



Sustainable Development Verified Impact Standard

MUYUAN WJZ AWMS GHG MITIGATION PROJECT IN HENAN PROVINCE



Document Prepared by CTI Certification Co., Ltd

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Client	Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd.
Project Title	Muyuan WJZ AWMS GHG Mitigation Project in Henan Province
Project Location	Nanyang City and Zhumadian City, Henan Province, China

Summary

- *A brief description of the project*

The project activity developed in Nanyang City and Zhumadian City, Henan Province, P. R. China, is a Project that install new animal waste management systems (AWMSs) by replace the current open anaerobic lagoons with 7 new closed anaerobic digesters to a group of 7 swine farms in project area, which will treat the manure and wastewater from the 7 swine farms to avoid methane emissions generated in the baseline uncovered anaerobic lagoons. The project activity involves implemented 7 sets of AWMSs in 7 existing swine farms involving 370,860 heads of market swine, 38,500 heads of breeding swine, it is estimated to produce 597,665 tons of manure and $3,287.1575 \times 10^4 \text{m}^3$ of biogas annually. The biogas produced is recovered and combusted for heat generation and used by swine farms, total heat production is estimated to be 657,340GJ. The project started operation on 15-July-2020 with the VCS Ref. No. 2876.

The Project contributes to the achievement of 4 of the 17 Sustainable Development Goals (SDG) of United Nations through the positive impacts generated by the project activity. Additionally, the project is expected to achieve 321,663 tCO₂e emissions reductions annually, as SD VISTA Labeled VCUs.

- *The purpose and scope of validation*

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 SD VISTA Program. 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 SD VISTA Program, including the appropriateness of the SD VISTA claims and the plans design for their monitoring. Validation is a requirement and is seen as necessary to provide assurance to stakeholders of the quality of project and its intended achievement of SDGs. Validation is part of the SD VISTA 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 SD VISTA Program. The scope of the validation was the review of the sustainable development impacts generated by the project, their contribution to the UN SDG and the benefits for people and prosperity and the benefits for the planet that they imply.

- *The method and criteria used for validation*

Validation is conducted using CTI Certification Co., Ltd (CTI) procedures in line with the requirements set by the Sustainable Development Verified Impact Standard and the SD VISTA Program Guide, without any qualification nor limitation. The validation team assessed the project activity's compliance against the Sustainable Development Verified Impact Standard version 1.0, SD VISTA Program Guide version 1.0, SD VISTA Program Definitions version 1.0 and the project description.

- *The number of findings raised during validation*

In the course of the validation and verification, 14 Corrective Action Requests (CARs), 10 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

- *Any uncertainties associated with the validation*

There are no restrictions of uncertainty for the validation.

- *Summary of the validation conclusion*

Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd. has commissioned the CTI Certification Co., Ltd to carry out the SD VSta validation of the project, “Muyuan WJZ AWMS GHG Mitigation Project in Henan Province” with regard to the relevant requirements of Sustainable Development Verified Impact Standard version 1.0. CTI confirms all validation activities including objectives, scope and criteria, level of assurance, project description, monitoring plan adhere to Sustainable Development Verified Impact Standard version 1.0 and SD VSta Program Guide version 1.0, including any associated updates. CTI concludes without any qualifications or limiting conditions that the project meets the requirements of SD VSta Version 1, including any associated updates, to a reasonable level of assurance for the project lifetime.

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1 VALIDATION PROCESS

1.1 Objective

Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd. has commissioned the CTI Certification Co., Ltd to carry out the validation of sustainable development benefits from the project of “Muyuan WJZ AWMS GHG Mitigation Project in Henan Province” under Sustainable Development Verified Impact Standard (SD VISta) Version 1.0.

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 SD VISta Program. 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 SD VISta Program, including the appropriateness of the SD VISta claims and the plans design for their monitoring. Validation is a requirement and is seen as necessary to provide assurance to stakeholders of the quality of project and its intended achievement of SDGs. Validation is part of the SD VISta 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 SD VISta Program.

1.2 Scope and Criteria

The scope of the validation was the review of the sustainable development impacts generated by the project, their contribution to the UN Sustainable Development Goals (SDG) and the benefits for people and prosperity and the benefits for the planet that they imply. With this aim, the audit assessed the project design, its management, the conditions of the stakeholders and the natural and ecosystem services at the project start, as well as the plans design for the monitoring of the project’s impacts.

The validation followed the criteria set by the SD VISta Program. Specifically, by the documents:

- SD VISta Program Guide, v1.0/26/,
- Sustainable Development Verified Impact Standard, v1.0/27/,
- SD VISta Program Definitions, v1.0/25/.

1.3 Level of Assurance

The assessment was conducted to provide a reasonable level of assurance of conformance against the defined audit criteria and materiality thresholds within the audit scope. The threshold for quantitative materiality with respect to the aggregate of errors, omissions and misrepresentations, individually or in the aggregate, for any reported SD VISta claim and/or SD VISta assets was limited to 5%, as required by Criterion 5.2.3 of the SD VISta Standard version 1.0/27/.

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 statement reasonably assure that the SDG benefits from project is materially correct and is a fair representation of the SDG benefits and information.

1.4 Summary Description of the Project

The project is implemented by Muyuan Foods Co., Ltd. in Nanyang City and Zhumadian City, Henan Province, China, which aims to install new Animal Manure Management Systems by replace the current open anaerobic lagoons with 7 new closed anaerobic digesters to a group of 7 existing swine farms in Nanyang City and Zhumadian City, Henan Province, which will treat the manure and wastewater from the 7 swine farms to avoid methane emissions generated in the baseline uncovered anaerobic lagoons. An Animal Manure Management System (AWMS) has been installed in each swine farm respectively which treat the manure and wastewater from the 7 existing swine farms. The raw materials such as pig manure and wastewater are collected into waste collecting tanks and then be separated first by Solid-liquid separators. the solid are treated in aerobic composting system, and the organic fertilizers are produced. The liquid is treated through anaerobic digestion and the biogas generated during the treatment process is captured for heat generation. If there is surplus biogas, then the biogas would be flared through the flaring system. After anaerobic digestion, the sludge produced from anaerobic digestion is treated through aerobic composting together with the separated solid, the effluent is used for agricultural irrigation. The generated heat is used for daily operation of AWMSs and the swine farms. The project implemented 7 sets of AWMSs in 7 existing swine farms involving 370,860 heads of market swine, 38,500 heads of breeding swine. Live swine are kept for 180 days in the farms before shipment and are estimated to produce 597,665 tons of manure and $3,287.1575 \times 10^4 \text{m}^3$ of biogas annually. The biogas produced is recovered and combusted for heat generation and used for daily operation of AWMSs and the swine farms and the residual biogas (if any) will be flared, the total heat production is estimated to be annual 657,340GJ. For conservativeness, baseline emissions from heat generation are neglected. The sludge produced from anaerobic digestion are treated through aerobic composting together with the separated solid, the effluent is used for agriculture irrigation which has been confirmed by site inspection and checking the Project Evaluation Report (PER) of the project/6/.

The project activity enables 7 existing swine farms to use new AWMSs instead of the open anaerobic lagoons in baseline scenario to achieve the harmlessness and ecological utilization of the swine manure, finally generate the electricity to swine farms, which has been verified by on-site inspection, and checking the related documentations, interview with the project implementer. The project is expected to avoid GHG emission of methane from anaerobic treatment of swine manure and wastewater through recovery and destruction of biogas.

The project includes 3 main project activities: (1) Biogas is captured for heat production; (2) Provide employment opportunity; (3) Organic fertilizer production.

The project activity generates GHG emission reductions by avoid GHG emission of methane from anaerobic treatment of swine manure and wastewater which has been verified by on-site inspection, and checking the related documentations, interview with the project implementer.

The aims of the project are to:

- Reduce GHG emissions from atmosphere by avoiding GHG emission of methane from anaerobic treatment of swine manure and wastewater;
- Provide clean heat energy by biogas generated during the treatment process;
- Contribute to the national recycling rate, tonnes of material recycled through produce organic fertilizers;
- Contribute to the local sustainable development by offer working opportunities for local population in the field of waste handling and recycling.

1.5 Audit Team Composition

Table 1-1 Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk/Doc review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader (also verifier)	IR	LIN	Shunrong	CTI	☒	☒	☒	☒

Table 1-2 Technical reviewer and approver

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)
1.	Technical reviewer	IR	LIN	Wu	CTI
2.	Approver	IR	ZHOU	Lu	CTI

1.6 Method and Criteria

A project specific Validation plan was developed to guide the validation auditing process to ensure efficiency and effectiveness. The purpose of the validation and plan is to present a risk assessment for determining the nature and extent of validation procedures necessary to ensure the risk of auditing error is reduces to a reasonable level. Therefore validation of the monitoring plan and the reported project achievements were measured for compliance against the following criteria:

- SD VISta Program Guide, v1.0/26/,
- Sustainable Development Verified Impact Standard, v1.0/27/,
- SD VISta Program Definitions, v1.0/25/,

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

- Contract review
- Appointment of team members and technical reviewers
- Publication of the SD VISta PD/1/
- A desk review of the SD VISta PD/1/ submitted by the client and additional supporting documents with the use of customised validation documents checklist
- Validation planning
- On-Site assessment
- Interviews with personnel of the project developer and representative of local stakeholders
- Draft validation reporting
- Resolution of Corrective Action Requests (CARs) and Clarification Requests (CLs)
- Final validation reporting
- Technical review
- Final approval of the validation.

In the validation process, there is a risk that potential errors, omissions, and misrepresentations will be found; therefore, a risk-based approach was used to guide the collection of appropriate and sufficient evidence to support a reasonable level of assurance. A risk-based approach means the CTI focused on items that might result in a material misstatement of the reported SD VISta assertion.

A project specific Validation Plan was developed to guide the validation auditing process to ensure efficiency and effectiveness. The purpose of the Validation Plan was to present a risk assessment for determining the nature and extent of validation procedures necessary to ensure the risk of auditing error was reduced to a reasonable level. The Validation Plan methodology was derived from all items in the validation process stated above. Any modifications applied to the Validation Plan were made to detect the processes with highest risk of material discrepancy. A detailed field plan was developed to guide the validation site visit and is embedded within the Validation Plan.

For the field audit effort, direct observation, interviews and review of the estimation of emission reductions were conducted in key areas determined to be the greatest risk, followed by ground-truthing and review of project activities. Field audit techniques were based on the project parameters/SDG indicators and professional judgment to meet a reasonable level of assurance.

In addition, a risk-based approach was used for the on-the-ground field audit effort to select key areas and impacted local stakeholders for spot-checking stratification and observation of stated project activities.

1.7 Document Review

The SD VISTA PD/1/ and supporting background documents related to the examination of the project details, implementation schedule, conditions prior to the project start, stakeholder identification and engagement, determination of expected impacts and their monitoring plans were reviewed. Documents review was conducted to ensure consistency with and identify any deviation from SD VISTA program requirements. Desk review included an examination of the project details, data and parameters, and quantification of SDG benefits.

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

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

The validation was performed basing on the documents check and site inspection/measurements, refer to the section 2 of this report for the validation process detail and corresponding documents review.

1.8 Interviews

The objective of the interview process was to solicit important information from personnel related to project and relevant to the validation process. Onsite interviews and information discussions were conducted with representatives from project implementer/I1/, Operation Staffs of the AWMSS/I2/, local officers/I3/, local residents/I4/, representatives from each swine farm/I5/ and VCS consultant/I6/. The interviews were performed by the validation and verification team on-site (within the project area, in Nanyang City and Zhumadian City, Henan Province, P.R. China) and the following is a list of the main interviewees and subject.

No.	Interviewee			Date	Subject, Reference Number/ID	Team member
	Last name	First name	Affiliation			
1.	Lu /I1/	Chang	Muyuan Foods Co., Ltd. Environmental department / Project Manager	12-January-2023~14-January-2023	Discussion on project financials, project design and implementation, Main equipment, Technical parameters, Baseline, Additionality, Project boundary, Monitoring plan, Monitoring devices, SDG impacts, ER calculation, Local legislation to biogas	Lin Shunrong

2.	Gong /12/	Haiyang	Wolong 2 nd farm/ AWMS operation staff	12-January- 2023	Project implementation Treatment method Main equipment Biogas production Slurry General info of interviewee, name, gender, Age, Education, Location How to obtain this job? What is the main work? Training provided, Salary level, if satisfied	Lin Shunrong
3.	Wu	Yun	Junzhang 26 th farm/AWMS operation staff	12-January- 2023		
4.	Zhao	Minghua	Zhengyang 4 th farm / AWMS operation staff	13-January- 2023		
5.	Sun	Jinhang	Zhengyang 6 th farm /AWMS operation staff	13-January- 2023		
6.	Yang	Guozhen	Zhengyang 9 th farm/AWMS operation staff	13-January- 2023		
7.	Xu	Xixian	Zhengyang 1 st farm/ AWMS operation staff	14-January- 2023		
8.	Wei	Qinghui	Zhengyang 13 th farm/AWMS operation staff	14-January- 2023		
9.	Zhang /15/	Kechun	Wolong 2 nd farm/ Swine farm operation staff	12-January- 2023	Scenario before the project started, Swine genetic source on-farm record keeping Feed supplier Swine weight Sale of Swine Living dates of Swine Daily stock of animals in the farm, discounting dead and discarded animals	Lin Shunrong
10.	Liu	Yan	Junzhang 26 th farm/Swine farm operation staff	12-January- 2023		
11.	Kong	Linglian	Zhengyang 4 th farm / Swine farm operation staff	13-January- 2023		
12.	Ma	Kaining	Zhengyang 6 th farm /Swine farm operation staff	13-January- 2023		
13.	Gao	Wenxian	Zhengyang 9 th farm/Swine farm operation staff	13-January- 2023		
14.	Xu	Hongtian	Zhengyang 1 st farm/ Swine farm operation staff	14-January- 2023		
15.	Guo	Zhiming	Zhengyang 13 th farm/Swine farm operation staff	14-January- 2023		
16.	Liu /14/	Mingkai	Local Stakeholders/ Residents	12-January- 2023	Local Stakeholder Consultation issues, Local environment impact	Lin Shunrong
17.	Zhou	Zhifei		12-January- 2023		
18.	Zhang	Zhizhong		12-January- 2023		
19.	Wang	Zhi		12-January- 2023		

20.	Liu	Xuefeng		13-January-2023		
21.	Wang	Qianqian		13-January-2023		
22.	Zhou	Zhou		13-January-2023		
23.	Fang	Qishan		13-January-2023		
24.	Liu	Guodong		13-January-2023		
25.	Zhu	Xiaoxuan		13-January-2023		
26.	Wu	Kai		14-January-2023		
27.	Ma	Zhi		14-January-2023		
28.	Zhou	Feifei		14-January-2023		
29.	Wang	Kai		14-January-2023		
30.	Zhao /I3/	Tianbao	Local officer/Nanyang Ecological Environment Bureau	12-January-2023	Baseline Scenario Local Stakeholder Consultation issues, SDG impacts, Inputs, Grievances mechanism, Local legislation to swine and biogas	Lin Shunrong
31.	Zhang	Xiufeng	Local officer/Nanyang Bureau of Agriculture and Rural Affairs			
32.	Tu /I6/	Shulan	Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd./ Senior Manager	12-January-2023~14-January-2023	Ex-ante and monitoring parameters, SDVISta PD editable issues	Lin Shunrong

1.9 Site Inspections

The validation site inspection was conducted from 12-January-2023~14-January-2023. A ground inspection of the project was conducted during the site visit and the validation and VVB interviewed representatives as above sections listed.

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

Duration of on-site inspection: 12-January-2023~14-January-2023				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting	Office in Muyuan Foods Co., Ltd. in Nanyang City, Henan	12-January-2023	Lin

	Interview with PP, local officers, consultant representatives	Province, P. R. China		Shunrong
2	On-site inspection Interview with Operation Staffs of the AWMSs and representatives from each swine farm, local residents	Project Area in Nanyang City and Zhumadian City, Henan Province, P. R. China	12-January-2023~ 14-January-2023	Lin Shunrong
3	Documents check	Project Area in Nanyang City and Zhumadian City, Henan Province, P.R.China	14-January-2023	Lin Shunrong
4	Finding Summary	Project Area in Zhumadian City, Henan Province, P.R. China	14-January-2023	Lin Shunrong
5	Close Meeting	Project Area in Zhumadian City, Henan Province, P.R. China	14-January-2023	Lin Shunrong

1.10 Public Comments

The project sought the registration with the SD VISTA Program, according to SD VISTA requirements the Project Description was submitted for public comment period. The project was allocated with VCS ID 2876. The public comment period for the SD VISTA PD started on 12-August-2022 and ended on 11-September-2022 (<https://registry.verra.org/app/projectDetail/VCS/2876>).

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

1.11 Resolution of Findings

Material discrepancies identified in the course of the validation are addressed either as CARs, CLs or FARs.

A Corrective Action Request (CAR) is established where:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional SDG benefits;
- The SD VISTA Standard Version 1.0 requirements have not been met;
- There is a risk that the SDG benefits cannot be monitored or calculated.

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

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

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

In the course of the validation 14 Corrective Action Requests (CARs), 10 Clarification Requests (CLs) were raised and successfully closed. The assessment is included in the report.

1.12 Forward Action Requests

No Forward Action Request was raised during the validation process.

2 VALIDATION FINDINGS

2.1 Summary of SDG Contributions

The PP has identified different impacts of the project that contribute to the achievement of 4 of the 17 Sustainable Development Goals (SDG) of United Nations through the positive impacts generated by the project activities, being all of them of the claim type.

For purposes of SD VISTA labeling, only the impact of 321,663 tCO₂e emissions reductions/2/, which are expected to be achieved annually throughout the project lifetime, as a consequence of the activities implemented to reduce methane emissions through avoid methane emissions generated in the previous manure treatment process of uncovered anaerobic lagoons, is categorized as a label. Specifically, as SD VISTA Labeled VCUs.

The Project outlined these contributions in Table 1 of the PD/1/ and completed the table appropriately. The PD substantiates the claims throughout the body of the PD/1/ in the required sections.

The audit team traced the identification of the project impacts on people, their prosperity and the planet through the causal chains elaborated by the PP and assessed their rationale based on the defined conditions prior to the project start, on the nature of the project activities and their goals, on the evidence provided and the information gathered during the site visit (observation of project activities and interview with stakeholders) and on the own experience of the audit. CTI confirmed that the impacts have been comprehensible identified and that the contribution to SDG is appropriately attributed.

The information provided throughout the PD/1/, as well as the additional evidence provided (refer to Appendix 2), substantiates all claims made by the PP. The audit team deems that all information presented regarding the estimated project contribution by the end of project lifetime to the SDG, associated SDG indicators and the net impact is complete, credible, appropriately substantiated and in compliance with the SD VISTA requirements. Refer to below sections for detail assessment of SDG benefits.

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

2.2 Project Design

2.2.1 Project Objectives

The project is located at Nanyang City and Zhumadian City, Henan Province, P. R. China which aims to install new Animal Manure Management Systems by replace the current open anaerobic lagoons with 7 new closed anaerobic digesters to a group of 7 existing swine farms in Nanyang City and Zhumadian City, Henan Province, which will treat the manure and wastewater from the 7 swine farms to avoid methane emissions generated in the baseline uncovered anaerobic lagoons. An Animal Manure Management System (AWMS) has been installed in each swine farm respectively which treat the manure and wastewater from the 7 existing swine farms. The raw materials such as pig manure and wastewater are

collected into waste collecting tanks and then be separated first by Solid-liquid separators. the solid are treated in aerobic composting system, and the organic fertilizers are produced. The liquid is treated through anaerobic digestion and the biogas generated during the treatment process is captured for heat generation. If there is surplus biogas, then the biogas would be flared through the flaring system. After anaerobic digestion, the sludge produced from anaerobic digestion is treated through aerobic composting together with the separated solid, the effluent is used for agricultural irrigation. The generated heat is used for daily operation of AWMSs and the swine farms. The project implemented 7 sets of AWMSs in 7 existing swine farms involving 370,860 heads of market swine, 38,500 heads of breeding swine. Live swine are kept for 180 days in the farms before shipment and are estimated to produce 597,665 tons of manure and $3,287.1575 \times 10^4 \text{ m}^3$ of biogas annually. The biogas produced is recovered and combusted for heat generation and used for daily operation of AWMSs and the swine farms and the residual biogas (if any) will be flared, the total heat production is estimated to be annual 657,340GJ. For conservativeness, baseline emissions from heat generation are neglected. The sludge produced from anaerobic digestion are treated through aerobic composting together with the separated solid, the effluent is used for agriculture irrigation which has been confirmed by site inspection and checking the Project Evaluation Report (PER) of the project/6/.

The project activity enables 7 existing swine farms to use new AWMSs instead of the open anaerobic lagoons in baseline scenario to achieve the harmlessness and ecological utilization of the swine manure, finally generate the electricity to swine farms, which has been verified by on-site inspection, and checking the related documentations, interview with the project implementer. The project is expected to avoid GHG emission of methane from anaerobic treatment of swine manure and wastewater through recovery and destruction of biogas.

Sustainable Development Objectives created from the project:

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:

- Increase access to affordable, reliable, sustainable and modern energy for local residents (Goal 7 of UN SDG, Target 7.0) – verified by checking the PER/6/, CTI confirmed that in the baseline scenario, the animal manure waste was left to decay in uncovered open lagoon at the livestock farms and methane is emitted to the atmosphere directly without any recovery, so the renewable energy share in baseline is 0, in project scenario, $3,287.1575 \times 10^4 \text{ m}^3$ of biogas will be captured annually for heat generation, thus avoid the methane emitted to the atmosphere and provide clean energy by utilizing biogas so that increase access to affordable, reliable, sustainable and modern energy for local residents, hence the contribution to this SDG has been confirmed.
- Increase decent work for local residents (Goal 8 of UN SDG, Target 8.0) – verified by site interview with employees including male and female and checking the Labor Contracts/17/ and periodical payroll/18/, CTI confirmed that in the baseline scenario, there was no job opportunities created, while the project created 14 job opportunities (7 females and 7 males) as workers, thus increase decent work for local residents, hence the contribution to this SDG has been confirmed;

- Reduce waste generation through resource utilization (Goal 12 of UN SDG, Target 12.0) – verified by checking the PER/6/, CTI confirmed that in the baseline scenario, the animal manure waste was left to decay in uncovered open lagoon at the livestock farms and no organic fertilizer was generated, while in the project scenario, 77,693 tonnes organic fertilizers will be generated annually, thus reduce waste generation through resource utilization, hence the contribution to this SDG has been confirmed.
- Avoid tons of greenhouse gas emissions (Goal 13 of UN SDG, Target 13.0) – verified by checking the Emission Reduction Calculation sheet/2/ and registered VCS Joint-PD-MR/3/, CTI confirmed that the project reduces GHG emissions with an estimated amount of 321,663 tCO₂e per year/2/ by installs 7 sets of animal waste management system (AWMSs) to avoid methane emissions generated in the previous manure treatment process of uncovered anaerobic lagoon to avoid methane emissions generated in the baseline scenario, hence the contribution to this SDG has been confirmed.

In opinion of VVB, the PP has clearly defined the sustainable development objectives of the project, which are appropriate to the nature of the project, the project activities planned and the sustainable development context in which it is developed. The stated objectives align with the logic of the SDG in promoting people well-being, strengthening awareness and promoting local partnerships in a sustainable, just and non-discriminatory way.

2.2.2 Project Activities

The project is structured in 3 main activities, design to achieve the sustainable development goals mentioned above:

Project Activity	Technologies or measures employed	How to achieve the project's sustainable development objectives	VVB Assessment
Biogas is captured for heat production	Via site inspection and checking the VCS Joint-PD-MR, CTI confirmed that biogas generated during the treatment process is captured for heat generation, the heat generated are all used by the operation of AWMSs and the 7 swine farms, which was provided by the coal-fired boiler without the project. 3,287.1575*10 ⁴ m ³ of biogas will be captured annually for heat generation, thus avoid	SDG 7 and SDG 13 achieved by captured biogas for heat generation, thus avoid the methane emitted to the atmosphere and provide clean energy by utilizing biogas so that increase access to affordable, reliable, sustainable and modern energy for local residents	Via site inspection and interview with representatives from project implementer/I1/, Operation Staffs of the AWMS plants/I2/, local officers/I3/, local residents/I4/, representatives from swine farms/I5/ and checking the PER/6/, Emission Reduction Calculation sheet/2/ and registered VCS Joint-PD-MR/3/, CTI verified that the project's stated activities will sufficiently

	the methane emitted to the atmosphere and provide clean energy by utilizing biogas.		achieve sustainable development objectives of the project.
Provide employment opportunity	14 full time job opportunities including 7 female and 7 male have been created from the project activity to local person.	SDG 8 achieved by create 14 full time job opportunities including 7 female and 7 male to locals and employed them as employees	Via site inspection and interview with employees and checking the Labor Contracts/17/ and periodical payroll/18/, CTI confirmed that the project employed 14 locals as employees thus decrease the unemployment rate, CTI verified that the project's stated activities will sufficiently achieve sustainable development objectives of the project.
Organic fertilizer production	Via site inspection and checking the VCS Joint-PD-MR, CTI confirmed that below technologies and measures have been employed to produce organic fertilizers: Install 7 sets of animal waste management system (AWMSs) to treat the manure which product the bio-organic fertilizers. The reuse of swine manure reduces the methane emissions from uncovered anaerobic lagoons in the project scenario. After liquid-solid separation, the solid will be treated in aerobic composting system and the organic	SDG 12 and SDG 13 achieved by treat the manure from the swine farms and install 7 sets of animal waste management system (AWMSs) which product the bio-organic fertilizers, reduce waste generation through resource utilization, and decrease tons of greenhouse gas emissions	Via site inspection and interview with representatives from project implementer/11/, Operation Staffs of the AWMS plants/12/, local officers/13/, local residents/14/, representatives from swine farms/15/ and checking the PER/6/, Emission Reduction Calculation sheet/2/ and registered VCS Joint-PD-MR/3/, CTI verified that the project's stated activities will sufficiently achieve sustainable development objectives of the project.

	fertilizers will be produced, which partly will be supplied to the farmers living around free and partly will be sold as fertilizer.		
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The PP has identified the expected impacts from project activities, and all them are positive.

The project activities cover a wide range of aspects of community development and technology improvement and it is the opinion of the audit team that no negative impacts will be occurred and that the project will cause a positive net result in people well-being and climate change.

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

2.2.3 Implementation Schedule

The PP listed in section 2.1.3 of the PD the key dates and milestones in the project's development and implementation. The first milestones reported correspond to the initial phases of project pre-establishment. CTI confirmed critical dates and milestones in the project's development and implementation, including initiation of SD VISta activities have been provided.

The start date of the project declared by the PP is 15-July-2020, when the project put into operation. Via checking the operation log/13/, it is verified that 15-July-2020 is the date when the project put into operation, it is verified that the start date is correct which is same to the start date defined under VCS scheme/3/. Therefore, the project start date is appropriate and consistent with the definition, the date on which activities that lead to the generation of sustainable development benefits are implemented, of Criterion 2.14 of SD VISta version 1.0/27/ and SD VISta Program Definitions v1.0/25/.

All project activities described in the PD have their corresponding date on the implementation schedule. All project activities have been already started at the time of this validation. CTI confirmed that the veracity of this statement by inspecting the implementation of project activities during the site visit.

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

2.2.4 Project Proponent and Other Entities Involved in the Project

The project proponent (Muyuan Foods Co., Ltd.), and the contact information reported in section 2.1.4 of the PD/1/ have been confirmed to be correct through checking the business license of the company/5/, General design and construction contract/11/, Equipment purchase contracts/10/, Approval of EIA/8/ and interviewing with the PP representative through the on-site visit/11/.

The other entities involved in the Project (Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd.) and the contact information reported in section 2.1.4 of the PD/1/ have been confirmed to be correct through checking the business license of the Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd./5/ and interviewing the representative of this company during the on-site visit.

The project proponent is responsible for implementation and management of the project, and Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd. plays roles related to carbon and SD VSta including development and management of the carbon project and buyer of VCU due to Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd. has experiences for develop the carbon project.

2.2.5 Project Type

Through the onsite visit, interviewing the project developer and reviewing the PD/1/, it was confirmed that the project is to introduce new Animal Manure Management Systems by replace the current open anaerobic lagoons with 7 new closed anaerobic digesters to a group of 7 existing swine farms in Nanyang City and Zhumadian City, Henan Province/6/, which will treat the manure and wastewater from the 7 swine farms to avoid methane emissions generated in the baseline uncovered anaerobic lagoons and the biogas produced is recovered and combusted for heat generation and used by swine farms in the project area in Nanyang City and Zhumadian City, Henan Province, P.R. China.

Therefore, it was confirmed that the sectoral scope is Scope 01: Energy industries (renewable - / non-renewable sources) and Scope 13 Waste handling and disposal as per the UNFCCC Standard “Applicability of sectoral scopes version 01.0”/22/ and Scope 15 as per para. A.1.2 in Appendix 1 of VCS standard (V4.4)/24/.

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

2.2.6 Project Location

The project site is located at Nanyang City and Zhumadian City, Henan Province, China. There are 7 subsidiary farms involved in the project. Details of the subsidiary farms’ location are given in table 3-1 below:

Table 3-1: Project Location

Item	Project Location		
Host Country	China		
Region:	Nanyang City and Zhumadian City, Henan Province		
Geographical Coordinates			
Swine farm	Detail Location	East longitude	North latitude
Wolong 2 nd farm	Shaozhuang Village, Luying township, Wolong District, Nanyang City	32° 52’9.05’’	112°27’15.77’’
Junzhang 26 th farm	Junzhang Village, Wangdian Township, Neixiang County, Nanyang City	33° 7’55.24’’	111°54’37.62’’
Zhengyang 1 st farm	Laodian Village, Pengqiao Township, Zhengyang County, Zhumadian City	32° 26’42.00’’	114°23’13.20’’
Zhengyang 4 th farm	Liwa Village, Lanqing Township, Zhengyang County, Zhumadian City	32° 28’25.36’’	114°13’14.56’’
Zhengyang 6 th farm	Liwa Village, Lanqing Township, Zhengyang County, Zhumadian City	32° 29’19.54’’	114°18’12.82’’

Zhengyang 9 th farm	Lanqing Village, Lanqing Township, Zhengyang County, Zhumadian City	32° 23'54.43"	114° 36'10.94"
Zhengyang 13 th farm	Xiemiao Village, Dougou Township, Zhengyang County, Zhumadian City	32° 26'37.43"	114° 18'20.30"

The project location has been clearly provided in section 2.1.7 of the PD/1/ and the detailed coordinates of the project have been provided respectively which have also been verified by site inspection with GPS device and checking the map and the information is verified as correct.

2.2.7 Baseline Scenario

The baseline scenario was identified via the processes outlined in applied CDM Methodology ACM0010– “GHG emission reductions from manure management systems” (version 08.0)/21/ which is the continuation of the current practice which is all swine manure was disposed in uncovered anaerobic lagoons in swine farms and methane is emitted to the atmosphere which is determined based on the PER/6/ and assessed in the joint validation and verification process under VCS/4/.

The PP has provided a summary of the social, economic, and natural capital conditions at the start of the project in relation to project activities in section 2.1.8 of the PD. The reported baseline scenario is assessed as below,

For social capital, via checking the public information of local government/36/ and site interview with local officer, CTI confirmed that the utilization rate of waste resources was still in the initial stage in local area and communities surrounding the project area at the start of the project nearly have no awareness of acting to climate change, little did they know about the huge amounts of methane produced by animal waste which have adverse impact on climate change. Furthermore, the low utilization rate of waste resources has caused a series of social and environmental problems the is bound to cause more serious ecological environment and social problems, such as the air, water and land pollution, and seriously affecting human and animal health.

For economic capital, at the start of the project, there would be less employment opportunities within the project’s operating area. There are additional lost economic opportunities for the local residents and the local farmers would spend more money on buying fertilizer which means that the local farmers make an economic saving through the project that would not be available to them were the project not to exist.

For natural capital, due to the swine manure waste would leave to decay in uncovered open lagoons at the swine farms which has confirmed by checking the evidence of baseline scenario/15/, so the methane is emitted to the atmosphere directly without any methane recovery and destruction facility. Methane emissions are also a major contributor to accelerating global warming, so the natural conditions in the baseline scenario are not conducive to climate change.

The main method of the CTI to assess the appropriated baseline scenario defined by the PP was the direct testimony of local stakeholders obtained through interviews during the site visit. In addition, the inspection of the surroundings of the project area provide context to the would-be situation without the project.

Based on the above assessment, CTI is able to confirm the accuracy and the credibility of the description of the social, economic, and natural capital conditions at the start of the project provided by the PP in the PD.

CAR 05 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

2.2.8 Causal Chain(s)

The PP presented causal chains in the PD, one per project activity, identifying outputs, outcomes and impacts, differentiating negative and positive impacts on the planet and impacts on people and prosperity.

CTI assessed the project against the stated causal chains and confirmed appropriateness via SD VISta Standard requirements. Findings ensured the PD depicted the causal chains in accordance with the Standard. During the validation audit, CTI assessed all provided documentation and references to each causal chain as below table,

Project Activity	Positive Impacts on	VVB Assessment
Biogas is captured for heat production	- Avoid methane emissions direct to the atmosphere - Reduce demand for fossil fuels - Promote the use of renewable energy	Via site inspection and interview with local farmers and checking the PER/6/, Emission Reduction Calculation sheet/2/ and registered VCS Joint-PD-MR/3/, CTI verified that the project's stated activity of installs 7 new sets of animal waste management systems (AWMSs) to replace the previous uncovered anaerobic lagoons for the manure treatment, biogas generated during the treatment process is captured for heat generation, the heat generated are all used by the operation of AWMSs and the 7 swine farms which reduce demand for fossil fuels, promote the use of renewable energy and decrease in carbon emission, thus achieve the positive impacts.
Provide employment opportunity and training	- Provide decent work for local residents - Promote justice in job recruitment - Personal skills and environmental awareness will be improved	Via site inspection and interview with local residents and checking the Labor Contracts/17/ and periodical payroll/18/ and training records/19/, it is verified that the project created 14 full time job opportunities for the local residents as workers regardless of gender (7 females and 7 males) and provided the trainings on climate change, technological requirements and monitoring parameters, CTI verified that the project's stated activity of hiring and training of new employees will provide decent work for local residents, promote justice in job recruitment and

		personal skills and environmental awareness will be improved, thus achieve the positive impacts.
Organic fertilizer production	• Avoid methane emissions direct to the atmosphere • Reduce waste generation through resource utilization • Improve the living conditions of the local farmers	Via site inspection and interview with local farmers and checking the PER/6/, Emission Reduction Calculation sheet/2/ and registered VCS Joint-PD-MR/3/, CTI verified that the project's stated activity of installs 7 sets of animal waste management system (AWMSs) to treat the manure which product the bio-organic fertilizers. The reuse of swine manure reduces the methane emissions from uncovered anaerobic lagoons in the project scenario. After liquid-solid separation, the solid will be treated in aerobic composting system and the organic fertilizers will be produced, which partly will be supplied to the farmers living around free and partly will be sold as fertilizer. Hence the project increases the recycling rate of resources, improve the living conditions of the local farmers and decrease in carbon emission, thus achieve the positive impacts.

After reviewing the evidence provided by the PP and collecting the information through direct interviews and inspections during the site visit, CTI validated all the causal chains included in the section 2.1.9 of the PD and confirmed that PP has appropriately and comprehensively described the cause-and-effect relationships product of the project activities, correctly tracing all the direct positive and negative, intended and unintended impacts on the Planet and on the People and Prosperity, as required by Criterion 2.1.5 of the SD VISTA version 1.0. CTI deems that the PP has included all reasonable effects of the project activities in the causal chains.

The PP has clearly documented in the causal chains which impacts of the project activities relate to People and their Prosperity and which relate to Planet. No SD VISTA assets are expected to be generated by the project.

2.2.9 Threats to the Project

The PP has described the natural and human-induced threats to the expected sustainable development benefits during the project lifetime and the threats are verified as actual and reasonable. The assessment is as below,

Natural threats - It is considered that the natural threats have been comprehensively described in Section 2.1.10 of PD/1/ including below,

- i. The Classical swine fever virus (CSF) could be happened and result in swine production declines and further reduce the swine manure supply. Via interview with representatives from swine farms and site visit of the swine farms, it is confirmed that the swine farms has established adequate biosecurity measures to tackle with the CSF, furthermore, only those that meet related epidemic prevention policy can be circulated in the market, besides, kitchen waste feeding will be avoided infection, and the strict treatment measures will be taken which are verified as reasonable and practical confirmed by interview and site visit.
- ii. The feedback and monitoring process of project can't be conducted properly due to unexpected circumstances, such as COVID-19 which may lead to the data collection suspended. Via interview with PP and employees, it is confirmed that the epidemic prevention and control measures has been established to provide strict disinfection, wearing masks and other protective gear, regular nucleic acid testing, controlling the social safety distance, and providing dormitories for employees, etc. to ensure that the infection and spread of new crowns are controlled at source, and other on-line methods will be used for information sharing with the local stakeholders which are verified as reasonable and practical confirmed by PP and employees and representatives of local stakeholders.

Human-induced threats - It is considered that the human-induced threats have been comprehensively described in Section 2.1.10 of PD/1/ including

- i. The fire or explosion caused by leakage of biogas would result in safety incidents. Via interview with employees and checking the training records/19/, it is confirmed that the relevant trainings on safety operation of the AWMS are conducted and portable gas detection alarm is equipped in each swine farm to detect gas concentrations in different locations, audible and visual alarm will be issued if it exceeds the normal range which has been verified by site inspection of the devices.
- ii. The leakage of manure waste into ground water that will cause the water pollution. Via checking the EIA approval/8/ and interview with local officers, CTI confirmed that the project activity is compliance with environmental laws and regulations and no leakage will be created to impact the environment and via site inspection interview with employees, it is confirmed that there are geo-membrane enclosed anaerobic tanks applied in the project is sealed by HDPE geomembrane, which is impermeable and leak-proof, and laying HDPE impermeable membranes inside the excavated soil pit, so it will not cause leakage of manure waste into ground water, which are verified as reasonable and practical confirmed by local officers and site inspection and checking the project design in Technical agreement of anaerobic tanks/12/.

In conclusion, CTI confirmed that the PP identified correctly and comprehensively the threats to the project benefits and that the PP created, and it is implementing mitigation actions to reduce or diminish these threats.

CAR 06 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

2.2.10 Benefit Permanence

The PP states that the project is focused on a program of training and supports a system of maintenance that helps extend the lifespan of the environmental technologies deployed.

To ensure the project's long-term viability and the permanence of benefits, PP has taken a series of actions:

- 1) Adopts the advanced technology and equipment to reuse the animal manure, benefits of the carbon reduction project and project will serve as a reference for the local government to further develop similar projects and improve the local ability in waste recycling.
- 2) Reduces of GHG in the atmosphere through avoiding methane emissions from anaerobic treatment of swine manure and waste water and the biogas generated used for heat generation, which will help to lessen the reliance on fossil fuels.
- 3) Offers awareness of and long-term significance of environmental protection and carbon reduction that accompanies the project extend the lifespan.

Hence, CTI verified the benefit-permanence activities through the desk review and during the on-site visit and considers the measures will likely achieve the sustainable development goals of the project and that these will last beyond its lifetime.

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

2.3 Stakeholder Engagement

2.3.1 Stakeholder Identification

The PD/1/ states that the stakeholders were identified as individuals who will be directly and indirectly affected by the implementation of the project.

The stakeholders are identified as those who deemed to either have a direct influence on the project or be directly influenced by the project, including but not limit to swine farms, local government, local residents near the project site and equipment providers.

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, CTI visited the project area and interviewed with the stakeholder representatives from involved representatives from swine farms, local government, local residents near the project site, it is confirmed the project is implemented in project area which impact the local residents near the project area by provide job opportunities and free organic fertilizers, and local government is responsible to the approval and related environmental and social issues and daily supervision of normal operation of the swine farms, and during the project implementation, original uncovered anaerobic lagoons are removed and new sets of AWMSs are installed at 7 existing swine farms, the raw materials are derived from the swine farms.

- *Checking the relevant docs and evidence*

The stakeholder's identification is confirmed as complete by checking the related docs of project including EIA approval/8/, labor contracts/17/, which define the local residents will be impacted; related PER/6/, equipment purchase contracts/10/ and General design and construction contract/11/ used to define the original uncovered anaerobic lagoons are removed and new sets of AWMSs are installed at 7 existing swine farms, the raw materials are derived from the swine farms, and EIA approval/8/ define the local government is responsible to the approval and related environmental and social issues and supervision of normal operation of the swine farms and AWMSs.

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

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

2.3.2 Stakeholder Description

All the identified stakeholders have been listed by PP in section 2.2.2 of PD and assessed by CTI in section above.

During the site visit, CTI interviewed representatives of different stakeholder groups described in the PD and was able to check the correctness and accuracy of the description of their relevance to the project and their interests.

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

2.3.3 Stakeholder Consultation

Different stakeholder consultations surveys and regular communications with different stakeholder groups were carried out by PP to present above identified local stakeholders' opinions on the implementation of project and share the information about potential cost, risks and benefits.

For the group of local government, PP will consult them regularly for the project to be granted permission to operate in their areas of jurisdiction and the local government play in granting permission for the project to operate, regular communication and consultation is maintained between the project and local government, the project proponent provides or updates regular yearly to the government such as company qualification information, financial auditing and environmental monitoring reports etc. This information is communicated via government affair platform, which has been confirmed by site interview with PP and representatives from local government. Hence, it is confirmed that the local government has been consulted and the information of the project has been shared with them.

For the local residents, due to the group size is large, PP has consulted with them by meetings and surveys conducted for the local residents during the project construction by questionnaire survey and grievance book aiming to fully explained the basic situation of the project and the benefits of the project (such as providing jobs and cheaper fertilizers) from the residents, and actively collected suggestions on potential risks through the survey questionnaires. The questionnaire survey was carried out by the project developer from 06-January-2020 to 10-January-2020 which was prior to the start date of the construction. During the survey, total of 105 questionnaires were issued for this project and 105 copies were collected (15 copies for each project site). The stakeholders' background information, survey process, and final

comments and response from PP were summarized and recorded in the PD. Via checking the 105 filled questionnaires/16/, it is verified that most local residents knew or heard about the Project. PP has shared the information about potential cost, risks and benefits such as providing jobs and cheaper fertilizers that will be created by the project, and Most of them are supportive of the project construction, and think the Project will bring more benefit than risks. And the survey shows that many local stakeholders think the Project will help improve the life of local people and promote local economic development without any adverse environmental impact and 100% of respondents agree with the construction of this project. Finally, it is verified that no negative comments raised from local stakeholders by checking the 105 filled questionnaires/16/.

Furthermore, via site inspection, CTI confirmed that the project owner established the mechanism for on-going communication with local resident by put up public announcements at the villages near the project site, and contacted the local authorities (mainly the ecology and environment bureau, agriculture and rural affairs bureau) by phone so that to collect the grievances or comments from local residents anytime.

By means of documents reviewed and the interviews performed, CTI considers that the summary of the comments received included in the PD is complete. CTI verified that there was no any grievances or comments received during the project implementation till the VVB site visit, Hence there is no need to change the project design based on the stakeholder inputs.

Via interview with PP, CTI confirmed that no specific channels for communication exist for marginalized and/or vulnerable groups as no any marginalized and/or vulnerable groups identified but all project communications and meetings are planned to the greatest extent possible to make accessible to all groups, through continuous Input / Grievance Expression Process Book prepared in each of project site.

Thus, CTI confirmed that the stakeholder consultation processes were carried out in an effective manner by the PP, that these processes were appropriate for each stakeholder group, providing information regarding potential costs, risks and benefits, and allowing the stakeholders to influence the project design.

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

2.3.4 Continued Consultation and Adaptive Management

For the project implementation, CTI confirmed that PP has established continued consultation and adaptive management methods for continuing communication and consultation with all stakeholder groups to ensure the local stakeholder have accessibility of the grievance redressal mechanism as below assessment.

Firstly, in order to set up the mechanism for on-going communication with local stakeholders, a continuous Input / Grievance Expression Process Book was checked has been put at the entrance of each swine farm/20/ where all stakeholders can give feedback at any time and PP has checked the book daily, if any comments received, PP will provide responses back to stakeholders immediately. Secondly, by posting notices in public places with the project implementation information, the notices posted during the operation of the project will be updated regularly, stakeholders affected by the project can receive timely notifications of the project and make comments on the project through the contact method of PP including phone or wechat provided in the postings and if any comments received, PP will provide

responses back to stakeholders immediately and the contact information and relevant information and policies that may affect the project will be updated in a timely manner.

In addition, the survey which conducted by using the questionnaire for SDG Contributions during Stakeholder Consultation annually to monitor stakeholder feedback throughout its life to solicit and consider effective stakeholder input about project implementation on an ongoing basis.

So far, no complaints about the project have been received by checking the Grievance Expression Process Book during on-site visit. Thus VVB verified that the accessibility of the grievance redressal mechanism can be fully guaranteed.

Besides, the consultation can also be conducted online, such as email, telephone, We Chat or video conference due to COVID-19 which has been confirmed by site interview with local stakeholders.

CTI confirmed that PP has provided many different methods as grievance redressal mechanism including on-line and off-line by posting notice and Grievance Expression Process Book, so it any stakeholders lack of access to technology of on-line, they can use the off-line methods to provide the comments to project. Only due to COVID-19, PP provided another online way, but offline ways are not given up by PP and although COVID-19 has some restrictions, but local stakeholders in the project area can still go out to check the postings and provide comments in the Grievance Expression Process Book which has been confirmed by site interviewed with local stakeholders. Thus it is verified that no stakeholder group was excluded due to a lack of access to technology.

In conclusion, project's plan for continued consultation and adaptive management is sufficient to ensure these components are included which complies with the Criterion 2.2.8 of the SD VISta version 1.0 and it is being implemented effectively.

2.3.5 Anti-Discrimination

Via checking the labor contract/17/, VVB confirmed that the work content and salary stipulated in the labor contract are the same, and the protection of the rights and interests of employees in the labor contract is protected by Labour Law of the People's Republic of China/34/. The project does not involve and is not complicit in any form of discrimination based on gender, race, religion, sexual orientation or any other basis.

The project respects all the rights to the women conferred to them by the Constitution of the People's Republic of China/34/, the Labour Law of the People's Republic of China/34/, special provisions on labour protection of female employees and other related regulation and policies. The project will not directly or indirectly reinforce gender-based discrimination and shall not lead to/contribute to adverse impacts. Gender equality will be attained by ensuring that both men and women will have equal opportunities to jobs created and trainings. The project creates 14 permanent jobs for the local residents during operation period of the project and 7 of them are confirmed as women, the job opportunities confirmed have been provided to the local residents fairly regardless of gender, age, education and other possible aspects of discrimination and both women and men are paid monthly and equally for same positions confirmed by checking the Payrolls/18/ and cross-checked with labor contract/17/. Therefore, the VVB verified that the project implements equal pay for equal work which in accordance with Article 46 of the Labor Law of the People's Republic of China/34/, and provides a complaint phone number to receive the comments raised related to gender and discrimination issue, but the project has not received relevant feedback. Therefore, VVB confirmed that no discrimination occurred in the project.

In conclusion, CTI confirms that the PP has developed a strict policy prohibiting any form of discrimination or harassment as well as designed measures that guarantee equal opportunities for community members, including women and vulnerable and/or marginalized people, in accordance with Criterion 2.2.9 of the SD VISta v1.0.

2.3.6 Worker Training

The PP has developed and implemented plans for hiring and training and capacity building of all the project employees.

Interviews with employees during the site visit confirmed all the employees were trained and well-versed in the skills needed to carry out their jobs and implementation of project which is also verified by checking the training records/19/. The audit team deems that the project has properly identified the training needs and delivered adequate capacitation to project's workers in order for them to perform their activities in a safe and effective manner.

2.3.7 Equal Work Opportunities

The PP stated that the hiring profile is established according with the vacant position given an equal opportunity without any discrimination of age, sex, marital status, ethnicity, social status or religious convictions, political ideas or sexual orientation, and in compliance with the local law. The project makes an effort to hire locally as evidenced by the onsite interview with project developer and project workers. Hiring criteria are based on skill sets without any discrimination as defined in the labor contract/17/.

During the project implementation, the total number of the local residents who were provided by long-term technician jobs for project implementation and management is 14, and 7 of them are confirmed as women and they are paid monthly and equally with man for same positions. This is confirmed via checking the labor contract/17/, periodical payroll/18/ and on site interview with women employees.

Hence, CTI confirmed that the project's hiring practices provide equal employment opportunities including management opportunities to all stakeholders, including women and marginalized and vulnerable people. It concludes that the project provides equal employment opportunities to all stakeholders.

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

2.3.8 Workers' Rights

The PD/1/ states that the project shall meet or exceed all applicable laws and regulations regarding workers' rights. Relevant law < Labor Law of the People's Republic of China>/34/ and Core Labor Conventions of the International Labor Organization (ILO)/35/ to which the PP have to comply is checked by CTI, this law is confirmed as the national law to guarantee the employment's right, health and safety. The hiring process is governed by the labour code and all workers have a contract in which its duties, rights and laws that protect them are reported. This is confirmed via checking the labor contract/17/ and on site interview with representatives from employees.

Thus CTI is able to confirm that the project has exceeded all local labor requirements and ensured that all workers were apprised of their rights, complying with the Core Labour Conventions of the ILO/35/. No labor conflicts were evidenced during the interviews with employees.

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

2.3.9 Occupational Safety Assessment

The PD/1/ states that the project proponent shall meet <Safety and Healthy in Agriculture> published by ILO/35/ and <Labor Law of the People's Republic of China>/34/ regarding workers' health and safety. Both the two regulations are confirmed as international and national rule and laws which can be used as the occupational safety regulations to obey. The activities that endanger workers are those related to workplace accidents due to fire incident, leakage of leachate and the odour generation and diffusion that requires qualified personnel and necessary safety instruments such as portable gas detection alarm are equipped to detect gas concentrations in different locations of the Raw materials warehouse, audible and visual alarm will be issued if it exceeds the normal range to prevent any risk, which has been confirmed during site observation and interview with the employees and local officers.

In conclusion, CTI considers that occupational safety assessment was comprehensive, and that measures have been put in place to minimize risk to workers.

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

2.3.10 Feedback and Grievance Redress Procedure

The PD/1/ describes a feedback and grievance redress process as below,

Via site inspection, VVB confirmed that PP has publicized the notification of grievance procedure by phone or wechat to local stakeholders via online way. On the other hand, as stated above, the offline notifications are made by posting announcements in public places, maximize notification to stakeholders through a variety of methods. And a continuous Input / Grievance Expression Process Book is put at the entrance of each swine farm, where all stakeholders can give feedback at any time which ensure the grievance redress procedure incorporates and respects traditional conflict resolution methods used by local stakeholders. Hence, VVB confirmed that the feedback and grievance redress procedure have been established to all stakeholders is ensured.

For the project implementation, via site inspection checking the Input / Grievance Expression Process Book put at the entrance of each swine farm/20/, all stakeholders are allowed to record their grievances or comments in the book at any time and PP has checked the book daily, if any comments received, PP will provide responses back to stakeholders immediately. CTI confirmed that PP has established continued consultation and adaptive management methods for continuing communication and consultation with all stakeholder groups.

Secondly, by posting notices in public places with the project implementation information, stakeholders affected by the project can receive timely notifications of the project and make comments on the project through the contact method of PP including phone or wechat provided in the postings and if any comments received, PP will provide responses back to stakeholders immediately. So far, no complaints about the project have been received by checking the Grievance Expression Process Book during on-site visit.

Besides, the consultation can also be conducted online, such as email, telephone, We Chat or video conference due to COVID-19 which has been confirmed by site interview with local stakeholders.

In addition, by interview with the residents, they confirm that all the contact information is announced to the stakeholders during the local stakeholder consultation process.

PP promised that grievances will be addressed in a reasonable amount of time, usually will take necessary action on the issue raised by the stakeholder within 48 hours.

Based on the above evidence, CTI confirmed that the grievance redress procedure has being design and is implemented according to Criterion 2.2.14 of the SD VISta version 1.0 and that it is effective in its aim.

2.3.11 Feedback and Grievance Redress Procedure Accessibility

According to the above section information, PP maintains a feedback and grievance redress procedure that is accessible in local language would be available to all project stakeholders through consultations and grievance book is available at the entrance of each swine farm.

During the site visit, the audit team was able to confirm that information about the project was available. Interviews with local stakeholders show no evidence of pending grievances. Therefore, CTI confirmed that the project is transparent with all stakeholders regarding grievances or any other feedback and that the procedure is accessible to all of them.

2.3.12 Stakeholder Access to Project Documentation

The full project documentation has been published on VERRA website for public comments as per checking the VCS website (<https://registry.verra.org/app/projectDetail/VCS/2876>). Thus the local stakeholders can easily download documents from the website. The project document, monitoring reports and other relevant documents will be provided as requested in a timely manner once requested by local stakeholders which is confirmed by PP and interview with local stakeholders. Furthermore, all the stakeholders can contact the project owner via telephone, email or We Chat regarding project documentation of every milestones of the project development, including registered, issuance, etc.

In conclusion, based on the testimonies of local stakeholders regarding the well-established communication channels with the project management, that the project has and will continue to make project documentation accessible to all stakeholders.

CL 05 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

2.3.13 Information to Stakeholders on Validation and Verification Process

In particular the project proponent informed and explained about the means of the validation process through email, telephone or We Chat as requested before the validation site visit took place as confirmed by site interview with local stakeholders and they will call if they have any issues about the project at anytime. This was also confirmed by the PP and interview with local stakeholders during the site visit.

All interviewees were well aware of the nature of the audit process and declared being informed of the auditors visit with anticipation. Hence CTI confirmed that all stakeholders are likely to know of future assessments.

CL 06 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

2.4 Project Management

2.4.1 Avoidance of Corruption

As legally registered companies according to above assessment, the PP and other involved entity in project design and implementation have the obligation to comply with relevant regulations, including anti-corruption law. This is verified by checking the company information in National Enterprise Credit Information Publicity System/29/ and company business license/5/.

Thus it is concluded that the project management has defined and set a strong and comprehensive framework to prevent the commitment any kind of illicit acts by project staff. No evidence of any form of corruption or illegality was found during the review of the provided evidence and the site visit.

2.4.2 Statutory and Customary Rights

Via checking the Constitution of the People's Republic of China and the Law of the People's Republic of China on Land Administration/34/ and based on the local expertise of VVB, CTI confirmed that the land of the project site is state-owned land property and local government has approved the project owner to use it for project implementation as defined in approval of EIA/8/.

Through on-site visit and checking the business license/5/ of the project owner and checking the Licenses for production and operation of 7 swine farms/9/, CTI verified that the project activity is constructed and operated in the swine farms owned by the project owner.

Muyuan Foods Co., Ltd. is responsible for the comprehensive implementation and management of the project and project owner has the ownership of the project thus has the right to make decisions about the carbon reduction of the project. Hence there are no uncertainties and changes to land tenure arrangements, resource access rights, community-based property rights and customary rights, usage rights or land ownership.

No conflict with any kind of statutory and customary rights was reported to the audit team nor was noticed by them.

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

2.4.3 Recognition of Property Rights

Refer to assessment in 2.4.2 above. CTI verified that all property rights are recognized, respected and supported. Since project was invested by the project owner, who has the legal right to control and operate the project activity, thus the ownership is clear, there is no dispute over land ownership at the project site.

2.4.4 Free, Prior and Informed Consent

As per the assessment in above section 2.3.3, CTI confirmed that the free, prior and informed consent has been obtained from those stakeholders who are affected by the project by the documentation assessed in section 2.3.3 and observations made during the site visit.

In order to solicit the opinions and attitudes of all stakeholders on the construction of the project, the project owner issued a stakeholder questionnaire before the construction of the project started on 06-January-2020 to 10-January-2020, to survey the opinions of local stakeholders on the construction of the project. On the other hand, the project is carried out under the supervision of the government, and the filing certificate has been obtained before the project starts; And signed agreement with the raw material supplier. In order to obtaining free, prior, and informed consent from the stakeholders prior to the construction of the project, the project owner issued a stakeholder questionnaire before the construction of the project started on 06-January-2020 to 10-January-2020, to survey the opinions of representatives of local stakeholders on the construction of the project, this is deemed a direct method to obtain free, prior, and informed consent from the stakeholders. On the other hand, the project is carried out under the supervision of the government, and the filing certificate has been obtained before the project starts; and signed agreement with the raw material suppliers which have been checked by VVB during site visit and has been assessed in the VCS verification report. Therefore, it means that PP has obtained free, prior, and informed consent from the stakeholders prior to the construction of the project through questionnaire, got certificate from government and signed agreements with related stakeholders to avoid any disagreement raised from the local stakeholders.

Furthermore, through on-site visit and checking the business license/5/ of the project owner and Licenses for production and operation of 7 swine farms/9/ and EIA approval of the project, CTI verified that the project developer Muyuan Foods Co., Ltd. is a privacy company, who is in charge of the integrated implementation and management of the project and swine farms and approved by the local government. Since project was invested by the project owner, who has the legal right to control and operate the project activity, thus the ownership is clear, there is no dispute over land ownership at the project site.

In conclusion, CTI confirmed that the project has respected property rights and obtained free, prior and informed consent of those who have been affected by the project.

2.4.5 Restitution and/or Compensation for Affected Resources

As assessed above, the project land belongs to the state-owned land. PP had granted permission to operate in their areas of jurisdiction and paid land use tax in accordance with Law of the People's Republic of China on Land Administration/34/, hence there are no negative effects on the land or resources due to the project.

Therefore, the allocation of restitution or compensation to any parties is not required.

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

2.4.6 Property Rights Removal/Relocation of Property Rights Holders

As assessed above, project land belongs to the state-owned land, before the construction of the project, the lands near to swine farms was vacant and didn't have any negative effects on indigenous people's livelihood and culture. Hence there are no activities lead to involuntary removal or relocation of property rights holders from their lands or territories, or force rights holders to relocate activities important to their culture or livelihood involved in the project.

Therefore, no removing property rights holders from their lands or territories occurred under the project implementation.

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

2.4.7 Identification of Illegal Activities

Via on-site observation and interview with local officers, CTI verified that there are no illegal activities inside the project area; the area is considered as being peaceful and excluded from social conflict. Furthermore, any illegal agricultural activities will be fined or sentenced to punishment according to Chinese laws/34/, thus it is confirmed no illegal activities will be occurred.

In conclusion, the project's benefits will not be affected by the illegal activities.

2.4.8 Ongoing Conflicts or Disputes

As per the assessment in above section 2.3.3, CTI confirmed that the free, prior and informed consent has been obtained from those stakeholders who are affected by the project by the documentation assessed in section 2.3.3 and observations made during the site visit.

Besides, as assessed above, CTI verified that all property rights are recognized, respected and supported. Since project was invested by the project owner, who has the legal right to control and operate the project activity, thus the ownership is clear, there is no dispute over land ownership at the project site and hence there are no negative effects on the land or resources due to the project.

Thus, there are no ongoing or unresolved conflicts or disputes over land, territories and resources rights.

Furthermore, by on site interview with representatives from PP and local stakeholders and checking the local stakeholder consultation records, it is confirmed that no any disputes that were not resolved during the last twenty years.

During the on-site observation, the project has been implemented for nearly 2.5 years and by interview with the local stakeholders, it is verified that no activity is undertaken by the project that could prejudice the outcome of an unresolved dispute relevant to the project.

In conclusion, no measures needed and designed to resolve conflicts or disputes.

2.4.9 National and Local Laws and Regulations

The PD has stated that the project is in the field of waste handling, this industry is confirmed as in line with the laws and regulations/34/ as listed in the section 2.3.9 of PD/1/.

Also the project is legally approved by Local government by checking the EIA approval/8/, Licenses for production and operation of 7 swine farms/9/, which means that the project is in line with the national and local laws and regulations based on the local expertise of the VVB. And as stated in the PD/1/ and confirmed by interview with local officer, 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/34/.

2.4.10 Project Ownership

The section 2.3.10 of the PD has been checked, it is confirmed that the Project Proponent demonstrates that they have the legal right to control and operate project activity.

Via checking the National legal approval to the Environmental Impact Assessment (EIA)/8/, Equipment purchase contracts/10/, General design and construction contract/11/ and the business license of the Muyuan Foods Co., Ltd./5/, it is verified that the PP has the legal right to control and operate the project activity. Thus, it is confirmed that the project owner has the ownership of the project.

2.4.11 Grouped Projects

The project is not a grouped project.

3 BENEFITS FOR PEOPLE AND PROSPERITY

3.1.1 Condition of Stakeholders at Project Start

Conditions at the start of the project

In section 3.1 of the PD, the PP described the conditions including social, economic and cultural of the stakeholders defined in section 2.2.2.

Significant changes in the past

There are some changes in the past before the project start, due to a large amounts of swine manure is decayed in open lagoons, this cause more serious ecological environment and social problems, such as the air, water and land pollution, and seriously affecting human and animal health. And the per capita disposable income of rural residents in Henan Province/37/ was lower than that of national residents/38/ especially in rural and remote area. Besides, for the swine farms, the energy consumption fee increased the financial burden of the swine farms.

The project implementation brings over significant changes to these interested stakeholder groups by offering new opportunities for providing recreational activities, research, or supporting project goals, and more importantly, significant positive/negative impacts which eventually outweigh negative impacts over the course of project period. These include economic, ecosystem services, and community amenity value impacts to the interested stakeholder groups.

Diversity between and within stakeholder groups

The diversity within the community including interactions between government and local residents, swine farms and related principles/33/ has been provided in PD and is confirmed by site interview with local officers and residents.

Interactions between stakeholder groups

The PD states that the local communities with low interactions between communities and community groups at the start of the project. It is verified by site visit interviews with the local stakeholders. The swine manure produced from the existing swine farms was left to decay in uncovered anaerobic lagoons at the swine farms and methane is emitted to the atmosphere directly without any methane recovery and destruction facility.

The audit team based the assessment of the appropriateness of these descriptions on the testimonies of the stakeholders obtained through interviews during the site visit. Section 1.8 of this report provides a comprehensive list of all the stakeholders interviewed during the validation process.

The description of the conditions prior to the project start were confirmed by all the interviewed stakeholders. Thus, CTI considers that the PP has described accurately the conditions at the project start date with respect to social, economic and cultural diversity within and between the stakeholder groups and the interactions between stakeholder groups.

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

3.1.2 Expected Stakeholder Impacts

The PP identified the expected stakeholder impacts through the definition of the causal chains of each project activity described in section 2.1.9 of the PD. The following table summarizes the means used to assess the expected impacts on each stakeholder group resulting from project activities:

Impacts	Affected stakeholder group(s)	Monitored output	VVB Assessment Methods	+/-	SDG Target
#1: Provide decent work for local residents	Local residents around the project site and the local government	The job opportunities are available to the all the local residents around the project site equally. For the local government, the local unemployment rate will be reduced, and the living conditions of the local residents will be improved. To a certain extent, it will help to promote local prosperity and stability.	Site inspection of project implementation, Interview with employees, local residents and representatives from local government Checking the Labor Contracts/17/ and periodical payroll/18/	+	8.0
#2: Promote justice in job recruitment	Local residents around the project site	The project will help to promote the employment of women. Decent job opportunities are available to them equally.	Site inspection of project implementation, Interview with employees especially women workers Checking the Labor Contracts/17/ and periodical payroll/18/	+	8.0
#3: Personal skills and environmental awareness will be improved	Local residents around the project site	Trainings will be accessible to all the employees, with emphasis on those recruited from local	Interview with employees, local residents	+	8.0

		residents. All the staff working in this project will be informed of risks and trained on measures to avoid it. Personal skills of the employees will be improved to adapt to sustainable development better.	Checking the technical training records/19/		
#4: Improved economic conditions	Local residents around the project site, the local government, swine farm and equipment providers	The project has brought economic benefits to local residents and swine farms. For the local government, the improvement of the economy of residents and enterprises contributes to the prosperity of the local economy to some extent.	Interview with representatives from local residents, the swine farms and local government	+	12.0

After reviewing the evidence provided by the PP and collecting the information through direct interviews and inspections during the site visit, the audit team is able to confirm that expected impacts for each stakeholder group identified in the PD are likely to occur. Therefore, CTI confirmed that the PP has properly estimated the type and magnitude of the project's impacts on the stakeholder groups, as required by Criterion 3.1.4 of the SD VISta version 1.0.

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

3.1.3 Mitigation of Negative Impacts on Stakeholders

As it was indicated in section 3.4. of the PD, there is no negative impacts on local vendors stakeholders identified due to the implementation of the project. Hence, no mitigation measurement is requested.

3.1.4 Stakeholder Monitoring Plan

The stakeholder monitoring plan was developed based on identified expected stakeholder impacts from project activities. To track the project's objectives, quantitative measurements of each expected stakeholder impact must be reviewed once in each verification period. Basically, quantitative analyses of baseline and project scenarios are compared to estimate net benefits resulting from project activities.

As stated in Section 3.1.2 Expected Stakeholder Impacts, the stakeholder monitoring plan specifically provide assessment of differentiated impacts for each of the stakeholder groups, analysis of expected stakeholder impacts from this community monitoring plan is easy to track due to analytical simplicity

allowing the project to monitor impact on each stakeholder group effectively. The monitoring parameters are identified and assessed as below,

Impacts No.	Affected stakeholder group(s)	Monitored parameter	Measurement methods and procedures	Monitoring frequency	VVB Assessment
Impact #1: Provide decent work for local residents	Local residents around the project site, swine farm and the local government.	Number of jobs for local people created by gender and the number of times all staff working in swine farms have been trained on risk avoidance measures	The total number of jobs created will be calculated based on the record keeping books, which includes name, gender, date of joining and other basic information of the employees. The results will also be cross checked with labour contracts and training records of the employees. The number of training sessions is calculated from the records of each type of employee training and is cross-checked with the training notices and sign-in sheets for each session.	Once for each monitoring period. After the first verification, only changes in employees will be reported.	The monitoring parameter is confirmed as reasonable to reflect measuring all the results of the corresponding impacts.
Impact #2: Promote justice in job recruitment				The total number of training sessions was counted at the end of each monitoring period.	During verification, via site inspection of project implementation, interview with employees, local residents and representatives from local government and checking the Labor Contracts, payrolls and training records of the employees, the impacts of 1 to 3 will be determined for the related monitoring period.
Impact #3: Personal skills and environmental awareness will be improved					

Impact #4 : Improved economic conditions	Local residents around the project site, the local government, swine farm and equipment providers	The amount of the organic fertilizers generated	This parameter can reflect the recycling of swine manure. The amount of the organic fertilizers generated is measured by belt scale. Calibration and frequency of calibration is according to manufacturer's specifications.	Continuously measure, aggregated by month, reported by monitoring period.	The monitoring parameter is confirmed as reasonable to reflect measuring the results of the corresponding impact. During verification, via site inspection of project implementation, interview with representatives from local residents, the swine farms and local government and checking the records of amount of the organic fertilizers generated and related monitoring equipment calibration information, the impacts of 4 will be determined for the related monitoring period.
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In conclusion, all necessary monitoring parameters required to support all impacts and claims described in the project's expected and net impacts are contained in the monitoring plan and are clearly described. Details on the methods for collection of data for each output that is being monitored, particularly regarding the monitoring frequency and methods and SDG Target or Indicator, are provided. After the review of evidence provided by the PP, the interview and communications with PP, CTI confirmed that monitoring arrangements described in the monitoring plan are feasible within the project design and that the PP will be able to implement the monitoring plan.

CAR 11 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

3.1.5 Net Positive Stakeholder Wellbeing Impacts

Via checking the PD, CTI confirmed that except for the potential threats described in Section 2.2.9, the impacts in Section 3.1.2 brought benefits for stakeholders and are net, long-term positive for them. Besides, all the risks mentioned have measures and mitigation, and the positive impacts below which is long-term and sustainable are more distinct than the potential risks on stakeholders' living life.

According to the PD, the positive impacts are indicated below:

- Provide decent work for local residents, which is beneficial for local residents around the project site, and the local government. 14 permanent jobs (including 7 females and 7 males)/17/ for the local residents will be created during operation period of the project, which will contribute to reducing unemployment rate.
- Promote justice in job recruitment, which is beneficial for local residents around the project site especially women, the equal job opportunities will be provided for the local residents regardless of gender/17/.
- Personal skills and environmental awareness will be improved through different training sessions have been provided to employees/19/.
- Improved economic conditions, which is beneficial for local residents the swine farms and local government, the project has brought economic benefits to local residents by provide salaries/17/,/18/ and swine farms/6/ and created tax revenue for the local government.

The site visit interviews with local stakeholders demonstrated that stakeholders were receiving benefits they would not otherwise have received in the absence of the project. Jobs were created and other income-producing opportunities and trainings of sustainable development were made available and have included the local people and women. In conclusion, the assessment of the anticipated net impacts is accurate and reflects faithfully the project benefits in stakeholder groups.

CTI has checked the net impact by their outcomes onsite: all the activities were visited during the field trip, and moreover, employees and local stakeholders representatives were interviewed. They confirmed the results mentioned, which is also supported in the extensive documentary evidences provided for the validation (see Appendix 3: list of evidences provided, in this report).

In conclusion, the net impacts of the project activities are likely to be positive for each related stakeholder group.

4 BENEFITS FOR THE PLANET

4.1.1 Condition of Natural Capital and Ecosystem Services at Project Start

In section 4.1 of the PD, the PP described the conditions of natural capital and ecosystem services prior to the project start and their potential threats. The audit team based the assessment of the appropriateness of these description on the ecological evidence provided by the PP, the natural conditions of the region, the inspection of the project area, as well as the testimonies of local community members and users of the services provided by the project.

The project description points out two key points to describe the conditions of natural capital and ecosystem services at the project start: biodiversity and ecosystem at landscape level. The real and possible threats, key assumptions, rationale and methodological choices to natural capital and ecosystem services within the region are discussed accordingly. The project description provides detailed descriptions with evidences for the listed criteria to conclude that the condition of natural capital and ecosystem service at project start is justified for this project.

- Threats

Two real and possible threats to nature and ecosystem were suggested and evaluated. These include global warming and cannot effectively exert the fertility of biomass. These threats are elaborated in detail in the project description to address that project activities are necessary for natural capital and ecosystem services conservation.

- Key assumptions and rationale

The underlying key assumptions for natural capital and ecosystem services of the project areas are that the property critical biodiversity and ecosystem values to the planet and these services will be threatened without proper intervention.

- Methodological choices

Methodological choices to assess natural capital and ecosystem services include quantitative and qualitative analysis, which is described in detail in below Section 4.1.2.

Thus, CTI considers that the PP has described accurately the conditions at the project start date with respect to natural capital and ecosystem services and includes real and possible threats.

CAR 12 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

4.1.2 Expected Impacts on Natural Capital and Ecosystem Services

The PP identified the expected impacts on natural capital and ecosystem services through the definition of the causal chains of each project activity described in section 2.1.9 of the PD. The following table summarizes means used to assess the expected impacts resulting from project activities:

Impacts	Affected Natural Capital and/or Ecosystem Service(s)	Impacts	VVB Assessment Methods	+/-	SDG Target
#1: Avoid methane emissions direct release into the atmosphere	Carbon emissions and climate change	The project reduces the GHG emissions, which mitigate the climate change as well. 7 new sets of AWMSs are installed to the 7 existing swine farms to treat the manure and wastewater. Methane emissions generated in the baseline uncovered anaerobic lagoons will be avoided.	Site inspection of project implementation, Checking the VCS Joint-PD-MR/3/ and VCS Joint-validation-verification report/4/	+	13.0
#2: Reduce waste generation through resource utilization	Waste recycling and usage of renewable energy	The solid is treated in aerobic composting system and the organic fertilizers can be produced, part of the fertilizer is distributed to local farmers for free, which will help to increase the resource reuse of waste materials.	Site inspection of project implementation, Interview with local farmers Checking the PER/6/	+	12.0
#3: Reduce demand for fossil fuels	Usage of renewable energy	The liquid of the manure waste is treated through anaerobic digestion and the biogas generated during the treatment process is captured for heat generation in AWMSs and swine farms,	Site inspection of project implementation, Interview with representative of swine farms Checking the PER/6/	+	7.0

		which will help to reduce the using of fossil fuels for heating in the swine farms.			
#4: Promote the use of renewable energy	Usage of renewable energy	The liquid of the manure waste is treated through anaerobic digestion and the biogas generated during the treatment process is captured for heat generation in AWMSs and swine farms, which will help to promote the use of renewable energy.	Site inspection of project implementation, Interview with representative of swine farms Checking the PER/6/	+	7.0

After reviewing the PER/6/, VCS Joint-PD-MR/3/ and VCS Joint-validation-verification report/4/ and through direct interviews and inspections during the site visit, the audit team is able to confirm that expected impacts on natural capital and ecosystem services resulting from project activities identified in the PD are likely to occur.

In conclusion, the PP has properly estimated the type and magnitude of the project's impacts on the on natural capital and ecosystem services, as required by Criterion 3.2.4 of the SD VISTA version 1.0.

CAR 13 was raised and successfully closed. Refer to Appendix 4 for detail assessment.

4.1.3 Mitigation of Negative Impacts on Natural Capital and Ecosystem Services

The PP has not identified negative impacts on natural capital and ecosystem services as result of the implementation of project activities which is also verified by CTI through site inspection and interview with local farmers and officers. Therefore, it is not necessary to do action to mitigate it.

4.1.4 Natural Capital and Ecosystem Services Monitoring Plan

The PP has designed a monitoring plan to track the effects of the project activities on the natural capital and ecosystem services, which is described in PD section 4.3, that is related to the impact of GHG Emission Reductions and the amount of the organic fertilizers generated. The monitoring plan is structured according to the project activities, and allow to track the contributions on the SDG 7 and SDG 13, described in section 1 of the PD, and to support all impacts and claims. All variables are directly linked to the impacts on the planet expected by the project.

The project is also validated and regularly verified under the Verified Carbon Standard (VCS) and has developed and implemented a robust monitoring system related to monitor the GHG Emission Reductions for SDG 13 during the next 10 years since project's start date.

Via checking the PD/1/ and comparing with VCS Joint-PD-MR/3/, CTI confirmed that all necessary parameters required to support all impacts and claims described in the project's expected and net impacts are contained in the monitoring plan and are clearly described. Details on the methods for collection of data for each output that is being monitored, particularly regarding the monitoring frequency and methods and SDG Target or Indicator, are provided.

For the amount of the biogas recycled, it will be measured by flow meter installed at the inlet of boiler in each swine farm. The calibration of flow meters, including the frequency of calibration, should be done every two years in accordance with national standards or requirements.

Due to the project is also validated and regularly verified under the Verified Carbon Standard (VCS) and has developed and implemented a robust monitoring system related to monitor the GHG Emission Reductions for SDG 13.

The monitoring parameters are identified and assessed as below,

Impacts No.	Monitored parameter	Measurement methods and procedures	Monitoring frequency	VVB Assessment
Impact #1 Avoid methane emissions direct release into the atmosphere	GHG emission reductions	Baseline, project and leakage emissions will be calculated based on ACM0010 GHG emission reductions from manure management systems (Version 08.0). GHG emission reductions=baseline emissions-project emissions-leakage emissions. Please refer to VCS PD and Validation report of the project for more details	Calculated monthly, reported by monitoring period.	The monitoring parameter is confirmed as reasonable to reflect measuring all the results of the corresponding impact. During verification, the project is regularly verified under the Verified Carbon Standard (VCS) and has developed and implemented a robust monitoring system related to monitor the GHG Emission Reductions during the next 10 years since project's start date, the impacts of 1 will be determined for the related monitoring period.
Impact #2 Reduce waste generation through	The amount of the organic fertilizers generated	This parameter can reflect the recycling of swine manure. The amount of the organic fertilizers generated is measured by belt scale. Calibration and	Continuously measure, aggregated by month, reported by monitoring period.	The monitoring parameter is confirmed as reasonable to reflect measuring the results of the corresponding impact.

resource utilization		frequency of calibration is according to manufacturer's specifications.		During verification, via site inspection of project implementation, interview with representatives from local residents, the swine farms and local government and checking the records of amount of the organic fertilizers generated and related monitoring equipment calibration information, the impacts of 2 will be determined for the related monitoring period.
Impact #3 Reduce demand for fossil fuels Impact #4 Promote the use of renewable energy	The amount of biogas recycled	The biogas recycled will be monitored by the flow meter installed at the inlet of boiler in each swine farm. The calibration of flow meters, including the frequency of calibration, should be done every two years in accordance with national standards or requirements. The parameter will be monitored continuously by the flow meter and reported cumulatively on monthly basis.	Continuously measure, aggregated by month, reported by monitoring period.	The monitoring parameter is confirmed as reasonable to reflect measuring the results of the corresponding impact. During verification, via site inspection of project implementation, interview with representatives from local residents, the swine farms and local government and checking the records of amount of biogas recycled and related monitoring equipment calibration information, the impacts of 3 and 4 will be determined for the related monitoring period.

CTI confirms that monitoring arrangements described in the monitoring plan are feasible within the project design and that the PP will be able to implement the monitoring plan.

4.1.5 Net Positive Natural Capital and Ecosystem Services Impacts

3,287.1575*10⁴ m³ of biogas will be captured annually for heat generation. The project is expected to achieve 321,663 tCO_{2e} of emission reduction annually/2/. This area will thus continue to provide the

following ecosystem services: waste recycling and carbon sequestration. Without the project activities, all manure waste was disposed in uncovered anaerobic lagoons in swine farms and methane is emitted to the atmosphere.

The project activity installs new Animal Manure Management Systems by replace the current open anaerobic lagoons with 7 new closed anaerobic digesters to a group of 7 existing swine farms which will treat the manure and wastewater from the 7 swine farms to avoid methane emissions generated in the baseline uncovered anaerobic lagoons, which has been verified by on-site inspection, and checking the related documentations, interview with the project implementer. The project is to reduce of GHG in the atmosphere through avoiding methane emissions from controlled aerobic treatment of manure.

The expected total emission reduction of the Project in the crediting periods of 10 years (from 15-July-2020 to 14-July-2030) is 3,216,630 tCO₂e, and the annual emission reduction is estimated to be 321,663 tCO₂e/2/.

No negative ecological impacts have been identified for the project, therefore net impacts of the project activities are positive.

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

5 OPTIONAL: CLIMATE MODULE

Not applicable.

6 OPTIONAL: SD VISTA ASSETS

Not applicable.

7 VALIDATION CONCLUSION

Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd. has commissioned the CTI to carry out the Sustainable Development Verified Impact Standard (SD VISTA) validation assessment of the project activity “Muyuan WJZ AWMS GHG Mitigation Project in Henan Province” (VCS ID 2876), in Nanyang City and Zhumadian City, Henan Province, China, and is able to affirm that the project is in compliance with the Sustainable Development Verified Impact Standard version 1.0 requirements and all its associated guides and definitions, without qualifications or limitations.

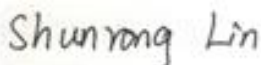
The objective of the validation was to conduct an independent assessment of the “Muyuan WJZ AWMS GHG Mitigation Project in Henan Province” design in order to determine its compliance with the requirements of the SD VISTA Program, including the appropriateness of the SD VISTA claims and the plans design for their monitoring. The scope of the validation was the review of the sustainable development impacts generated by the project, their contribution to the UN SDG and the benefits for people and prosperity and the benefits for the planet that they imply.

The review of the Project Description and additional documents related to the project management and monitoring; and the subsequent background investigation, interviews and testimonies of stakeholders and project site inspections have provided CTI with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarized as follows:

- The project is in line with all criteria of the SD VISTA version 1.0, the SD VISTA Program Guide version 1.0 and the SD VISTA Program Definitions version 1.0.
- All claims made by the project, including its contribution to the SDG, associated SDG indicators and net impacts on People and Prosperity and on the Planet, are credible and appropriately substantiated with historical and projected data and information.
- The monitoring plans for tracking the impacts on stakeholders and on natural capital and ecosystem services are transparent and adequate to support all impacts and claims expected by the project.

The conclusion of this report is that the “Muyuan WJZ AWMS GHG Mitigation Project in Henan Province”, as it was described in the Project Description, conforms with all criteria applicable for validation set by the Sustainable Development Verified Impact Standard and the SD VISTA Program Guide, without any qualification nor limitation.

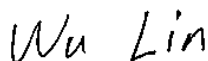


Lin Shunrong

CTI

Verification Team Leader

25-July-2024



Lin Wu

CTI

Technical Reviewer

25-July-2024

APPENDIX 1: ABBREVIATIONS

Abbreviations	Full texts
AWMS	Animal Waste Management System
BE	Baseline Emission
CAR	Corrective Action Request
CCER	China Certified Emission Reduction
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO ₂	Carbon dioxide
CP	Crediting Period
DNA	Designated National Authority
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
ETS	Emission Trading Scheme
FAR	Forward Action Request
PER	Project Evaluation Report
GHG	Green House Gas
GS	Gold Standard
GSC/GSP	Global Stakeholder Consultation Process
IPCC	Intergovernmental Panel on Climate Change
JPM	Joint-PD-MR
KP	Kyoto Protocol
LSC	Local Stakeholder Consultation
MoV	Means of Validation
MP	Monitoring Plan
PA	Project Activity
PE	Project Emission
PP	Project Participant
QC/QA	Quality control/Quality assurance
SD	Sustainable Development
SDG	Sustainable Development Goals
SD VISta	Sustainable Development Verified Impact Standard
tCO _{2e}	Tonnes of Carbon di oxide equivalent
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:

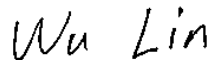
Qualification						
Status	GHG Auditor	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	√	√	√	√	√	√

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



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

APPENDIX 3: DOCUMENTS REVIEWED OR REFERENCED

No	Author	Title	References to the document	Provider
1.	Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd.	SD VISta PD	SD VISta PD of Muyuan WJZ AWMS GHG Mitigation Project in Henan Province - Draft Version 01, dated 13-July-2022 - Final Version 02, dated 22-February-2023 - Final Version 03, dated 01-July-2024 after VERRA Review round 1 - Final Version 04, dated 24-July-2024 after VERRA Review round 2	Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd.
2.	Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd.	Emission Reduction Calculation Sheets	Emission Reduction Calculation sheet (related to ex-ante VCU calculation) Version No. 02, dated 07-July-2022	Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd.
3.	Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd.	VCS Joint-PD-MR	VCS Joint-PD-MR of Muyuan WJZ AWMS GHG Mitigation Project in Henan Province, Version No. 02, dated 07-July-2022	VCS website
4.	CTI	VCS Joint-Validation-Verification Report	VCS Joint-Validation-Verification Report of Muyuan WJZ AWMS GHG Mitigation Project in Henan Province, Version 1.0, dated 08-July-2022	VCS website
5.	Local Administrative Examination and Approval Bureau	Business License of PP	Business License of Muyuan Foods Co., Ltd. and Profit Carbon Environmental Energy Technology (Shanghai) Co., Ltd.	PP
6.	Henan Tutian New Energy Technology Co., Ltd.	Project Evaluation Report	Issued on 22-March-2019	PP
7.	Nanyang Environmental Protection Research Institute Co., Ltd.	Environment Impact Assessment (EIA)	Issued in November 2018	PP
8.	Henan Provincial Department of Ecology and Environment	EIA approval	Issued on 30-May-2019	PP
9.	Local County Agriculture and Rural Affairs	Licenses for production and operation	Licenses for production and operation of the breeding	PP

No	Author	Title	References to the document	Provider
			livestock and poultry of 7 swine farms	
10.	PP and manufacturers	Equipment purchase contracts	Equipment purchase contracts of all the involved main equipment including biogas boiler, solid-liquid separators, anaerobic tanks and flare system etc.	PP
11.	PP and Henan Guanyu Environmental Protection Technology Co., Ltd.	General design and construction contract	Signed on 24-October-2019	PP
12.	Manufacturers	Technical agreement	Technical agreement of main equipment	PP
13.	PP	Operation log of the project	Operation log of the 7 AWMSs plants	PP
14.	Project Owner and Henan Yimu Liangtian Fertilizer Industry Co., Ltd.	Sale agreement of organic fertilizer	Sale agreement of organic fertilizer dated 30-June-2020	PP
15.	PP	Photo of baseline lagoon	Photo of baseline lagoons of 7 swine farms	PP
16.	PP	Local Stakeholder Consultation Records prior to the construction start date	Local stakeholder consultation process evidences: 105 filled questionnaires by attendance in the Meeting	PP
17.	PP and employees	Labor contracts	Labor contracts signed with employees for implementation of this project	PP
18.	PP	Pay rolls	Monthly salary slips for employees	PP
19.	PP	Technical Training Records	Technical Training Records of project 1. Training Records 2. Training register list	PP
20.	On-site VVB team	Photographs of Project Site	Photo taken by VVB during site visit including main equipment, swine farms, monitoring devices, etc.	On-site VVB team
21.	UNFCCC	CDM Approved Methodology ACM0010	"GHG emission reductions from manure management systems" (Version 08.0)	UNFCCC website
22.	UNFCCC	CDM Standard	Applicability of sectoral scopes version 01.0	Public Website
23.	VERRA	SD VISta PD Template	SD-VISta-Project-Description-Template-v1.0	VERRA
24.	VERRA	VCS Standard	VCS Standard version 4.4	VCS website
25.	VERRA	SD VISta Program Definitions	SD VISta Program Definitions, v1.0	SD VISta website
26.	VERRA	SD VISta Program Guide	SD VISta Program Guide, v1.0	SD VISta website

No	Author	Title	References to the document	Provider
27.	VERRA	SD VISTA	Sustainable Development Verified Impact Standard, v1.0	SD VISTA website
28.	Google	Google Earth Map	earth.google.com	Website
29.	State Administration for Market Regulation	National Enterprise Credit Information Publicity System	https://www.gsxt.gov.cn/	Website
30.	GS	Gold Standard	http://www.goldstandard.org/	Website
31.	UNFCCC	UNFCCC	http://cdm.unfccc.int	Website
32.	VCS	VCS	https://verra.org/project/vcs-program/	Website
33.	People's Government of Henan Province	2011-2015 Animal Husbandry Planning of Henan Province	https://wenku.baidu.com/view/f93b99e99dc3d5bbfd0a79563c1ec5da50e2d63c.html?wkts=1670391825135&bdQuery=河南畜牧发展规划	Website
34.	National Government	Law&Regulation	1. Farmland Irrigation Water Quality Standard (GB5084-2005); 2. Odor Pollutant Discharge Standard (GB14554-93); 3. Comprehensive Emission Standards for Air Polluted Areas (GB16297-1996); 4. Boiler Air Pollutant Emission Standard (GB13271-2014); 5. Environmental Noise Emission Standard for Industrial Enterprise Boundary (GB12348-2008) 6. Environmental Protection Law of P.R. China 7. Law of the People's Republic of China on the Environmental Impact Assessment 8. Labor Law of the People's Republic of China 9. Constitution of the People's Republic of China 10. Law of the People's Republic of China on Land Administration	Public Website
35.	International Labor Organization	ILO	https://www.ilo.org/global/lang-en/index.htm	Public Website
36.	Public information	Public information of local government	https://nynct.henan.gov.cn/	Public Website
37.	Public information	Income of rural residents in Henan Province	https://www.henan.gov.cn/2022/03-12/2413033.html	Public Website

No	Author	Title	References to the document	Provider
38.	Public information	Income of national residents	http://www.stats.gov.cn/tjsj/zxfb/202201/t20220117_1826403.html	Public 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.	2.2.1	Date : 20/01/2023
Description of CL				
It is observed that the stakeholder identification process is not provided in line with the request of the SD VISta PD template. Clarification is requested.				
Project participant response				Date : 22/02/2023
The stakeholder identification process has been revised according to the template requirements. To identify the project's key stakeholders, the identification process determined there were two main groups of stakeholders, those with a direct impact on the project or those with an indirect impact on the project. In this project, the process of stakeholder identification consists of three steps: communication and discussion, analysis of rights, questionnaire survey and on-site interview. Communication and discussion Before the implementation of the project, Muyuan Foods Co., Ltd. and consulting company held a communication and discussion meeting, to discuss the stakeholder in the project. The local government staff, decision makers from the PP and raw material suppliers attended. During this workshop, discussion focused on the impact of project activities on the community, a comprehensive list of the categories of people expected to be affected by the project were identified. This provided valuable background information for subsequent investigations and research. Analysis of rights An analysis of user rights helped provide a straightforward insight into which communities, community groups and stakeholders are present in the area. This process aided in identifying communities and stakeholders. Questionnaire survey and on-site interview After the discussion meeting, PP organized a team of people to interview the village representatives, relevant government officials and distribute the questionnaires to gather local residents' opinions. The questionnaire is aimed at the residents involved in the project. The results of the questionnaires show that all farmers have no objection to the project and they are all willing to participate. As a result, the direct stakeholders were deemed to local government, local residents around the project site, raw material suppliers (7 swine farms). The indirect stakeholders were identified as equipment providers. Please refer to the updated pd for details.				

Documentation provided by project participant	
/1/- version 2.0	
VVB assessment	Date: 27/02/2023
The revised PD is checked, CTI confirmed that the clarification has been added. The stakeholders are identified as those who deemed to either have a direct influence on the project or be directly influenced by the project, including but not limit to swine farms, local government, local residents near the project site and Equipment providers. Refer to section 2.3.1 of this report for detail assessment. CL 01 is closed.	

CL ID	02	Section no.	2.2.7	Date : 20/01/2023
Description of CL				
It is observed that the work opportunities demonstration is not provided completely in line with the request of the SD VISta PD template. Clarification is requested.				
Project participant response				Date : 22/02/2023
The work opportunities demonstration is added in updated version. The details as follows: Prior to the project started, by posting the labor law propaganda materials, broadcasting in the village, the local residents are aware of their right to participate in the work, more residents could participate in the recruitment. Furthermore, the project shall in the future apply mutual assistance rules and has a strong commitment to similar training opportunities for its staff. Please refer to the updated pd for details.				
Documentation provided by project participant				
/1/- version 2.0				
/17/				
/18/				
VVB assessment				Date: 27/02/2023
The revised PD is checked, CTI confirmed that the work opportunities demonstration has been clarified in line with the request of the SD VISta PD template. The project makes an effort to hire locally as evidenced by the onsite interview with project developer and project workers. Hiring criteria are based on skill sets without any discrimination as defined in the labor contract/17/. During the project implementation, the total number of the local residents who were provided by long-term jobs for project implementation and management is 14, and 7 of them are confirmed as women and they are paid monthly and equally with man for same positions. This is confirmed via checking the labor contract/17/, periodical payroll/18/ and on site interview with women employees. CL 02 is closed.				

CL ID	03	Section no.	2.2.8	Date : 20/01/2023
Description of CL				
It is observed that the worker's right demonstration is not provided completely in line with the request of the SD VISta PD template. ILO requirement and how to inform workers about their rights under relevant laws are all missing. Clarification is requested.				
Project participant response				Date : 22/02/2023
This project abides by all relevant China's workers' rights, laws, and regulations. The project ensures that any project employment is in conformance of the Core Labor Conventions of the International Labor Organization (ILO). The following conventions of the ILO have been ratified by the Government of China and are judged to be "In Force" in China by the ILO. 1) C029-Forced Labour Convention, 1930 (No. 29) 2) C100-Equal Remuneration Convention, 1951 (No.100) 3) C105-Abolition of Forced Labour Convention, 1957 (No. 105) 4) C111-Discrimination (Employment and Occupation) Convention, C1958 (No.111)				

5) C138–Minimum Age Convention, 1937 (No.138)	
6) C182–Worst Forms of Child Labor Convention, 1999 (No.182)	
Documentation provided by project participant	
/1/- version 2.0 /17/ /35/	
VVB assessment	Date: 27/02/2023
The revised PD is checked, CTI confirmed that the descriptions have been clarified accordingly. The PD/1/ states that the project shall meet or exceed all applicable laws and regulations regarding workers' rights. Relevant law < Labor Law of the People's Republic of China>/34/ and Core Labor Conventions of the International Labor Organization (ILO)/35/ to which the PPs have to comply is checked by CTI, this law is confirmed as the national law to guarantee the employment's right, health and safety. The hiring process is governed by the labour code and all workers have a contract in which its duties, rights and laws that protect them are reported. This is confirmed via checking the labor contract/17/ and on site interview with representatives from employees. Thus CTI is able to confirm that the project has exceeded all local labor requirements and ensured that all workers were apprised of their rights, complying with the Core Labour Conventions of the ILO/35/. No labor conflicts were evidenced during the interviews with employees. CL 03 is closed.	

CL ID	04	Section no.	2.2.9	Date : 20/01/2023
Description of CL				
PP stated that project is in compliance with local and national laws on Environmental, Health and Safety, however, the exact laws are not provided. Clarification is requested.				
Project participant response				Date : 22/02/2023
The project owner has referenced Labor Law of the People's Republic of China and adapted them to meet the local conditions to ensure workers' health and safety. The workers' health and safety policy, including items covering the health insurance scheme for workplace accidents and evacuation plans is made available for workers.				
Documentation provided by project participant				
/1/- version 2.0 /35/ /34/				
VVB assessment				Date: 27/02/2023
The revised PD is checked, CTI confirmed that the exact laws has been clarified. The PD/1/ states that the project proponent shall meet <Safety and Healthy in Agriculture> published by ILO/35/ and <Labor Law of the People's Republic of China>/34/ regarding workers' health and safety. Both the two regulations are confirmed as international and national rule and laws which can be used as the occupational safety regulations to obey. The activities that endanger workers are those related to workplace accidents due to fire incident, leakage of leachate and the odour generation and diffusion that requires qualified personnel and necessary safety instruments such as gas detection alarm are equipped to detect gas concentrations in different locations of the Raw materials warehouse, audible and visual alarm will be issued if it exceeds the normal range to prevent any risk, which has been confirmed during site observation and interview with the employees and local officers. In conclusion, CTI considers that occupational safety assessment was comprehensive, and that measures have been put in place to minimize risk to workers. CL 04 is closed.				

CL ID	05	Section no.	2.2.12	Date : 20/01/2023
Description of CL				
The actual status of how the stakeholder access to project documentation is not clarified.				
Project participant response				Date : 22/02/2023

The website link (https://registry.terra.org/app/projectDetail/VCS/2876) of the documentation is added in updated version.	
Documentation provided by project participant	
/1/- version 2.0	
VVB assessment	Date: 27/02/2023
The revised PD is checked, CTI confirmed that the access to project documentation has been clarified. The full project documentation has been published on VERRA website for public comments as per checking the VCS website (https://registry.terra.org/app/projectDetail/VCS/2876). Thus the local stakeholders can easily download documents from the website. The project document, monitoring reports and other relevant documents will be provided as requested in a timely manner once requested by local stakeholders which is confirmed by PP and interview with local stakeholders. Furthermore, all the stakeholders can contact the project owner via telephone, email or We Chat regarding project documentation of every milestone of the project development, including registered, issuance, etc. In conclusion, based on the testimonies of local stakeholders regarding the well-established communication channels with the project management, that the project has and will continue to make project documentation accessible to all stakeholders. CL 05 is closed.	

CL ID	06	Section no.	2.2.13	Date : 20/01/2023
Description of CL				
The information to stakeholders on assessment process is not clarified based on the actual process.				
Project participant response				Date : 22/02/2023
The validation and verification site visit were held on 09-January-2023, PP have informed all stakeholders to attend this meeting on 01-January-2023, to ensure that assessor would be able to independently ask questions of all stakeholders regarding project consultations.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				Date: 27/02/2023
The revised PD is checked, CTI confirmed that the information to stakeholders on assessment process has been clarified based on the actual process. In particular the project proponent informed and explained about the means of the validation process through email, telephone or We Chat as requested before the validation site visit took place as confirmed by site interview with local stakeholders and they will call if they have any issues about the project at anytime. This was also confirmed by the PP and interview with local stakeholders during the site visit. All interviewees were well aware of the nature of the audit process and declared being informed of the auditors visit with anticipation. Hence CTI confirmed that all stakeholders are likely to know of future assessments. CL 06 is closed.				

CL ID	07	Section no.	2.3.2	Date : 20/01/2023
Description of CL				
The demonstration of the rights to lands, territories and resources directly affected by project activities is not provided in line with the SD VISta PD template. PP just justified the project ownership but not the lands. Clarification is requested.				
Project participant response				Date : 22/02/2023
According to the Constitution of the People's Republic of China and the Law of the Peoples Republic of China on Land Administration, the land is state-owned land. The project owner has obtained the construction right to use the land authorized by Henan province Natural Resources and Planning Bureau, and paying annually land tax to the government, the process has been completed before the implementation of project.				
Documentation provided by project participant				
/1/- version 2.0				

VVB assessment	Date: 27/02/2023
The revised PD is checked, CTI confirmed that the demonstration of the rights to lands, territories and resources directly affected by project activities has been updated in line with the SD VISta PD template request. Refer to section 2.4.2 of this report for detail assessment. CL 07 is closed.	

CL ID	08	Section no.	2.3.5	Date : 20/01/2023
Description of CL				
PP is not clarify that why there are no negative effects on the land or resources due to the project activity.				
Project participant response				Date : 22/02/2023
Before the construction of the project, the project land belongs to the state-owned land. PP had granted permission to operate in their areas of jurisdiction and paid land use tax in accordance with The Law of Land Administration of the People's Republic of China.				
Documentation provided by project participant				
/1/- version 2.0 /34/				
VVB assessment				Date: 27/02/2023
The revised PD is checked, CTI confirmed that the clarification has been added. The project land belongs to the state-owned land. PP had granted permission to operate in their areas of jurisdiction and paid land use tax in accordance with Law of the People's Republic of China on Land Administration/34/, hence there are no negative effects on the land or resources due to the project. Therefore, the allocation of restitution or compensation to any parties is not required. CL 08 is closed.				

CL ID	09	Section no.	2.3.6	Date : 20/01/2023
Description of CL				
PP is not clarify that why no removal or relocation will occur as a result of this project.				
Project participant response				Date : 22/02/2023
Before the construction of the project, the land here was vacant near swine farms and didn't have any negative effects on Indigenous people livelihood and culture. Therefore, the project activity does not lead to removal or relocation of property rights holders from their lands or territories, and do not force rights holders to relocate activities important to their culture or livelihood.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				Date: 27/02/2023
The revised PD is checked, CTI confirmed that the clarification has been added. project land belongs to the state-owned land, before the construction of the project, the land here was vacant and didn't have any negative effects on their livelihood and culture. Hence there are no activities lead to involuntary removal or relocation of property rights holders from their lands or territories, or force rights holders to relocate activities important to their culture or livelihood involved in the project. Therefore, no removing property rights holders from their lands or territories occurred under the project implementation. CL 09 is closed.				

CL ID	10	Section no.	3.2	Date : 20/01/2023
Description of CL				
For the impacts on stakeholders, not all the stakeholders are listed in the table that impacted by the project, clarification is requested.				
Project participant response				Date : 22/02/2023

Impact #4 Improved economic conditions The affected stakeholder groups include local residents around the project site, the swine farm, unmanaged SWDS and local government. These impacts are actual impact which is a direct consequence of the project activity.	
Impact #5 Promoted the development of agriculture at that time The affected stakeholder groups include local residents around the project site and local government. The impact is actual impact which is a direct consequence of the project activity. These two expected impacts are added. The details can refer to the table in section 3.2 of the latest JPM.	
Documentation provided by project participant	
/1/- version 2.0	
VVB assessment	Date: 27/02/2023
The revised PD is checked, CTI confirmed that clarification is added. Refer to section 3.1.2 of this report for detail assessment. CL 10 is closed.	

Table 3. CAR from this verification

CAR ID	01	Section no.	Cover	Date : 20/01/2023
Description of CAR				
In cover page, 1. Host country name is missing. 2. Information of Assessor Contact is missing. 3. History of SD VISta Status is not provided. 4. Expected Future Assessment Schedule is not clear as PP intend to combine the validation and 1 st verification process of the SD.				
Project participant response				Date : 22/02/2023
1. The project location is Henan Province, P.R. China. 2. The Information of Assessor Contact is added in the latest SD VISta PD. 3. The SD VISta is under validation and verification. 4. The initial SD VISta verification is happening concurrently with the validation. It is estimated that the Project will verify every year subsequently.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				Date: 27/02/2023
1. The revised PD is checked, CTI confirmed that name has been added correctly. 2. The revised PD is checked, CTI confirmed that Assessor Contact information has been added accordingly. 3. The revised PD is checked, CTI confirmed that history has been correctly provided. 4. The revised PD is checked, CTI confirmed that Expected Future Assessment Schedule has been updated to be reasonable. CAR 01 is closed.				

CAR ID	02	Section no.	1	Date : 20/01/2023
Description of CAR				
For table 1, the net impact on SDG indicator for 8.5.2 is not correct.				
Project participant response				Date : 22/02/2023
The net impact on SDG indicator for 8.5.2 is revised to decrease.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				Date: 27/02/2023

The revised PD is checked, CTI confirmed that the revision is reasonable for the indicator.
CAR 02 is closed.

CAR ID	03	Section no.	2.1.2	Date : 20/01/2023
Description of CAR				
The project activities involved in the project that will achieve net sustainable development benefits are not listed clearly and how these activities achieve the SD benefits are not specified clearly.				
Project participant response				Date : 22/02/2023
The stakeholder identification process has been revised according to the template requirements. The details as follows: Biogas is captured for heat production The biogas generated during the treatment process is captured for heat generation, the heat generated are all used by the operation of AWMSs and the 7 swine farms, which was provided by the coal-fired boiler without the project. Prior to the implementation of the project, all manure waste produced from the existing 7 swine farms was left to decay in 7 uncovered anaerobic lagoons at the livestock farms and methane is emitted to the atmosphere directly without any methane recovery and destruction facility. The project activity reduces of GHG and provides clean energy. Provide employment opportunity Muyuan WJZ AWMS GHG Mitigation Project in Henan Province Project currently employs 14 full time staff members. This includes 7 female staff and 7 male staff responsible for daily managing, data recording and operation maintaining when necessary. The project activity contributes to SDG 8 – Decent Work and Economic Growth, by aiming to increase well-paying employment opportunities by hiring residents in the area. Furthermore, the project is implementing an Anti-Discrimination Recruitment Policy ensuring that the hiring and recruitment process does not discriminate based on gender and makes sure that an adequate number of women and members of other underrepresented groups are encouraged and have the opportunity to apply. Organic fertilizer production The project installs 7 sets of animal waste management system (AWMSs) to treat the manure which product the bio-organic fertilizers. The reuse of swine manure reduces the methane emissions from uncovered anaerobic lagoons in the project scenario. After liquid-solid separation, the solid will be treated in aerobic composting system and the organic fertilizers will be produced, which partly will be supplied to the farmers living around free and partly will be sold as fertilizer. The project activity would help ease their pressures in the economy. The project activity has identified that it supports SDG 12 (Responsible Consumption and Production). This is because the swine manure can be reused and recycled to produce organic fertilizers. The activity also contributes to SDG 13 -Climate Action as the composting process avoid potential GHG emissions that would have been generated if the manure treated in uncovered anaerobic lagoons.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				Date: 27/02/2023
The revised PD is checked, CTI confirmed that the project activities have been correctly provided. Refer to section 2.2.2 of this report for detail assessment. CAR 03 is closed.				

CAR ID	04	Section no.	2.1.3	Date : 20/01/2023
Description of CAR				
For the implementation schedule of the project, 1. The time period of the project activities that will achieve net sustainable development benefits are not listed. 2. The time period of the local stakeholder consultation is missing. 3. The project start date is not defined as per the SD VISta version 1.0.				

4. The process of the VCS and SD VISta need to be provided as per the actual status of the two schemes.	
Project participant response	Date : 22/02/2023
1.The time period of the project activities involved in SDG targets are added. The details can refer to the table in section 2.1.3 of the latest SD VISta PD. 2. The time period of the local stakeholder consultation has been added. 3. The project start date which activities that lead to the generation of sustainable development benefits are implemented is 15-July-2020. 4. The process of the VCS and SD VISta are added. The details can refer to the table in section 2.1.3 of the latest SD VISta PD.	
Documentation provided by project participant	
/1/- version 2.0 /16/	
VVB assessment	Date: 27/02/2023
1. The revised PD is checked, CTI confirmed that time period of the project activities have been added and verified as correct and actual. 2. The revised PD is checked, CTI confirmed that time period of the local stakeholder consultation is added which is verified as correct by checking the questionnaires/16/. 3. The revised PD is checked, CTI confirmed that project start date has been defined correctly in line with the SD VISta version 1.0. 4. The revised PD is checked, CTI confirmed that process of the VCS and SD VISta have been provided as per the actual status of the two schemes. CAR 04 is closed.	

CAR ID	05	Section no.	2.1.8	Date : 20/01/2023
Description of CAR				
The description of social, economic, and natural capital conditions at the start of the project is not provided as per the request of SD VISta PD template.				
Project participant response				Date : 22/02/2023
The description of social, economic, and natural capital conditions at the start of the project is revised as per the request of SD VISta PD template. The details as follows: Social capital conditions Before the implementation of the project, the local government issued a series of policies to promote the livestock and poultry farming, with a substantial increase in output. However, the number of livestock and poultry manure also increased rapidly. Such a large amount of swine manure didn't match the technology of resource utilization, The utilization rate of waste resources was still in the initial stage. Otherwise, the communities surrounding the project area at the start of the project were significantly lack the awareness of acting to climate change, little did they know about the huge amounts of methane produced by animal waste which have adverse impact on climate change. The low utilization rate of waste resources has caused a series of social and environmental problems the is bound to cause more serious ecological environment and social problems, such as the air, water and land pollution, and seriously affecting human and animal health. Through the project activities, the environmental problems caused by livestock and poultry manure have been effectively alleviated, and the process of local waste recycling has been promoted. At the same time, the employment created by the project activities has also increased the local employment rate. Economic capital conditions For the economic baseline scenario, it can be assumed that without the project there would be less employment opportunities within the project's operating area. There are additional lost economic opportunities for the local residents. Furthermore, the swine manure will be treated in aerobic composting system and the organic fertilizers will be produced, which partly will be supplied to the farmers living around free and partly will be sold as fertilizer, under the baseline economic scenario, the local farmers would spend more money on buying fertilizer. Therefore, the local farmers make an economic saving through the project that would				

not be available to them were the project not to exist.

Natural capital conditions

The project installs 7 new set of animal waste management systems (AWMSs) to replace the previous uncovered anaerobic lagoons for the manure treatment. The project activity will reduce of GHG in the atmosphere through avoiding methane emissions from controlled aerobic methane emissions generated in the previous manure treatment process of uncovered anaerobic lagoons.

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VVB assessment

Date: 27/02/2023

The revised PD is checked, CTI confirmed that description of social, economic, and natural capital conditions at the start of the project have been provided as per the request of SD VISta PD template. Refer to section 2.2.7 of this report for detail assessment.

CAR 05 is closed.

CAR ID	06	Section no.	2.1.10	Date :	20/01/2023
Description of CAR					
1. For all the threats listed in the table, the results that created by the threats are missing.					
2. For the last row, the threat of Leakage of manure waste into ground water is not specified clearly.					
Project participant response					Date : 22/02/2023
1. The results created by threats is added.					
2. The relevant description has been added: Leakage of manure waste into ground water that will cause the water pollution.					
Documentation provided by project participant					
/1/- version 2.0					
VVB assessment					Date: 27/02/2023
1. The revised PD is checked, CTI confirmed that results that created by the threats have been provided.					
2. The revised PD is checked, CTI confirmed that description has been updated to be reasonable.					
Refer to section 2.2.9 of this report for detail assessment.					
CAR 06 is closed.					

CAR ID	07	Section no.	2.1.11	Date :	20/01/2023
Description of CAR					
The description in section 2.1.11 is not in line with the SD VISta PD template that need to describe the plan to maintain and enhance project benefits after project activities have ceased.					
Project participant response					Date : 22/02/2023
The description of benefit performance is revised in line with the SD VISta PD template. The details as follows:					
1) Project adopts the advanced technology and equipment to reuse the animal manure, which is in line with the current policies and local development plans. Thus, even if the project is ceased, the project will serve as a reference for the local government to further develop similar projects and improve the local ability in waste recycling.					
2) The project activity reduces of GHG in the atmosphere through avoiding methane emissions from anaerobic treatment of swine manure and waste water. Capture of methane will significantly reduce the odor nuisance in the vicinity of the facility. As a kind of renewable energy, the biogas generated will be used for heat generation, which will help to lessen the reliance on fossil fuels.					
3) As the project runs, local residents will feel the benefits of carbon reduction project, such as the project activities reduce odors from animal waste, get the fertilizers for free, etc. At the same time, during the annual training, the project proponent has also repeatedly emphasized the importance of carbon reduction and carbon neutrality and popularized related knowledge. Therefore, local residents have a deeper understanding of the significance of environmental protection and carbon reduction. Beyond the lifetime of this project, local residents can continue to improve themselves in this area because they already have the knowledge base.					

Documentation provided by project participant	
/1/- version 2.0	
VVB assessment	Date: 27/02/2023
The revised PD is checked, CTI confirmed that the description has been updated to be in line with the SD VISta PD template request. Refer to section 2.2.10 of this report for detail assessment. CAR 07 is closed.	

CAR ID	08	Section no.	2.2.2	Date : 20/01/2023
Description of CAR				
The stakeholder groups listed in section 2.2.2 are not same to the identification in section 2.2.1. Revision is requested.				
Project participant response				Date : 22/02/2023
The stakeholder groups are revised and the process of identification is updated accordingly.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				Date: 27/02/2023
The revised PD is checked, CTI confirmed that the stakeholder groups listed in section 2.2.2 are consistent with the identification in section 2.2.1 CAR 08 is closed.				

CAR ID	09	Section no.	2.2.3	Date : 20/01/2023
Description of CAR				
The stakeholder consultation information provided in section 2.2.3 is not in line with the SD VISta PD template that request to provide the information about how potential cost, risks and benefits was shared with each stakeholder group.				
Project participant response				Date : 22/02/2023
The stakeholder consultation information provided in section 2.2.3 is not in line with the SD VISta PD template that request to provide the information about how potential cost, risks and benefits was shared with each stakeholder group.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				Date: 27/02/2023
The revised PD is checked, CTI confirmed that the stakeholder consultation information has been provided in line with the SD VISta PD template requests. Refer to section 2.3.3 of this report for detail assessment. CAR 09 is closed.				

CAR ID	10	Section no.	3.1	Date : 20/01/2023
Description of CAR				
The information provided in section 3.1 is not in line with the SD VISta PD template that request to provide the social, economic and cultural conditions, diversity within and between the stakeholder groups and the interactions between stakeholder groups, significant changes in these elements in the pas at the project start date.				
Project participant response				Date : 22/02/2023
The statement in this section is revised in updated version in line with the SD VISta PD template. The details as follows: Conditions at Project Start For the local government, prior to the implementation of the project, local government has effectively implemented the suggestions on promoting the development of live pig production and stabilizing market supply Cluster Since 2007, and the local farming mode has transferred from individual farming to large-scale, intensive and standardized farming, with a substantial increase in output. Such a large amount of swine manure is bound to cause more serious ecological environment and social problems,				

such as the air, water and land pollution, and seriously affecting human and animal health. For the local residents, under the baseline scenario, the per capita disposable income of rural residents in Henan Province was 17,533 RMB in 2021, which was lower than that of national residents. The situation is worse in rural and remote area.

For the swine farms, before the project activities, all swine manure waste produced was left to decay in uncovered anaerobic lagoons, the energy consumption fee increased the financial burden of the swine farm.

Diversity between/within the stakeholders

Prior to the implementation of the project, local government has effectively implemented the 2011-2015 Animal Husbandry Planning of Henan Province Since 2011, and the local farming mode has transferred from individual farming to large-scale, intensive and standardized farming, the local residents' working priorities had also shifted from farming to working in the livestock farm.

Interactions between/within the stakeholders

In recent years, China has been continuous promoted the comprehensive utilization of manure of livestock, the local government also supports relevant enterprises including the swine farm and regularly holds business service seminars to provide assistance for technical and business problems. Before the implementation of the project, all manure waste produced from the existing swine farms was left to decay in uncovered anaerobic lagoons at the livestock farms and methane is emitted to the atmosphere directly without any methane recovery and destruction facility.

Significant Changes in the Past

In the past, the local economic was underdeveloped and the government didn't have enough experience to develop policies and strategies, to optimize rural economic reform and promote economic development. Due to the low economic growth in the past years, the local residents were mainly lived by farming and seeking to go outside of their villages for living, and most of the female have to stay at home with no income.

Documentation provided by project participant

/1/- version 2.0

VVB assessment

Date: 27/02/2023

The revised PD is checked, CTI confirmed that the information provided in section 3.1 is in line with the SD VISta PD template request.

Refer to section 3.1.1 of this report for detail assessment.

CAR 10 is closed.

CAR ID	11	Section no.	3.3	Date	: 20/01/2023
Description of CAR					
The parameter of training times is not listed in table 1 as SDG claim indicator, revision is requested.					
Project participant response					Date
The parameter of training times is revised in updated version. The parameter related to the amount of the organic fertilizers generated will be monitored in this project. The details can refer to the table in section 3.3 of the latest SD VISta PD.					: 22/02/2023
Documentation provided by project participant					
/1/- version 2.0					
VVB assessment					Date
The revised PD is checked, CTI confirmed that this section has been updated to be consistent with other parts.					: 27/02/2023
CAR 11 is closed.					

CAR ID	12	Section no.	4.1	Date	: 20/01/2023
Description of CAR					
The information provided in section 4.1 is not in line with the SD VISta PD template that request to provide the statement of natural capital and ecosystem services at the start of the project.					
Project participant response					Date
The statement of natural capital and ecosystem services is revised in line with the SD VISta PD					: 22/02/2023

template. The details as follows:

The state of natural capital and ecosystem services at the start of the project

Before the project starts, the common practice for animal waste management is building uncovered anaerobic lagoons/ponds at related swine farms, the swine manure was left to decay in the uncovered lagoon at the swine farms and methane is emitted to the atmosphere directly without any methane recovery and destruction facility. Also, in China, uncovered anaerobic lagoons are a manure treatment method recognized by the state. In addition, since there is no legal regulation to mandate to implement anaerobic digestion, aerobic or other biological treatment techniques to treat the swine manure and no legal regulation to mandate to capture and/or utilize methane generated at the common treatment method, therefore the continue of those common practice to treatment the manure i.e., uncovered anaerobic lagoons and the natural stacking are the most economic, viable and reasonable.

The uncovered anaerobic lagoons and anaerobic decay in an unmanaged treatment technology belong to anaerobic treatment technology that can produce methane, and the methane is usually released into the atmosphere and poses a threat to the climate change because there are no laws and regulations requiring the recycling of methane.

Before the project start, the swine manure is disposed of in uncovered anaerobic ponds built in swine farm and the site selection of swine farms will not be located in areas with high conservation value. It will not affect the local rare plants, animals, landscape, topography and regional hydrology. Therefore, before the implementation of the project, the impact of anaerobic treat of swine manures only relevant to climate change.

At the start of the project, condition of the climate in the project area are: Southwest Henan Province has four distinct seasons, mild climate, large annual temperature difference, moderate rainfall, sufficient sunshine, long frost-free period, and many easterly winds, belonging to the subtropical monsoon climate. The annual average temperature is 15.0 °C. The annual average precipitation is 800 mm.

Potential Threats

At the beginning of the project, the use of anaerobic treatment technology (uncovered anaerobic lagoon for swine manure) to treat swine manure will not only produce methane emissions, but also cannot effectively exert the fertility of biomass. Henan province aims to accelerate the development of agriculture, so there is a growing demand for high-quality organic fertilizers. In addition, methane is one of the important gases affecting global climate change, therefore, the disposal of swine manure by anaerobic treatment methods poses a threat to natural capital and ecosystem services.

Documentation provided by project participant

/1/- version 2.0

VVB assessment

Date: 27/02/2023

The revised PD is checked, CTI confirmed that the information provided in section 4.1 is in line with the SD VISta PD template request.

Refer to section 4.1.1 of this report for detail assessment.

CAR 12 is closed.

CAR ID	13	Section no.	4.2	Date :	20/01/2023
Description of CAR					
For impact #3 in section 4.2, PP stated that the project activity will help to relieve the CCPG's reliance on fossil fuel which is not correct, revision is requested.					
Project participant response					Date :
For impact #3 in section 4.2, the modified details are as follows: Biogas is a kind of renewable energy. All the biogas produced from the project is used for heat generation, no surplus biogas for the flaring system.					22/02/2023
Documentation provided by project participant					
/1/- version 2.0					
VVB assessment					Date:
					27/02/2023

The revised PD is checked, CTI confirmed that the information provided in section 4.2 is updated and correct.
Refer to section 4.1.2 of this report for detail assessment.
CAR 13 is closed.

CAR ID	14	Section no.	4.4	Date : 20/01/2023
Description of CAR				
The information provided in section 4.4 is not in line with the SD VISta PD template.				
Project participant response				Date : 22/02/2023
The description of this section is revised in updated version according to the SD VISta PD template. The details as follows: The anticipated net impact of project activity is positive for natural capital and ecosystem services, since the project activity is mainly through introducing an aerobic composting system to treat the swine manure, thereby realizing the recycling of waste and reducing its methane emissions during the anaerobic treatment. And all the heat generated will be used by swine farms which was provided by the coal-fired boiler without the project. The project activity will help to promote the use of renewable energy. This project is put into operation on 15-July-2020, the GHG emission reduction generated is about 3,216,630 tCO₂e from 15-July-2020 to 14-July-2030, with an average annual GHG emission reduction of 321,663 tCO₂e. It is estimated that approximately 1,637 tons of animal manure will be handled daily by the AWMS. The biogas released during the anaerobic digestion will be collected and used for heat production. The heat production is estimated to be 657,340GJ. 3,287.15*10⁴m³ of biogas are expected to be generated by the project. And 77,693tons of organic fertilizers will be produced annually.				
Documentation provided by project participant				
/1/- version 2.0				
VVB assessment				Date: 27/02/2023
The revised PD is checked, CTI confirmed that the information provided in section 4.4 is in line with the SD VISta PD template request. Refer to section 4.1.5 of this report for detail assessment. CAR 14 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: