to mitigate the potential risks to stakeholders such as slipping while checking the rice in the field are provided. 2. The revised MR is checked, CTI confirmed that the actual risks occurred to the stakeholders during this monitoring period not provided. Refer to section 4.3 of this report for detail assessment. CAR 04 is closed.				

CAR ID	05	Section no.	4.1	Date : 22/04/2021
Description of CAR				
For the parameter GWP _{CH4} , the choice of data request that any future revision of the IPCC's assessment report should be taken account, according to the VCS standard 4.1, the GWP _{CH4} is updated according to IPCC's report, related updated is requested.				
Project participant response				Date : 17/05/2021

As stated in Section 3.14.4 in the updated version of VCS-Standard (v4.1), the following requirements shall be followed.

For GHG emission reductions occurring on or after 1 January 2021, all ex-ante estimates and ex-post calculations shall be converted to CO₂e using GWP values from the IPCC Fifth Assessment Report (AR5), which is 28 t CO₂e/t CH₄.

For GHG emission reductions occurring on or before 31 December 2020, all ex-ante estimates and ex-post calculations may be converted to CO₂e using either the GWP value of 25 for CH₄ from AR4 or 28 from AR5.

Projects that complete validation on or before 31 July 2021 may use GWP value of 25 for CH₄ from AR4 for ex-ante emission reduction estimates, though such projects shall use that of 28 from AR5 for ex-post calculations.

Therefore, since this project has registered on 10 March 2021, the value of 25 was use for ex-ante estimates and that of 28 was used for ex-post calculation in this monitoring period.

The related ER calculation is also updated accordingly.

Documentation provided by project participant

/1/- version 02

/2/- version 02

/35/

/36/

/47/

VVB assessment

Date: 20/05/2021

The revised MR is checked, CTI confirmed that the related revision has been made in the whole MR. 25 tCO₂e/tCH₄ from IPCC's Fourth Assessment report, GHG Protocol/35/ is an ex-ante value as listed in the PD/5/, and according to the PD, any future revision of the IPCC's assessment report should be taken account. Then based on the requirement 3.14.4 of VCS Standard 4.1/47/, projects that complete validation on or before 31 July 2021 may use GWP values from AR4 for ex-ante emission reduction estimates, though such projects shall use GWP values from AR5/36/ for ex-post calculations. So 28tCO₂e/tCH₄ from IPCC's Fifth Assessment report, GHG Protocol/36/ is applicable to this monitoring period and in compliance with the VCS Standard 4.1/47/.

The updated ER calculation process and result in both MR and ER sheet has been checked, it is verified that the value is correct and updated accordingly with the change of GWP value of CH₄.

CAR 05 is closed.

Table 4. FAR from this verification

FAR ID	N/A	Section No.	-	Date: -
Description of FAR				
Project participant response				
Date: -				
Documentation provided by project participant				
VVB assessment				
Date:				