ADJUSTED WATER MANAGEMENT IN RICE CULTIVATION IN EASTERN HECHUAN DISTRICT

Document Prepared by Shenzhen CTI International Certification Co., Ltd

Project Title	Adjusted Water Management in Rice Cultivation in Eastern Hechuan District
Report Title	Joint Validation and 1st periodical VCS Verification report for Adjusted Water Management in Rice Cultivation in Eastern Hechuan District
Version	3.0
Report ID	2021-0906
Verification Period	09-May-2018 to 31-December-2021
Client	Search CO2(Shanghai) Environmental Science & Technology Co. Ltd.
Pages	90
Date of Issue	09-August-2022
Prepared By	Shenzhen CTI International Certification Co., Ltd
Contact	Shenzhen CTI International Certification Co., Ltd F8-A CTI Building, No.4 LiuXianSan Road, Xin'an Street Bao'an District, Shen Zhen 518101, P. R. China

	Phone: +86-10-65580012 https://www.cti-cert.org/ Contact: Ms. Lin Shunrong Email: linshunrong@cti-cert.com
Approved By	Zhou Lu
Work Carried Out By	Lin Wu (TL& verifier) Yan Shun (TE) Lin Shunrong (TR)

Summary:

- *A description of the project*

The project activity developed in Hechuan District, Chongqing City, 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 18,908 ha for single-cropping rice. The project is expected to achieve 58,898 tCO_2e of emission reduction annually. The project started operation on 09-May-2018 with the VCS Ref. No. 2632.

- *A description of the validation and verification*

The approved CDM methodology AMS-III.AU. "Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (version 4.0) is applied to quantify the GHG removals achieved in this project. The calculation of the GHG emission reductions is carried out in a transparent and conservative manner. This project is being developed in conjunction with the validation and 1st periodic of verification.

- *The purpose and scope of validation and verification*

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

The 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 method and criteria used for validation and verification*

Validation and Verification is conducted using Shenzhen CTI International Certification Co., Ltd (CTI) procedures in line with the requirements specified in the latest version of the VCS Validation and Verification Manual and applying auditing techniques. The validation/verification team assessed the project activity's compliance against the VCS Standard Version 4.2, the selected CDM methodology and the joint project description and monitoring report. The project is eligible under Project Scope 14. The validation/verification criteria followed the guidance documents provided by VCS included the following:

VCS Standard Version 4.2, VCS Program Guide Version 4.1 and the applied CDM methodology AMS-III.AU. "Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (version 4.0).

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

In the course of the validation and verification, 7 Corrective Action Requests (CARs), 4 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

- *Any uncertainties associated with the validation and verification*

There are no restrictions of uncertainty for both validation and verification.

- *Summary of the validation and verification conclusions*

Search CO2(Shanghai) Environmental Science & Technology Co. Ltd. has commissioned the Shenzhen CTI International Certification Co., Ltd to carry out the Verified Carbon Standard (VCS) validation joint with 1st periodical verification of the project, "Adjusted Water Management in Rice Cultivation in Eastern Hechuan District" (VCS ID 2632) with regard to the relevant requirements of VCS standard Version 4.2. CTI confirms all validation and verification activities including objectives, scope and criteria, level of assurance, project description, monitoring and monitoring report adhere to VCS Standard Version 4.2 and all associated updated as documented in this report, are complete.

CTI concludes that the project activity "Adjusted Water Management in Rice Cultivation in Eastern Hechuan District" in China, as described in the final version of Joint-Project-Description-Monitoring-Report, meets all relevant requirements for VCS validation and verification activity and correctly applied the methodology AMS-III.AU. Version 4.0. Hence CTI is able to certify that the GHG emission reductions from the project during the monitoring period from 09-May-2018 to 31-December-2021 were generated as 240,373 tCO_2e, by considering the net GHG emission reductions generated during this monitoring period have exceeded the threshold required in the small-scale methodology applied, which is the 60,000 tCO_2e per year, the GHG emission reductions are amount to 240,000 tCO_2e can be claimed as VCUs.

CONTENTS

1 INTRODUCTION 6

1.1 Objective 6

1.2 Scope and Criteria 6

1.3 Level of Assurance 7

1.4 Summary Description of the Project 7

2 VALIDATION AND VERIFICATION PROCESS 9

2.1 Method and Criteria 9

2.2 Document Review 13

2.3 Interviews 14

2.4 Site Inspections 18

2.5 Resolution of Findings 21

2.5.1 Forward Action Requests 21

3 VALIDATION FINDINGS 22

3.1 Project Details 22

3.2 Participation under Other GHG Programs 28

3.3 Safeguards 28

3.4 Application of Methodology 34

3.5 Non-Permanence Risk Analysis 62

4 VERIFICATION FINDINGS 63

4.1 Accuracy of GHG Emission Reduction and Removal Calculations 63

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals 72

5 VALIDATION AND VERIFICATION CONCLUSION 74

APPENDIX 1: ABBREVIATIONS 76

APPENDIX 2: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS 77

APPENDIX 3: DOCUMENTS REVIEWED OR REFERENCED 80

APPENDIX 4: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS 85

1 INTRODUCTION

1.1 Objective

Search CO2(Shanghai) Environmental Science & Technology Co. Ltd. has commissioned the Shenzhen CTI International Certification Co., Ltd to carry out the Verified Carbon Standard (VCS) validation joint with 1st periodical verification of the project for the monitoring period from 09-May-2018 to 31-December-2021 (both days included).

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

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 Standard Version 4.2 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 a requirement and is seen as necessary to provide assurance on the generation of VCUs.

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the project description (PD) to validate that (a) the project design is actual, (b) the baseline scenario is correctly defined as per the applied methodology and relate tools, (c) the project is additional, (d) the monitoring plan can be implemented and is transparent and adequate and (e) all data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature. The Joint-PD-MR is reviewed against the criteria stated in VCS standard Version 4.2/43/ and the approved baseline and monitoring methodology AMS-III.AU. version 4.0/34/. The validation was based on the requirements VCS Validation and Verification Manual and VCS Standard version 4.2 applying auditing techniques. The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

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. The VVB assessed and determined 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 is expected to generated average GHG emission removal of 58,898 tCO_2eper year, and therefore can be considered as a 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 validation and verification statement reasonably assure 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 Chongqing Gengfang Agricultural Development 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 18,908 ha for single-cropping rice. With the replacing of the continuously flooded method by intermittent flooded method, the project solves the problems of excessive water used during rice cultivation and expected to decrease 48% of the CH_4 emission.

The project activity generates GHG emission reductions by changes continuously flooded to intermittent flooded condition during rice cultivation, which has been verified by on-site inspection, and checking the related documentations, interview with the project implementer. In the monitoring period from 09-May-2018 to 31-December-2021, CTI is able to certify that the GHG emission reductions from the project were generated as 240,373 tCO_2e, by considering the net GHG emission reductions generated during this monitoring period have exceeded the threshold required in the small-scale methodology applied, which is the 60,000 tCO_2e per year, the GHG emission reductions are amount to 240,000 tCO_2e can be claimed as VCUs.

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 Joint Joint-PD-MR/1/. The project applied to be registered as a VCS project activity and the 240,000 tCO_2e of emission reductions have been certified as verified carbon units (VCUs) for 1st monitoring period from 09-May-2018 to 31-December-2021.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

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

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

- VCS Standard, v4.2/43/
- VCS Program Guide, v4.1/42/
- VCS Program Definitions, v4.1/41/
- VCS-Joint-Project-Description-Monitoring-Report-Template-v4.0/39/

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

- Document review
- On-site assessment
- The resolution of outstanding issues and the issuance of the final joint validation and verification report and certification.

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

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

a. PP sampling approach - ex ante baseline determination and local stakeholder survey

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

In the project area of 18,908 ha, there are 10,020 households involved in the project due to rice paddies in the project area belong to these farmers via checking the cooperation agreements signed between the project proponents and all the farmers which ensure the proper development of the project/8/. All the

farmers are located in project area in Hechuan District, Chongqing City, which is a limited area. Simple random sampling approach was selected for this project due to relatively homogenous population being studied, given the similar soil condition and similar cultivation habit of farmers in Hechuan District. Therefore, simple random sampling (SRS) approach was followed by the PP to determine the sample size for baseline survey, and it is able to confirm the selection of sampling approach is appropriate as per VVB's local knowledge. Target population is defined as all the 10,020 households with 42,285 farmers included in the project.

As per the applied methodology and PD, a simple random sampling was drawn by the PP from the farmers database/12/ in line with the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities (hereafter can be referred to as the 'sampling guideline') (version 04.0)/37/.

Following "Sampling and Surveys for CDM Project Activities and Programme of Activities" version 09.0/36/ and "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/37/, the verifier checked the sampling results of PP and Chongqing Academy of Social Sciences with the following steps:

For determine the baseline, to verify the accuracy and correctness of sampling survey data, VVB has checked the sampling approach as per the "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/37/, this sampling approach found to be appropriate as the farmers are assumed as homogenous based on the experience of Chongqing Academy of Social Sciences who conducted the sampling survey.

Via checking the paragraph 12 of 2.1.1 section of the guideline/37/, it confirmed that the Sample size calculation by Simple Random Sampling can be done using following formulae:

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

Where

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

N is 10,020 as determined of total number of farmers, P is determined as 75%, as per the level of confidence, VVB expects that 90% of the samples taken shall comply with the project requirements.

Hence the *n* is calculated as

$$1.645^2*10{,}020*0.75*(1-0.75)/\{(10{,}020-1)*0.1^2*0.75^2+1.645^2*0.75*(1-0.75)\}=90.$$

The sample size of the baseline and local stakeholder survey considering the parameters is calculated in a conservative way, and the least number of the sample size is 90 as above calculation method according to the "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/37/. The sample size calculation process is verified by the VVB and confirmed as in line with the sampling guideline/37/, thus the result is confirmed as correct and reasonable. Furthermore, to be

conservative, Chongqing Academy of Social Sciences has randomly selected 100 farmer samples to conduct the baseline survey.

An Ex-ante investigation report with investigation of 100 samples/13/ was supplied by the PP, which was compiled base on the survey done by the Chongqing Academy of Social Sciences. In the Survey report, name of farmers, location, rice cultivation type, flooding type, rice type, cropping season type etc. were investigated and recorded. Via interview with the PP and representative from Chongqing Academy of Social Sciences, it is confirmed that 100 samples are randomly selected from the 10,020 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.

b. PP sampling approach – ex post determination of $A_{s,g}$

PP has applied a sampling method for monitoring of farmers' compliance with project cultivation practice (determination of $A_{s,g}$) during the 1st monitoring period, details are stated as below,

The project farmers database with all 10,020 participated rice households/12/ 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/12/ 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 09.0)/36/, 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/36/.

324 samples have been selected according to stratified sampling method in 16 towns/villages 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 Joint-PD-MR and in line with the requirement of the sampling standard/36/. 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 324 samples has been defined. Due to this monitoring period covered nearly 4 years, project proponents randomly selected 324 samples at the beginning of each year during this monitoring period, that means total 1,296 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/21/ including all parameters that are part of the project cultivation practice during cultivation season have been checked, CTI confirmed that 1,296 samples are randomly selected from the 10,020 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.

c. VVB sampling approach

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

For Ex ante:

The VVB reviewed the Ex-ante investigation report/13/ and crosschecked with the inspection during the on-site period, including 20 random samples interview and related cultivation area visit. Verified whether the sample plan is reasonable to conduct and the implementation and results of the sample survey can be accepted.

As per the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, Version 09.0/35/ (hereafter referred to as the "sampling standard"), CTI has applied acceptance sampling to verify the results of the ex ante baseline and local stakeholder survey.

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

To be more conservative, before the on-site visit, CTI determined 20 as the sample size and randomly selected 20 from the survey list of the 100 samples/13/. For the randomly selection of 20, a pre-randomized order of numbers ranging from 1-100 as calculated by Excel's RAND () function was brought to the field and a farmer list prepared in the field. If for example, the first number is 5, then the farmers' name that was listed 5th on the farmer list would be the one to be surveyed.

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

The 20 selected households from Ex-ante investigation report/13/ are interviewed and site inspected by VVB from the sampling conducted by the PP. Via the information got during site interview and inspection of the field condition comparing with the PP's data in the sample records/13/, it is found that all information is consistent between each other. No discrepancy is found between the sample records/13/ and the site validation sample results. And all the samples confirmed that they participated in the PP's baseline sampling survey.

As there are no discrepant records, i.e. the discrepant record is less than the acceptance number of 1, the sample records/13/ is accepted as per "Sampling and Surveys for CDM Project Activities and Programme of Activities"/36/.

For Ex post determination of $A_{s,g}$

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 VVB for the site verification.

The VVB reviewed the farmers' logbooks/21/ 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, Version 09.0/36/ (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/21/.

For the farmers included in the project area, via checking the cooperation agreements signed between the project proponents and all the farmers which ensure the proper development of the project/8/, it is confirmed that all the farmers are located in project area in Hechuan District, Chongqing City, China. Due to the number of famers who were selected with the logbooks involved was too large and scattered to carry out a census, hence based on the principle of cost-effectiveness, based on experience of the VVB, the acceptance sampling approach can be selected for this project due to relatively homogenous population being studied, given the similar soil condition and similar cultivation habit of farmers in Hechuan District. 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 VVB refers to the sampling standard and sampling guideline and found that sample size should be not less than 26 and acceptance number is 1. And this sample size is confirmed as the moderate quantity in the table 2 of the standard/40/, thus is confirmed as appropriate number.

Furthermore, 26 households were selected to interview to confirm the information of the $A_{s,g}$ during site visit and if acceptance number is higher than 1, then the VVB will adjust the sampling number.

Also another 1,296 farmer's logbooks/10/ have been checked all to check if any issues and if any were found, the VVB will also adjust the sampling number to interview more farmers to cross-check the information.

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 1,296 samples. For the randomly selection of 26, a pre-randomized order of numbers ranging from 1-1,296 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 households (total sample size) were chosen by the VVB 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 households from 1,296 samples were interviewed, site and cultivation practice inspected by VVB 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/21/, it is found that all information is consistent between each other. No discrepancy is found between the sample records/21/ 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/21/ is accepted as per "Sampling and Surveys for CDM Project Activities and Programme of Activities"/36/.

2.2 Document Review

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

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

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

The validation and verification were performed basing on the documents check and site inspection/measurements, refer to the section 3 and 4 of this report for the validation and verification process detail and corresponding documents review.

2.3 Interviews

Describe the interview process and identify personnel, including their roles, who were interviewed and/or provided information additional to that provided in the Joint-PD-MR/1/ and any supporting documents.

The objective of the interview process was to solicit important information from personnel related to project and relevant to the validation and verification process. Onsite interviews and information discussions were conducted with project implementer/I1/, local officer from Agriculture and Rural Affairs Committee of Hechuan District/I2/, expert from Huazhong Agricultural University and Chongqing Academy of Social Sciences/I3/, technicians from local agrotechnical stations/I4/, rice cultivation farmers/I5/ and Project VCS development consultant/I6/. The interviews were performed by the VVB on-site (within the project area, in Hechuan District, Chongqing City, 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.	Yang/I1/	Yu	Chongqing Gengfang Agricultural Developmen t Co., Ltd./ Manager	10-January-2022 ~11-January-2022	- Chronological description of the project activity with documents of key steps of the implementation. - Technical details of the project realization, project feasibility, designing, operational life time - Project Boundary - Baseline - Additionality - Eligibility criteria - ER calculation - Monitoring plan and arrangements - Monitoring methods and procedures - Crediting period	Lin Wu Yan Shun

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					- Project activity starting date - Ownership - local stakeholder consultation - SD indicators	
2.	Zhou/I2/	Jianping	Agricultural and Rural Committee of Hechuan District / Section Staff	10-January-2022	- Baseline - Monitoring devices - Monitoring method - Water regime during the rice cultivation period	
3.	Jiang/I3/	Yang	Huazhong Agricultural University /expert	10-January-2022[1]		
4.	Zhang/I3/	Li	Chongqing Academy of Social Sciences /expert	10-January-2022		
5.	Yuan/I4/	Fei	Local agrotechnical stations/ technicians	10-January-2022 ~11-January-2022	- Baseline Survey - Farmer survey - Stakeholder comments - Agricultural aspects - Environmental aspects - Local Agricultural characteristics - Local Rice cultivation type - Local filed condition - Local farmers' income - Local rice yield - Local flooding condition - Fertilizer utilization - Technical Training	
6.	Liu/I4/	Hui				
7.	Zhang /I5/	Xinyue	Farmers participated the Ex ante Survey	10-January-2022	- General information of farmer - Field area - Rice type - Cultivation type - Baseline Scenario - Flooding type in baseline	
8.	Cao/I5/	Xinyu		10-January-2022		
9.	Qin/I5/	Qi		10-January-2022		

[1] There are total 5 rice projects in Chongqing conducted the site visit together, hence the interview with officers and experts was conducted on 10-January-2022 which the first day of the site visit schedule.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
10.	Zhou/I5/	Yuanqiong		10-January-2022	- Fertilizer utilization in both baseline and project - Flooding type in project scenario - Rice yield comparison - Technical Training - Field record - Income level - Job opportunities	
11.	Su/I5/	Panxia		10-January-2022		
12.	Zhu /I5/	Fangqin		10-January-2022		
13.	Yan/I5/	Rou		10-January-2022		
14.	Cao /I5/	Xiaolan		10-January-2022		
15.	Jin/I5/	Huoying		10-January-2022		
16.	Chu/I5/	Tao		10-January-2022		
17.	Qian/I5/	Xiaoli		10-January-2022		
18.	Chen/I5/	Cui		10-January-2022		
19.	Hua/I5/	Yingman		10-January-2022		
20.	Shen/I5/	Xunwen		10-January-2022		
21.	Han/I5/	Wenxiu		10-January-2022		
22.	Tao/I5/	Hua'e		10-January-2022		
23.	Yan/I5/	Yamei		10-January-2022		
24.	Jiang/I5/	Yan		10-January-2022		
25.	He/I5/	Jingxian		10-January-2022		
26.	Wu/I5/	Lan		10-January-2022		

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
27.	Jiang/I5/	Xueqian	Farmers sampled for checking the logbook	11-January-2022	- General information of farmer - Field area - Rice type - Cultivation type - Baseline Scenario - Flooding type in baseline - Fertilizer utilization in both baseline and project - Flooding type in project scenario - Rice yield comparison - Technical Training - Field record in Logbook - Income level - Job opportunities	
28.	Wei/I5/	Yujing		11-January-2022		
29.	Chu/I5/	Xiaxue		11-January-2022		
30.	Zhou/I5/	Lingzhu		11-January-2022		
31.	Qin/I5/	Chunyan		11-January-2022		
32.	Qi/I5/	Rong		11-January-2022		
33.	Han/I5/	Meimei		11-January-2022		
34.	Huan/I5/	Qing		11-January-2022		
35.	Lu/I5/	Zhen		11-January-2022		
36.	Hua/I5/	Ruijin		11-January-2022		
37.	Wang/I5/	Jie		11-January-2022		
38.	Feng/I5/	Xingyi		11-January-2022		
39.	Xu/I5/	Shasha		11-January-2022		
40.	Jiang/I5/	Zhitao		11-January-2022		
41.	Hua/I5/	Daxiu		11-January-2022		
42.	Wang/I5/	Taihong		11-January-2022		
43.	Shui/I5/	Xueqian		11-January-2022		

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
44.	Wang/I5/	Jixiang		11-January-2022		
45.	Bao/I5/	Chunyan		11-January-2022		
46.	Yan/I5/	Shuiyun		11-January-2022		
47.	Chen/I5/	Chunyan		11-January-2022		
48.	Pan/I5/	Sha		11-January-2022		
49.	Xu/I5/	Rou		11-January-2022		
50.	Xia/I5/	Erzhen		11-January-2022		
51.	Zheng/I5/	Ting		11-January-2022		
52.	Han/I5/	Hui		11-January-2022		
53.	Shen/I6/	Keye	Search CO2(Shanghai) Environmental Science & Technology Co. Ltd./ Project manager	10-January-2022 ~11-January-2022	- Financial aspects - Monitoring period - Project activity starting date - Assumptions - Baseline study assumptions - Additionality - Crediting period - Monitoring plan and implementation - Monitoring measurements - Editorial issues of the VCS PD	

2.4 Site Inspections

The joint validation and verification site inspection was conducted on 10-January-2022~11-January-2022. A ground inspection of the project was conducted during the site visit and the joint validation and VVB interviewed project implementer/I1/, local officer from Agriculture and Rural Affairs Committee of Hechuan District/I2/, expert from Huazhong Agricultural University and Chongqing 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 and documents evidence were checked, details as following table,

Duration of on-site inspection: 10-January-2022~11-January-2022				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Opening meeting Interview with PP, experts, consultant representatives	Office in Chongqing Gengfang Agricultural Development Co., Ltd. in Chongqing City, P.R. China	10-January-2022[2]	Lin Wu Yan Shun
2	On-site inspection Interview with sampled farmers and technicians	Project Area in Hechuan District, Chongqing City, P.R. China	10-January-2022~11-January-2022	Lin Wu Yan Shun
3	Documents check	Project Area in Hechuan District, Chongqing City, P.R. China	11-January-2022	Lin Wu Yan Shun
4	Finding Summary	Project Area in Hechuan District, Chongqing City, P.R. China	11-January-2022	Lin Wu Yan Shun
5	Close Meeting	Project Area in Hechuan District, Chongqing City, P.R. China	11-January-2022	Lin Wu Yan Shun

During the site inspection, total six baseline and project reference fields were checked, the 6 plot areas are determined by the VVB by site visit and 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				
10-January-2022	Fenglin Village, Yunmen Street, Hechuan District	106°20'58"E	30°04'24"N	The baseline reference fields were selected that they are representative of baseline scenario where single-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 Joint-PD-MR by GPS device used by VVB. Also the chambers were confirmed as installed on the fields.
		106°21'02"E	30°04'23"N	
		106°21'04"E	30°04'21"N	

[2] There are total 5 rice projects in Chongqing conducted the site visit together, hence the interview with officers and experts was conducted on 10-January-2022 which the first day of the site visit schedule.

Project Scenario Reference fields				
10-January-2022	Fenglin Village, Yunmen Street, Hechuan District	106°21'42"E	30°04'26"N	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 single-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 Joint-PD-MR by GPS device used by VVB. Also the chambers were confirmed as installed on the fields.
		106°21'44"E	30°04'25"N	
		106°21'45"E	30°04'27"N	

Furthermore, during the site inspection, VVB also visited 26 households' (the samples selected for determined the $A_{s,g}$) 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 VVB 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				
10-January-2022~11-January-2022	Juxing Village in Guandu Town	106°24′41″E	30°06′18″N	Each area is verified as located in the project boundary by checking the geographical coordinates and KML file. Cultivation and flooding approach are consistent as project design
		106°24′45″E	30°06′09″N	
		106°24′41″E	30°06′12″N	
		106°24′37″E	30°06′11″N	
		106°24′38″E	30°06′09″N	
		106°24′40″E	30°06′07″N	
	Baitasi Village in Xianglong Town	106°36′04″E	30°15′27″N	
		106°36′11″E	30°15′20″N	
		106°36′16″E	30°15′22″N	
		106°36′16″E	30°15′33″N	
	Jiufengmiao Village in Xianglong Town	106°36′26″E	30°16′58″N	
		106°36′28″E	30°17′00″N	
		106°36′31″E	30°16′58″N	
	Zhongshan Village in Xiaojia Township	106°28′14″E	30°15′41″N	
		106°28′12″E	30°15′41″N	
		106°28′15″E	30°15′37″N	
	Chadian Village in Xiaojia Township	106°26′41″E	30°16′39″N	
		106°26′45″E	30°16′37″N	
		106°26′44″E	30°16′41″N	
		106°26′47″E	30°16′40″N	

		106°26′47″E	30°16′44″N	
		106°26′44″E	30°16′48″N	
	Xiaotong Village in Xiaomian Township	106°32′49″E	30°07′51″N	
		106°32′52″E	30°07′58″N	
		106°32′57″E	30°08′07″N	
		106°33′07″E	30°08′10″N	

2.5 Resolution of Findings

Material discrepancies identified in the course of the validation and verification 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 Standard Version 4.2 requirements have not been met;
- There is a risk that the emission reductions cannot be monitored or calculated.

A Clarification Request (CL) will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A Forward Action Request (FAR) will be issued when certain issues related to project implementation should be reviewed during the next verification.

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

In the course of the validation 7 Corrective Action Requests (CARs), 4 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

2.5.1 Forward Action Requests

This is the joint validation and 1st VCS verification, thus there is no FAR raised previously.

3 VALIDATION FINDINGS

3.1 Project Details

- Project type, technologies and measures implemented, and eligibility of the project

Type:

Through the onsite visit, interviewing the project developer and reviewing the project description/1/, 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 18,908 ha for single-cropping rice.

As per the Appendix 1 Eligible AFOLU project categories in VCS standard Version 4.2/43/, CTI confirmed that the project belongs to one type of AFOLU categories, i.e. Agricultural Land Management (ALM). While eligible ALM activities are those that reduce net GHG emissions on croplands and grasslands by increasing carbon stocks in soils and woody biomass and/or decreasing CO_2, N_2O and/or CH_4 emissions from soils. Via site inspection and checking the Project implementation program/6/, CTI confirmed that the project reduces CH_4 emissions on croplands by replacing the continuously flooded method with the intermittently flooded method, hence, the project is defined as an eligible ALM activity.

In addition, for the ALM type, the project area shall not be cleared of native ecosystems within the 10 year period prior to the project start date, via checking the Certificate of Eligibility for Land provided by the Agriculture and Rural Committee of Chongqing City/51/ and site interview with local officers from agricultural bureau, CTI confirmed that the project areas were not cleared of native ecosystems since 2005 which means that no cleared of native ecosystems in project areas within the 10 year period prior to the project start date.

By checking the project design, CTI confirmed that the project is applicable to one of eligible ALM activities, i.e. Improved Cropland Management (ICM). For ICM, as per the standard, “this category includes practices that demonstrably reduce net GHG emissions of cropland systems by increasing soil carbon stocks, reducing soil N_2O emissions, and/or reducing CH_4 emissions”, and through the onsite visit, interviewing the project developer and reviewing the project design, CTI confirmed that the project takes practices to reduce CH_4 emissions of cropland systems by change the water regime during the rice cultivation period from continuously flooded to intermittent flooded condition so as to increase soil carbon stocks, thus CTI verified that the sectoral scope 14: “Agriculture, Forestry, and other Land Use (AFOLU) is applicable to the project.

Furthermore, via checking the email confirmation from VERRA dated on 19-November-2020 sent by PP/3/, CTI verified that VERRA also confirm that Project type is considered an AFOLU project under the VCS Program. This is in accordance with the definitions of eligible AFOLU project categories set out in Appendix 1 of the VCS standard Version 4.2. So although the project applied CDM approved methodology AMS-III.AU: Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation, version 4.0 (which belongs to scope 15 as per the EB’s definition), the sectoral scope 14: “Agriculture, Forestry, and other Land Use (AFOLU) is confirmed to be applicable to the project.

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

• Technologies and measures implemented:

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

Adjusted Water Management in Rice Cultivation in Eastern Hechuan District (hereinafter referred to as the Project) is a Project that change the water regime during the rice cultivation period. It changes continuously flooded to intermittent flooded condition during rice cultivation so that to result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane. The Project involves a total acreage of 18,908 ha for single-cropping rice.

Via site inspection with rice lands/31/ and interview with farmer representatives/I5/, it is confirmed that before the project implementation, the paddy fields are regarded as an isolate unit and the rice was continuously flooded, and with the project, the cement ditches and reservoirs were constructed and pumps and valves were installed to conduct the intermittent flooded water regime during rice cultivation. With the replacing of the continuously flooded method by intermittent flooded method, the project solves the problems of excessive water used during rice cultivation and expected to decrease 48% of the CH_4 emission.

Via checking the Joint-PD-MR/1/, it is confirmed that the scenario existing prior to the implementation of the project as stated in the Joint-PD-MR is rice was cultivated by continuously flooded method. The baseline scenario is the same as the scenario existing prior to the implementation of the project activity, which has been confirmed during the site interview with local officer/I2/ and agricultural experts/I3/ and sampled farmers/I5/ and checking the Ex-ante investigation report/13/. Thus it is verified that the baseline scenario is reasonable and correct.

The project activity generates CH_4 emission reductions by build ditches, reservoir construction, pumps and valves installation for applying intermittently flooded method in project area, that otherwise continuously flooded method was used in rice paddies, which means fields have standing water throughout the rice growing season and may only dry out for harvest and in this condition, the organic matter in rice soil under flooded condition would emit a large amount of methane (CH_4) because of anaerobic decomposition. Due to the CH_4 in rice paddies is produced by the anaerobic decomposition of organic matter after the flooding, hence through the project that allows the field to drain halts CH_4 production, which happens in anaerobic condition, reducing the total quantity of CH_4 released during the cropping season.

The project will not only generate GHG emission reductions but also save water, increase production thus produce financial, social and environmental benefits.

The expected total emission reduction of the Project in the first crediting periods of 7 years (from 09-May-2018 to 08-May-2025) is 412,286 tCO_2e, and the annual emission reduction is estimated to be 58,898 tCO_2e.

In conclusion, it is verified that the summary description of the project in section 1.1 is in line with the Joint-PD-MR template requirements and all the information has been provided and verified as correct.

• Eligibility of the project:

The PP has described and justified how the project is eligible under the scope of the VCS Program in Joint-PD-MR as per the section 2.1.1 of VCS standard Version 4.2. The assessment is provided as below,

1. The project activity generates GHG emission reductions including CH_4 which belong to the six Kyoto Protocol greenhouse gases which belongs to scope 1) of section 2.1.1 of VCS standard Version 4.2.
2. Via checking the Joint-PD-MR/1/ of the project, it is verified that the project is implemented to change the water regime during the rice cultivation period. It changes continuously flooded to intermittent flooded condition during rice cultivation so that to result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane, and the additionality is verified as actual, thus there is no assumption of having generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction for this project.
3. Via checking all the excluded project activities in the table, it is verified that this project type is not excluded by the scope of VCS program.

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

• Project design, including eligibility criteria for grouped projects

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

• Project proponent and other entities involved in the project

The project proponent (Chongqing Gengfang Agricultural Development Co., Ltd., hereinafter "Chongqing Gengfang" or "Gengfang") and the contact information reported in section 1.5 of the VCS Joint-PD-MR have been confirmed to be correct through checking the business license of the company/9/ and interviewing with the PP representative through the on-site visit/I1/.

The other entities involved in the Project are (Search CO2 (Shanghai) Environmental Science & Technology Co. Ltd., hereinafter "Search CO2") acted as consultant and VCUs buyer and Vitol (China) Energy Co, Ltd. acted as General Account Holder and the contact information reported in section 1.6 of the VCS Joint-PD-MR have been confirmed to be correct through checking the business license of the Search CO2 (Shanghai) Environmental Science & Technology Co. Ltd./9/ and interviewing the representative of both companies.

• Ownership

The section 1.7 of the Joint-PD-MR has been checked, and during the on-site visit and checking the business license/9/ of the participant parties and the carbon reduction project cooperation agreement signed between the farmers and Chongqing Gengfang Agricultural Development Co., Ltd./8/, CTI verified that the project developer Chongqing Gengfang Agricultural Development Co., Ltd. is a privacy company, who is in charge of the integrated implementation and management of the project. The rice paddies and agricultural fields involved in the project was owned by the farmers which has been confirmed by site

interview with farmers/I5/ and local officer from Agriculture and Rural Affairs Committee of Hechuan District/I2/.

The project proponent is responsible for the comprehensive implementation and management of the project and farmers also have right to authorize Chongqing Gengfang as a representative of the carbon project owner and Chongqing Gengfang only has the right to make decisions about the carbon reduction project which is confirmed by checking the carbon reduction project cooperation agreement signed between the farmers and Chongqing Gengfang Agricultural Development Co., Ltd./8/ and interview with farmers/I5/.

Furthermore, Chongqing Gengfang has already sold the carbon project development right to Search CO2 which has been verified in the emission reduction purchase agreement/15/, thus Search CO2 leads the development and management of the carbon project.

Hence, based on the above assessment, it is verified that rice paddies and agricultural fields involved in the project was owned by the farmers, the project proponent is responsible for implementation and management of the project, and Search CO2 plays roles related to carbon including development and management of the carbon project and buyer of VCUs due to Search CO2 has experiences for develop the carbon project, and Vitol (China) Energy Co, Ltd. plays roles as General Account Holder for this project as the partner of Search CO2 which has been confirmed by checking the communications agreement and letter of agreement which have been submitted to VERRA. Furthermore, due to Search CO2 will buy the VCUs of the project, hence to achieve the success of the VCS registration and issuance, Search CO2 participated in compiling the monitoring plan, organizing the training etc. for the carbon development only, which is verified will not have overall control and responsibility for the project itself and also will not violate the project proponent's rights and responsibilities of the project.

- Project start date

The project start date is 09-May-2018 which is verified as the date on which the project land preparation was started. Via checking the Construction Contract/11/ and record in the farmer's database/12/, it is verified that the start date is correct and in line with the VCS standard Version 4.2.

- Project crediting period

For the VCS crediting period, PP has chosen 21 years renewable crediting period started from 09-May-2018 to 08-May-2039 which is in line with the concept for crediting period in section 3.8.2 of the VCS Standard version 4.2.

- Project scale and estimated GHG emission reductions or removals

The average annual ERs of the project are 58,898 tCO_2e, which is lower than the threshold of large-projects (300,000 tCO_2e per year). Therefore the project falls in the category of "Project" as per definition in VCS standard. And the estimated total Estimated GHG Emission Reductions or Removals during the 1st 7 years of VCS crediting period (09-May-2018 to 08-May-2025) is 412,286 tCO_2e.

• Project location

The project site is located at Hechuan District, Chongqing City, P. R. China. The geographical coordinates for the project site are between 105°58'37" - 106°16’34" east longitude and between 29°58’19" - 30°22'24" north latitude. The location of the project site is verified with on-site investigation by GPS devices and checking the google earth map/44/.

KML file with project boundary is checked as provided/4/, and is verified as consistent with the Joint-PD-MR and on-site investigation by GPS devices and checking the google earth map/44/.

• Conditions prior to project initiation

The rice was planted under continuously flooded condition existing prior to the project in project area, the irrigation and drainage ditch of rice paddies was made up of soil, which is not enough to make the irrigation and drainage controllable which has been confirmed by checking the Ex-ante investigation report/13/ and interview with farmers/I5/, the project is the construction of new drainage cement ditch and reservoirs and installation of pumps and valves. The conditions prior to project initiation have been validated in the Joint-PD-MR/1/ to be the same as the baseline scenario identified in the Joint-PD-MR/1/ section 3.4, i.e. continuation of the current practice which is continuously flooded water regime without any organic amendment during rice cultivation in the project fields in this project.

The baseline scenario is the same as the scenario existing prior to the implementation of the project activity, which has been confirmed during the site interview with local officer/I2/, agricultural experts/I3/ and local farmers/I5/ and checking the Ex-ante investigation report/13/. Thus it is verified that the baseline scenario is reasonable and correct.

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

Due to the project is an AFOLU project, the appropriate information on the climate, hydrology, topography, relevant historic conditions, soils, vegetation and ecosystems including the present and prior environmental conditions of the project area has been provided in Joint-PD-MR as assessed as correct and actual via site inspection and checking the public information and checking the Ex-ante investigation report/13/of the project area and also cross-checked by interview with local officer/I2/, agricultural experts/I3/ and local farmers/I5/.

• Project compliance with applicable laws, statutes and other regulatory frameworks

The Joint-PD-MR has stated that the project is in the field of agriculture, the rice cultivation and flooding is confirmed as in line with the laws and regulations as listed in the PD/30/. For the construction during the construction period, via checking the Inspection and Acceptance Report of the project/7/, it is verified that the construction is in line with the requirement of national laws and regulations as stated in the Inspection and Acceptance Report of the project/7/ which means that the project is in line with the national and local laws and regulations based on the local expertise of the VVB. And as stated in the Joint-PD-MR/1/ and confirmed by interview with local officer/I2/, CTI verified that the project will be subject to regular inspection by local government during the implementation period to ensure continuous compliance.

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

• Participation under other GHG programs:

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

The project has neither been registered nor seeking registration under any other GHG programs which has been confirmed via checking the UNFCCC/49/, GS/48/, VCS/50/ and other GHG schemes' website. It is verified that the project is seeking registration only in VCS program/50/.

-Rejection by other GHG programs

The project has neither been rejected by any other GHG programs which has been confirmed via checking the UNFCCC/49/, GS/48/, VCS/50/ and other GHG schemes' website.

• Other forms of credit:

-Emissions trading programs and other binding limits

The project proponent is not part of any emission trading program which has been confirmed via checking the UNFCCC/49/, GS/48/, VCS/50/ 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/49/, GS/48/, VCS/50/ and other GHG schemes' website, it is verified that the implementation of the project is consistent with the description in the Joint-PD-MR and the monitoring system is fully functional to generate Verified Carbon Units (VCUs) without any double counting for this monitoring period from 09-May-2018 to 31-December-2021.

Besides, based on VVB's local expertise, China has a national emissions trading scheme only cover the high-emission industries, such as power generation sector that emitted at least 26,000 tons of CO_2e/year which has been verified in the public website/45/, and it is confirmed that the project activity is not included the mandatory emission control scheme and there is no emission cap enforced for the project owner by checking the enforced company list in public information/46/. Hence, it is confirmed that the emission reductions will not be double counted.

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

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

• Additional information relevant to the project, including:

-Leakage management for AFOLU projects

According to the applied methodology AMS-III.AU (Version 04.0)/34/ and the demonstration in the Joint-PD-MR and section 4.4.5.3 of this report, any effects of the project activity on GHG emissions outside the project boundary are deemed to be negligible and do not have to be considered under this methodology, thus the leakage of the project is zero. Thus no management involved.

-Commercially sensitive information

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

-Sustainable development contributions

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

1. *The percentage of increase in rice yield (Goal 2 of UN SDG, Target 2.4) – verified by interview with local farmers/I5/ and checking the farmers' log-books/21/ comparing with the Ex-ante investigation report in Hechuan District/13/, hence the contribution to this SDG has been confirmed and the provisions for monitoring and reporting this goal is verified as reasonable;*
2. *The number of job opportunities provided by this project to local farmers (Goal 8 of UN SDG, Target 8.5) – verified by interview with local farmers and checking the Technician Recruitment Appointment Contracts/23/ and interview with technicians/I4/, hence the contribution to this SDG has been confirmed and the provisions for monitoring and reporting this goal is verified as reasonable;*
3. *Sequester greenhouse gas and mitigate climate changes (Goal 13 of UN SDG, Target 13.0) – verified by checking the Emission Reduction Calculation sheet/2/, hence the contribution to this SDG has been confirmed and the provisions for monitoring and reporting this goal is verified as reasonable.*

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

CL 01, CAR 01, CAR 02, CAR 03, CAR 04, CAR 05 and CAR 06 were raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.2 Participation under Other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs which has been confirmed via checking the UNFCCC/49/, GS/48/, VCS/50/ and other GHG schemes' website. It is verified that the project is seeking registration only in VCS program/50/.

3.3 Safeguards

3.3.1 No Net Harm

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

Environmental impacts - It is considered that the environmental impacts have been comprehensively described in Section 2.1 of Joint-PD-MR/1/ including below,

i. The large amount of construction waste could be generated and construction dust could be produced during the construction period, which will impact on the ecosystem and environment of local area in project area according to the project construction situation and interview with local experts and farmers

   Via interview with local experts and farmers, there was no adverse effect on the ecology, air, water and solid waste, for the project subject to the implementation of pollution mitigation measures during construction period according to the requirements of Regulations of Chongqing Municipality on the Administration of City Appearance and Environmental Sanitation/29/.

ii. 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/.

   Via checking the supporting evidence Technical Guidelines for Intermittently Flooded Rice Cultivation Method in Chongqing City issued by the Institute of Agricultural Engineering of Chongqing Academy of Agricultural Sciences/20/, Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan in 2017/17/ and Report of Measuring Methane Emission Rate of Single-cropping Rice Paddies with Different Water Regime by Closed Chamber from 2018 to 2021/18/, VVB confirmed that the amount of fertilizer used before the project activity (baseline reference fields) is not larger than that used throughout the project period (project reference fields), both the evidence are finished by third party, hence accepted by VVB.

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/20/, 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. Furthermore, via checking the Farmers' log-books/21/, CTI confirmed that the amount of fertilizer used have been recorded in farmers' cultivation logbook, and the summarized value is consistent with the optimal amount of nitrogen fertilizer recommended in Technical Guidelines/20/.

Therefore, based on the applied methodology, it is verified that due to the optimized N fertilization practice, N_2O emissions do not significantly deviate from the baseline emissions and hence are not considered.

Socio-economic impacts - It is considered that the Socio-economic impacts have been comprehensively described in Section 2.1 of Joint-PD-MR/1/ including

i. The construction of the project would put economic pressure on them, especially farmers and if the intermittently flooded method cannot be conducted strictly during rice cultivation within the project area, then the yield would not be good, and the income will not be increased.

ii. The cement ditches and reservoirs, and pumps and valves were installed 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 – Via interview with local officer and farmers, it is confirmed that the implementation of the project will improve local socio-economic development through providing a part of funds as subsidies to farmers and providing trainings to technicians and farmers involved in this project which has been verified by checking the funds allocation receipts to farmers/14/ and the training records/26/. Furthermore, associated with the interview with local experts/I3/, technicians/I4/ and farmers/I5/ and checking the Technical Guidelines for Intermittently Flooded Rice Cultivation Method/20/, 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/21/ and confirmed by local officers/I2/ and technicians/I4/, CTI verified that there were no any damaged ditches and reservoirs, and pumps and valves 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 Joint-PD-MR/1/, 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.

3.3.2 Local Stakeholder Consultation

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

Consultation prior to the start date of the project:

Survey questionnaires were distributed to relevant personnel of village representatives, relevant governmental officials, local farmers by the Chongqing Academy of Social Sciences in June 2017, totally 100 copies of questionnaires were issued to relevant personnel with 100 pieces of reply received. The stakeholders' background information and comments from questionnaires were summarized and recorded in the Joint-PD-MR/1/, Section 2.2. And VVB has confirmed that the survey of 100 samples (among 96 are farmers) is a sufficient sample of all the farmers involved in the project which has been assessed in the section 2.1 of this report.

Via checking the 100 filled questionnaires/24/, it is verified that all respondents knew or heard about the Project. Most of them are supportive of the project construction, and think the Project will bring more benefit than loss through reducing methane emissions, saving water resource and increasing the rice productivity. Most of the respondents are willing to participate in the construction and operation of the project and they have no opinions on the project implementation.

And some respondents have concerns about the construction funds and how to conduct intermittent flooded water regime well, these impacts have already been considered by the PP has taken related

mitigation measures through providing a part of funds as subsidies to farmers and providing trainings to technicians and farmers involved in this project which has been verified by checking the funds allocation receipts to farmers/14/ and the training records/26/ so that the project can be implemented successfully.

Finally, it is verified that there is no one thinks that the project will have a negative impact on the local life and environment, local stakeholders are supportive of the project construction by checking the questionnaires/24/, and thus no need to change the project design based on the stakeholder inputs.

Mechanism for on-going communication and Consultation during this monitoring period:

For the project implementation, via site inspection checking the Suggestion Book and the contact information published on the notice board of villages/25/, it is confirmed that there was no comments or suggestions in the book during the implementation period since 2018, and via interview with PP, it is verified that they will check the book regularly and collect all the comments received.

Besides, the technicians have paid a regular visit to the villages and collect comments if any and surveyed the project area which has been confirmed by site interview with technicians/I4/.

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

AFOLU Specific

Due to the project is an AFOLU project, according to the Joint-PD-MR template/39/ request, below are assessed of how the project has communicated the following with local stakeholders,

- The project design and 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/31/ and this is also checked during site inspection.

- The 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 Local Stakeholder Consultation records/24/.

- All relevant laws and regulations covering workers' rights 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 validation and 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/31/.

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.

CL 02 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.3.3 Environmental Impact

In China, according to Chinese law "Environmental Impact Assessment Law of the People's Republic of China", it is confirmed that there is no requirement from any environmental impact assessments to the type of the project. Hence the analysis of the environmental impacts of the project activity is sufficiently described by PP in the Joint-PD-MR/1/. The assessment is as below,

Associated with the interview with local experts and farmers, there was no adverse effect on the ecology, air, water and solid waste, for the project subject to the implementation of pollution mitigation measures during construction period according to the requirements of Regulations of Chongqing Municipality on the Administration of City Appearance and Environmental Sanitation/17/. There are no any negative impacts found in the project location during the project implementation.

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

In conclusion, there were some negative impacts on environment during the construction period which has been demonstrated in Joint-PD-MR/1/, also the proper measurements have been carried out by project implementer to mitigate such impacts. And by site inspection of implementation, it is confirmed that there are no obvious negative impacts during the implementation period only if the ditches would be damaged that may impact the water resources, however, with the proper measurements, this situation is unlikely to happen.

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

3.3.4 Public Comments

The project sought the registration with the VCS Program, according to VCS requirements the Project Description was submitted for public comment period. The project was allocated with VCS ID 2632. The public comment period started on 18-November-2021 and ended on 18-December-2021 (https://registry.verra.org/app/projectDetail/VCS/2632).

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

3.3.5 AFOLU-Specific Safeguards

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

Local stakeholder identification process and the description of results

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

The stakeholders are identified as residents (42,285 farmers within 10,020 local households of which 28,754 are females, accounting for about 68%) involved in the project area who are directly affected by the project activities, Agricultural and Rural Committee of Hechuan District that involved in providing the basic techniques of intermittently flooded method, local governments of Hechuan District involved in local social and environmental management, and village committees of Hechuan District involved in collecting opinions from the respective locals and villages.

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

- *On-site inspection and interview*

Via on-site inspection, VVB visited the project area and interviewed with the stakeholder representatives from involved farmer, local officers, technicians, local experts. By seeing the project scenario and interview with stakeholders, it is confirmed the project is implemented in project area which impact the 10,020 households in this area, and local government is responsible to the approval and related environmental and social issues, and during the project implementation, the local farmers involved in the project area are trained by the Agricultural and Rural Committee of Hechuan District and PP.

- *Checking the relevant docs and evidence*

The stakeholder's identification is confirmed as complete by checking the related docs of project, carbon reduction project cooperation agreement signed between the farmers and Chongqing Gengfang Agricultural Development Co., Ltd./8/ which define the 10,020 households; Technical Training Record/26/ which are used to prove that techniques provided by the Agricultural and Rural Committee of Hechuan District. The Village committees in project area is responsible for collecting opinions from the respective locals and villages with the project proponent by interview with local farmers/I5/.

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

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

Risks to local stakeholders and mitigation measures

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

Risks to local stakeholder resources and mitigation measures

The Joint-PD-MR/1/ states the overall risks to the stakeholder resources are low, no major risks have arisen that may cause any loss of project benefits for the local community, climate and biodiversity, so that the long-term viability is assured. Before the project implementation, the PP has got all the agreements from involved farmer as confirmed by checking the funds allocation receipts to farmers/14/ and interviewed with local farmers/I5/, hence it is verified that project will not impact local stakeholder's property rights without the free, prior and informed consent.

Processes to ensure ongoing communication and consultation

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

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

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

For the project implementation, via site inspection checking the Suggestion Book published on the notice board of villages/25/, it is confirmed that there was no comments or suggestions in the book during the implementation period since 2018, and via interview with PP, it is verified that they will check the book regularly and collect all the comments received.

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

CL 03 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.4 Application of Methodology

3.4.1 Title and Reference

The approved consolidated methodology applied in the project activity is AMS-III.AU–"Methane Emission Reduction by Adjusted Water Management Practice in Rice Cultivation" (version 04.0)/34/.

This methodology also refers to the latest approved version of the following tools and guidelines:

TOOL 21 "Demonstration of Additionality of Small-scale Project Activities (version 13.1)"/38/

"Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities" (version 09.0)/36/

"Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities", version 04.0/37/

"General guidelines for SSC CDM methodologies", version 23.1/35/

3.4.2 Applicability

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

Table 3-1 Assessment of Applicability conditions of AMS-III.AU (version 4.0).

No.	Applicability conditions	Validation Assessment	Conclusion
1	The methodology comprises technology/measures that result in reduced anaerobic decomposition of organic matter in rice cropping soils and thus reduced generation of methane. The methodology includes projects such as: (a) Rice farms that change the water regime during the cultivation period from continuously to intermittent flooded conditions and/or a shortened period of flooded conditions; (b) Alternate wetting and drying method and aerobic rice cultivation methods (see <http://www.knowledgebank.irri.org/water management>); (c) Rice farms that change their rice cultivation practice from transplanted to direct seeded rice	Via checking the Ex-ante investigation report/13/ and interview with farmers/I5/, local experts/I3/ and local officer/I2/, CTI confirmed that the technology utilized by project is type (a) Rice farms that change the water regime during the cultivation period from continuously to intermittent flooded conditions and/or a shortened period of flooded conditions through the construction of cement ditches and installation of pumps and valves for controllable irrigation and drainage by site inspection.	Applicable
2	Rice cultivation in the project area is predominantly characterized by irrigated, flooded fields for an extended period of time during the growing season, i.e. farms whose water regimes can be classified as upland or rainfed and deep water are not eligible to apply this methodology. This shall be shown from a representative survey conducted in the geographical region of the proposed project or by using national data. This project area characterization shall also include information on pre-season water regime and applied organic amendments, so that all dynamic parameters as shown in Table 2 are covered by the baseline study.	Via checking the Ex-ante investigation report/13/ and interview with farmers/I5/, local experts/I3/ and local officer/I2/, CTI confirmed that Rice cultivation in the project area is predominantly characterized by irrigated, flooded fields for an extended period during the growing season. Furthermore, this project area characterization also include information on pre-season water regime and applied organic amendments, all dynamic parameters as shown in Table 2 are covered by the baseline study. The representative baseline survey conducted in the geographical region of the proposed project by Chongqing Academy of Social Sciences/13/ is verified to confirm this.	Applicable

No.	Applicability conditions	Validation Assessment	Conclusion
3	The project rice fields are equipped with controlled irrigation and drainage facilities such that both during dry and wet season, appropriate dry/flooded conditions can be established on the fields	In the proposed project: The rice fields are equipped with controlled irrigation and drainage facilities, thus the intermittently flooded method can be established on the fields. This is verified by site visit and checking the Inspection and Acceptance Report of the project/7/.	Applicable
4	The project activity does not lead to a decrease in rice yield. Likewise, it does not require the farm to switch to a cultivar that has not been grown before	The project only involved in change the water regime during the rice cultivation period that will not lead to a decrease in rice yield and the type of rice planted in this project is very common and no requirement from the project to lead the farm to switch to a cultivar that has not been grown before. This is verified by site visit and interview with farmers representative/I5/ and checking the Inspection and Acceptance Report of the project/7/.	Applicable
5	Training and technical support during the cropping season that delivers appropriate knowledge in field preparation, irrigation, drainage and use of fertilizer to the farmer is part of the project activity and is to be documented in a verifiable manner (e.g. protocol of trainings, documentation of on-site visits). In particular the project proponent is able to ensure that the farmer by himself or through experienced assistance is able to determine the crop's supplemental N fertilization need. The applied method shall assess the fertilizer needs using for example a leaf color chart or photo sensor or testing stripes. Alternatively a procedure to ensure efficient fertilization considering the specific cultivation conditions in the project area backed by scientific literature or official recommendations shall be used.	Via checking the technical training records/26/, CTI confirmed that the appropriate knowledge in field preparation, irrigation, drainage and use of fertilizer has been provided to the farmers in every April since 2018 to 2021.	Applicable
6	Project proponents shall assure that the introduced cultivation practice, including the specific cultivation elements, technologies and use of crop protection products, is not subject to any local regulatory restrictions	The project only involved in change the water regime during the rice cultivation period by equipped with controlled irrigation and drainage facilities in project area, which is deemed in line with the local	Applicable

No.	Applicability conditions	Validation Assessment	Conclusion
		regulatory which has been verified by site interview with local officer/I2/ and expert/I3/ and checking the related laws and regulations/30/.	
7	Except the case where the default value approach indicated in section 6.1.2 "Emission reductions using IPCC tier 1 approach or default values" is chosen for emission reductions calculations, project proponents have access to infrastructure to measure CH_4 emissions from reference fields using closed chamber method and laboratory analysis	In the PD, the "Emission reductions using IPCC tier 1 approach or default values" is chosen by PP for ex ante emission reductions calculations, and during site inspection, CTI confirmed that the project proponents have installed infrastructure to measure CH_4 emissions from reference fields using closed chamber method and laboratory analysis as the monitoring method for the actual emission reductions calculations.	Applicable
8	Aggregated annual emission reductions of all fields included under one project activity shall be less than or equal to 60 kt CO_2 equivalent	The project is expected to generate 58,898 tCO_2e annually which is less than or equal to 60 kt CO_2 equivalent. And PP stressed that if the emission reductions monitored during the verification excesses the threshold, the project proponent will only claim gap of 60,000 tons according to the Applicability of small-scale methodology. This is verified by checking the Joint-PD-MR/1/ and ER sheet/2/.	Applicable
Conclusion: Methodology AMS-III.AU (Version 04.0) is applicable to the project activity.			

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

Table 3-2 Assessment of Applicability conditions of methodological tool

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

Tool	Criteria	Validation Assessment	Conclusion
	also apply "TOOL19: Demonstration of additionality of microscale project activities" as applicable.	Hence not applicable to "TOOL19: Demonstration of additionality of microscale project activities"	
Conclusion: All the relevant methodological tools are applicable to the project activity.			

Furthermore, due to the project is defined as a small-scale case, according to the section 3.9.3 of VCS Standard version 4.2, "where applying a methodology with scale and/or capacity limits, it shall be demonstrated that the project is not a fragmented part of a larger project or activity that would otherwise exceed such limits. The project shall be considered a fragmented part of a larger project if within one kilometer of the project boundary there exists another project where:

1) The project proponents for both projects are the same.

2) The sectoral scope and project activity for both projects are the same.

3) The other project has been registered under the VCS Program or another GHG program within the previous two years."

Via checking the project boundary in KML file/4/, CTI confirmed that the there is no another project exists within one kilometer of the project boundary, hence it is verified that the project is not considered as a fragmented part of a larger project.

3.4.3 Project Boundary

Based on AMS-III.AU (version 04.0)/34/, the Project boundary for this Project activity includes:

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

Via site investigation by GPS device and checking the map of the project area/4/, CTI confirmed that the project boundary is correctly defined in line with the applied methodology/34/.

The main emission sources and gases including each GHG source, sink and reservoir included in the project boundary are determined as per the applied methodology, GHG sources included and excluded from the project boundary is defined as correct and corresponding to the actual status of the project, via on-site inspection and checking the project design in project implementation program/6/, it is verified that all the relevant sources have been selected.

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

3.4.4 Baseline Scenario

The Joint-PD-MR applies the baseline scenario given by section 5.2 of the AMS-III.AU/34/, i.e.

Baseline scenario is the continuation of the current practice e.g. continuously flooded rice cultivation in the project fields without any organic amendment during rice cultivation in the project fields.

Via checking the Ex-ante investigation report/13/, CTI confirmed that the continuously flooded method during rice cultivation with no organic amendment is the current practice without project, which is in line with the baseline scenario identified in the applied methodology that is the continuation of the current practice of continuously flooded rice cultivation in the project fields without any organic amendment during rice cultivation in the project fields.

Thus it is verified that identified baseline scenario is justified. Refer to below section for assessment of the project additionality.

3.4.5 Additionality

Due to the project is a small-scale, TOOL 21"Demonstration of Additionality of Small-scale Project Activities (version 13.1)"/38/ is used to demonstrate the additionality.

In addition, the project applied the small-scale methodology and in the section 5 of the methodology AMS-III.AU, it states "Project participants shall apply the "General guidelines for SSC CDM methodologies, "Guidelines on the demonstration of additionality of small-scale project activities". The "Guidelines on the demonstration of additionality of small-scale project activities" has now replaced by TOOL 21"Demonstration of Additionality of Small-scale Project Activities (version 13.1)"/38/. Then it means that PP has used the correct tool for demonstration of additionality of the project.

Demonstration of additionality has been assessed as below:

Based on the applied methodology, it is verified that no barriers identified that would prevent the baseline scenario prior to the implementation of project as listed above. The step below is used to analyze the additionality of the project by conducting an investment barrier analysis and technical barrier analysis using the related methodological tool.

Investment barrier analysis

The investment barrier analysis is conducted in line with the requirement in the tool, due to the baseline scenario has been determined in the methodology, thus it is confirmed that the baseline scenario is a financially more viable alternative to the project activity due to there was no financial cost needed to continue the baseline scenario and it would have led to higher emissions. Thus only need to demonstrate the investment barrier of the project scenario.

And based on the comparison of the living standard of the 10,020 households involved in the project with the investment put into build the cement ditches, the total costs of irrigation and drainage facilities in high-standard farmland is 12,479,280 CNY, and based on the Project implementation program, CTI confirmed that local government's funds account for about 86.16% which is not enough to fully cover all the costs and the funds from government only cover the major constructions contains ditches and the reservoirs, however, the small devices used in the farmer's own rice fields, such as valves, pumps, canals,

and other facilities need to be funded by farmers themselves, this has been confirmed by site interview with local officers and farmers. Therefore, only if the remaining CNY 1,727,100 (13.84%) of the investment paid by the farmers, the whole project can be finished and the intermittently flooded method can be achieved in each farmer's rice fields.

Then the remaining construction cost is 1,727,100 which is about CNY 90/ha is still to be paid by farmers even with the funds. However, via interview with the farmers, CTI confirmed that they would rather maintain the status quo than spend money on the project, hence, due to the money need to paid to the project verified above and by site interview with households, the farmers would not pay the additional investment. CTI confirmed that in the absence of the project activity, the scenario prior would be existed as no farmers would invest the updated drainage and irrigation system due to they would rather maintain the status quo than spend money on the project. This is verified by on-site interview with the farmers/I5/ and checking the Ex-ante investigation report/13/.

Finally, via checking the funds allocation receipts to farmers/14/, it is verified that the project implementer raised funds which need to be paid by farmers. Via checking the Project implementation program/6/, CTI confirmed that there is no profit would be created by the project but the carbon revenue, hence, by checking the Board meeting minute/10/ and emission reduction purchase agreement/15/, VVB confirmed that the project implementer paid the investment based on carbon revenue consideration and solved the investment of the project.

In conclusion, CTI confirmed that the information about the investment barrier have been justified as above and confirmed as correct and actual, and CTI also confirmed that the project faces capital or investment return constraints that can be overcome by the additional revenues associated with the sale of GHG credits, which is verified also in line with the section 3.5.4 of the VCS Methodology Requirement v4.1/52/.

Besides, with points mentioned above, the project proponent has added some clarifications in the "Investment barrier" in Section 3.5 of JPM, which is assessed as follows:

First, the major construction that government provided belongs to a public facility for farmers. The reason why the government invested is that the construction of high-standard farmland (i.e. the public facility) is government's duty and jobs, but is not a participation in these carbon projects which has been verified by site interview with the local officers.

Second, what the government invested in this project are ditches and reservoirs merely. There is no introduction of intermittently flooded method and devices which has been verified by site interview with the local officers and farmers. And the government won't maintain this new flooded regime and repair devices after the construction of the ditches and reservoirs. It is the project proponent who introduced the intermittently flooded methods, provides relevant devices to achieve the intermittently flooding and training, as well as maintain the new flooded regime and repair the devices in the project lifetime which has been confirmed by site inspection and interview with PP, local officers and farmers, also by checking the project design in project implementation program/6/.

And based on the demonstration as above, the project proponent considering the revenue earned from the carbon development is willing to invest this project, so the project could be carried out finally.

To conclude, this project is a small-scale project and the additionality has been analyzed in the JPM in line with the appropriate tool for demonstration of additionality.

Thus it is verified that baseline scenario is a financially more viable alternative to the project activity but would have led to higher emissions.

Technical barrier analysis

The technical barrier analysis is conducted in line with the requirement in the tool, due to the baseline scenario has been determined in the methodology, thus it is confirmed that the baseline scenario is a less technologically advanced alternative to the project activity involves lower risks so would have led to higher emissions, which has been verified by on-site interview with the farmers/I5/ and it is confirmed that without this project, farmers would grow rice by old flooding method, although higher emissions would be resulted.

For the project activity, due to the low market share of the new technology adopted in project zone in Hechuan District with 96.2% of farmers practiced the continuously flooded method during rice cultivation which has confirmed by checking the Ex-ante investigation report/13/, so the project activity faces technical barrier as no farmers have access to advanced technology about intermittently flooded water regime, which requires regularly drainage and irrigation as in the baseline scenario, local farmers only need to ensure that there is enough water in the paddy fields. This is verified by on-site interview with the farmers/I5/ and checking the Ex-ante investigation report/13/. And with the project implementation, the agricultural experts trained local farmers to popularize the intermittently continuously flooded method to replace the traditional continuously flooded method which has been verified by checking the technical training records/26/ which proved that the project will overcome the technical barrier.

In conclusion, an explanation to show that the project activity would not have occurred due to the two barriers as listed in the TOOL 21 “Demonstration of Additionality of Small-scale Project Activities (version 13.1)”/38/ which have been sufficiently justified as above, thus the VVB was able to reach a reasonable level of assurance that the project is additional.

3.4.6 Quantification of GHG Emission Reductions and Removals

For validation of the estimated GHG emission reductions in the Joint-PD-MR/1/ and ER calculation sheet/2/,

Further, the VVB has downloaded from the UNFCCC website the applicable version of the CDM methodology,

Via verify the Joint-PD-MR/1/, it is confirmed the calculation of ERs is done as per the applied methodology (AMS-III.AU ver. 04.0) with follow steps listed below.

Baseline emissions

According to the methodology, the baseline scenario is the continuation of the current practice e.g. continuously flooded rice cultivation in the project fields.

Hence baseline emissions shall be calculated on a seasonal basis using the following formula:

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

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

Where:

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

Determination of baseline emission factor on reference fields

As per the applied methodology (AMS-III.AU ver. 04.0), Baseline reference fields shall be set up in a way that they are representative of baseline emissions in the project rice fields. For each group of fields with the same cultivation pattern, as defined with the help of Table 2, at least three reference fields with the same pattern shall be determined in the project area. On these fields, measurements using the closed chamber method shall be carried out, each resulting in an emission factor expressed as $kgCH_4$/ha per season. The seasonally integrated baseline emission factor $EF_{BL,s,g}$ shall be derived as average value from the three measurements for each group.

Via checking the Ex-ante investigation report derived from farmer's information/13/, CTI confirmed that all the surveyed sampled farmers using the same cultivation pattern (Continuously flooded, No organic amendment, soil pH within project area is larger than 5.5, soil organic carbon within the range between 1-3% and climate condition is same) as defined with the help of Table 2 in applied methodology, thus only one group was defined for the project to determine the baseline emission factor on reference fields.

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

Project emissions

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

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

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

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

Where:

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

Determination of project emission factor on reference fields

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

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

Leakage

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

Emission reductions:

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

Where:

ER_s	=	Emission reductions in season s ($t\ CO_2e$)

Ex ante estimation of emission reductions

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

has selected IPCC tier 1 default values for emission and scaling factors for ex ante estimation of emission reductions. The approach has been explained and justified in the Joint-PD-MR and assessed as below,

Emission reductions using IPCC tier 1 approach or default values

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

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

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

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

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

Where:

ER_y	=	Emission reductions in year y (t CO_2e)
EF_{ER}	=	Adjusted daily emission factor (kgCH_4/ha/day). Alternatively, seasonal emission factor (kg CH_4/ha/season) may be determined
A_y	=	Area of project fields in year y (ha)
L_y	=	Cultivation period of rice in year y (days/year). This is not applicable when seasonal emission factor is determined.
GWP_{CH_4}	=	Global warming potential of CH_4 (t CO_2e/t CH_4) 28 tCO_2/tCH_4 from the Fifth Assessment report, GHG Protocol/32/
EF_{BL}	=	Baseline emission factor (kg CH_4/ha/day) or (kg CH_4/ha/season)
EF_P	=	Project emission factor (kg CH_4/ha/day) or (kg CH_4/ha/season)
$EF_{BL,c}$	=	Baseline emission factor for continuously flooded fields without organic amendments (kg CH_4/ha/day) or (kg CH_4/ha/season)
$SF_{BL,w}$ or $SF_{P,w}$	=	Baseline or project scaling factors to account for the differences in water regime during the cultivation period
$SF_{BL,p}$ or $SF_{P,p}$	=	Baseline or project scaling factors to account for the differences in water regime during the pre-season before the cultivation period
$SF_{BL,o}$ or $SF_{P,o}$	=	Baseline or project scaling factors should vary for both type and amount of organic amendment applied

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

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

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

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

Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Institute of Central Laboratory, School of Plant Science and Technology, Huazhong Agricultural University/17/, CTI confirmed that the report was carried out by experts from Huazhong Agricultural University and the staff of the Agricultural and Rural Committee of Hechuan District who are worked within the agricultural knowledge field and it is confirmed that the experts are qualified to implementation of methane measurement in rice fields based on VVB's local expertise. And by checking the report/17/ and interview with the expert from Huazhong Agricultural University/I2/, CTI verified that expert gets the qualification and conducted the lab test in line with the requirement in the methodology.

Furthermore, via checking the detailed plan prepared by PP for methane measurements/19/, CTI verified that before the experts conducted the methane measurement in rice fields, PP provided a plan to experts and this plan included the schedule for the field and laboratory measurements, the logistics that are necessary to get the gas samples to the laboratory and a cropping calendar. The plan also included all reference field specific information regarding location and climate, soil, water management, plant characteristics, fertilizer treatment and organic amendments which is in line with the Appendix. Guidelines for measuring methane emissions from rice fields in the applied methodology (AMS-III.AU ver. 04.0).

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

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

Feature	Conditions	Justification
Chamber material	Option 1: Non-transparent • Commercially available PVC containers or manufactured chambers (e.g. using galvanized iron);	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/ and on-site checked the

	• 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	Chamber, CTI confirmed that the chamber used in this project is fulfill with the material request listed in the applied methodology.
Placement in soil	Option 1: Fixed base • Base made of non-corrosive material and remains in the field for the whole season; • Base should allow tight sealing of the chamber; • Base should have bores in the submerged section to allow water exchange between inside and outside; • Base should be installed at least 24 hours before the first sampling	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/ and on-site checked the Chamber, CTI confirmed that the chamber used in this project is fulfill with the placement in soil request listed in the applied methodology.
Auxiliaries of chamber	• Thermometer for measuring the temperature inside the chamber; • Fan (battery operated) inside the chamber for mix the inside air during sampling; • Sampling port (rubber stopper placed in a bore of the chamber)	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/ and on-site checked the Chamber, CTI confirmed that the auxiliaries of chamber used in this project is fulfill with the request listed in the applied methodology.
Basal area	Rectangular or rounded, but has to cover minimum of four rice hills (ca. 0.1 m^2 minimum)	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/ and on-site checked the Chamber, CTI confirmed that the shape and size of chamber used in this project is fulfill with the request listed in the applied methodology.
Height	Option 1: Fixed height	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in

	Total height (protruding base + chamber) should exceed plant height	Hechuan District in 2017 conducted by Huazhong Agricultural University/17/ and on-site checked the Chamber, CTI confirmed that the height of chamber used in this project is higher than the plant height that is fulfill with the request listed in the applied methodology.

Table 3-4. On the field – air sampling

Feature	Conditions	Justification
Replicate chambers per plot	Minimum requirement: Three replicate chambers per plot	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/ and on-site checked the Chambers, CTI confirmed that the three replicate chambers were placed in every plot that is fulfill with the request listed in the applied methodology.
Number of air samples per exposure / data points per measurement	Minimum requirement: Three samples per exposure	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, CTI confirmed that there were three samples for every exposure analyzed that is fulfill with the minimum request listed in the applied methodology.
Exposure time	30 minutes	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, CTI confirmed that exposure time is 30 minutes that is fulfill with the request listed in the applied methodology.
Daytime of measurement	Morning	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, CTI confirmed that measuring time was at morning in daytime is 30 minutes from 9.30 – 10.00 a.m. that is fulfill with the request listed in the applied methodology.
Measurement interval	Minimum requirement: once per week	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/ and checking the plan/20/, CTI confirmed that measurement

		interval period is once per week that is fulfill with the minimum request listed in the applied methodology.
Syringe	Suitability test (leak proof) before measurement Preferably equipped with a lock for ease of handling	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/ and on-site checked the Chambers, CTI confirmed that the syringe with a lock was used in chamber and it is checked for leak proof before every measurement that is fulfill with the request listed in the applied methodology.
Sample storage until analysis	Storage < 24 h: air samples can remain in syringe; Storage > 24 h: transfer air samples into evacuated vial, store with slight overpressure	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, CTI confirmed that the three samples were taken before a laboratory analysis was performed, so the samples were stored in the evacuated vials that is fulfill with the request listed in the applied methodology.

Table 3-5. Laboratory analysis

Feature	Conditions	Justification
Method	Gas Chromatograph with flame ionization detector (FID)	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, CTI confirmed that the FID is used in laboratory analysis
Injection	Direct injection or with multi-port valve and sample loop	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, CTI confirmed that the direct injection method is used in laboratory analysis
Column	Packed (e.g. molecular sieve) or capillary column	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, CTI confirmed that the packed column is used in laboratory analysis
Calibration	With certified standard gas each day of analysis	Via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously

	before and after the analyses are done	Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, CTI confirmed that the calibration is conducted as per request of the methodology in laboratory analysis.

Thus via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, CTI verified that the measurement methane results are correct, and based on the "Calculation of the emission rate for a plot (reference field)" in the Appendix. Guidelines for measuring methane emissions from rice fields in the applied methodology (AMS-III.AU ver. 04.0),

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

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

Where:

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

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

$$s = \frac{\Delta m_{CH_4}}{\Delta t} \quad (11)$$

Where:

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

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

$$RE_{ch} = s \times \frac{60min}{A_{chamber}} \quad (12)$$

Where:

RE_{ch}	=	Emission rate of chamber ch (mg/h x m^2)

ch = Index for replicate chamber on a plot

$A_{chamber}$ = Chamber area (m²)

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

$$RE_{plot} = \frac{\sum_{ch=1}^{Ch} RE_{ch}}{Ch} \quad (13)$$

Where:

RE_{plot} = Average emission rate of a plot (mg/h x m²)

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

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

Plots	RE_{plot} (mg/h x m²)	Hours a day	RE_{plot} (kg/day/ha)
Plot 1	11.474	24	2.75
Plot 2	11.414		2.74
Plot 3	11.181		2.68
Average	11.375		2.73

Hence, based on above calculation process, and via checking the Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 conducted by Huazhong Agricultural University/17/, it is verified that the baseline emission factor for continuously flooded fields without organic amendments ($EF_{BL,c}$) is 2.73 kg CH4/ha/day as used in the Joint-PD-MR is correct and actual.

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

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

Table 3-7. IPCC default values for *$SF_{BL,w}$ or $SF_{P,w}$*

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

	Intermittently flooded - multiple aeration	0.52

Via Ex-ante investigation report/13/ and interview with farmer/I5/, CTI verified that the water regime is continuously flooded in baseline scenario, and via site inspection and checking the Inspection and Acceptance Report of the project/7/, CTI confirmed that the water regime of this project activity is intermittently flooded with multiple aeration as defined in the methodology, hence $SF_{BL,w}$ is 1 and $SF_{P,w}$ is 0.52.

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

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

Table 3-8. IPCC default values for $SF_{BL,p}$ or $SF_{P,p}$

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

Via checking the Ex-ante investigation report/13/, CTI verified that all the rice cultivation is single-cropping in project area, hence $SF_{BL,p}$ and $SF_{P,p}$ are 0.68.

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

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

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

Where:

ROA_i = Application rate of organic amendment type *i*, in dry weight for straw and fresh weight for others, tonne ha^{-1}.

5 tonne/ha of straw is assumed as the baseline quantity of organic amendment, because the value of leftover straw after harvest is in the range of 3 tonne/ha (when harvested manually to the ground level, leaving very little stubble and the root residues) to 7 tonne/ha (harvested mechanically leaving behind large amount of crop residues on the field)

$CFOA_i$ = Conversion factor for organic amendment type i (in terms of its relative effect with respect to straw applied shortly before cultivation.

0.29 is used for a single crop and 1.0 for a double crop

Via the Ex-ante investigation report/13/, Inspection and Acceptance Report of the project/7/ and interview with farmer/I5/, CTI verified that no organic amendments are applied under both baseline and project scenario, so ROA_i is 0 and thus based on above formular, $SF_{BL,o}$ and $SF_{P,o}$ are 1.

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

The estimated amount of GHG emission reductions of the project is 412,286 tCO_2e during the 1st crediting period (7 years) from 09-May-2018 to 08-May-2025, resulting in estimated average annual emission reductions of 58,898 tCO_2e.

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

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

3.4.7 Methodology Deviations

There are no any methodology deviations applied to the project.

3.4.8 Monitoring Plan

1. Data and parameters available at validation

Please refer to the following tables for assessment of each parameter determined ex-ante only used to calculate the ex-ante emission reduction:

A_y	Area of project fields in year y
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is field measurement, determined by collecting the project field sizes in a project database. The size of project fields are determined by GPS or satellite data.
Correct value provided?	Yes – 18,908 ha Derived from GPS results measured by Agricultural and Rural Committee of Hechuan District/5/
Has this value been verified?	Yes. The value has been verified against the data source. And the areas for sampled farmers have been verified by site interview with farmers and measuring by GPS device during site inspection.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

GWP_{CH4}	Global warming potential of CH_4
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is IPCC's *Fifth Assessment report, GHG Protocol* which are appropriate/32/
Correct value provided?	Yes – 28 tCO_2e/ tCH_4
Has this value been verified?	Yes. It is a default value from IPCC/32/. The value has been verified against the data source
Choice of data correctly justified?	Yes
Measurement method correctly described?	Yes, any future revision of the IPCC's assessment report should be taken account.

L_y	Rice cultivation period in day(s) of one season
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is derived from local agricultural department as an empirical value for the days of single-cropping rice cultivation which has been confirmed by site interview with local officers and farmers.
Correct value provided?	Yes – 125 days
Has this value been verified?	Yes. There are no farmers' logbooks as the value is used for ex-ante emission reduction calculation. This is an empirical value
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$EF_{BL,c}$	Seasonal baseline emission factor for continuously flooded fields without organic amendments
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017/17/ which is verified as appropriate. Refer to above section "Determine the value of parameter $EF_{BL,c}$" for assessment details.
Correct value provided?	Yes –2.73 kg CH_4/ha/day
Has this value been verified?	Yes. The values are verified as correct and calculated as per the applied methodology. Refer to above section "Determine the value of parameter $EF_{BL,c}$" for assessment details.
Choice of data correctly justified?	Yes. The justification of choice has been clearly stated in the Joint-PD-MR by PP which is verified as in line with the applied methodology.

Measurement method correctly described?	N/A

$SF_{BL,w}$	Baseline scaling factors to account for the differences in water regime during the cultivation period
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/33/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –1 is adopted due to the rice is cultivated under continuously flooded condition in baseline scenario Refer to above section "Determine the value of parameter $SF_{BL,w}$ or $SF_{P,w}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/33/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{P,w}$	Project scaling factors to account for the differences in water regime during the cultivation period
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/33/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –0.52 is adopted due to the rice is cultivated under intermittently flooded condition in baseline scenario Refer to above section "Determine the value of parameter $SF_{BL,w}$ or $SF_{P,w}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/33/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{BL,p}$	Baseline scaling factors to account for the differences in water regime in the pre-season before the cultivation period.
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/33/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –0.68 is adopted due to cultivation mechanism in rice filed is single-cropping in baseline scenario Refer to above section "Determine the value of parameter $SF_{BL,p}$ or $SF_{P,p}$" for assessment details.

Has this value been verified?	Yes. It is a default value from IPCC/33/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{P,p}$	Project scaling factors to account for the differences in water regime in the pre-season before the cultivation period.
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/33/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –0.68 is adopted due to cultivation mechanism in rice filed is single-cropping in project scenario Refer to above section "Determine the value of parameter $SF_{BL,p}$ or $SF_{P,p}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/33/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{BL,o}$	Baseline scaling factors should vary for both type and amount of organic amendment applied
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/33/ as listed in the applied methodology which is appropriate
Correct value provided?	Yes –1 is adopted due to no organic amendments are applied under baseline scenario, so ROA_i is 0 and thus based on calculation formular, $SF_{BL,o}$ is 1. Refer to above section "Determine the value of parameter $SF_{BL,o}$ or $SF_{P,o}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/33/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

$SF_{P,o}$	Project scaling factors should vary for both type and amount of organic amendment applied
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	The source is 2006 IPCC Guidelines for National Greenhouse Gas Inventories/33/ as listed in the applied methodology which is appropriate

Correct value provided?	Yes –1 is adopted due to no organic amendments are applied under project scenario, so ROA_i is 0 and thus based on calculation formular, $SF_{p,o}$ is 1. Refer to above section "Determine the value of parameter $SF_{BL,o}$ or $SF_{P,o}$" for assessment details.
Has this value been verified?	Yes. It is a default value from IPCC/33/. The value has been verified against the data source.
Choice of data correctly justified?	Yes
Measurement method correctly described?	N/A

2. Data and Parameters Monitored

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

$A_{s,g}$	Aggregated project area in given season s
Title in line with Methodology?	Yes
Ex-ante Value	Not used for ex ante ER calculation
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	Yes–to determine by collecting the project field sizes in a project database
Correct value provided?	N/A
Has this value been verified?	N/A
Choice of data correctly justified?	Yes –to determine by collecting the project field sizes in a project database which is in line with the applied methodology and only compliant farms are considered
Measurement method correctly described?	Yes – Field measurement. The size of project fields shall be determined by GPS or satellite data. Should such technologies not be available, established field size measurement approaches shall be used provided that uncertainties are taken into account in a conservative manner which is in line with the applied methodology.
Monitoring frequency correctly described?	Every season - verified as per the applied methodology
Monitoring equipment correctly described?	GPS or satellite data - verified as per the applied methodology
QA/QC procedure correctly described?	Yes General guidelines for SSC CDM methodologies/35/ will be referred
Purpose of data?	BE_s calculation

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

Choice of data correctly justified?	Yes –Field measurements in baseline reference fields as per the applied methodology
Measurement method correctly described?	Yes –Field measurements in baseline reference fields as per instructions in the appendix (Guidelines for measuring methane emissions from rice fields) and IPCC 2006, volume 4, chapter 5.5/33/ as per the applied methodology
Monitoring frequency correctly described?	Obtained from the calculation of the emission rate for baseline reference fields according to the requirements in the Appendix of methodology, and the $C_{CH4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings is derived from the laboratory analysis. Regular measurements as per closed chamber method guidance, seasonally integrated - verified as per the applied methodology
Monitoring equipment correctly described?	Closed chamber and also devices in laboratory - verified as per the applied methodology
QA/QC procedure correctly described?	Yes The implementation of methane measurement in rice fields shall be conducted by technicians trained by experts and the laboratory should get ISO/IEC 17025/28/ certificate. All the data should be cross-checked by technicians and experts. The QA/QC procedure is verified as appropriate and in line with the requirement of Appendix in methodology.
Purpose of data?	BE_s calculation

$EF_{P,s,g}$	Project emission factor of group g in given season s
Title in line with Methodology?	Yes
Ex-ante Value	Not used for ex ante ER calculation
Data unit correctly expressed?	Yes
Appropriate description?	Yes
Source clearly referenced? (appropriate?)	Yes - Field measurements in project reference fields
Correct value provided?	N/A
Has this value been verified?	N/A
Choice of data correctly justified?	Yes –Field measurements in project reference fields as per the applied methodology
Measurement method correctly described?	Yes –Field measurements in project reference fields as per instructions in the appendix (Guidelines for measuring methane emissions from rice fields) and IPCC 2006, volume 4, chapter 5.5/33/ as per the applied methodology
Monitoring frequency correctly described?	Obtained from the calculation of the emission rate for baseline reference fields according to the requirements in the Appendix of methodology, and the $C_{CH4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings is derived from the laboratory analysis. Regular measurements as per closed chamber method guidance, seasonally integrated - verified as per the applied methodology
Monitoring equipment correctly described?	Closed chamber and also devices in laboratory - verified as per the applied methodology
QA/QC procedure correctly described?	Yes

	The implementation of methane measurement in rice fields shall be conducted by technicians trained by experts and the laboratory should get ISO/IEC 17025/28/ certificate. All the data should be cross-checked by technicians and experts. The QA/QC procedure is verified as appropriate and in line with the requirement of Appendix in methodology.
Purpose of data?	PE_s calculation

3. Monitoring plan

The VVB has checked the monitoring plan of the Joint-PD-MR against the applied methodology.

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

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

Monitoring team

The monitoring team will take the overall monitoring responsibility in the whole monitoring process which has been confirmed during the site interview with the representatives from monitoring team which consists of the project proponent/I1/, Search Co2 Investment Management Co., Ltd /I6/, technicians/I4/ and experts from the Agricultural and Rural Committee/I2/. Also the Search Co2 Investment Management Co., Ltd will establish cultivation logbooks template for the farmers to be monitored within the project boundary to collect and record monitoring data which has been confirmed by interview with the monitoring team members. And the final monitoring results will be double-checked by experts of the Agricultural and Rural Committee. The roles and responsibilities of the project owner and monitoring team has been defined in the monitoring plan and verified as reasonable and achievable.

Furthermore, for the analysis of emission rate of gas sampling on field, a laboratory with relevant certificate conducted test and the measurement team was leaded by an expert. 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 plan designed in the Joint-PD-MR for monitoring of farmers' compliance with project cultivation practice is checked by VVB, CTI confirmed that the description is in line with the applied methodology.

The project database with all 10,020 participated rice farmer households' identification/12/ including name and address of the rice farmer, size of the field and additional farm specific information have been provided to the VVB, CTI confirmed that the PP has set up a database that allow an unambiguous identification of participating rice farm, and this database will be used as the basis for PP to conduct the sampling method as stated below.

As per the requirement in the applied methodology, a cultivation logbook shall be maintained for all project fields, hence all the 10,020 participated rice farmer households will fill the logbooks as per the requirement in the methodology.

As per the request from the applied methodology, the reporting and verification shall be done on the basis of samples of the log-books from the farmers, according to the latest version of the "Standard for sampling and surveys for CDM project activities and programme of activities" (version 09.0), 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/36/.

324 samples will be selected according to stratified sampling method in 16 towns/villages based on the numbers determined for each town calculated by the weight of total farmers numbers of each town in project area.

And then for sample selection of each town, a random sampling method will be used for determine the famers sample in each town and finally the randomly selected 324 samples will be defined.

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

(a) Sowing (date),

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

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

(d) Yield

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

For this monitoring period, 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, V9.0/36/. Refer to section 2.1 for details of the VVB sampling approach.

Via checking the results listed in sampled farmers' logbooks/21/, CTI verified that the monitoring of farmers' compliance with project cultivation practice is in line with the monitoring plan 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.

In addition, via checking the selected sampled farmers' logbooks/21/, CTI confirmed that the rice yield was increased by an average of 15% due to the implementation of the project in this monitoring period comparing with the yield of rice in baseline scenario as surveyed in the Ex-ante investigation report/13/.

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

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

For this monitoring period, the two monitoring parameters are monitored and assessed as below,

a. Requirement

For ex post emission reduction calculation, as per the Joint-PD-MR/1/ 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/19/, 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 Joint-PD-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/18/ 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/21/ 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/I3/.

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 4 seasons (one cultivation season each year)/18/, CTI confirmed that the measurements have been conducted by technicians trained by expert from Huazhong Agricultural University in these fields using the closed chamber method in both baseline and project rice fields. Based on local expertise from VVB, CTI confirmed that Huazhong Agricultural University is an institution owned the certificate to do the laboratory analysis, CTI confirmed that the experts work in the university and their fields of study is rice. Thus the requirement for implementation of methane measurement in rice fields of the methodology is satisfied.

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/19/ and applied methodology. In conclusion, CTI confirmed that the chambers were installed correctly and air samplings were taken correctly. 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.

Refer to above tables 3-3, 3-4 and 3-5 for detail assessment of the monitoring methods.

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/18/ 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 $C_{CH4,t}$ were obtained.

e. 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 above formulars (10)-(13).

So, the final integrated results of with the $EF_{BL,s,g}$ and $EF_{p,s,g}$ ($kgCH_4$/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/18/ for this monitoring period, CTI confirmed that the calculation results of $EF_{BL,s,g}$ and $EF_{p,s,g}$ ($kgCH_4$/season/ha) listed in the MR is consistent with the methane measurement and calculation reports listed in the 4 methane measurements and calculation reports for 4 different seasons in this monitoring period/18/.

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 Joint-PD-MR/1/.

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 displace 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/21/,/18/, 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 Joint-PD-MR/1/.

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

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

3.5 Non-Permanence Risk Analysis

N/A

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

1. Assessment of Project implementation status during this monitoring period

Through the onsite visit, interviewing the project developer and reviewing the project description/1/, 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 18,908 ha for single-cropping rice.

Via site inspection with rice lands/38/ and interview with farmer representatives/I5/, 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 and pumps and valves were installed to conduct the intermittent flooded water regime during rice cultivation. With the replacing of the continuously flooded method by intermittent flooded method, the project solves the problems of excessive water used during rice cultivation and expected to decrease 48% of the CH_4 emission.

Via checking the Joint-PD-MR/1/, CTI confirmed that the project activity generates CH_4 emission reductions by build ditches for applying intermittently flooded method in project area, that otherwise continuously flooded method was used in rice paddies, which means fields have standing water throughout the rice growing season and may only dry out for harvest and in this condition, the organic matter in rice soil under flooded condition would emit a large amount of methane (CH_4) because of anaerobic decomposition. Due to the CH_4 in rice paddies is produced by the anaerobic decomposition of organic matter after the flooding, hence through the project that allows the field to drain halts CH_4 production, which happens in anaerobic condition, reducing the total quantity of CH_4 released during the cropping season.

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, pumps and valves, as well as the monitoring and metering equipment, the project has been implemented and operated as applied methodology and monitoring plan described in the Joint-PD-MR/1/.

This verification covers the period from 09-May-2018 to 31-December-2021 (including both days). The Project involves a total acreage of 18,908 ha for single-cropping rice, therefore, 240,000 tCO_2e emission reductions are claimed as VCUs during this monitoring period.

The construction of high standard rice fields commenced on 25-December-2017 and project start date was 09-May-2018, which has been confirmed in the project database with all 10,020 participated rice farmer households' identification/12/.

VVB confirmed that the activities commenced before the monitoring period and during this monitoring period have been stated in the Joint-PD-MR/1/. 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 Joint-PD-MR/1/.

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 Joint-PD-MR/1/. There are no any material discrepancies between project implementation and the project description.

In conclusion, the verification Team was able to confirm that the project implementation is in accordance with the project description contained in the Joint-PD-MR/1/.

2. Assessment of Data and parameters available at validation

Via checking the Joint-PD-MR/1/, it is confirmed that all the ex-ante data and parameters are same to the Joint-PD-MR which is verified as correct. Refer to section 3.4.8 for the detail assessment of ex-ante parameters.

3. Assessment of Data and parameters monitored

During the verification all relevant monitoring parameters (as listed in chapter 3.4.8 of this report) have been verified with regard to the

(i) appropriateness of the applied measurement / determination method,

(ii) the correctness of the values applied for ER calculation,

(iii) the accuracy, and applied QA/QC measures.

The monitoring results as well as the verification procedure are described parameter-wise in the below tables,

$A_{s,g}$	Aggregated project area in given season s
Title in line with Methodology?	Yes
Data unit correctly expressed?	Yes – ha
Appropriate description?	Yes
Monitored Value?	18,908 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/12/, and the size of each household's rice field in the database is determined by using GPS by Agricultural and Rural Committee of Hechuan District which has been confirmed by interview with officers from Agricultural and Rural Committee of Hechuan District.
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/21/.
Measurement method and procedures correctly described?	Yes – Field measurement and by checking the farmers' log-books/21/. 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/22/ 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 Joint-PD-MR and the applied methodology
Monitoring equipment correctly described?	GPS measuring equipment - verified as per Joint-PD-MR 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/27/, 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/35/ has been referred. The project field sizes derived from the project database with farmers information/12/ was cross-checked with the farmers' log-books/21/ and Fact Sheets on Rice Cultivation/22/ 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/21/ and Fact Sheets on Rice Cultivation/22/, CTI confirmed that all the farmers cultivated single-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 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?	<table><tr><td rowspan="2">Categories</td><td colspan="4">$EF_{BL,s,g}$ (kg CH_4/ha)</td></tr><tr><td>2018</td><td>2019</td><td>2020</td><td>2021</td></tr><tr><td>Seasons</td><td>337.41</td><td>336.13</td><td>339.86</td><td>338.97</td></tr></table>
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 Joint-PD-MR/1/ and applied methodology/34/.
Choice of data correctly justified?	Yes –field measurements in baseline reference fields and analyzed in the laboratory as per Joint-PD-MR 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 5.5/33/ as per Joint-PD-MR/1/ and applied methodology/34/.

Calculation method?	Yes- Refer to equations in below section 4.4.3 for calculation process which is verified in line with Joint-PD-MR/1/ and applied methodology/34/.
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 Joint-PD-MR 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 $C_{CH4,t}$ (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 Joint-PD-MR/1/ and applied methodology/34/. 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/18/ for this monitoring period and site interview with expert/I3/, 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/16/. 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 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	2021
Seasons	223.86	222.53	226.47	225.48

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 Joint-PD-MR/1/ and applied methodology/34/.
Choice of data correctly justified?	Yes –field measurements in project reference fields and analyzed in the laboratory as per Joint-PD-MR/1/ and applied methodology/34/.
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 5.5/33/ as per Joint-PD-MR/1/ and applied methodology/34/.
Calculation method?	Yes- Refer to equations in below section 4.4.3 for calculation process which is verified in line with Joint-PD-MR/1/ and applied methodology/34/.
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 Joint-PD-MR/1/ and applied methodology/34/. Obtained from the calculation of the emission rate for project reference fields according to the requirements in the Appendix of methodology, and the $C_{CH4,t}$ (CH_4 concentration in chamber at time t) of weekly gas samplings is derived from the laboratory analysis. 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 Joint-PD-MR/1/ and applied methodology/34/. 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/18/ for this monitoring period and site interview with expert/I3/, 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/16/. 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?	-

4. Assessment of GHG emission reductions Quantity

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 are calculated on a seasonal basis using the following formula:

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

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

During this monitoring period covered 4 years from 2018 to 2021, there are total 4 cultivation seasons, and based on the assessment of the farmers' logbooks/21/, it is confirmed that there was only one group defined. And based on the above assessment in section 4.1, CTI verified that the parameters $A_{s,g}$ and $EF_{BL,s,g}$ were monitored in line with the Joint-PD-MR/1/ and applied methodology/34/.

Via checking the results in the methane measurement and calculation reports/18/ issued by laboratory of Huazhong Agricultural University, CTI confirmed that via the measurement results of C_{CH4}, based on the formulars of (10) to (13) 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 $EF_{BL,s,g}$ (kgCH_4/season/ha) which are summarized in Table 4-1 below,

Table 4-1 RE_{plot} (mg/h × m²) in baseline reference fields during this monitoring period from 2018 to 2021

Year	Category	RE_{plot} (mg/h × m²)	Hours over the season	RE_{plot} (kg/season/ha)
2018	Plot 1	11.58	2,952	341.84
	Plot 2	11.47		338.59
	Plot 3	11.23		331.51
	Average	11.43		337.41
2019	Plot 1	11.50	2,928	336.72
	Plot 2	11.51		337.01
	Plot 3	11.44		334.96
	Average	11.48		336.13
2020	Plot 1	11.47	2,976	341.35
	Plot 2	11.40		339.26
	Plot 3	11.39		338.97
	Average	11.42		339.86
2021	Plot 1	11.43	2,976	340.16
	Plot 2	11.41		339.56
	Plot 3	11.33		337.18
	Average	11.39		338.97

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

Table 4-2 $EF_{BL,s,g}$ (kg CH_4/season/ha) in baseline reference fields during this monitoring period from 2018 to 2021

Year	2018	2019	2020	2021
$EF_{BL,s,g}$ (kgCH4/season/ha)	337.41	336.13	339.86	338.97

Finally, based on the above values of $EF_{BL,s,g}$ and formular (1) and (2), the baseline emissions BE_y (tCO_2e) during the period from 2018 to 2021 is calculated in below table,

Table 4-3 BE_y calculation during this monitoring period from 2018 to 2021

Year	2018	2019	2020	2021
$EF_{BL,s,g}$ (kgCH4/season/ha)	337.41	336.13	339.86	338.97
GWP_{CH_4} (t CO2e/t CH4)	28	28	28	28
$A_{s,g}$ (ha)	18,908	18,908	18,908	18,908
BE_s (tCO_2e)	178,632.95	177,955.29	179,930.04	179,458.85
Annual Total BE_y (tCO_2e)	**178,632.95**	**177,955.29**	**179,930.04**	**179,458.85**

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.

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:

$$PE_y = \sum_s PE_s \tag{3}$$

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

During this monitoring period covered four years from 2018 to 2021, there are total 4 seasons, and based on the assessment of the farmers' logbooks/21/, it is confirmed that there was only one group defined. And based on the above assessment in section 4.1, CTI verified that the parameters $A_{s,g}$ and $EF_{P,s,g}$ were monitored in line with the Joint-PD-MR/1/ and applied methodology/34/.

Via checking the results in the methane measurement and calculation reports/18/ issued by laboratory of Huazhong Agricultural University, CTI confirmed that via the measurement results of C_{CH4}, based on the formulars of (10) to (13) 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} (mg/h × m²) in project reference fields during this monitoring period from 2018 to 2021

Year	Category	RE_{plot} (mg/h × m²)	Hours over the season	RE_{plot} (kg/season/ha)
2018	Plot 1	7.60	2,952	224.35
	Plot 2	7.64		225.53
	Plot 3	7.51		221.70
	Average	7.58		223.86
2019	Plot 1	7.52	2,928	220.19
	Plot 2	7.65		223.99
	Plot 3	7.63		223.41
	Average	7.60		222.53
2020	Plot 1	7.65	2,976	227.66
	Plot 2	7.58		225.58
	Plot 3	7.60		226.18
	Average	7.61		226.47
2021	Plot 1	7.68	2,976	228.56
	Plot 2	7.57		225.28
	Plot 3	7.48		222.60
	Average	7.58		225.48

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 CH_4/season/ha) in project reference fields during this monitoring period from 2018 to 2021

Year	2018	2019	2020	2021
$EF_{P,s,g}$ (kgCH_4/season/ha)	223.86	222.53	226.47	225.48

Finally, based on the above values of $EF_{P,s,g}$ and formular (3) and (4), the project emissions PE_y (tCO_2e) during the period from 2018 to 2021 is calculated in below table,

Table 4-6 PE_y calculation during this monitoring period from 2018 to 2021

Year	2018	2019	2020	2021
$EF_{P,s,g}$ (kgCH_4/season/ha)	223.86	222.53	226.47	225.48
GWP_{CH_4} (t CO_2e/t CH_4)	28	28	28	28
$A_{s,g}$ (ha)	18,908	18,908	18,908	18,908
PE_s (tCO_2e)	118,516.86	117,812.72	119,898.65	119,374.52
Annual Total PE_y (tCO_2e)	**118,516.86**	**117,812.72**	**119,898.65**	**119,374.52**

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.

Calculation of leakage GHG emissions

In accordance with AMS-III.AU. ver. 04.0, registered Joint-PD-MR 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 ($LE_y = 0$).

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

The VVB 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 CO_2e)

BE_s = Baseline emissions from baseline fields in season s (tCO_2e)

PE_s = Project emissions from project fields in season s (tCO_2e)

Hence, the emission reduction during this monitoring period from 2018 to 2021 are summarized in the table below

Table 4-7 Emission Reductions Calculation during this monitoring period from 2018 to 2021

Year	2018	2019	2020	2021
BE_s (tCO_2e)	178,633	177,955	179,930	179,459
PE_s (tCO_2e)	118,517	117,813	119,899	119,375
ER_s (tCO_2e)	60,116	60,142	60,031	60,084
Annual Total ER (tCO_2e)	**60,116**	**60,142**	**60,031**	**60,084**

Parameters / Period	Baseline Emissions BE_y	Project Emissions PE_y	Leakage Emissions LE_y	Net GHG emission reductions or removals ER
	(tCO_2e)	(tCO_2e)	(tCO_2e)	(tCO_2e)
09-May-2018~31-December-2018	178,633	118,517	0	60,116
01-January-2019~ 31-December-2019	177,955	117,813	0	60,142
01-January-2020~ 31-December-2020	179,930	119,899	0	60,031

01-January-2021~ 31-December-2021	179,459	119,375	0	60,084
Total	**715,977**	**475,604**	**0**	**240,373**

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

Note that for the ER value year in 2018, which is similar to the ER value of 2019 to 2021 with started date of 2018 is 09-May-2018, CTI assessed as below,

Via checking the famers' logs/21/ and based on the local expertise of VVB, CTI confirmed that for this kind of project which reduce ER due to adjusted water regime during rice cultivation, the ER occurred during the rice growing season which is not a whole year time. Via checking the registered PD, CTI confirmed that for year 2018, the start time of field preparation which is the start date of project that started to generate the ER is 09-May-2018, hence the whole rice growing season has been considered in year 2018 which is same to 2019 to 2021.

Furthermore, based on the assessment of applicability conditions in applied methodology, it is confirmed that the aggregate annual emission reductions of all fields included under this project activity shall be less than or equal to 60 kt CO_2 equivalent that should not exceed the threshold required in the small-scale methodology. Hence, as per the request of the applied small-scale methodology, the PP shall only claim the ER value equal to 60 kt CO_2 equivalent at most which has been listed as below table,

Parameters / Period	Net GHG emission reductions or removals *ER* claimed as VCUs (tCO_2e)
09-May-2018 ~ 31-December-2018	60,000
01-January-2019 ~ 31-December-2019	60,000
01-January-2020 ~ 31-December-2020	60,000
01-January-2021 ~ 31-December-2021	60,000
Total	**240,000**

Therefore, for the total 1st Monitoring period from 09-May-2018 to 31-December-2021, 240,000 tCO_2e equivalent of credits eligible for issuance as VCUs.

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

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

Refer to section 4.1 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 4.1 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.

5 VALIDATION AND VERIFICATION CONCLUSION

Search CO2(Shanghai) Environmental Science & Technology Co. Ltd. has commissioned the CTI to carry out the Verified Carbon Standard (VCS) joint validation and 1st periodic verification of the project activity Adjusted Water Management in Rice Cultivation in Eastern Hechuan District (VCS ID 2632), for the monitoring period from 09-May-2018 to 31-December-2021, with regard to the relevant requirements for VCS Standard Version 4.2.

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

- the baseline scenario is correctly defined as per the applied methodology and relate tools;
- the project is additional;
- all data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature;
- the monitoring plan in the validated Joint-PD-MR is as per the applied baseline and monitoring methodology.
- the project has been implemented and operated as per the VCS Joint-PD-MR;
- the project complies with the validation and verification criteria for projects set out in VCS Standard Version 4.2;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS requirement and AMS-III.AU. (version 4.0);
- the monitoring is in place as per the applied baseline and monitoring methodology AMS-III.AU. (version 4.0);
- 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 09-May-2018 to 31-December-2021

Verified GHG emission reductions and removals in the above verification period by vintage is

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
09-May-2018~31-December-2018	178,633	118,517	0	60,116
01-January-2019~31-December-2019	177,955	117,813	0	60,142
01-January-2020~31-December-2020	179,930	119,899	0	60,031
01-January-2021~31-December-2021	179,459	119,375	0	60,084
Total	**715,977**	**475,604**	**0**	**240,373**

Based on the assessment of applicability conditions in applied methodology, it is confirmed that the aggregate annual emission reductions of all fields included under this project activity shall be less than

or equal to 60 kt CO_2 equivalent that should not exceed the threshold required in the small-scale methodology. Hence, as per the request of the applied small-scale methodology, the PP shall only claim the annual ER value equal to 60 kt CO_2 equivalent at most.
Therefore, for the total 1st Monitoring period from 09-May-2018 to 31-December-2021, 240,000 tCO_2e equivalent of credits eligible for issuance as VCUs.

Lin Wu

CTI

Verification Team Leader

09-August-2022

Zhou Lu

CTI

Final Approval

09-August-2022

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 Assessement
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. Wu 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 1.1: Thermal energy generation
	TA 1.2: Energy generation from renewable energy sources
SS 2: Energy distribution	TA 2.1: Electricity distribution
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 10: Fugitive emissions from fuels (solid, oil and gas)	TA 10.1: Fugitive emissions from oil and gas
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
SS 13: Waste handling and disposal	TA 13.1: Solid waste and wastewater
	TA 13.2: Manure

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:
Lu ZHOU
General 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

APPENDIX 3: DOCUMENTS REVIEWED OR REFERENCED

No	Author	Title	References to the document	Provider
1.	Search CO2(Shanghai) Environmental Science & Technology Co. Ltd.	Joint-PD-MR	Joint-PD-MR of Adjusted Water Management in Rice Cultivation in Eastern Hechuan District • Draft Version 1.0, dated 08-January-2022 • Version 2.0, dated 28-February-2022 • Version 3.0, dated 24-May-2022 • Final Version 4.0, dated 08-August-2022	Search CO2 (Shanghai) Environmental Science & Technology Co. Ltd.
2.	Search CO2(Shanghai) Environmental Science & Technology Co. Ltd.	Emission Reduction Calculation Sheets	Emission Reduction Calculation sheet (related to ex-ante) • Version 01, dated 03-January-2022 Emission Reduction Calculation sheet (related to this monitoring period) • Version 01, dated 03-January-2022	Search CO2 (Shanghai) Environmental Science & Technology Co. Ltd.
3.	VERRA	Email confirmation of scope	Email confirmation from VERRA dated on 19-November-2020 for the project scope is determined as AFOLU	Project Owner
4.	Project Owner	KML file	KML file with project boundary	Project Owner
5.	Agriculture and Rural Affairs Committee of Hechuan District	GPS results	GPS results measured by Agriculture and Rural Affairs Committee of Hechuan District for project field sizes	Project Owner
6.	Chongqing Municipal Commission of Agriculture	Project implementation program	Project implementation program of Chongqing City dated 16-October-2017	Project Owner
7.	Chongqing Municipal Commission of Agriculture	Inspection and Acceptance Report	Inspection and Acceptance Report of Chongqing City dated 30-April-2018	Project Owner
8.	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
9.	Chongqing Economic and Technological Development Zone Management Committee Market	Business License	Business License of Chongqing Gengfang Agricultural Development Co., Ltd.	Project Owner

No	Author	Title	References to the document	Provider
	Supervision and Administration			
10.	Project Owner	Board meeting minute	Board meeting minute for project to be developed as VCS project on 25-April-2017	Project Owner
11.	Hechuan District Agriculture Committee and Chongqing Senyao Construction Engineering Co., Ltd.	Construction Contract	Construction Contract for Hechuan District signed between Hechuan District Agriculture Committee and Chongqing Senyao Construction Engineering Co., Ltd. on 15-December-2017	Project Owner
12.	Project Owner	Farmers database	Information of all the 10,020 households included in the project	Project Owner
13.	Chongqing Academy of Social Sciences	Ex-ante investigation report	Ex-ante investigation report with investigation project area, baseline scenario, cultivation practices, including 100 farmer samples in baseline scenario period issued on 12-July-2017	Project Owner
14.	Project Owner and farmers	Funds allocation receipts	Funds allocation receipts to farmers	Project Owner
15.	Chongqing Gengfang Agricultural Development Co., Ltd. and Search CO2 (Shanghai) Environmental Science & Technology Co. Ltd.	Emission reduction purchase agreement	Emission reduction purchase agreement signed between Chongqing Gengfang Agricultural Development Co., Ltd. and Search CO2 (Shanghai) Environmental Science & Technology Co. Ltd. on 01-September-2017	Project Owner
16.	China National Accreditation Service (CNAS)	Certificate of laboratory	Certificate of laboratory named Institution of Central Laboratory, School of Plant Science and Technology, Huazhong Agricultural University with ISO/IEC 17025 certificate dated on 03-January-2017 valid to 02-January -2025	Project Owner
17.	Institute of Central Laboratory, School of Plant Science and Technology, Huazhong Agricultural University	Report of Measuring Methane	Report of Measuring Methane Emission Rate of Double-cropping Rice Paddies with Continuously Flooded Method by Closed Chamber in Hechuan District in 2017 dated 28-December-2017	Project Owner
18.	Institution of Central Laboratory, School of Plant Science and Technology, Huazhong Agricultural University	Methane measurement and calculation reports	4 seasons' measurement and calculation reports during year 2018 to 2021 1. 2018 season issued on 23-September-2018 2. 2019 season issued on 18-September-2019 3. 2020 season issued on 15-September-2020	Project Owner

No	Author	Title	References to the document	Provider
			4. 2021 season issued on 23-September-2021	
19.	PP and Institution of Central Laboratory, School of Plant Science and Technology, Huazhong Agricultural University	Plan for methane measurements	Detailed plan prepared by PP for methane measurements in April 2017	Project Owner
20.	Search CO2(Shanghai) Environmental Science & Technology Co. Ltd.	Technical Guidelines	Technical Guidelines for Intermittently Flooded Rice Cultivation Method in Anhui Province issued in October 2017	Project Owner
21.	Farmers	Farmers' log-books	Farmers' log-books from 1,296 sampled farmers selected for monitoring $A_{s,g}$ during this monitoring period.	Project Owner
22.	Technicians	Fact Sheets	Fact Sheets on Rice Cultivation in Hechuan District from 2018 to 2021	Project Owner
23.	Project Owner and employments	Technician Recruitment Appointment Contracts	Technician Recruitment Appointment Contracts signed between Project Owner and technician	Project Owner
24.	Chongqing Academy of Social Sciences	Local stakeholder consultation records	100 filled questionnaires distributed to relevant personnel of village representatives, relevant governmental officials, local farmers in June 2017	Project Owner
25.	Project Owner	Suggestion Book	Suggestion Book published on the notice board of villages	Project Owner
26.	Chongqing Gengfang Agricultural Development Co., Ltd.	Technical Training Records	Technical Training Records to Technicians and Farmers since 2018 to 2021	Project Owner
27.	Unistrong	Instruction of GPS	Instruction of GPS Measuring Equipment	Project Owner
28.	ISO	ISO/IEC 17025	ISO/IEC 17025 certificate for laboratory	Public website
29.	Chongqing City People's Government	Waste Management Measure	Regulations of Chongqing Municipality on the Administration of City Appearance and Environmental Sanitation	Public website
30.	National or local Government	National Laws and Regulations	PRC Constitution, PRC Agricultural Law, Law of the PRC on Land Administration, Implementing Regulations of the Law of the PRC on Land Administration, Law of the PRC on Rural Land Contracting, PRC Production Safety Law, and PRC Labour Law. National Master Plan for High Standard Farmland Construction	Public Website

No	Author	Title	References to the document	Provider
			National Plan for the Construction of High Standard Farmland for Comprehensive Agricultural Development Guidance on the National Demonstration Project of High Standard Farmland Construction Comprehensive Agricultural Development Construction Standard of National Agricultural Comprehensive Development of High Standard Farmland Construction Demonstration Project (Trial) (National Agricultural Office [2009] No.163) Design Specification for Irrigation and Drainage Engineering (GB50288-1999) Technical Specification for Water-saving Irrigation Engineering (GB/T50363-2006)	
31.	On-site VVB team	Photographs of Project Site	Photographs of project area, ditches, reservoirs, pumps, valves, chambers, posted notice etc. taken by VVB during the on-site validation	On-site Validation team
32.	Intergovernmental Panel on Climate Change	AR5	IPCC's Fifth Assessment report, GHG Protocol	www.ipcc-nggip.iges.or.jp
33.	IPCC	IPCC publications	2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book www.ipcc-nggip.iges.or.jp	Website
34.	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
35.	UNFCCC	General guidelines	General guidelines for SSC CDM methodologies, version 23.1	UNFCCC Website
36.	UNFCCC	Standard for Sampling and Surveys	CDM Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, V09.0	UNFCCC Website
37.	UNFCCC	Guideline for Sampling and Surveys	CDM Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities, V04.0	UNFCCC Website
38.	UNFCCC	CDM Methodological Tool	CDM methodological tool Demonstration of Additionality of	UNFCCC Website

No	Author	Title	References to the document	Provider
			Small-scale Project Activities (version 13.1)	
39.	VERRA	Joint-PD-MR Template	VCS-Joint-Project-Description-Monitoring-Report-Template-v4.0	VERRA
40.	VERRA	Registration and Issuance Process	Registration and Issuance Process version 4.1	VCS website
41.	VERRA	VCS Program Definitions	VCS Program Definitions, v4.1	VCS website
42.	VERRA	VCS Program Guide	VCS Program Guide, v4.1	VCS website
43.	VERRA	VCS Standard	VCS Standard version 4.2	VCS website
44.	Google	Google Earth Map	earth.google.com	Website
45.	Ministry of Ecology and Environment of China	China cap & trade scheme	http://www.mee.gov.cn/xxgk2018/xxgk/xxgk02/202101/t20210105_816131.html	Public Website
46.	Ministry of Ecology and Environment of China	Enforced company list	http://mee.gov.cn/xxgk2018/xxgk/xxgk03/202012/W020201230736907682380.pdf	Public Website
47.	China CER Exchange Info-platform	China CER	http://cdm.ccchina.org.cn/ccer.aspx	Website
48.	GS	Gold Standard	http://www.goldstandard.org/	Website
49.	UNFCCC	UNFCCC	http://cdm.unfccc.int	Website
50.	VCS	VCS	https://verra.org/project/vcs-program/	Website
51.	Agriculture and Rural Committee of Chongqing City	Certificate of Eligibility for Land	Certificate of Eligibility for Land issued by Agriculture and Rural Committee of Chongqing City in October 2017	PP
52.	VCS	VCS Methodology Requirement v4.1	https://verra.org/wp-content/uploads/2022/01/VCS-Methodology-Requirements_v4.1.pdf	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				Date:
Documentation provided by project participant				
VVB assessment				Date:

Table 2.CL from this verification

CL ID	01	Section no.	1.9	Date : 30/01/2022
Description of CL				
It is observed that the project start date is not same to the start date of project lifetime, clarification is requested.				
Project participant response				Date : 18/02/2022
The contents of the project start date have been revised. The project lifetime is based on the design life of the ditches. The design lifetime of the ditches in this project is 30 years, so the project lifetime is 30 years. The start date is subject to the acceptance date of the high-standard farmland construction project. Thus, the start date of the project lifetime is earlier than the start date of the project.				
Documentation provided by project participant				
/1/- version 2.0 /7/				
VVB assessment				Date: 27/02/2022
The revised Joint-PD-MR is checked, CTI confirmed that the clarification has been added. The explanation provided by PP has been checked, via checking the Inspection and Acceptance Report of the project/7/, VVB confirmed that the ditches and reservoirs were put into use on 29-April-2018, and based on the VVB's local expertise, the lifetime of this kind of project started from the main constructions put into operation, hence VVB verified that the date of 29-April-2018 is reasonably determined as the project lifetime started date. While as per the Joint-PD-MR, 09-May-2018 is the start date of the project and also the start date of crediting period which is the date on which the project land preparation was started and generated GHG emission reductions. Hence, it is confirmed that project start date not same to the start date of project lifetime is reasonable. CL 01 is closed.				

CL ID	02	Section no.	2.2	Date : 30/01/2022
Description of CL				
The project proponent is requested to clarify how a survey of only 100 farmers from households is a sufficient sample of all the households involved in the project.				
Project participant response				Date : 18/02/2022

The contents of the ex-ante survey have been revised. According to the Standard for Sampling Surveys for CDM Project Activities and Programme of Activities (v9.0), the number of households involved was too large and scattered to carry out a census. Moreover, households are homogeneous which is suitable for simple random sampling. Thus, random sampling is used for the survey, and the calculation steps have been added.
Documentation provided by project participant
/1/- version 2.0 /8/
VVB assessment **Date:** 27/02/2022
The revised Joint-PD-MR is checked, CTI confirmed that the reasons has been clarified. For the households included in the project area, via checking the cooperation agreements signed between the project proponents and all the households which ensure the proper development of the project/8/, it is confirmed that all the households are located in project area in Hechuan District, Chongqing City. Due to the number of households involved was too large and scattered to carry out a census, hence based on the principle of cost-effectiveness, based on experience of the Chongqing Academy of Social Sciences who conducted the ex ante survey, the simple random sampling approach dan be selected for this project due to relatively homogenous population being studied, given the similar soil condition and similar cultivation habit of farmers of households in Hechuan District, Chongqing City. Following "Sampling and Surveys for CDM Project Activities and Programme of Activities" version 09.0/36/ and "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/37/, the verifier checked the sampling results of PP and Chongqing Academy of Social Sciences with the following steps: For determine the baseline, to verify the accuracy and correctness of sampling survey data, verification team has checked the sampling approach as per the "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/37/, this sampling approach found to be appropriate as the farmers are assumed as homogenous based on the experience of Chongqing Academy of Social Sciences who conducted the sampling survey. Based on the formular listed in the Joint-PD-MR and validation report, the sample size of the baseline survey considering the parameters is calculated in a conservative way, and the least number of the sample size is 90 as above calculation method according to the "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/37/. The sample size calculation process is verified by the validation team and confirmed as in line with the sampling guideline/37/, thus the result is confirmed as correct and reasonable. Furthermore, to be conservative, Chongqing Academy of Social Sciences has selected 100 household samples to conduct the baseline survey and local stakeholder consultation. Hence it is verified that the sample size and procedure was evaluated and determined to be acceptable as per "Sampling and Surveys for CDM Project Activities and Programme of Activities" version 09.0/36/ and "Guideline of Sampling and surveys for CDM project activities and programmes of activities" version 04.0/37/. CL 02 is closed.

CL ID	03	**Section no.**	2.5	**Date :** 30/01/2022
Description of CL				
In section 2.5, the Potential Risks and Measures are not justified totally corresponding to the project.				
Project participant response				**Date :** 18/02/2022
The contents of Potential Risks and Measures have been revised in section 2.5.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				**Date:** 27/02/2022

The revised Joint-PD-MR is checked, CTI confirmed that the justification of Potential Risks and Measures have been updated which are verified as corresponding to the project. Refer to section 3.3.5 of this report for detail assessment. CL 03 is closed.

CL ID	04	Section no.	4.1	Date : 30/01/2022
Description of CL				
For the baseline emissions and project emissions calculation, how to conduct the ex ante calculation is not clarified.				
Project participant response				Date : 18/02/2022
The contents of the baseline emissions and project emissions calculation have been revised. As for ex-ante estimation, as required in Section 5.8.1 and 5.8.2 stated in methodology AMS-III.AU (version 4.0), the project proponent shall estimate baseline and project emissions using the IPCC tier 1 approach but undertaking measurements to determine baseline emission factors for continuously flooded fields as described in Section 4.4 and relevant values used for calculation had been included.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				Date: 27/02/2022
The revised Joint-PD-MR is checked, CTI confirmed that clarification is added and verified as correct which is in line with the applied methodology. Via checking the applied methodology, it is confirmed that as per the applied methodology (AMS-III.AU ver. 04.0), for the ex ante estimation of emission reductions, project participants shall either refer to own field experiments or estimate baseline and project emissions with the help of national data or IPCC tier 1 default values for emission and scaling factors. Hence PP has selected IPCC tier 1 default values for emission and scaling factors for ex ante estimation of emission reductions. The approach has been explained and justified in the Joint-PD-MR and assessed as below, Emission reductions using IPCC tier 1 approach or default values As an alternative to the reference field approach indicated in paragraphs 12, 13, 16 and 17 of the methodology, project participants calculate emission reductions using Option 1, i.e. Using the IPCC tier 1 approach but undertaking measurements to determine baseline emission factors for continuously flooded fields, as per the formula (5) to (8) in the above section of report. Hence, it is confirmed that the formular (1) to (4) only used for ex post baseline emissions and project emissions calculation and for ex ante, only ER values are calculated which is verified in line with the applied methodology. CL 04 is closed.				

Table 3.CAR from this verification

CAR ID	01	Section no.	1.1	Date : 30/01/2022
Description of CAR				
1. The technologies/measures implemented by the project was not enough as it was not clear how to control irrigation/drainage can be achieved in both during dry and wet season. 2. The ER value achieved during this monitoring period is not correct. 3. The VCUs claimed for this monitoring period is not specified clearly.				
Project participant response				Date : 18/02/2022
1. The contents have been revised. Through the pumps and valves, the necessary water can be supplied to the rice paddies in time in the dry season, and the excess water can be drained from the rice paddies in the rainy season. In this case, the CH_4 emission can be declined by an average of 48%. 2. The value has been corrected to 240,373 tCO_2e. 3. The contents have been revised. The project proponent claimed the 60,000 tCO_2e annually, during this monitoring period is 240,000 tCO_2e.				
Documentation provided by project participant				

/1/- version 2.0	
VVB assessment	**Date:** 27/02/2022
1. The revised Joint-PD-MR is checked, CTI confirmed that technologies/measures implemented by the project have been supplemented. Via site inspection with rice lands/31/ and interview with farmer representatives/I5/, it is confirmed that before the project implementation, the paddy fields are regarded as an isolate unit and the rice was continuously flooded, and with the project, the cement ditches and reservoirs were constructed and pumps and valves were installed to conduct the intermittent flooded water regime during rice cultivation. 2. The revised Joint-PD-MR is checked, CTI confirmed that typo mistakes have been revised accordingly, value is correct and consistent with other parts. 3. The revised Joint-PD-MR is checked, CTI confirmed that the value of VCUs have been specified. CTI is able to certify that the GHG emission reductions from the project during the monitoring period from 09-May-2018 to 31-December-2021 were generated as 240,373 tCO_2e, by considering the net GHG emission reductions generated during this monitoring period have exceeded the threshold required in the small-scale methodology applied, which is the 60,000 tCO_2e per year, the GHG emission reductions are amount to 240,000 tCO_2e can be claimed as VCUs. CAR 01 is closed.	

CAR ID	02	**Section no.**	1.2	**Date :** 30/01/2022
Description of CAR				
The VCS Standard has been updated to version 4.2, the version used in Joint-PD-MR should be updated to the latest version.				
Project participant response				**Date :** 18/02/2022
The version of the VCS Standard in the Joint document has been revised to version 4.2.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				**Date:** 27/02/2022
The revised Joint-PD-MR is checked, CTI confirmed that the VCS Standard has been updated to version 4.2 in the whole Joint-PD-MR which has been verified in line with the VCS Standard version 4.2/43/. CAR 02 is closed.				

CAR ID	03	**Section no.**	1.10	**Date :** 30/01/2022
Description of CAR				
The end date of 1st crediting period in table of section 1.10 is not correct and not same to other parts.				
Project participant response				**Date :** 18/02/2022
The contents of the crediting period have been revised. The end date of the 1st crediting period is 08-May-2025.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				**Date:** 27/02/2022
The revised Joint-PD-MR is checked, CTI confirmed that the end date of 1st crediting period in table of section 1.10 has been updated to 08-May-2025 which is verified same to other parts of the Joint-PD-MR CAR 03 is closed.				

CAR ID	04	**Section no.**	1.11	**Date :** 30/01/2022
Description of CAR				
The VVB on-site visit time period is not provided as milestone in the project's development and implementation.				
Project participant response				**Date :** 18/02/2022
The content of the VVB on-site visit time period has been added to the table of milestones.				
Documentation provided by project participant				

/1/- version 2.0	
VVB assessment	**Date:** 27/02/2022
The revised Joint-PD-MR is checked, CTI confirmed that VVB on-site visit time period has been added which is verified as correct and actual. CAR 04 is closed.	

CAR ID	05	**Section no.**	1.12	**Date :** 30/01/2022
Description of CAR				
The geographical coordinates of the project boundary are missing in section 1.12.				
Project participant response				**Date :** 18/02/2022
The missing content has been added. Hechuan District is located at 29°58'19" - 30°22'24" N, 105°58'37" - 106°16'34" E.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				**Date:** 27/02/2022
The revised Joint-PD-MR is checked, CTI confirmed that actual coordinates have been specified. The project site is located at Hechuan District, Chongqing City, P. R. China. The geographical coordinates for the project site are between 105°58'37" - 106°16'34" east longitude and between 29°58'19" - 30°22'24" north latitude. The location of the project site is verified with on-site investigation by GPS devices and checking the google earth map/44/. KML file with project boundary is checked as provided/4/, and is verified as consistent with the Joint-PD-MR and on-site investigation by GPS devices and checking the google earth map/44/. CAR 05 is closed.				

CAR ID	06	**Section no.**	1.17	**Date :** 30/01/2022
Description of CAR				
PP is requested to demonstrate that a project contributes to at least three SDGs by the end of the first monitoring period, and in each subsequent monitoring period as per the section 3.16 of VCS Standard version 4.2.				
Project participant response				**Date :** 18/02/2022
The contents of SDGs have been revised. The implementation of the project activities contributed to 3 SDGs, namely Goal 2, Increase in rice yield; Goal 8, More job opportunities and growth of the local economy; Goal 13, CH_4 emission reduction.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				**Date:** 27/02/2022
The revised Joint-PD-MR is checked, CTI confirmed that actual project contributes to three SDGs by the end of the first monitoring period has been specified and verified as in line with the section 3.16 of VCS Standard version 4.2/43/. Refer to section 3.1 of this report for detail assessment. CAR 06 is closed.				

CAR ID	07	**Section no.**	5.3	**Date :** 30/01/2022
Description of CAR				
1. The parameters' name listed in titles of table 5-3 and 5-4 are not correct. 2. The location of the baseline and project reference fields are not accurate, the names of town are missing.				
Project participant response				**Date :** 18/02/2022
1. Names of the parameters have been corrected to $EF_{BL,s,g}$ and $EF_{P,s,g}$. 2. The contents of the locations of the fields have been revised. The baseline fields and the project fields are all in Fenglin Village, Yunmen Street, Hechuan District.				
Documentation provided by project participant				
/1/- version 2.0				

VVB assessment	Date: 27/02/2022
1. The revised Joint-PD-MR is checked, CTI confirmed that the parameters' name listed in titles of table 5-3 and 5-4 are updated to be $EF_{BL, s, g}$ and $EF_{P, s, g}$ which are verified as correct. 2. The revised Joint-PD-MR is checked, CTI confirmed that the names of village and town are added in the location of the baseline and project reference fields which have been verified as correct and actual via site inspection. CAR 07 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: