VCS VALIDATION REPORT

PROJECT REIGNITE: TURNING FARM WASTE TO CLIMATE ACTION

Document Prepared by RINA Services S.p.A (RINA)

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Report Title	Validation report of Project Reignite: Turning Farm Waste to Climate Action
Client	SRC-Natura Sure Pvt. Ltd.
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Summary:

RINA Services S.p.A. (RINA) has performed the validation of the aforementioned grouped project. The project is about involving the farmers to utilize agricultural waste into biochar applying flame curtain pyrolysis method in steel-shield soil pits in India.

The objective of validation is to have an independent evaluation of a project activity by a VVB against the requirements of the VCS standard Version 4.4 /04/ and GHG program applied, based on the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS requirements/04/, GHG program requirements and host party criteria are validated to confirm that the project design/01/, as documented, is sound and reasonable and meets the identified criteria. Validation is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The purpose of the validation engagement was to conduct, in accordance with the VCS Program rules, an ex-post independent assessment of the project activity, estimated GHG emission reductions and removals that would occur as a result of the project implementation. The validation engagement was carried out through a combination of documents review and direct interviews with relevant personnel. As part of the validation engagement 6 findings were raised: 1 FAR, 3 Clarification requests and 02 corrective action requests were raised during the audit process. All the findings were addressed and closed. These findings are described in Appendix I of this report. The project complies with the validation criteria, and RINA holds no restrictions or uncertainties with respect to the compliance of the project with the validation criteria.

CONTENTS

1 INTRODUCTION

1.1 Objective

Explain the purpose of the validation.

RINA Services S.p.A. (RINA) has been commissioned by SRCNatura Sure Pvt. Ltd. to perform an independent validation assessment *of the project titled – "Project Reignite: Turning Farm Waste to Climate Action" (VCS ID- 4679)*. The audit team has reviewed the project description and monitoring plan.

The objective of the Validation is to have an independent evaluation of a project activity by a VVB against the requirements of the VCS Version 4.4/04/ and GHG program applied, based on the *VCS* project design *(PD)*/01/. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS requirements/04/, GHG program requirements and host Party criteria are validated to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Verified Carbon Units (VCUs).

The objective of the verification work is to comply with the requirements of Verified Carbon Standards requirements. According to this assessment RINA shall:

- ensure that the project activity has been implemented and operated as per the PD/01/, and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place,
- the project's baseline and monitoring plan is assessed against "Methodology for Biochar Utilization in Soil and Non-Soil Applications v1.*1*., dated *05 July* 2023, Sectoral scope 1*3/05/*
- ensure that the *VCS* PD/01/ and other supporting documents provided are complete, verifiable and in accordance with applicable VCS methodology/requirements /04/
- ensure that the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology */04/*
- evaluate the data recorded and stored as per the applicable requirements /20/
- assessment of the sustainability monitoring parameters as per the VCS standard version 4.4 requirements /04/.

1.2 Scope and Criteria

Describe the scope and criteria of the validation.

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. The validation scope is to review the VCS PD/01/ against the VCS criteria which refers to VCS Version 4.4 standard and all the GHG program requirements/06/. Validation *assessment* is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the *VCS* PD/01/.

In the case of VCS project activities, the scope is set by:

- VCS v4.4 standard/04/ requirements
- Clean Development Mechanism Validation and Verification Standard (VVS) for programmes of activities, v3.0/06/
- Baselines and monitoring methodologies (including GHG inventories)/05/
- Environmental issues relevant to the applicable sectoral scope
- Current technical and operational knowledge of the specific sectoral scope and information on best practice
- Stakeholder consultation and feedback

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the VCS PD/01/. The focus of the assessment team is to identify the significant risks for the project implementation and the generation of VCUs.

1.3 Reasonableness of Assumptions

All the revisions of the validation report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation activities had been completed according to the pertinent the VVB's instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for VCS and CDM validation and verification. The level of assurance of the validation report is defined as reasonable. The VVB confirms that a reasonable level of assurance has been achieved during the verification process.

The validation team and technical reviewers consist of the following personnel.

Role	Last Name	First Name	Country

Team Leader, Verifier & Technical Expert TA 13	Singh	Vinay	India
Technical Reviewer	Amalorpavanathan	Cyril A A	India

1.4 Summary Description of the Project

The project is about involving the farmers to utilize agricultural waste*/residue* into biochar applying flame curtain pyrolysis method in steel-shield soil pits in India. *As the farmers* practice traditional methods of waste disposal: open field burning and decomposition of biomass. Open field burning boosts carbon dioxide (CO2) emissions and decomposition of waste biomass results in methane (CH4) *emissions*, magnifying environmental impacts locally and globally.

In Project Reignite, farmers *will be* us*ing* the flame curtain pyrolysis method in steel-shield soil pits to process agricultural waste into biochar. The fire on top creates a 'flame curtain' that limits oxygen access to the biomass below. This initiates the pyrolysis process, producing high-quality biochar. Once the pit is full, the fire is extinguished using water, nutrient solutions, or soil. The dried biochar is then mixed with manure and applied deep into the soil (more than 10 cm subsurface).

This is a grouped project in India. The first instance of the grouped project is being implemented with 5,000 farmers (defined as biochar producers in the project) in the state of Odisha, India. The project has a crediting period of 7 years, renewable twice. The first instance of this grouped project is expected to remove an estimated 110,760 tCO2e annually, leading to the removal of estimated 775,320 tCO2e over the first crediting period of 7 years.

2 VALIDATION PROCESS

2.1 Method and Criteria

Validation was conducted using RINA procedures in line with the requirements specified in the VCS Standard version 4.4/04/ and CDM VVS v3/06/.

On-site audit was conducted on 26thJuly -28th *October* 2023 to assess project activity and stakeholders' consultation process. Validation was conducted using RINA procedures in line with the requirements specified in the VCS Standard version 4.4/04/ and CDM VVS v3/06(a)/. The sampling process under this Validation has been done in accordance with clause 6 (c) (iii) Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 09.0 and to calculate the sample size statistical software has been used with confidence level of 90% and margin of error acceptance as 10% for determining the sample size for 5000 farmers. /06(b)/.

VVB sampling

VVB applied CDM sample guidelines with confidence/precision criterion of 90/10 to assess the sample size for verification.

The assessment team used sample size calculator software (http://www.raosoft.com/samplesize.html) to assess the sample size and based on that carried out simple random sampling. With the application of calculator a margin error of 10% and confidence level of 90%, the sample size of 67 has been estimated for random assessment by VVB. During the validation process, the audit team assessed the sample size and interviewed sixty-seven farmers on the ground for audit (validation).

Assessment of PP's sample

Also, as per Section 6 of the CDM Standard for Sampling & Surveys paragraphs 29 to 38

Para 29: The validation team confirms that it has applied the 'acceptance sampling' approach for the validation of the PP's sampled records. It has selected a random sample of the PP's sample records.

-Para 30, 31: The validation team has considered an AQL of 1.0% and UQL of 20%, with a producer risk level of 5% and consumer risk level of 10%. These are acceptable limits for sample-based inspection and have been defined in Table 2 of the CDM Standard for Sampling & Surveys. Using these settings, the sample size for the validation team came to 18, as specified by Table 2. The validation team has therefore chosen 18 samples from the PP's sample records.

-Para 32, 33: The sample size (n) for acceptance sampling by the validation team was 18, as explained above. Therefore, n = 18. Table 2 from the CDM Standard informs us that the acceptance number (c) for a sample size of n = 18 is 1. This means that the validation team will accept the PP's sample records if the number of discrepant records is not more than 1. This rule has formed the basis for the validation team's acceptance criteria for the sample records of the PP.

-Para 34, 35, 36: The validation team did not note any discrepant records during its acceptance sampling check, therefore, the provisions of these paragraphs were not used

-Para 37, 38: The validation team has checked the laboratory test reports of the samples taken by the PP. The team observed that the tests were conducted by recognised laboratories that were accredited by national accreditation bodies, and therefore, their reported results could be considered reliable.

-Para 39: None of the three conditions stated at paragraph 39 of the CDM Standard are applicable in the case of the project.

→The estimated value of the annual emission removals by the project are more than the stated limit of 100,000 tCO2; therefore, conditions (a) is not applicable;

→There are no security concerns in the geographic region that hosts the project; hence, condition (b) is not relevant;

→The project is located within the national boundaries of India and therefore this condition also is inapplicable, since it is related to LDCs or to host countries with 10 or fewer registered CDM project activities.

The validation assessment consists of the following phases:

- Document review;
- Follow-up actions;
- Onsite audit and interviews
- The resolution of outstanding issues and
- Issuance of the final validation report.

The information provided by the project participants is assessed by applying the means of verification specified in the VCS v4.4, Toolkit/04/ and the CDM VVS V3/06(a)/.

The audit team first performed the desk review, followed by on-site assessment and direct interview and discussion *with the stakeholders, villagers and community people*, which results in the formation of a draft report and a list of findings. The next step involves the evaluation of the findings through direct communication with the PPs and then finally the preparation of the *valid*ation report.

This verification report and other supporting documents then undergo an internal quality control by the VVB before submission to the VCS. The following sections outline each step in more detail.

2.2 Document Review

VVB audit team cross verified the documentation and discussed the same with PP during on-site audit. Also, the technical equipment and its details were cross verified with the documents provided by PP. The following additional documentation, provided by project personnel in support of the aforementioned documents, was also reviewed by the audit team is in Appendix *II* of this report.

2.3 Interviews

Audit team conducted the interview process during its on-site verification of the project site visit conducted on 26th -28th *October* 2023. The key personnel interviewed, and the main topics interviewed are summarized in the table below:

Sr. No	Date	Name and Role	Organization	Topic
1	26 Oct 2023	Rajesh Aggarwal, Director	SRCNatura Sure Pvt. Ltd.	Project activity, baseline survey and scenario
2	26 Oct 2023	SR Sahoo, Field Officer	*Puri,* SRCNatura Sure Pvt. Ltd.	Local stakeholders, villagers

3	26 Oct 2023	Abhijeet Singh, Project Manager	SRCNatura Sure Pvt. Ltd.	Project details, implementation status, biochar production process
4	26 Oct 2023	Srimantri Mishra, Field Officer	Puri, SRCNatura Sure Pvt. Ltd.	Biomass collection, biochar production process, safety trainings
5	26 Oct 2023	Lataa Sethi, Biochar Producer	Puri, SRCNatura Sure Pvt. Ltd.	Project benefits, biochar application and production process
6	27 Oct 2023	Rupasmita Swain, Field Officer	Kendrapada, SRCNatura Sure Pvt. Ltd.	Project benefits, biochar production and application
7	27 Oct 2023	Prassana Behera, Villager	Kendrapada	Stakeholder consultation, benefits to village,
8	28 Oct 2023	Saroj Pradhan Sahoo, Area Manager	Kendrapada, SRC Natura Sure Pvt. Ltd.	Biomass and involvement of villagers and local farmers, training part
9	28 Oct 2023	Ranjita Pradhan, Biochar Producer	Kendrapada, SRCNatura Sure Pvt. Ltd.	Biochar production process

List of Interviewed villagers, community people and relevant stakeholders is attached in Annexure III below.

2.4 Site Visits

Audit team had conducted a site inspection by physical visit to the *first project instance located in Odisha* and discussed different topics as mentioned under section 2.3 of this report. The team has conducted the site visit *from* 26- *October*-2023 to 28- *October*-2023. During the site visit, the audit team had visited the *villages in Odisha to assess the biomass waste, stakeholders' consultation process, baseline scenario, biochar production process, safety requirements and involvement of villagers/farmers.*

On 26th October 2023, audit team visited the village Patrapada in Puri district of Odisha and met with the villagers/farmers participating in the program for biochar production. Audit team directly interviewed the farmers regarding the biochar applications, training programs imparted by the project proponent, environment impact and project benefits.

Audit team visited village Barana, Gram Panchayat - Rai Gorad, Block – Puri Sadar, District- Puri met with local supervisor Mamina Bhoi and villagers to discuss waste biomass and its collection, biochar production process, soil application and safety measure during the process of production of biochar.

Audit team had conducted a site inspection by physical visit to *seven villages in districts of Kendrapada and Puri*. During the site visit, the audit team had visited the gram panchayat and the project site where the first biochar kiln is installed and assessed the biochar production process during the site audit. The villagers demonstrated the biochar production process using the steel shield soil pit installed.

2.5 Resolution of Findings

Describe the process for the resolution of findings (corrective actions, clarifications or other findings) raised by the validation team during the validation.

State the total number of corrective action requests, clarification requests, forward action requests and other findings raised during the validation.

Provide a summary of each finding, including the issue raised, the response(s) provided by the project proponent, and the final conclusion and any resulting changes to project documents. Unless this fits on one page, put all findings in an appendix.

The objective of this phase of the joint validation-verification is to resolve any outstanding issues which need to be clarified for RINA' s positive conclusion on the project description. To guarantee transparency any findings raised regarding to the validation and verification of the project are incorporated in the Validation and Verification Protocol Tables in Appendix I to this report.

CAR (Corrective Action Request) is raised if one of the following occurs:

- Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- Modifications to the implementation, operation and monitoring of the project activity has not been sufficiently documented by the project participants;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- Issues identified in a FAR during validation to be verified during subsequent verifications.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met. All CARs and CLs raised by RINA during verification shall be resolved prior to submitting a request for registration and issuance.

FAR (Forward Action Request) is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period.

During the current verification, 01 Forward Action Request (FAR), 3 Clarification requests and 02 corrective action requests were raised.

2.5.1 Forward Action Requests

One forward action request (FAR) was raised during present validation.

3 VALIDATION FINDINGS

3.1 Project Details

The Project aims to transition farmers from traditional practices of uncontrolled combustion and biomass decomposition to the production and soil application of biochar in their farms. By introducing farm-level, low-technology pyrolysis method, the project proponent ensures net GHG removals through the following steps:

1. Agricultural waste biomass is sustainably collected, and air/sun dried within the farm.

2. The biomass undergoes careful pyrolysis in a steel-shield soil pit located in the farm.

3. The resulting biochar is dried, mixed with manure, and applied to 10cm soil subsurface.

The project is eligible under the methodology for Biochar Utilization in Soil and Non-Soil Applications VM0044, Sectoral Scope 13 Version 1.1 Published on 5 July 2023 /05/

Project design, including eligibility criteria for grouped project.

The project is grouped project and eligible under methodology VM0044 meeting the criteria for grouped project. This is a grouped project in India. The first instance is being implemented in the state of Odisha, India.

The project activity mitigates CO2 and CH4 emissions by avoiding open field burning and biomass decomposition. It removes carbon through biochar production and soil application. These actions address CO2 and CH4, which come under the seven greenhouse gases outlined in the Kyoto Protocol.

Project proponent and other entities involved in the project

Assessment team checked during the site visit as well from the documentation verification and confirms that the details of the project proponent and confirms that the project proponent is SRCNatura Sure Pvt. Ltd. and there are no other entities involved, the same has been verified by the audit team based on the agreements between farmers and SRC/22/.

The PP has provided the updated KML which includes the area in which the 5,000 farms are located. It has been updated to show the delineated project locations within the first instance of the project. A KML file of the delineated polygons was submitted by the PP to the team, from

which the geographical extent of the first instance of 5000 farms can be visualized.

PP has prepared an updated new kml file that has marked the geographic information about the project instances in terms of individual 'blocks of villages' within which the initial project instances are being implemented. Every 'block' comprises a group of villages. All the 5000 instances in the project are contained in these blocks, which have been delineated by blue boundaries on the kml map. The validation team therefore accepts that the depiction of the project instances on the kml map meets paragraph 3.11.1point no. 2b and 3 of the VCS Standard v4.4).

In the updated kml file that the PP has prepared, the entire project is shown as distributed across the village blocks in the region in which the project is being implemented. The VVB could therefore validate that the new kml provides sufficient geographical information in respect of the location details of the project instances.

The demarcation is as follows:

a) The red polygons in the updated kml file numbered A, B & C represent groups of village blocks referred to at Sr. No. (1). These are essentially the same as the red polygon figures in the previously submitted kml file. A, B & C and delineated with red borders. For every polygon drawn on the map in the kml file, the PP has also provided a representative geodetic coordinate in the updated kml file.

   A) 19°54'39.80"N, 85°56'8.23"E
   B) 20° 0'29.16"N, 84°16'49.82"E
   C) 20°43'28.53"N, 86°55'2.05"E

b) The blue polygons in the revised kml delineate 'village blocks" (referred to at Sr. No. (1)). Each of the polygons A, B & C comprises varying numbers of village blocks. Each block in turn comprises a set of individual villages in which are situated the farms in which the instances lie, thus completing the entire set.

c) The country of India is marked in blue colour (project boundary for the grouped project) and the state of Odisha (project boundary for first instance) is marked in green colour.

As the coordinate data is obtained from Google Earth, the validation team does not doubt the same and the same was verified during on-site audit. The validation team therefore confirms that the project location in the PD meets the requirement of VCS standard v4.4 paragraph 3.11.1.

Ownership

The ownership is with the project proponent SRC Natura Sure Pvt. Ltd and the same has been verified during the site audit and with agreement with farmers/22/.
PP, SRCNatura Sure Pvt. Ltd. has entered into legal agreements with each of the 5000 farmers participating in the project. The project ownership is demonstrated by the agreement in the following manner:

1. The farmer acknowledges by signing the agreement that all rights, title and interest in the emission removal credits accruing from the project will be vested solely in the PP ie. SRCNatura Sure Pvt. Ltd.

2. The farmer declares and confirms, by signing the agreement, that they have no right to the potential emission removal credits claimed from the project.
3. The agreement also vests clear legal ownership of the project in SRCNatura Sure Pvt. Ltd., the emission removal credits arising from the project as well as the complete environmental benefits from it.

Agreements signed by farmers were reviewed to confirm the above provisions within the same. Therefore, VVB confirms that the legal ownership of the PP over the project has been validated and confirmed by VVB.

Project Start Date

The project start date is 16th October 2023. On this date the first production facility under the project started at Biswaranjan Sahu's farm (UID: 288nKxZbT0Gp-zWvfAQ9wA), located at coordinates " 19.9110556,85.9356195". This is documented in the field report prepared by the PP's field officer and also bears the signature of the owner of the farm. The same has been verified during the site audit and cross checked with the UID and signature of the owner of the farm. /22/

Project crediting period

Assessment team confirms that the crediting period dates for the project is as below:
The project crediting period is 7 years, twice renewable for a total of up to 21 years. The first crediting period is for 7 years from 16th October 2023 to 15th October 2030. The same is acceptable to the assessment team as the same is as per the requirement of VCS standard version 4.4/04/.

Project scale and estimated GHG emission reductions or removals

Assessment team confirms that the project activity is grouped project and as per clause 3.10 VCS Standard v4.4, indicates that Project size categorizations are as follows:

1) Projects: Less than or equal to 300,000 tonnes of CO2e per year.

2) Large projects: Greater than 300,000 tonnes of CO2e per year.

This project will achieve an estimated average of 110,760 tCO2e/year.

Project Scale	
Project	√
Large project	x

Conditions prior to project initiation

Assessment team during the desk review and on-site assessment found that the biomass, agricultural waste is being burned in the field. The baseline as described in section 3.3.4 of this report will continue to be the baseline in the absence of project activity. The baseline scenario is the continued open field burning and biomass decay. Also, no law, statute or other regulatory framework in Odisha and India that mandates the project activity (conversion of waste agricultural biomass into biochar). The same has been verified by the VVB and confirms the same.

Project compliance with applicable laws, statutes and other regulatory frameworks

There are no laws, statutes, or other regulatory frameworks that prevent the implementation of activities mentioned in the project. Currently, there are no enforced biochar production and soil application laws in place in the state of Odisha in India by the central or state governments. In addition, the State Pollution Control Board of Odisha website/xx/. The audit team cross verified this with SPCB and CPCB website that there is no regulation that mandates production of biochar from agricultural wastes.

Participation under other GHG programs:

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

  The grouped project has not been registered and is not seeking registration under any other GHG program(s). The same has been verified with VERRA and CDM website. There are only two projects all across the world that are seeking registration under VERRA and this is one of them. https://registry.verra.org/app/search/VCS/All%20Projects

- Rejection by other GHG programs

  The project has not been applied to or rejected by any other GHG programs. The same has been cross verified by audit team by checking the VERRA and UNFCCC website and other GHG programs.

The project has not sought or received any another form of GHG-related credit, including renewable energy certificates. Also, this project activity does not deal with supply chain of any goods or services. Thus, this section is not applicable.

Project contribution to sustainability:

The sustainability indicators as mentioned below is checked by the assessment team and found correct. PP considered 12 SDGs i.e., SDG - 1, 2, 3, 5, 6, 8, 10, 11, 12, 13, 15 & 17.

SDG 1: No poverty - This project involves small stakeholder farmers who are solely dependent on agriculture for income. This project will increase the income stream of farmers by increasing the

productivity of their lands and thus reducing poverty. During the on-site audit, it was assessed by audit team that the project is involving, small farmers and through biochar project the productivity of farmers land would increase and reduce the poverty of the farmers.

SDG 2: Zero hunger - The use of biochar in soil improves soil fertility, thereby increasing crop yields. With increasing quality of soil, farmers can produce more food, helping combat local and global food insecurity. With the increased productivity, the farmers will have more food security and thus reducing the hunger/pverty.

SDG 3: Good Health and Well Being - Open field burning of agricultural waste contributes to air pollution, which has significant implications on respiratory health of local communities and nearby areas. By transitioning farmers to biochar production, Project Reignite will help reduce the incidence of respiratory health issues in communities. In the absence of project scenario, the farmers are burning the agro waste in the open field, and this is leading the GHGs emission and increased air pollution thus causing more health issues. With implementation of this project, there is reduced GHGs emission and improved health conditions.

SDG 5: Gender Equality- Project Reignite focuses on women empowerment by enabling women of the household to be biochar producers and field officers. By generating work opportunities for women and promoting gender equality, the project will empower women and provide them with financial independence and decision-making power. During on-site it was assessed by audit team and found that the project is involving local women farmers and thus promoting gender equality.

SDG 6: Clean Water and Sanitation - Community water bodies have been contaminated due to excessive use of chemical fertilizers in the past. Application of biochar to soil reduces the need of chemical fertilizers for agriculture. Biochar's properties of enhancing soil's water holding capacity reduce the need for irrigation, conserving freshwater resources. The production of biochar and application of it in soil applications is leading to enhanced soil quality and clean water quality.

SDG 8: Decent Work and Economic Growth - Project Reignite enhances working conditions by shifting farmers from harmful open field burning to safer biochar production. Production of biochar is leading to overall economic growth and the same has been assessed during on-site audit and found to be appropriate.

SDG 10: Reduced Inequalities - Project Reignite addresses this goal by selecting farmers from lowest socio-economic status and highest risk to the effects of climate change for the project activity to increase their income through biochar production and utilization, thereby fostering economic inclusivity. During on-site audit it was assessed by audit team that the farmers are involved from lowest income and thus increasing the socio-economic status of lowest income farmers.

SDG 11: Sustainable Cities and Communities - Project Reignite enables farmers to manage agricultural waste innovatively and sustainably, reducing potential health risks and promoting cleaner, safer rural communities. Additionally, biochar application aids in sustainable land management, supporting the health of surrounding ecosystems, thereby contributing to sustainability of local communities. This project is reducing the health risks and promoting cleaner environment, as in absence of the project, the agro waste is burned in open field.

SDG 12: Responsible Consumption and Production - Project Reignite operates under the principles of a circular economy, converting what was traditionally considered a liability - agricultural waste - into a productive asset. By converting residual biomass from one harvest into biochar, we are enhancing both the yield and quality of subsequent crops. As the agricultural waste is being converted into biochar and applied to soil thus enhancing the crop yield and the same was assessed during the site audit and found to be appropriate.

SDG 13: Climate Action - Project Reignite actively addresses climate change by promoting the transformation of biomass into biochar, a process that sequesters atmospheric carbon and stores it in a stable form. As this project is reducing the GHGs emissions and sequestration of atmospheric carbon in stable form is for betterment of climate.

SDG 15: Life on Land - Biochar application to soil contributes to sustainable land management by enhancing soil health, reducing soil erosion, improving water retention, and mitigating land degradation. Through the application of biochar the soil and water is improved and is leading to sustainable life on land.

SDG 17: Partnerships for the Goals - Project proponent encourages multi-stakeholder engagement and partnerships between farmers and investors/buyers of carbon offsets. The project proponent is having agreement with farmers and villagers for production of biochar. Thus, leading to overall partnership for SDGs contribution.

During on-site audit, the audit team physically visited the villages in Puri & Kendrapada districts to assess the SDGs parameters by having discussions and direct interviews with project proponent, relevant stakeholders (villagers, community participation, farmers, pradhans and gram panchayats). During on-site audit, it was discussed in detail with stakeholders regarding the project and its benefits and the involvement of local farmers and community. The VVB found that the project is meeting the requirement of all the above-mentioned SDGs parameters. Photos on on-site assessment is attached in the Annexure IV of this report.

As leakage emissions from transportation of freight is accounted, but for this project as such there is no transportation, thus there is no leakage.

Commercially sensitive information

No commercially sensitive information has been excluded from the public version of the project. The same has been verified by the audit team and confirmed from the project proponent that there is no commercial sensitive information.

Overall conclusion: Through document review and on-site audit, the audit team physically visited the project site and had direct meetings and interviews with villagers and local stakeholders regarding the project nature and its implementation, benefits. It was found that the villagers and stakeholders are

aware of the project and directly involved in the project activity and clearly understand the benefits of the project. Thus, the VVB confirms that the project description is accurate and complete, also provides the nature of the project.

Project's eligibility

S. No.	Criteria provided in Standard	Evaluation Condition for new instances	PP's response	VVB Assessment
1.	Meet the applicability conditions set out in the methodology applied to the project.	Each new project activity instance must meet the applicability conditions set out in the Methodology VM0044 v1.1.	This project activity instance is compliant with the applicability conditions as explained in Section 3.2.	The detailed analysis is provided in section 3.2 of PD and it has been assessed by VVB that the new project activity instance is meeting the applicability conditions as per methodology.
2.	Use the technologies or measures specified in the project description.	Each new project activity instance must involve conversion of waste biomass to biochar and its utilization in soil application. For all new project instances to be added in the future, the same technology would be used, i.e. the process of biochar production by soil pit pyrolysis technique, using steel shield	This project activity instance is compliant with the measures specified as the activity is conversion of waste biomass to biochar for soil application.	In the project activity the waste biomass is converted to biochar for soil application and this has been verified by VVB during the site audit. And the new project instances that will be included in the project will have the same soil pit pyrolysis technique for biochar production.
3.	Apply the technologies or measures in the same manner as specified in the project description.	Each new project activity instance must use low technology pyrolysis.	This project activity instance uses flame curtain pyrolysis technology in steel-shield soil pit.	The project instances are using the low flame curtain pyrolysis and the same has been verified during on-site audit.

4.	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The baseline scenario for each new project activity instance must be open field burning or decomposition of waste biomass. The geographical area of the new instance must be within India.	The baseline scenario of this project activity instance is open field burning and decomposition of waste biomass as described in Section 3.14. The geographical area of this instance is within India as demonstrated in Section 1.12.	The baseline scenario for any new project activity instance is open field burning. As the normal practice in the geographical area is open field burning and this has been confirmed by on-site audit and literature references available in public domain has been referred: https://www.ncbi.nlm.nih.gov/ pmc/articles/PMC6427124 which clearly states that the open field burning is common practice in India.
5.	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	Each new project activity is required to demonstrate additionality characteristics that are in line with the first instance of the project activity.	The project activity demonstrates regulatory surplus. The project activity, processing of waste biomass to biochar, is the basis for a positive list in the methodology VM 0044 V1.1 and this project activity instance meets all the applicability conditions as described in Section 3.2 of the methodology. Thus, the project is deemed as additional as further described in Section 3.5.	As the common practice in these areas is open field burning of crop residue and biomass waste. Thus, for any new instance the additionality criteria are same as the baseline scenario is waste biomass burning.

Inclusion of New Project Activity Instance

S. No.	Criteria	Evaluation	PP's response	VVB Assessment
1.	Occur within one of the designated geographic areas specified in the project description.	Each project activity instance must be in the geographic boundary of India.	This project activity instance is in the state of Odisha, which comes under the geographic boundary of India.	The project activity and it's instance are located within the state of Odisha and PP has provided the project boundary KML file and also this was verified during the site audit.
2.	Conform with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial conformance with multiple sets of eligibility criteria is insufficient.	Each new project activity instance must comply with the complete set of eligibility criteria as established in this document.	This project activity instance complies with the eligibility criteria established for new project activity instances.	All the project instances are using the soil pit pyrolysis using steel shield.
3.	Be included in the monitoring report with sufficient technical financial, geographic, and other relevant information to demonstrate conformance with the applicable set of eligibility criteria and enable evidence gathering by the validation/ verification body.	Each new project activity instance must be included in the monitoring report with sufficient technical, geographic, and other relevant information to demonstrate conformance with the eligibility criteria and provide evidence to the VVB.	This project activity instance outlines a monitoring plan described in Section 5 and will be included in the monitoring report with all relevant information to demonstrate conformance with the eligibility criteria to enable evidence gathering by the VVB.	During verification the VVB will assess and verify the new project activity instances and its details to be included by PP in the monitoring report.

4.	Be included in the updated project description, with updated project located information (as set out in Section 3.11), which shall be validated at the time of verification against the applicable set of eligibility criteria.	The project description document (including the project location information in Section 3.11) must be updated each time a project activity instance is added.	This project description document includes this project activity instance. The geographic boundary of this instance is included in Section 3.11.	PP has provided the detailed kml file of the project boundary and the same has been assessed by VVB and found to be correct.
5.	Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance (i.e., the date upon which the project activity instance began reducing or removing GHG emissions).	Each new project activity instance must demonstrate ownership by the project proponent from the prospective start date.	This project activity instance is owned and operated by SRCNatura Sure Pvt. Ltd. as mentioned in Section 1.7.	PP has provided the ownership document of the project activity and the agreement with the farmers for the project activity. VVB has verified the documents to be in order and the same was cross verified with the farmers.
6.	Have a start date that is the same as or later than the grouped project start date.	Each new project activity instance must have a start date that is the same or later than the grouped project start date, which is 16th October 2023.	This project activity instance's start date is 16th October 2023, which is the same as the grouped project's start date because it is the first instance.	PP has provided the supporting documents for the project start date and the same has been verified by VVB and found to be correct.
7.	Be eligible for crediting from the start date of the project activity instance	Each new project activity instance must be eligible for crediting from the start date of the	This project activity instance is eligible for crediting from 16th October 2023 to the end of the first crediting	All the new project instances are using the same technology for producing biochar and will be included in

	throughout to the end of the project crediting period (only).	project activity instance throughout to the end of the project crediting period.	period, which is 15th October 2030.	the project activity after the project start date.
8.	Only eligible for crediting from the start of the verification period in which they were added to the grouped project.	Each new project activity instance is only eligible for crediting from the start of the verification period in which they were added to the grouped project.	The crediting period for this project activity instance begins on 16th October 2023.	The start date of the project activity instance is 16th October 2023 and all the new instances will be included after the project start date.
9.	Not be or have been enrolled in another VCS project.	Each new project activity instance must not be or have been enrolled in another VCS project.	This project activity instance has not been and will not be enrolled in another VCS project.	PP has provided the self-declaration letter that the new activity instance will not be or have been part of any other VCS project. Also, this has been verified during the on-site audit with direct interviews with farmers and also this will be verified during the first monitoring period by VVB.
10.	Adhere to the clustering and capacity limit requirements for multiple project activity instances set out in 3.6.8 – 3.6.9.	Each new project activity instance must adhere to the clustering and capacity limit requirements.	There are no project instances within 10kms of this project activity instance. Project activity does not involve any capacity limits. Therefore, this condition is met.	There is no other project of the same PP within the limit of 10kms of this project activity. This has been cross verified during the site audit and found to be correct.

3.2 Safeguards

3.2.1 No Net Harm

No potential negative environmental or socio-economic impacts have been identified for the project.

3.2.2 Local Stakeholder Consultation

The stakeholder consultation details are as follows:

PP made the announcement on 1st of week of January 2023, regarding the stakeholder consultation process for the project activity. /08//09//10//11//12//13//14/

The stakeholder consultation process lasted from 15th January 2023 to 30th April 2023. During on site audit, the audit team assessed the stakeholder consultation process and identification of villagers/farmers that were part of stakeholders meeting. During on site audit team visited the seven villages and met with 150 villagers and discussed about the whole local stakeholder's consultation process and project implementation and its benefits at the local level. PP has conducted the stakeholder consultation through set of questionnaires to interview and discuss with the villagers.

To address any complaint and grievance, project proponent has initiated an open line of communication, and informed all end users about the establishment of a grievance register. The purpose of this register

is to collect and document any concerns or complaints related to the project. During on site assessment audit team found that there have not been any grievances or complaints till now and if there are any complaints then it will be documented in the project description in case any arise in the future.

The VVB confirms that the local stakeholder consultations have been done in accordance with VCS v4.4 requirements. On site audit stakeholder meeting attendees is attached in Annexure VI of this report.

3.2.3 Environmental Impact

No potential negative environmental or socio-economic impacts have been identified for the project.

3.2.4 Public Comments

Four Comments were received during the public commenting period.

https://registry.verra.org/app/projectDetail/VCS/4679

These comments have been raised under CAR 2 in Appendix II of the report. These comments have been addressed by the PP and the same has been assessed by the audit team and found to be appropriate, thus these comments are closed.

3.2.5 AFOLU-Specific Safeguards

As this a non-AFOLU projects, thus this section is not required.

3.3 Application of Methodology

3.3.1 Title and Reference

Provide the title and reference of the applied methodology and any tools. Note that the methodology and tools, and the specific versions of them applied by the project, must be valid at the time of validation.

The project applies “VM0044 Methodology for Biochar Utilization in Soil and Non-Soil Applications, Version 1.1 Published on 5 July 2023, Sectoral scope 13 /05/.

3.3.2 Applicability

The applicability of the methodology is justified below:

As per the methodology the project must comply with all applicability conditions and the same has been assessed by the audit team as given below:

Sr. No	Criterion	Justification by PP	Audit team conclusion
Technological Scope			
1	The methodology is applicable when biochar is produced from eligible waste biomass through a thermochemical process such as pyrolysis, gasification, and biomass boilers and the biochar is subsequently applied to an end use (soil or non-soil applications). Torrefaction and hydrothermal carbonization as processes of biochar production are excludedexcluded8 from this methodology.	The methodology is applicable as the biochar will be produced from eligible waste biomass (described in Table 5 below) using flame curtain pyrolysis technology and the biochar will be subsequently applied to soil as an end use. No other process of biochar production is a part of the project activity.	During onsite audit, the audit team visited the project site and assessed that the biochar can be produced from eligible waste biomass through thermochemical process such as pyrolysis and the produced biochar is used in soil applications.
2	The methodology is applicable to projects using either low or high technology production facilities to produce biochar, as per the definitions of each provided in Section 3 of this methodology.	The project activity uses low technology production facilities to produce biochar. Steel-shield soil pit complies with the definition of low-tech production facility as provided in Section 3 of the methodology.	On-site assessment done by audit team at the project site found that steel-shield is installed in soil pit and agro waste is pyrolyzed directly and the biochar is produced proving it to be low technology production.
3	The biochar producers must have a health and safety program to protect workers from airborne pollutants and other hazards.	Biochar producers will be following a health and safety program to protect their health. The summary of the health and safety program is following: 1. The production facility (steel-shield soil pit) will be located at a safe distance from physical structures to prevent fires.	During on-site audit, the audit team directly discussed the issue of health and safety program with project workers to protect from airborne pollutants and other hazards. It was found that the field officers and workers are aware of safety

Sr. No	Criterion	Justification by PP	Audit team conclusion
		2. The biochar producer will wear a face mask and hand gloves during production for biochar. 3. The biochar producer will maintain a safe distance from the fire and should use a long stick to control the fire. 4. The biochar producer will wear non-inflammable clothing during production and will have access to safety kits in close vicinity.	protocols. The audit team assessed the site and found that the project site is located at a safe distance from physical structures to prevent fires. The workers and supervisors wear face mask and hand gloves during production of biochar. Safe distance is being maintained. Also, the biochar producer will wear non-inflammable clothing during production and have access to safety kits in close vicinity.
Eligible feedstocks and production			
1	Feedstock must be purely biogenic waste biomass and not purpose-grown.	Biochar producers will only be using biogenic waste biomass originating from their own/family's/neighbours' farms to produce biochar. As waste biomass is the by-product of cultivation of crops (primary activity of farmers), it will not be purpose-grown.	During on-site audit, it was assessed and audit team found that there is abundance of biogenic waste in the state of Odisha. Also, it was discussed with farmers and villagers that they will be using only biogenic wastes originating from their own/ family's farm to produce biochar. To check the biogenic waste composition, audit team visited the villages and found that many of the water ponds are covered with water hyacinth and it is biogenic waste. In one of the ponds in village Barana, the water pond was cleared from

Sr. No	Criterion	Justification by PP	Audit team conclusion
			water hyacinth, which will be dried to be used for production of biochar. Audit team confirms that in the project activity, the waste is purely biogenic waste biomass and not purpose grown.
	Feedstock must have been otherwise left to decay or combusted for the purposes other than energy production.	In the absence of the project activity, feedstock will be combusted in the open field for purposes other than energy production. Following information source has been used to demonstrate the same: The source of biomass is identified as the biochar producer's or their family's/neighbours' fields, and the biomass is not being used in the baseline scenario as farmers are practicing open field burning and decay of biomass. Signed attestations in line with Appendix 2 of the methodology confirm that the biomass was not used for alternative purposes but was getting burnt in open field fires and left to decay in the five years preceding the project start date.	During on-site audit, the audit team assessed and found that the feedstock is waste biogenic, and it is burnt or just left to decay and there are no other purposes for it.

Sr. No	Criterion	Justification by PP	Audit team conclusion
	Feedstock must not have been imported from other countries.	The biochar producers will only be using waste biomass from their own/family's/neighbours' farms to produce biochar. No transportation of biomass, except walking distance, will take place. Thus, feedstock will not be imported from other countries.	During on-site audit, the audit team visited seven villages and found that the feedstock is only from farmers own farm or family farms which are nearby and there is no transportation involved in the project activity as the biochar is produced near the farm and applied in soil of the farm nearby.
	Feedstock must meet the sustainability conditions provided in Table 1. This table is not an exhaustive list of waste biomass examples.	Feedstocks that will be used for biochar production in the project activity meet the sustainability conditions provided in Table 1 of the methodology and the applicability is described in Table 6 below.	During on-site audit, audit team cross verified the feedstocks and found that these feedstocks are waste biomass that comes out during harvesting. It is left to decay on corners of the farm and water hyacinth and ipomoea carnea are invasive species in the area and is good source of feedstock.
Sustainability Criteria for Feedstock			
	Agricultural Waste Biomass	Where project proponents are using agricultural waste biomass directly from fields and not from a centralized biomass processing operation (e.g., food processing facilities), project propends must provide documentation that the project activity is not leading to a decline in soil carbon stocks or a reduction in crop productivity, or that in the baseline	During on-site audit, the audit team assessed the biomass and found that it is agriculture biomass waste and directly from the fields and not from centralized biomass processing operation.

Sr. No	Criterion	Justification by PP	Audit team conclusion
		agriculture waste biomass was burned without energy production (e.g., open burning or stubble)	
	Aquaculture Plants A. Waste must be byproducts of aquaculture. B. Project proponents must be demonstrated that waste invasive species such as water hyacinth (Eichhornia crassipes) were not purposely introduced in order to qualify as feedstock for biochar production.	Water Hyacinth (Eichhornia crassipes), a pervasive invasive species, has plagued Odisha's water ecosystems for nearly a century. Historical records show that its problematic spread was already recognized in 1930, with efforts to combat its growth recorded by the Legislative Council of Bihar and Odisha (Sinha et al. 1930).5 Narayanan et al. (2007)6 further emphasize its widespread presence in India. This species, with its well documented invasive history, was not deliberately introduced and its utilization adheres with the sustainability conditions.	During the site audit, audit team visited Puri and Kendrapada districts of Odisha and found that the water hyacinth and ipomoea are invasive species and growing naturally in every water body.
Continued Eligible Feedstocks and Production Conditions			
	Biochar made from a single or mixed eligible feedstock must comply with the latest version of the IBI Biochar Testing Guidelines or the EBC Production Guidelines.	Biochar will be made from a single feedstock per batch and will comply with the conditions applicable to low-technology production facilities (steel-shield soil pit using flame curtain pyrolysis in our case) in the latest	The biochar is being produced from a single feedstock and is complying with the latest version of the EBC production guidelines. /31/ During on-site audit, the audit team assessed and found that the

Sr. No	Criterion	Justification by PP	Audit team conclusion
		version of the EBC Production Guidelines	biochar is being produced from single feedstock and is in line with the latest EBC production Guidelines.
	The waste biomass used as feedstock to produce biochar and the resulting biochar to be utilized in soil or non-soil application may be transported via ships, boats, and vehicles other than road transportation up to a distance of 200km. However, it must only be transported by vehicles (i.e., road transportation) for distances more than 200km as defined under CDM Tool 12: Project and leakage emissions from transportation and freight.	There will not be any transportation involved as the biochar will be produced and applied in the same/nearby farm from where waste biomass originated. Hence, this condition is not applicable.	During on-site audit, the audit team visited the sites and found that there is no transportation involved as the biochar is produced near the farms and is applied back again to soil. Thus, thiscriteria is not applicable.
	Mineral additives such as lime, rock minerals, and ash may comprise up to 10 percent of the mass when added. If the addition exceeds 10 percent on a dry weight basis, the biochar producer must present laboratory tests indicating that the final product meets IBI Biochar Testing Guidelines or EBC Production Guidelines thresholds for organic and inorganic contaminants.	This condition is not applicable as mineral additives will not be added in production.	During on-site audit, the audit team verified that there are no mineral additives is being used in the biochar production process.
	Other evidence that may be used to demonstrate compliance with waste biomass sustainability criterion are biomass certification schemes such as the Roundtable on Sustainable Biomaterials (RSB), International Sustainability and Carbon Certification (ISCC) or any other certification scheme	No other evidence is required or used.	There are no such criteria that is applicable on the biochar production and the project is in accordance with the approved VM0044 methodology. /05/

Sr. No	Criterion	Justification by PP	Audit team conclusion
	approved and/or endorsed by a relevant legislative body or international body such as the European Union, CORSIA, and national/state governments.		
Eligible biochar end-use application criteria			
	Biochar is eligible to be utilized and accounted for under the methodology if it is being utilized within one year of its production. Biochar is subject to natural decay and the permanence of biochar is calculated for a period of 100 years. To adhere to the decay factor established for 100 years and prevent any decay before application, biochar must be utilized in soil or non-soil applications within the first year of its production.	Biochar will be produced from the waste biomass after the agricultural season ends and crops are harvested. Biochar producers will apply biochar as production takes place. Thus, biochar will be utilized within a few weeks of its production. The monitoring plan described in Section 5.3 includes tracking of the biochar applied.	During on-site audit, the audit team found that the biochar will be produced from the waste biomass produced after the agricultural season.
	Biochar is eligible to be used as a soil amendment on land other than wetlands. Eligible land types include cropland, grassland, vegetated urban soils, and forest. Biochar is eligible to be applied either to the soil surface or subsurface. For surface application, the biochar must be mixed with other substrates such as compost, manure or digestate from anaerobic digestion. For subsurface application, the biochar may be applied either as a unique soil amendment or mixed with other substrates. For any soil application, the biochar must: a) comply with biochar material standards to avoid the risk of	Biochar will be applied to the soil subsurface as a mixed soil amendment with manure (cow dung). a) There is no risk of transferring unwanted heavy metals and organic contaminants to soil. The laboratory analysis report of biochar samples confirms that the heavy metals and contaminants content in biochar meets the EBC Production Guidelines. b) H:Corg will be monitored annually as described in Section 5.2 using nationally accredited laboratory results following EBC production guidelines to ensure	During validation, the audit team conducted the field visit and found that the farmers will be mixing the biochar with cow dung and then applying it to soil. There is no risk of transferring unwanted heavy metals and organic contaminants. As during site audit, it was found that the feedstock for biochar is only agro waste and there is no use of organic contaminants (herbicide, pesticide and plant and animal tissues).

Sr. No	Criterion	Justification by PP	Audit team conclusion
	transferring unwanted heavy metals and organic contaminants to soil. Project proponents must meet the IBI Biochar Testing Guidelines or EBC Production Guidelines, or relevant national regulations for avoiding soil contamination. b) have a hydrogen to organic carbon molar ratio (H:Corg) of less than or equal to 0.7	hydrogen to organic carbon molar ratio of less than or equal to 0.7.	The test report during first verification will ensure that the hydrogen to organic carbon molar ratio is less than or equal to 0.7.
	Biochar is eligible to be used in non-soil applications including but not limited to cement, asphalt, and any other applications where long term storage of the biochar is possible. Only biochar produced in high technology production facilities, as defined under the methodology, is eligible to be used in non-soil applications.	Biochar will not be used in non-soil applications in the project. Thus, the condition is not applicable.	During on-site audit, it was found that biochar produced in the project activity is only being used in soil applications.
	Project proponents must demonstrate that biochar and/or final products are long-lived via credible evidence such as laboratory results, peer reviewed research papers or any other third party-evaluated product assessment, such as decay rate analysis, as applicable. The information provided must include the lifetime of the product in which biochar is stored long term. The resultant product must be compliant with national/international product quality standards/specifications as applicable (e.g., the American Concrete Institute Standards in the US).	Biochar production in Project Reignite employs flame curtain pyrolysis, which is high temperature ranging between 650°C and 750°C (Cornelissen et al. 2016). Such temperatures yield robust biochar with significant resistance to decay. The Intergovernmental Panel on Climate Change (IPCC) has reported that biochar produced under these conditions retain 89% of their mass after a century (IPCC, 2019).8 “Pyrolysis temperature influences biochar stability, with temperatures > 500°C generally leading to longer-term half-lives (> 1000	Biochar production is through pyrolysis where the temperature is ranging from the 650°C and 750°C (Cornelissen et al. 2016). /23/ During the on-site audit, audit team checked the production of biochar through live demonstration by PP and cross verified with the IPCC report and found it to be correct.

Sr. No	Criterion	Justification by PP	Audit team conclusion
		years)" (Ippolito et al., 2020).9 Another notable study by Spokas (2010)10 supports the long-term stability of high-temperature biochar.	
	The methodology must not be applied if biochar is used for energy purposes, burned as a fuel (e.g., as a substitute for charcoal or coke) or used in other soil or non-soil applications where biochar cannot be demonstrated to be a long lived and persistent carbon sink.	Biochar will only be used for soil application and will not be used for any other purposes.	The produced biochar will be used for soil applications and the same has been verified during the site audit and found to be correct.
	Biochar must not be used in applications in which substantial amounts of the biochar are oxidized (e.g., burned or used as a reduction agent in steel production, processed into activated carbon, or other uses that are fossil fuel-intensive).	Biochar will only be used for soil application. Thus, it will not be used in application in which substantial amounts of the biochar are oxidised.	Biochar will be used only for soil applications and the same has been verified by audit team during the site audit.
	Non-soil applications are ineligible under the methodology if there is a loss of more than 50 percent of the carbon measured by dry weight basis (e.g., some activated carbon, due to excessive fossil fuel input, results in a loss of more than 50 percent of the original biochar carbon material and therefore would not be eligible).	Biochar will not be used in non-soil application.	PP has confirmed and the same has been verified during the site audit. The audit team discussed the same with villagers and farmers and found that there will be no non-soil applications.

3.3.3 Project Boundary

The project boundary for the grouped project is India. The project boundary for the first instance of the grouped project is Odisha. It encompasses farms that are part of the project where project activity will be taking place.

> The project boundary includes emission from Pyrolysis or thermochemical conversion (low technology systems). CO2 is the major source of GHG and the same has been assessed by the audit team/26/.

Project boundary provided in the PD was reviewed by the validation team. The project consists of more than one instance and will be implemented in India. Therefore, the validation team has assessed the physical boundary of the project to be all those facilities within the geographical boundary of the host country India. The validation team clarifies that the project first instance is proposed to be implemented in the state of Orissa within India.

Source		Gas	Included or not	Justification by VVB
Baseline	Feedstock production	CO_2	No	The agro waste biomass is considered as renewable as per methodology, thus it has not been included in the baseline.
		CH_4	No	
		N_2O	No	
	Feedstock Transportation	CO_2	No	There is no feedstock transportation in the project baseline and in the project scenario. The waste biomass will be converted to biochar in the farm itself. Thus, these GHGs are not included in the boundary.
		CH_4	No	
		N_2O	No	
	Combustion, aerobic, and anaerobic decomposition of feedstocks	CO_2	No	There are CO2 and CH4 emissions from combustion of biomass or its decay in the absence of project activity. However, the methodology assumes baseline emissions to be zero (conservative assumption).
		CH_4	No	
		N_2O	No	
Project	Feedstock production	CO_2	No	In the project scenario the waste is by-product of the regular agriculture in farms of villages and it is not grown purposefully. There are no emissions from feedstock production. Waste biomass is considered renewable as per the methodology referring to CDM renewable biomass definition and applicability conditions.
		CH_4	No	
		N_2O	No	
		CO_2	No	

	Pyrolysis or thermochemical conversion (low technology systems)	CH_4	Yes	As per the methodology, default methane emission value for steel-shield soil pit (low-technology production facility) are taken from published literature (Cornelissen et al. 2016).
		N_2O	No	
	Electricity and/or fossil fuels consumed during eligible thermochemical process	CO2	No	No electricity or fossil fuels are consumed during the pyrolysis process.
		CH4	No	
		N2O	No	
	Biochar Transportation	CO2	No	There is no transportation activity involved in the project activity, thus GHGs are not included.
		CH4	No	
		N2O	No	
	Pre-treatment of feedstocks (e.g., grinding, grinding)	CO2	No	No emissions are involved as no pre-treatment of feedstocks takes place in the project activity.
		CH4	No	
		N2O	No	
	Biochar application (e.g., preparation of biochar for final use)	CO2	No	No emissions take place during biochar application as it is applied manually by farmers.
		CH4	No	
		N2O	No	

3.3.4 Baseline Scenario

As per the methodology /05/ applied the baseline scenario is the continued burning biomass waste and biomass decay in the absence of project activity."

Through various sources like Central Pollution Control Board (CPCB) and State Pollution Control Board (SPCB) it was found that the agro-waste is generally burned in open field or left to decay in open. Also, during on-site audit, it was assessed by the audit team that the baseline scenario identified is correct and as per applicable methodology.

The baseline survey included all the 5000 farmers. Therefore, the survey did not involve any sampling. As a result, the validation team agrees that there is negligible uncertainty in the results of the baseline survey, because 100% of the farmers were surveyed.

The validation team can confirm through its sectoral knowledge and experience that "open field burning of biomass residues" is a common and widely followed practice among farmers in India due to lack of sustainable agricultural waste disposal methods. This is also found documented in available literature on the subject.

Also, literature references available in public domain has been referred:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6427124/ which clearly states that the open field burning is common practice in India.

In the validation team's opinion, the PP, in carrying out the baseline survey, has actually gone a step further in order to justify its plausibility. In the interests of conclusively demonstrating the baseline scenario, the PP opted to carry out this survey, even though it involved additional expenses for the PP to do so.

3.3.5 Additionality

The PP has demonstrated the additionality in line with methodology/05/ requirement as below. The PP uses activity method for the demonstration of additionality.

Activity Method

Step 1: Regulatory Surplus

There is no mandated government programme or policy in host country of this project.

The regulatory surplus of this project has been confirmed in accordance with the VCS standard. It is noted that the project activity (conversion of waste agricultural biomass into biochar and its subsequent application to agricultural soils) in the region of India are not mandated/required under the national, state or local government statutes. The assessment team checked this with CPCB and SPCB guidelines and regulations. /30/

Step 2: Positive List

As per additionality criteria of methodology /05/, the project meets the applicability conditions of the methodology and meets below conditions which represent the step 2 positive list.

The project is located in India and as per methodology VM0044,

The positive list determination pivots on the concept of activity penetration, emphasizing that if biochar production doesn't exceed 5% of its potential, it's considered to be additional.

Activity Penetration in the project is 0.062% which is well beneath the 5% benchmark and thus the project activity is additional.

3.3.6 Quantification of GHG Emission Reductions and Removals

Baseline emissions.

In the baseline scenario, absence of project activity, waste biomass would have been burnt for purposes other than energy (open field burning) or left to decay, the default net baseline emission avoidance is zero (conservative scenario). Except that, as no biochar is being produced in baseline, no GHG removals are considered.

Quantification of project emissions at Sourcing Stage

According to methodology, emissions at sourcing stage are set to zero.

Production Stage

$$ER_{PS,y} = \sum_t \left(\left(\sum_k CC_{t,k,y} \times \frac{44}{12} \right) - \left(\sum_p PE_{PS,t,p,y} \right) \right) \quad (1)$$

Where:

ERPS,y = GHG emissions removals at production stage in year y (tCO2e)

CCt,k,y = Organic carbon content on a dry weight basis for biochar type t used for application type k in year y (tonnes)

PEPS,t,p,y = Project emissions at production stage for production of biochar type t at production facility p in year y (tCO2e)

44/12 = Coefficient to convert organic carbon to tCO2e

Low technology production:

$$CC_{t,k,y} = \sum_p (M_{t,k,p,y} \times F_{Cp,t,p} \times PR_{de,k}) \quad (6)$$

Where:

CCt,k,y = Organic carbon content on a dry weight basis for biochar type t used for application type k in year y (tonnes). Biochar type is based on the feedstock used to produce the biochar.

Mt,k,p,y = Mass on a dry weight basis of biochar type t for application type k produced at production facility p in year y (tonnes)

FCp,t,p = Organic carbon content of biochar type t produced in production facility p per tonne of biochar, taken on a dry weight basis (percent). For low technology production facilities. this is determined through laboratory material analysis of biochar where possible. Otherwise, values are obtained from Table 4 per type of feedstock. Where feedstocks are mixed, the most conservative value of the relevant feedstocks must be used.

PRde,k = Permanence adjustment factor due to decay of biochar to be defined for application type k (dimensionless). Biochar is subject to natural decay rate when used in soil applications such as in agriculture, forests, croplands, or grasslands. Many low technology production facilities do not measure the temperature at biochar production. A default value of 0.5621 must be used where pyrolysis temperature is unknown. This follows a conservative approach for carbon permanence.

$$CC_{t,k,y} = 5000\, X\, ((0.49 \times 0.89 \times 9.5) + (0.77 \times 0.89 \times 1) + (0.77 \times 0.89 \times 2) + (0.65 \times 0.89 \times 1) + (0.65 \times 0.89 \times 1) + (0.65 \times 0.89 \times 0.5))$$

$CC_{t,k,y}$ = 38225.5

Project Emissions for low tech production facilities:

$$PE_{PS,p,y} = \left(P_{ED,p,y} + P_{EP,p,y} + P_{EC,p,y}\right) \times \frac{\sum_t \sum_k M_{t,k,p,y}}{M_{p,y}}$$

Where:

PEPS,p,y = Project emissions at the production stage at production facility p in year y (tCO2e)

PED,p,y = Emissions associated with the pre-treatment of waste biomass at production facility p in year y (tCO2e)

PEP,p,y = Emissions associated with the conversion of waste biomass into biochar at production facility p in year y (tCO2e)

PEC,p,y = Emissions due to the utilization of auxiliary energy for the purpose of pyrolysis at production facility p in year y (tCO2e)

PED,p,y = 0 as there are no emsissions from pre-treatment of waste biomass

PEC,p,y = - as there is no utilization of auxiliary energy for the purpose of pyrolysis

$$P_{EP,p,y} = \sum_k \sum_t (F_e \times GWP_{CH4} \times M_{t,k,p,y}) \quad (9)$$

Where:

PEP,p,y = Emissions associated with the conversion of waste biomass into biochar at production facility p in year y (tCO2e)

Fe = Average methane emissions from producing one tonne of biochar in year y (tCH4/tonne). Values from Table 3 in Cornelissen et al. (2016) may be used based on the corresponding kiln type (i.e., low technology production facility type). Where the kiln type is not listed a default average emission factor of 0.049 t CH4/tonne may be conservatively used based on the value for traditional kilns since simple low-cost technologies are known to emit higher levels of CH4. Project proponent may propose more appropriate values based on scientific studies, research papers or any other credible documentation and/or information related to the utilized production technology.

GWP CH4 = Global warming potential of methane. Use value referenced in the latest version of the VCS Standard

Mt,k,p,y = Mass on a dry weight basis of biochar type t and application type k produced at production facility p in year y (tonnes)

PEP,p,y = 0.014 x 28 x 15

PEP,p,y = 5.88 tCO2e

PEPS,p,y = 5.88 x 75000/75000 (assuming that all biochar produced is utilised for soil application)

PEPS,p,y = 5.88 x 1

Thus, the resulting emission removals are:

ERPS,y = (38225.5 x 44/12) – (5.88 x 5000)

ERPS,y = 38225.5 x 44/12 – 29400

ERPS,y = 110760.166667

Application Stage

There are no emissions in the application stage as there are no emissions from processing or utilization of biochar from application.

Quantification of leakage.

As there is no transportation of biomass or biochar in the project, leakage is therefore set at zero.

Summary of net GHG emission reductions or removals.

Net GHG emission reductions have been calculated as follows:

$$ERSS,y = BESS,y - PESS,y \quad (14)$$

Where:

ERSS,y = GHG emission reductions at sourcing stage in year y (tCO2e)

BESS,y = Baseline emissions at sourcing stage in year y; conservatively assumed default value of zero (tCO2e)

PESS,y = Project emissions at sourcing stage in year y, conservatively assumed to be zero (waste biogenic source material is considered as renewable biomass) (tCO2e)

Thus, ERSS,y = 110760 tCO2e

Net GHG emission reductions and removals are calculated as follows:

$ERy = ERSS,y + ERPS,y - PEAS,y - LEy$ (15)

Where:

ERy = Net GHG emissions reductions and removals in year y (tCO2e)

ERSS,y = GHG emission reductions at sourcing stage in year y (tCO2e)

ERPS,y = GHG emission removals at production stage in year y (tCO2e)

PEAS,y = GHG emissions at application stage in year y (tCO2e)

LEy = Total leakage emissions in year y (tCO2e)

ERy = 0 + 110,760 – 0 – 0

ERy = 11,0760 tCO2eq

The validation team hereby confirms that the project has correctly applied the methodology VM 0044 version 1.1 and that the baseline, project, leakage and emission removal calculations are in order. There are no leakage emissions to be considered since the project does not involve any transmission at any stage of the biochar life cycle. All of the biochar is produced and is applied at the same farm facility at which it has originated.

3.3.7 Methodology Deviations

PP has proposed a methodology deviation in the following parameters:

Parameter	Requirement of the methodology	Proposed Deviation	VVB Conclusion
Moisture content for calculation of biochar on dry weight basis	Frequency of recording: Moisture content should be monitored for each batch of biochar type t.	Frequency of monitoring will be on a monthly basis for random samples of biochar produced of type t. The field sample size will be determined using the Standard for Sampling and Surveys for CDM project activities and programme of activities as a guideline. The laboratory will be testing a representative sample from the field samples.	Audit team reviewed the methodology and found that in page nos. 37 and 38 of methodology in comments section, it is mentioned that the "Moisture content should be monitored for each batch of biochar type t. The weighted average should be calculated for each monitoring period". Considering this PP has taken a deviation that for each batch of biochar the dry weight-moisture content assessment is not possible, and monitoring will be done for random samples using Standard for Sampling and Surveys for CDM project activities and programme of activities as a guideline. The laboratory will be testing a representative sample from the field samples. The same is found to be appropriate, the VVB accepts the proposed deviation using the sample size.
H:Corg (Ratio of hydrogen to organic	Frequency of recording: Each batch of biochar	Frequency of monitoring will be on an annual basis for random	Audit team assessed the parameter and the proposed deviations in the methodology and

carbon) of biochar produced	produced at the production facility p.	samples of biochar produced of type t. The field collection sample size will be determined using the Standard for Sampling and Surveys for CDM project activities and programme of activities as a guideline. The laboratory will be testing a representative sample from the field samples.	found that the number of batches is too large and it is very scattered on the ground. Thus, monitoring of all the batches from all the villages will be not possible. During the site audit, it was assessed that the sample size will be determined using the Standard for Sampling and Surveys for CDM project activities and programme of activities as a guideline/06(b)/. The laboratory will be testing a representative sample from the field samples. The same is found to be appropriate and the VVB accepts the proposed deviation.

H:Corg (Ratio of hydrogen to organic carbon) of biochar produced

The validation team refers to the VM 0044 version 1.1 methodology document and observes that the section 9.1 of the methodology specifies parameters that would be available at the time of validation (i.e. parameters that remain fixed and do not need to be monitored), while section 9.2 of the methodology has specified those parameters that would need to be monitored during the implementation and operation of the project.
The team notes that the parameter “H:Corg” is listed in section 9.2, which implies that the value of this parameter is not fixed on an ex-ante basis and must be determined through monitoring. In the validation team’s opinion, therefore, including this parameter as a monitored parameter fulfils the requirement of the methodology.
However, PP did conduct tests on a sample of biochar to determine expected values of H:Corg, as these values would also be needed in order to arrive at the sample size (the revised PDD section 5.3 provides details on how the PP would calculate the sample size). These test results were shown to the validation team, and it was found that values of this parameter are much lower than 0.7, which is the limit specified by the methodology under applicability conditions (Refer Section 4 of VM 0044 version 1.1 point no. 10). Thus, the validation team was able to confirm that the project has met this condition of the methodology for its applicability.

3.3.8 Monitoring Plan

Identify the parameters to be monitored and describe the steps taken to validate the suitability and eligibility of monitoring equipment and procedures.

Provide an overall conclusion regarding the adherence of the monitoring plan to the requirements of the applied methodology and any referenced tools.

Parameters determined ex-ante:

1) FCp,t,p - Organic carbon content of biochar for each biochar type t produced in production facility p per tonne of biochar, on a dry weight basis (%). Default values are taken from Table 4AP.1 of IPCC (2019) Appendix 4/26/:

Feedstock Type	Feedstock	Organic Carbon Content
Rice husks and rice straw	Paddy Straw	0.49
Wood	Tree Pruning, Bamboo Pruning (Only taken from mature bamboo with woody stems)	0.77
Herbaceous	Maize Cobs, Ipomoea Carnea, Water Hyacinth	0.65

The default values applied for the organic carbon content is from IPCC and the same is found to be appropriate by the audit team.

2) Permanence adjustment factor due to decay of biochar (dimensionless) defined for application type k - As pyrolysis temperature for flame curtain pyrolysis method is known to be >600°C and as observed in practice, permanence adjustment factor is 0.89 taken from IPCC (2019) Appendix 4 AP.2 /26/. Also, the pyrolysis temperature has been tested by laboratory and PP has provided the lab test report/xx/. During the on-site audit, VVB used industrial infrared thermometers to cross check the temperature of biomass burning and found that the temperature is well above 600 °C.

3) Global warming potential of methane as 28, taken from IPCC Fifth Assessment Report/32/

4) The parameter Fe - tonnes CH4 per tonne biochar (t CH4/t) produced in a steel-shield soil pit (low-technology production facility) has been taken from Table 3 in Cornelissen et al. (2016)/23/ as 14kg CH4/ tonne of biochar for steel-shield soil pit, the same has been found to be appropriate by the audit team.

5) Biomass Categories and Quantities at each production facility has been determined by the baseline survey and expert judgement from the project proponent. The audit team discussed with PP and visited the sites and cross checked the survey data found it to be appropriate. /07/

6) the value of PRde,k as 0.89 (i.e. corresponding to a temperature of 600 degrees C and upwards, as per Table 3 for default values in the VM 0044 methodology

Parameters determined ex-Post:

1) Mp,y - Total mass on a dry weight basis of biochar produced in production facility p in year y

   This parameter is being monitored on-site through Weighing scale each biochar production facility. The calibration frequency of weighing scale will be done annually and the record of calibration will be provided by PP.

2) Mt,k,p,y - Mass on dry weight basis of biochar type t and application type k produced at production facility p in year y, will be measured and monitored at project site using weighing scale.
3) FCp,t,p - Organic carbon content of biochar for each biochar type t produced in production facility p per tonne of biochar, taken on a dry weight basis.

   The organic carbon content will be determined by Laboratory material analysis of field sample of biochar. The field sample will be done using the Sampling and Surveys for CDM Project Activities and Program of Activities Standard as a guideline. The lab will be using a representative sample from the field samples for the testing. Lab results from NABL accredited lab will be presented during verification for the first monitoring period.
4) Ratio of hydrogen to organic carbon – Annually field samples will be collected by PP using the Sampling and Surveys Standard for CDM Project Activities and Program of Activities as a guideline. Laboratory will be using a representative sample out of the field samples collected using Sampling.
5) Tprod (Degrees Celsius (C) - Average annual production temperature during pyrolysis - Continuous, monitored by handheld high temperature industrial infrared thermometer, for each batch produced, aggregated to annual averages,

   Periodic (as per manufacturer's specification) calibration of thermometer against a primary device provided by an independent NABL accredited laboratory will be done.

QA/QC procedure on data archiving:

The validation team confirms that QA/QC procedures in respect of data archiving have been specified in the monitoring plan in the PD at Section 5.2.
For all the parameters in the monitoring plan, which are Mp,y, Mt,k,p,y, 'moisture content', Fcp,t,p and H:Corg, the retention of monitored data would be for a period of 09 (nine) years, i.e. 07 years of the crediting period plus 2 years.

Procedures for calibrating monitoring equipment:

The monitoring equipment used in the project is weighing scales that are used for weighing of biochar produced. Section 5.2 & 5.3 of the PD has described the same. It has been specified that the equipment used would be "Electronic Portable Fishing Hook type Digital LED Screen Weighing Scale". The procedure for calibrating the same is also stated therein, which would be by comparing the weight reading on the scale with known weights and the equipment is calibrated annually.

Soil Applications

Once the biochar producer (farmer) is ready to apply the inspected biochar to the soil, the field officer visits the farm and opens the sealed bags. The sealed bags are opened only in the presence of the PP's field officer inspecting the farm. For any bag whose seal is found broken, the field officer will order a second weighing to be done. The lower of the two weight readings would be applied to determine the values of the mass parameter Mt,k,p,y for the further calculations of carbon content CCt,k,y and project emissions PEPS,p,y. The field officers then supervise the biochar producer during application to ensure all biochar produced has been applied to the soil".
The validation team assessed that the monitoring plan will be effective in ensuring that even if there is any loss in the biochar quantity, the same would get accounted for, since the re-weighing of the biochar containing bag ensures that only the lower of the two weights would be applied in further calculations of the emission removals, thus any loss in the biochar weight (such as due to CO2 conversion) gets subtracted from the value of Mt,k,p,y and thereby a conservative value of ERPS,y will be calculated. Once the biochar is applied in the soil, there is no doubt regarding the biochar not being in use. The same has been addressed by the methodology.

Constant feedstock

The validation team has discussed the issue with the PP who has confirmed that in every field wherein biochar production takes place would use the same type of biomass feedstock for every batch charging. In other words, the farmers participating in this project have been instructed not to use a mixture of biomass types while performing the pit pyrolysis, but to always use the same type of biomass. Since rice paddy is the main crop in the geographic region in which the project would be implemented, it follows that paddy stalks residue would be the overwhelming majority (>60%) of the biomass feedstock used and all other types of biomass, would make up the remaining 40%. However, each farmer has been instructed to use the same type of biomass and not mix two different biomass types. Therefore, the PP will ensure that at any time, the same material goes into the pit for producing the biochar and heterogeneity in the same will be strictly avoided. The field officers working for the PP have been tasked to supervise the farms under their control and ensure that this procedure is respected by the farmers who will participate in this project.

3.4 Non-Permanence Risk Analysis

Provide a concluding statement regarding the determined value of the overall risk rating.

Not applicable as this is not an AFOLU project. However in this methodology there is a permanence factor and the same has been derived from the IPCC report, Carleson Research and Lab test report./23//26/20/

In this project the PRde,k = Permanence adjustment factor due to decay of biochar to be defined for application type k (dimensionless). Biochar is subject to natural decay rate when used in soil applications such as in agriculture, forests, croplands, or grasslands.

"The temperature in the main pyrolysis zone just below the flame curtain is 680°C to 750°C and cools down slowly below the main pyrolysis zone when new feedstock layers are added to 150– 450°C

depending on the duration of batch before final quenching" (Cornelissen et al. 2016)/23/. It matches with average values collected from a sample of production facilities during process testing as described in Section 5. Due to high temperature pyrolysis, the fraction of biochar remaining after hundred years is 0.89 (Table 4AP.2 of IPCC (2019)/26/.

4 VALIDATION OPINION

RINA Services S.p.A. has been engaged by SRCNatura Sure Pvt. Ltd. to perform the validation of the project activity. The management of the project participant/owner is responsible for the preparation of the GHG emissions data and the reported/estimated GHG emissions reductions on the basis set out within the project's monitoring Plan in the VCS PD and the approved VCS Methodology: VM0044: Methodology for Biochar Utilization in Soil and Non-Soil Applications VM0044, Sectoral Scope 13, Version 1.1 Published on 5 July 2023.

Our Validation approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board and VCS board. Our approach is risk-based, drawing on an understanding of the risks associated with estimated GHG emissions data and the controls in place to mitigate these. The validation can confirm that:

- The projects description compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS standard version 4.4 /04/
- The project's baseline and additionality and monitoring plan are assessed against "VCS Methodology: VM0044" for grouped project/05/.
- A risk-based approach has been followed to perform this validation activity. The review of the project description and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews with Project Owner have provided with sufficient evidence for positive validation opinion as per the requirement of VCS.

The conclusions of this report demonstrate that the proposed VCS project, as described in the VCS PD/01/, conforms to all applicable validation criteria.

The project complies with the validation and verification criteria for projects and their GHG emission reductions or removals set out in VCS standard Version 4.4 and includes any qualifications or limitations.

RINA declaration that the validation of the GHG statement was conducted in accordance with ISO 14064-3; 2019.

The validation team is hereby able to conclude and confirm that the project is expected to achieve the estimated emission removals as stated in the PD".

Validated GHG emission reductions and removals in the above period:

Year	Estimated GHG emission reductions or removals (tCO2e)
Year 2023 (16-Oct - 2023-- 31- Dec-2023)	23,366
Year 2024	110,760
Year 2025	110,760
Year 2026	110,760
Year 2027	110,760
Year 2028	110,760
Year 2029	110,760
Year 2030 01 Jan 2030-- 15-Oct -2030)	87,394
Total estimated ERs	775,320
Total number of crediting years	7 years
Average annual ERs	110,760

APPENDIX I: RESOLUTIONS TO CARS/CLS

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

FAR ID	01	Section no.	1.11	Date : 28/10/2023
Description of FAR				
Test report of biochar quality (carbon and hydrogen content) to be provided during the first verification of the project activity.				
Project participant response				**Date:** 30/10/2023
Test reports will be provided during the first verification for Organic Carbon Content, H:Corg, and Moisture content as per the monitoring plan in the PDD.				
Documentation provided by project participant				
-				
DOE assessment				**Date:** 01/11/2023
PP to provide the test reports during the 1st verification of the project.				

Table 2. CL from this verification

CL ID	01	Section no.		Date : 27/10/2023
Description of CL				
PP is requested to provide the following documents: - to demonstrate the ownership by the project proponent - Project start date - Training documents/record of farmers and surveyors - Test report of the biochar content				
Project participant response				**Date:** 30/10/2023

1. We have signed agreements with the farmers involved in the project, whereby all rights, title and interest in the emission reduction credits accruing from the project would be solely vested in the PP, viz., M/s. SRCNatura Sure Pvt. Ltd. The PP thus demonstrates their legal right to control and operate the project. Additionally, while uploading their biochar production data into the mobile tracking app devised for the project, farmers will need to declare and sign that they have no right over the potential emission reduction credits claimed from the project and that the same is being transferred in the name of the PP. This further ensures the clear legal ownership of the PP in the project.
2. The first production facility under the project started at Biswaranjan Sahu's farm (UID: 288nKxZbT0Gp-zWvfAQ9wA) , located at coordinates "19.9110556,85.9356195", (Inspection ID: eJZ.dBG2RG25cX.0XgnCeQ) on the 16th of October 2023. This is documented in the field report prepared by the PP's field officer (ID: HJYO8gTsQLyLHOrJOfDFFw) and also bears the signature of the owner of the farm. We have attached the report of even date as evidence of the completion of agricultural activity at the farm and can hence be considered as evidence of the start date of the project.
3. We held multiple open house sessions for training our monitoring team on the procedures to be followed for implementing the project. The final training and testing session was conducted on 10/10/2023 in Puri by officials of SRC-Natura Sure Pvt. Ltd. and was also attended by the village representatives and local staff. We have attached the following documents as evidence of the training:
    a. Extract from Attendance records of training
    b. List of participants
    c. Training presentation
    d. Sample Photographs of the training session
4. Please find attached a copy of the test report for heavy metal content in the biochar and yield rate for biomass to biochar conversion, as requested.

Documentation provided by project participant	
Training records, signed agreements, test report and first production facility record	
DOE assessment	**Date:** 01/11/2023

PP has provided the following documents:

- signed agreements with the farmers involved in the project,
- first production facility under the project started at Biswaranjan Sahu's farm
- training records
- test report for heavy metal content

The audit team verified the documents and cross checked during the site audit and found to be correct. Thus, this CL is closed.

CL ID	02	Section no.		Date : 27/10/2023
Description of CL				

PP is requested to provide supporting documents/evidences: - for local stakeholders' consultation process - handout provided to attendees - survey report for baseline scenario
Project participant response **Date:** 30/10/2023
- Please find the docs.
Documentation provided by project participant
Please find the below documents: 1. Extract of Attendance Register 2. Script of local stakeholder consultations (LSC) in English translated from Odia 3. Sample invitation card sent to residents of the villages in which the project will be implemented 4. Sample posters put in villages 5. Sample of handouts distributed at the end of LSC sessions 6. Excel File showing summary of responses compiled from results of the baseline survey conducted by us regarding the treatment/use of the biomass residues in the baseline scenario, i.e. in the absence of the project. This survey targeted 100% of the farmers and comprised questions as to what practice they followed for the treatment/use of the biomass residues in their fields. The survey indicated that a majority of the farmers (exceeding 90%) either burned the crop residue in their fields to make way for planting new crops or left the biomass to decay. The survey results have conclusively proven the baseline scenario described in the VCS- PD at section 3.4.
DOE assessment **Date:** 01/11/2023
PP provided all the relevant documents and the same has verified by the audit team and found it to be correct. Hence the CL is closed.

CL ID	03	**Section no.**	3.6	**Date :** 27/10/2023
Description of CL				
PP is requested to provide clarifications/ documents/evidences 1) on methodology deviations and evidence of approval/confirmation from VERRA: - Moisture content for calculation of biochar on dry weight basis - H:C org (Ratio of hydrogen to organic carbon) of biochar produced 2) Calibration frequency of weighing equipment 3) Estimates on mass of biochar on a dry weight basis for production facility (tonnes) per year				
Project participant response				**Date:** 30/10/2023

Point No. (1) reply: We would like to inform you that we have had a detailed discussion in a call with the concerned team from Verra on 12/09/2023 during which we discussed various aspects of the methodology as applying to our project regarding (a) moisture content for calculation of biochar on dry weight basis and (b) H:Corg ratio. and the need to take deviations from the same; to which Verra advised us that the proposed deviations could be looked into by the VVB validating the project and decide on the same accordingly. We have attached Verra's email dated 08/09/2023 which confirms the above mentioned point. *Point No. (2) reply:* We would like to state that the calibration of the weighing scale used for measurement of biochar weight would be carried out on an annual basis. We have stated the calibration frequency in the monitoring plan of the revised VCS-PD. *Point No. (3) reply:* Regarding the quantities of biomass residues that our project would utilize, we would like to state that the estimations of biochar yield per production facility per year have been derived on the basis of our longstanding experience in agricultural biomass waste projects as well as empirical knowledge in the field. The estimations made in Table 1.1 of the VCS PD are also supported by expert technical opinion which we have attached along with our reply for your review.
Documentation provided by project participant
- Expert judgment report - Methodology deviation details

DOE assessment	**Date:** 01/11/2023
PP has provided the relevant information/ documents and the same has been verified by the audit team and found it to be correct. Thus CL is closed.	

Table 3. CAR from this verification

CARL ID	01	**Section no.**	5	**Date: 27/10/2023**
Description of CAR				
PP is requested to provide the following: - Weblink for IPCC 2019 default values for organic content in section 5.1 of PD/MR				
Project participant response				**Date:** 30/10/2023
Here is the IPCC 2019 weblink: https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch02_Ap4_Biochar.pdf				
Documentation provided by project participant				
As above				

DOE assessment	Date: 01/11/2023
PP provided the weblink for the same. The CAR is closed.	

CARL ID	02	Section no.	2.4	Date: 27/10/2023
Description of CAR				
PP is requested to provide the clarifications/correction for the public comments received during the global stakeholder's consultation process for thirty days (19/09/2023 to 19/10/2023) on VERRA website: 1) How are you manage the data on such a large scale? The tech for data collection must be explained in details in the description. Otherwise its a pointless thing. 2) Why is this project being done in Odisha and why not any other state. How was this selection made? 3) Has the project proponent taken permission from government bodies to burn stubble? Stubble burning is not a big issue in Odisha. 4) Biomass claimed is very large. What is the source of tracking for this biomass.				
Project participant response				Date: 30/10/2023

Here are the answers for the public comments received:

1) We are managing the data on such a large scale using the Reignite mobile app. The mobile app has been developed and is maintained by the Together for Restoration Software Engineering team consisting of software engineers dedicated for the project. The app is private and only available to the Reignite monitoring team to monitor and report biochar production and application. The procedure for data collection is explained in the monitoring plan in the PDD. The data is stored in a Google Cloud database with a backup facility.
2) We have been working with farmers in Odisha for years and we are introducing the project for the betterment of local communities in Odisha. It is also noted that in the state of Orissa, paddy is the principal crop. The biochar from cultivation of the paddy crop is estimated by us to be 9.5 tonnes per production facility (such as envisaged in the project) per year, on a dry weight basis. Among other crop residues, paddy has one of the highest residue yields and therefore the potential of emission removals to be claimed is high wherever paddy is the main crop. This was one of the main considerations behind the selection of the state of Orissa for planning the biochar project.
3) The project does not involve burning of stubble. In fact, the project is meant to stop stubble burning which is currently happening across India. Farmers will be producing biochar using a special technique called flame curtain pyrolysis. Biochar production does not require any government permissions as of now. We would like to point out that the widespread practice of "open burning" or "left to decay" of crop residues results in the loss of carbon absorbed during the life of the crop. By converting the biomass residue into biochar and its further soil application, the project prevents this loss from taking place.
4) The source of tracking for biomass is the Reignite mobile app. Our field officers interview farmers at the beginning of each agricultural season for the estimated amounts of biomass available and expert judgment is used further to validate the estimates. Regarding the quantities of biomass residues that our project would utilize, we would like to state that the estimations of biochar yield per production facility per year have been derived on the basis of our longstanding experience in agricultural biomass waste projects as well as empirical knowledge in the field. The estimations made in Table 1.1 of the VCS PD are also supported by expert technical opinion.

Documentation provided by project participant

Revised VCS PD

DOE assessment	**Date:** 01/11/2023

PP has provided the responses to the global stakeholder comments. During on-site audit the audit team assessed the biogenic waste availability in the villages of Odisha and found that there is ample amount of waste is available in the area and in the absence of the project activity, the prevailing scenario is stubble burning and the agro waste is left is open to decay.

The PP is using the Reignite mobile app to maintain and monitor the data. The data is recorded into the app by the field officers and the same has been verified by the audit team during on-site audit. Thus, the CAR is closed.

APPENDIX II: LIST OF DOCUMENTNS

Ref No.	*Document*
/01/	VCS Project Description (PD) of the project titled, "Project Reignite: Turning Farm Waste to Climate Action", version 1.1, dated 31-October-2023
/02/	Emission Reduction (ER) estimation sheet, version 01 dated 02-September-2023
/03/	Extract from baseline Survey Data sheet, dated 30-October-2023
/04/	VCS: VCS Standard, Version 4.4 (v 4.4), Requirements Document of 21-December-2022 VCS: VCS Program Guide, VCS Version 4.3 (v4.3), Requirements Document of 21-December-2022
/05/	Methodology for Biochar Utilization in Soil and Non-Soil Applications VM0044, Sectoral Scope 13 Version 1.1 Published on 5 July 2023, https://verra.org/methodologies/vm0044-methodology-for-biochar-utilization-in-soil-and-non-soil-applications/
/06/	a) CDM validation and verification standard for programmes of activities, version 03.0 dated 09-September-2021 b) Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 09.0 dated 27-May-2021 c) **http://www.raosoft.com/samplesize.html**
/07/	Baseline survey results
/08/	Extract from Attendance Register maintained for LSC Meetings
/09/	Sample invitation card sent to local stakeholders
/10/	Sample poster put in villages prior to LSC
/11/	Sample hand out provided at the end of meetings
/12/	Transcript of LSC Meetings, dated 1-January-2023
/13/	Summary of LSC Meetings with photographic evidence, dated 5-October-2023
/14/	Training Manual
/15/	Extract from Training Images
/16/	Training records of monitoring team
/17/	Test report of heavy metals presence in Biochar, dated 20-September-2023

/18/	Test report of yield rates for each feedstock type, dated 05-September-2023
/19/	Screenshots of Reignite Mobile app
/20/	Record of first batch of biochar production on 16th October 2023 (ID: eJZ.dBG2RG25cX.OXgnCeQ), dated 18-October-2023
/21/	Expert judgement on expected biomass availability and biochar production
/22/	Agreement between SRC-Natura Sure Pvt. Ltd. and Farmers
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/32/	IPCC Fifth Assessment Report

APPENDIX III: SITE PHOTOGRAPHS