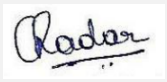
BIOCHAR PROJECT-1 BY WEACT

Document Prepared by 4K Earth Science Private Limited

Report ID	23037-VCS
Project Title	Biochar Project-1 by WeAct
Project ID	4578
Verification period	12-April-2023 to 30-June-2023 (inclusive of both dates)
Crediting period	12 April 2023 to 11 April 2030 (inclusive of both dates)
Original date of issue	08-June-2024
Most recent date of issue	02-May-2025
Version	3.1
VCS Standard Version	4.7
Client	WeAct Pty Ltd
Prepared by	4K Earth Science Private Limited

Approved by	Chandrakala R  Managing Director
Work carried out by	Mr. Koteswara Rao (Technical Expert TA 15.1and Local Expert) Ms. Swati S Acharya (Team Leader and Local Expert) Mr. Praveen Babu S (Team Member) Mr. Ma Paa Puratchikkanal (Technical Reviewer AFOLU TA 15.1)

Summary:

'WeAct Pty Ltd' has commissioned "4K Earth Science Private Limited" to carry out the Joint Validation and Verification of the project "Biochar Project-1 by WeAct", with regard to the relevant requirements of VCS Standard Version 4.7/8/. The monitoring period verified is from 12-April-2023 to 30-June-2023 (including both the days).

This project activity is a voluntary initiative in the state of Telangana in India by WeAct Pty Ltd.

The technical details of the project is verified from the technical specifications /16/, Efficiency Test /22/, photos /21/ and during on-site audit and found consistent.

The objective of this validation activity is to have an independent third party for the assessment of theproject design, estimated ER sheet and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. As a result of the validation, the Assessment team confirms that:

- The project fulfils criteria of VCS Standard Version 4.7.
- The project is in line with all relevant VCS requirements.
- The project additionality is sufficiently justified in the Joint PDMR.
- The monitoring plan is transparent, adequate and in line with applied baseline and monitoring methodology
- The calculation of the Baseline emission reductions is carried out in a transparent andconservative manner, so that the calculated emission reductions of 149,282 tCO_2e is mostlikely to be achieved within the first 7 years of crediting period.

No restrictions or uncertainties were identified related to the joint validation and verification.

The management of the 'WeAct Pty Ltd' responsible for the preparation of the GHG emissions data and the reportedGHG emissions reductions on the basis set out within the project final JOINT PROJECT DESCRIPTION & MONITORING REPORT Version 05 dated 05-April-2025 . The calculation and determination of GHG emission reductions from the project is the responsibility of the management of 'WeAct Pty Ltd'. The development and maintenance of records and reporting procedures are in accordance with the JOINT PROJECT DESCRIPTION & MONITORING REPORT, the final Version 05 dated 05-April-2025 .

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions in the ER sheet from the project based on the reported emission reductions in the final JOINT PROJECT DESCRIPTION & MONITORING REPORT Version 05 dated 05-April-2025 . The total monitoring period considered is 12/04/2023 to 30/06/2024 within which emission reductions are accounted with the data available for the period "12/04/2023 to 12/06/2023". The project is designed to accommodate any low-tech facility that may be used by PP during the season. However, during the first monitoring period, the Box-Kiln method was used for biochar production. Therefore, for the purpose of ex-ante ER reporting in the VCS PD-MR, the results for approach 3 have been included. During each subsequent monitoring period, the MR will report the

approaches and methods used for biochar production, and the ex-ante values will be adjusted accordingly for ER comparison.

Further during Crediting period (12-April-2023 to 11-April-2030), the project will produce a net total amount of 149,282 tCO2e of emission reductions. The crediting period subject to this PDMR is inclusive of first and last day of period. However, during this joint validation & verification, first monitoring period was reported for 12-April-2023 to 30-June-2023 (inclusive of both dates) and a net 10 tCO2e emission reductions achieved.

Based on an understanding of the risks associated with reporting GHG emissions data and the controlsin place to mitigate these, 4KES planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated for an ex-ante estimation.

Year	Estimated GHG emission reductions or removals (tCO_2e)
Year 1 (12 April 2023 to 11 April 2024)	21,326
Year 2 (12 April 2024 to 11 April 2025)	21,326
Year 3 (12 April 2025 to 11 April 2026)	21,326
Year 4 (12 April 2026 to 11 April 2027)	21,326
Year 5 (12 April 2027 to 11 April 2028)	21,326
Year 6 (12 April 2028 to 11 April 2029)	21,326
Year 7 (12 April 2029 to 11 April 2030)	21,326
Total estimated ERs	149,282
Total number of crediting years	7
Average annual ERs	21,326

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1 INTRODUCTION

1.1 Objective

4KES has been contracted by 'WeAct Pty Ltd' to undertake the Joint validation and verification of the project titled "Biochar Project-1 by WeAct" (VCS ID 4578). The Monitoring period verified is from 12/04/2023 to 30/06/2023 (including both the days).

The purpose of this joint validation and verification is to have an independent third-party assessment of whether the project activity conforms to the qualification criteria set out in the VCS standard Version 4.7 /08/ to attain real, measurable, additional and permanent emission reductions.

The validation statement/opinion is a written assurance that:

- The project complies with all the applicable VCS requirements and has the ability to generate the emission reductions stated over the project's crediting period.
- The validation followed the requirements of the current version of the VCS Standard Version 4.7 /08/ and VCS program guide 4.3 /07/ to ensure the quality and consistency of the validation work and the report.

The objectives of the verification exercise are, by review of objective evidence, to establish that:

- The project activity has been implemented and operated as per the Joint Project Description and Monitoring Report (JPD & MR) and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Monitoring report and other supporting documents are complete;
- The data is recorded and stored as per the monitoring methodology and approvedmonitoring plan.
- To confirm that the monitoring system is implemented and fully functional to generate Voluntary Emission Reductions (VERs/VCUs) without any double counting, and
- To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The validation scope is given as an independent and objective review of the project design and monitoring plan which is included in the Joint PD & MR and other relevant supporting documents.

The scope of work covered in the validation is described below:

- To validate whether the project activity meets the requirements of VCS Standard Version 4.7 /08/ and VCS program guide 4.3/07/ including additionality and compliance with local laws.
- To evaluate whether the baseline and monitoring plan are in conformance with the applied methodology from the VCS approved GHG program.
- To confirm that the information presented are completed, consistent, transparent and free of omission or material error.
- Background investigation and follow up interviews.

The information in the Joint PD & MR is reviewed against the criteria of VCS Standard 4.7 /08/, VCS Program Guide 4.3/07/ and the approved baseline and monitoring VCS methodology VM0044 version 1.1 /6/

4KES has performed validation based on a risk-based approach focusing mainly on the significant risks to meet the qualification criteria and the ability to generate Verified Carbon Units (VCUs).

The scope of verification is to assess the claims and assumptions made in the Joint PD & MR against the VCS criteria, including but not limited to, VCS standard, applied methodology and other relevant rules and requirements established for VCS project activities.

The validation and verification are not meant to provide any consulting towards the client. However, stated request for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Reasonableness of Assumptions and Level of Assurance

The Joint validation & verification report is based on Joint PD & MR /02/, Monitoring plan, supporting documents made available to the validator and information collected through performing interviews during the on-site audit. Based on the process and procedures conducted, 4KES states with a reasonable level of assurance that information in the Joint PD & MR:

- is materially correct and is a fair representation of the actual project details, and

- is prepared in accordance with VCS requirements and the applied CDM methodology for information pertaining to additionality, GHG qualification, monitoring and reporting

The validation & verification work is carried out as per this requirement and the validation & verification opinion is assured provided the credibility of all above. Details are presented in the Validation & Verification statement in section 4 below.

The verification team verified the complete monitoring data and for the monitoring parameter of the monitoring plan against the Joint PD & MR /02/, ER Calculation sheet /03/ and actual ER

Sheet /04/ and confirms that the reported emission reductions are free from any type of material errors. On-site audit was also conducted to verify the implementation and monitoring plan of the project activity. The implementation of the project activity (i.e., major equipment andthe metering arrangement) was verified during the interview and found in accordance with the Joint PD & MR /02/. Verification team has also verified the technical details of the project equipment and metering arrangement with the supportive documents and found correct. Therefore, 4KES confirms that the validation & verification is conducted with reasonable level ofassurance.

1.4 Summary Description of the Project

The project involves the establishment of a biochar production facility in the Telangana district of India, aimed at addressing the region's crop residue management challenges while enhancing soil carbon levels through biochar application. Biochar, a carbon-rich, charcoal-like substance, is produced through the pyrolysis of biomass in a low-oxygen environment. While biochar has a long history of use in various cultures worldwide, its adoption and exploration in India have been relatively recent. As such, promoting biochar production and use requires substantial effort, including raising awareness, fostering technological and financial inclusion, improving waste collection and handling practices, and establishing effective monitoring systems to ensure sustainable production and application.

The project employs low-tech production methods, specifically the soil-pit and box-kiln techniques. These two methods provide a solid foundation for small-scale production, experimentation, and community-level initiatives. The process is designed to limit airflow, ensuring that the biomass undergoes pyrolysis, a process where it decomposes in the absence of oxygen. The project will focus on using a single type of waste biomass—cotton stalk—as the feedstock for biochar production, with the resulting biochar being applied to improve soil health.

The start date of the project 12/04/2023 which is the date of production of first batch of biochar under the project activity. The assessment team checked the Biochar making log book and Biochar weigh log book /14/ and confirms that the start date chosen is as per the paragraph 3.8.1 of the VCS Standard, version 4.7/8/.

The project is designed to accommodate any low-tech facility that may be used by PP during the season. However, during the first monitoring period, the Box-Kiln method was used for biochar production. Therefore, for the purpose of ex-ante ER reporting in the VCS PD-MR, the results for approach 3 have been included. During each subsequent monitoring period, the MR will report the approaches and methods used for biochar production, and the ex-ante values will be adjusted accordingly for ER comparison.

The detailed technological specification of the project activity is included under section 1.5 of the PDMR/2/. The technical details are verified from the 'Technology specifications reference letter & specifications' issued by 'Samuchit Enviro Tech'/25/.

The project is expected to achieve an annual average emission reduction of 21,326 tCO2e over the first crediting period of 7 years and a total emission reduction of 149,282 tCO2e during the first seven years renewable crediting period (12/04/2023 to 11/04/2030)/3/.

During the current verification period, i.e., 12/04/2023 to 30/06/2023 (1st verification of 1st Crediting period), the project has achieved an emission reduction of 10 tCO2e/4/.

The important timeline of the project has been given below:

07- April – 2023	Public Stakeholders Meeting
12 April 2023	Start date

Other important details of the project:

Crediting Period type:	Renewal Crediting Period Period: Seven years, twice renewable
First Crediting Period:	12-April-2023 to 11-April-2030 (inclusive of both dates)
Current Monitoring Period:	12-April-2023 to 30-June-2023 (inclusive of both dates)
GHG ERRs achieved:	10 tCO2e

The project participants involved in the project are as per below tables.

Project participant:

Organization name	WeAct Pty Ltd
Contact person	Satish Duvvuru
Title	Director
Address	5/663 Victoria Street, Victoria 3067, Australia.
Telephone	+61-409 135 580
Email	satish@weact.com.au

Other Entities Involved in the Project:

Organization name	Not applicable.
Role in the project	Not applicable.
Contact person	Not applicable.
Title	Not applicable.
Address	Not applicable.
Telephone	Not applicable.
Email	Not applicable.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The validation and verification process involves the following:

- The desk review of documents and evidences submitted by the project proponent incontext of the reference VCS rules and guidelines,
- Undertaking on-site audit, interview or interactions with the representative of theproject proponent,
- Reporting audit findings with respect to clarifications and non-conformities and theclosure of the findings, as appropriate and
- Preparing a draft validation and verification report
- Resolution of outstanding issues and the issuance of final validation and verificationreport and opinion
- The prepared validation & verification report and other supporting documents then undergo an internal quality control before being submitted to the Verra Secretariat forregistration & issuance of credits as per VCS standard version 4.7 /8/
- Verification approach: during the current verification process, the audit team did not conduct any sampling approach. More details are included under the section 2.3 below.

In order to ensure transparency, a validation & verification protocol was prepared for the project according to the VVS for PAs version 03.0, validation & verification requirements and VCS Standard version 4.7/08/. The Clarification Requests (CL) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) for issues relating to project implementation that required review during the next verification of the project activity.

4KES assessed and determined whether the proposed implementation and operation of the project activity, and the steps taken to report emission reductions comply with the criteria and relevant guidance provided by the VCS Board.

Duration of Validation & Verification:

Validation & Verification Contract	03/07/2023
On-site audit	29/11/2023 to 30/11/2023
Draft Validation and Verification Report	12/04/2024
Final Validation and Verification Report	19/12/2024

2.2 Document Review

The validation & verification has been conducted using the VCS Standard and the applied methodology VM0044: METHODOLOGY FOR BIOCHAR UTILIZATION IN SOIL AND NON SOIL APPLICATIONS version 1.1 as the reference criteria. The Assessment team had done the completeness check of Joint PD & MR submitted by the PP as per the VCS standard Version 4.7/08/ requirements.

Furthermore, a desk review was also carried out to assess the following:

- Information of project details in compliance with VCS PD template
- Appropriateness of methodology VM0044: METHODOLOGY FOR BIOCHAR UTILIZATION IN SOIL AND NON SOIL APPLICATIONS version 1.1/6/ applied to the project activity.
- Compliance with relevant laws and regulations
- Correctness of application of baseline and monitoring methodology
- Demonstration of additionality
- Monitoring plan described in the VCS PD
- Stakeholder consultation
- Proof of listing of project under pipeline

The Joint PD & MR version 01 dated 02/01/2024 /01/ was initially reviewed and the PP was requested to submit the revised documents along with the supporting information and documents. The revised documents and additional supporting documents were further assessed by the validation & verification team during desk review. During the validation and verification process, the revised Joint PD & MR (final version 05, dated 05-April-2025) /02/ and the supporting documents were assessed to confirm the actions taken by the PP to the CARs and CLs issued.

During the pre-submission to VERRA stage, the Assessment team has reviewed the final version of the Joint PD & MR (i.e., final Version during the first submission was 03, dated 25/03/2024) to confirm that all changes agreed have been incorporated adequately. However, the assessment was further extended during the PRR stage and final assessment was concluded based on the satisfactory closure of all findings, reported under the final version of the Joint PD & MR as version 05, dated 05-April-2025. The documents that were considered during the validation and verification process are given in Appendix of this report.

The assessment is performed by a verification team using a protocol. The cross checks between information provided in the Joint PD & MR and information from sources other than those used, if available, the team's sectoral or local expertise and, if necessary, independent background investigations.

2.3 Interviews

As a part of joint validation & verification, the on-site assessment was performed by assessment team on 29/11/2023 to 30/11/2023. During site visit, the verification team interviewed representative of PP and O&M team who is responsible for monitoring of the project activity. Kindly find below names of the persons interviewed:

No.	Interview			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Kumar D	Udaya	WeAct	29/11/2023 to 30/11/2023	• Project Implementation status • Project Boundary • Methodology Eligibility criteria • Host country Requirements • Monitoring Plan • Project activity start date and Crediting period • Roles and responsibilities of the project owner • Local Stake holder consultation • Baseline assumptions • Additionality • Training to the Monitoring personnel • PD filling • Editorial in PD • Additionality • ER calculation • Actual ER calculation	Koteswar Rao Swati S Acharya Praveen Babu S
2	Reddy P	Praneeth	Aranya	29/11/2023 to 30/11/2023		
3	Reddy D	Sathish Kumar		29/11/2023 to 30/11/2023		
Beneficiary Details						
1	Eshwar Patel		Beneficiary		- Verification of monitored data - Awareness about ownership of CERs - All parameters verification	
2	Khaja		Beneficiary			
3	Bakkappa		Beneficiary			

4	Sunil	Beneficiary	
5	Ravinder	Beneficiary	
6	Sammamma	Beneficiary	
7	Manemma	Beneficiary	
8	Sushilamma	Beneficiary	
9	Manikyamma	Beneficiary	
10	Bujiamma	Beneficiary	
11	Bagyamma	Beneficiary	
12	Nagamani	Beneficiary	
13	Sheshi Kala	Beneficiary	
14	Lakshmi	Beneficiary	
15	Purra Nassimulu	Beneficiary	
16	Begali Sangappa	Beneficiary	
17	Vittal	Beneficiary	
18	Jagan Krishtapur	Beneficiary	
19	Purra nadhulear	Beneficiary	
20	Beragi Gopal	Beneficiary	
21	Sam Sum	Beneficiary	
22	B. Suresh	Beneficiary	
23	Saber	Beneficiary	
24	Meenammal	Beneficiary	
25	Vinodamma	Beneficiary	
26	Saugamma	Beneficiary	
27	Bagirthamma	Beneficiary	
28	Sudharleer	Beneficiary	
29	Kistaiali	Beneficiary	
30	Rasmma	Beneficiary	

31	Prameeth	Beneficiary	

Approach:

The audit team considered non-sampling approach during the current monitoring period. The project is not a grouped activity, whereas different approaches adopted by PP for production of biochar but within the project boundary confirmed in the PDMR. During the current monitoring period PP adopted only the 'Approach 2' which defines "Multiple biochar production moveable Box-Kilns across the project boundary". This approach allows PP to adopt one or more Box-kilns which can be used in one or more locations where biochar can be produced, However, PP conducted only a pilot phase implementation during the current monitoring period that included single box kiln (with the same specified technical parameters) which was operated in one location only. Therefore, sampling approach was not required during the on-site audit.

2.4 Site Visits

As a part of joint validation & verification, the on-site assessment was performed by assessmentteam on 29/11/2023 to 30/11/2023. The following tasks were undertaken during the site visit.

- To understand and evaluate the project area/boundary, project emissions leakage and leakage management aspects.
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the Monitoring Plan.
- To validate all datasets provided are in line with the methodological requirements.
- To interact with the communities directly and indirectly dependent/impacting/impacted by the project and understand the socioeconomic dimension of the project.
- To understand the biodiversity dimension of the project
- To check the project management, meet the management team, check the monitoring plan and its on ground implementation practices.
- To check the grassland area as defined and mentioned in the PD.
- Legal ownership of the lands.
- Review the financials audits and fund flow.

Duration of on-site inspection: 29/11/2023 to 30/11/2023				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	**Opening Meeting**	Aranya Office, Around Zaheerabad, Sangareddy District, Telangana	**29/11/2023 to 30/11/2023**	**Koteswar Rao** **Swati S Acharya** **Praveen Babu S**
2	**Visit to Site**			
3	**Document Review & Closing Meeting**			

2.5 Resolution of Findings

As an outcome of the validation and verification process, the team can raise different types of findings:

A Clarification Request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met

Where a non-conformance arises the team leader shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- The VCS requirements have not been met;
- There is a risk that emission reductions cannot be monitored or calculated.
- The validation and verification process may be halted until this information has been made available to the team leader's satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

During the validation and verification process, total 23 CAR and 04 CL were raised and resolved satisfactorily. The list of CARs/CLs/FARs raised and the response provided, the mean of validation and verification, reasons for their closure and references to correction in the relevant documents are provided in Appendix of this report.

2.5.1 Forward Action Requests

02 FARs are raised during the validation & verification.

3 VALIDATION FINDINGS

3.1 Project Details

The project involves establishing a biochar production facility in the Telangana district of India. Its aim is to tackle the issue of crop residue in the region while improving soil carbon through biochar application. Biochar is a carbon-rich charcoal-like substance produced from the pyrolysis or heating of biomass materials in a low-oxygen environment. While biochar has a long history of use in various cultures worldwide, its adoption and exploration in India have been relatively recent. Therefore, significant efforts are required to promote the concept of biochar production and utilization. These efforts include raising awareness, implementing technological and financial strategies, improving waste collection and handling practices, and establishing monitoring mechanisms. These steps are essential for ensuring the sustainable production and application of biochar. The project activity is expected to generate an annual average of 22,376 tCO_2e emission reductions which is estimated based on a projected generation of biochar from cotton stalks as feedstock during each harvesting season in each year. During the current monitoring period the net GHG emission removals achieved by the project is 10 tCO_2e.

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Audit history	As the project is under-going registration and issuance, the assessment team has checked the audit history mention in section 1.2 of the PDMR and found that the audit history is filled appropriately.
Sectoral scope	Sectoral scope 13 – Waste Handling and Disposal (WHD)
AFOLU project category, if applicable	Not applicable
Project activity type	Waste Handling and Disposal (WHD)
General eligibility of the project to participate in the VCS Program	• *VCS Standard v4.7 was referred by the assessment team and found that, the project activity is included under the scope of the VCS Program and not excluded under Table 2.1 of the VCS Standard v4.7* *(i) The Project activity includes Methane (CH4) which is one of the seven Kyoto Protocol GHGs which is as per the requirement of para 2.1.1 of VCS standard 4.7, and also, the project activity uses the Methodology VM0044 which is approved by Verra. Hence, the assessment team that the project is eligible under the VCS program.*

(ii) *As per the Table 1, of section 2.1.3, the exclusion conditions do not apply to gasification, pyrolysis, combusting biofuels, biogas, fractions of renewable biomass in refuse-derived fuels, agro/forest biomass residues in waste streams that are sent to landfills, CO2 capture and storage from renewable biomass combustion, or thermal efficiency improvements (e.g., cook stoves.). The assessment team confirms from the on-site inspection that the project handles crop residues (cotton stalks) and process involve is the pyrolysis. Hence, this project is eligible as per the requirement of VCS standard 4.7, para 2.1.3.*

- *The project was listed and was open for public comment between 23-August-2023 to 22-September-2023. This was verified from Verra website (https://registry.verra.org/app/projectDetail/VCS/4578). The start date of the project 12-April-2023 which is the date of production of first batch of biochar under the project activity. The assessment team confirm using the Biochar making log book and Biochar weigh log book /14/ that which is as per the VCS Standard.*
- *The project activity uses the Methodology VM0044 which is approved by Verra. Hence, the assessment team that the project is eligible under the VCS program. The methodology doesn't have the scale and/or capacity limits.*
- *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.*
- *The applied methodology stipulates some conditions under which methodology is not applicable, such non-eligibility related information are discussed below:*

Conditional Para	*Assessment*
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-	*The assessment team confirms based on the on-site inspection that the biochar used in the project activity is applied to soil, creating a long-lasting and persistent carbon sink. Consequently, there are no applications related to*

	lived and persistent carbon sink.	*energy, fuel, or non-soil uses considered under this project activity. Hence, the methodology is applicable*
	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).	*The assessment team confirms based on the on-site inspection that there are no non-soil applications of biochar considered under the project activity. Additionally, the soil application process is noted to be not involve burning or oxidizing the biochar. Hence, the methodology is applicable.*
	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).	*The assessment team confirms based on the on-site inspection that no non-soil applications of biochar are considered under the project activity. Hence, the methodology is applicable.*
AFOLU project eligibility, if applicable	• *Not applicable*	
Transfer project eligibility, if applicable	• *The assessment team checked the Declaration on Statement of No-Double Accounting of emission Reduction Claim/15/ declaration provided by PP which state that the project is not included under any emissions trading program or any other mechanism that includes GHG allowance trading. Also inline with the Appendix 2 and Section 3.23 (Participation under other GHG Programs) of the VCS Standard.*	

Project design	*The project has been designed to multiple options or approaches for the biochar production facility. These options include:* *Approach 1: Multiple in-situ earth-pits for biochar production across the project boundary.* *Approach 2: Multiple moveable Box-Kilns for biochar production across the project boundary.* *Approach 3: Centralized biochar production pit(s) for different regions across the project boundary.* • *The assessment team by means of on-site inspection confirms that, the project includes available cotton wastes from within the project boundary & low-tech biochar production facilities within the project boundary, hence biochar is locally produced and utilized for soil application in the nearby fields. This includes some goods & services from local suppliers, vendors and also local resources are being deployed with the help of a local implementing entity 'Aranya Agriculture Alternatives" (i.e. third party) which is confirmed through the official declaration provided by the Aranya Agriculture Alternatives and hence not being developed as a grouped project.*
Project ownership	The assessment team found that the entire project is financed by WeAct Pty Ltd (PP). The low-technology biochar production facilities are fully owned, controlled and operated by WeAct with the assistance of a local representative "Aranya Agriculture Alternatives". The audit team confirmed during the site visit that Aranya's role is limited as local representative to manage ground activities, whereas "WeAct Pty Ltd." owns and controls the production of biochar. The farmers who supply cotton stalks and use biochar for soil application, are not involved in the production process. The audit team interviewed local stakeholders and also verified that project's legal and operational rights including the right to the VCUs are not restricted by any stakeholders; PP obtains Free Prior Informed Consents (FPIC/32/) from each farmer in the form of signed FPIC form. From these evidences the audit team is able to confirm that PP has the legal rights to control and operate the project and also rights of VCUs are voluntarily given to PP by each farmers included in the FPIC/32/ form. The information included under section 1.8 of the final PDMR are appropriate and in line with the verification conducted by VVB. Thus, ownership solely belongs to WeAct. This is further supported by

	PP through Board Resolution/27/ and in accordance with the VCS Program specifications on project ownership.
Project start date	The start date of the project 12-April-2023 which is the date of production of first batch of biochar under the project activity. The assessment team confirm using the Biochar making log book and Biochar weigh log book /14/ that which is as per the para 3.8.1 of the VCS Standard, version 4.7.
Project crediting period	Seven years, twice renewable
Project scale	Project
Likelihood of achieving estimated GHG emission reduction or removals	149,282 tCO2
Technologies and measures implemented by the project activity	The technology measures proposed and implemented by PP at project level is limited to biochar production using low-technology facilities in line with the methodological provisions The project includes the soil-pit methods and box-kiln method which are two common low-tech approaches that can serve as a starting point for small-scale production, experimentation, and community-level initiatives. This process is mainly designed based on limited airflow to ensure the biomass undergoes pyrolysis, a process where it decomposes in the absence of oxygen. The project activity mainly targets to include single type of waste biomass i.e. “Cotton Stalk” used as feedstock to produce biochar and the resulting biochar to be utilized in soil application. As per the design of the technology/measures, there are 3 approaches prescribed in this project which are mentioned in the project design section 1.12 of the PDMR. The mentioned technology specifications in the section 1.12 of the PD&MR have been crosschecked using the specification document which is found to be correct. An assessment summary is included below: **The assessment:**

Details	Assessment Remarks
Technology type: Low-technology biochar production facilities	Accepted, as per EBC production Guidelines provisioned under the methodology

	<table><tr><td>Low-tech methods: Two methods are prescribed: (i) Earth-pits, and (ii) Box-Kiln</td><td>Accepted in line with EBC guidelines. • Under the Earth-pits (also known as soil-pits), two methods are prescribed by PP: (a) regular soil-pits and (b) steel-shield soil-pits • Under the Box-kiln, 'moveable/portable shallow steel type' has been prescribed.</td></tr></table> PP has included detailed specification of these low-tech methods under the section 1.12 of the PDMR. The technical details are verified from the 'Technology specifications reference letter & specifications' issued by 'Samuchit Enviro Tech'/25/. The VVB conducted a desk review of the technical information provided and found it to be relevant. Reference links to the reviewed material are included below: https://shorturl.at/it1f3 https://shorturl.at/6onj4 The technical specifications were accepted based on several factors. Samuchit is a social enterprise with extensive experience in biochar and related fields. Their expertise is considered credible, particularly as the specifications were certified by Dr. Priyadarshini Karve, the Founder and Director of Samuchit. Dr. Karve is a well-known technical expert with over 25 years of experience and has developed numerous improved biomass-burning cookstoves aimed at reducing indoor air pollution and firewood dependence in rural areas. Her work in biochar, charcoal, and sustainable agricultural technologies has earned multiple national and international awards, including the World Technology Award (2005), Sahyadri Hirkani Award (2011), and Pune's Pride Award for Innovation (2013). She has also been widely featured in various media and publications. Given her credentials and contributions, the VVB accepted the technical specifications and related information provided by Dr. Karve. These details are publicly accessible on Samuchit's official website, LinkedIn page, and the Clean Energy Access Network (CLEAN), where Dr. Karve leads a community of technical experts across sectors.
Implementation schedule of the project activity or activities	*The response should include:* • *An assessment of the implementation status of the project activity(s).*
Project location	The project is designed to cater a wider project boundary (as can be identified from the three approaches prescribed under the project design), but within the district of Sangareddy in the state of Telangana. Thus, the project location is within the territorial boundary as follows:

	Village : multiple villages across three mandalas Region : Zaheerabad District : Sangareddy State :Telangana Country : India Geo-coordinates : Latitude 17°37' 9.9" N and Longitude 78°4' 56.31" E The location of each instance was verified using the geo-coordinates of each source (i.e., farmer), which are also listed in the ER Excel sheet along with the areas where biochar was applied, as provided by the Project Proponent (PP). The assessment team used Google Earth to confirm the project locations, which were found to be accurate. Additionally, the PP submitted a KML/31/ file outlining the entire project boundary, which was found to be consistent with the project design.
Conditions prior to project initiation	The assessment team conducted on-site inspections and interviewed beneficiaries and local people, confirming the following: 1. Cotton wastes in the region are commonly burned in open fields (primary practice). 2. Sometimes, a portion of the cotton wastes is left in the field to decay. 3. There is no treatment process for these cotton wastes; therefore, no biochar production activity took place in the baseline. In the absence of the project activity, waste biomass is either combusted or left to decay without being utilized for energy production or biochar production for soil or non-soil applications. Additionally, it is confirmed that the project has not been implemented to generate GHG emissions for subsequent reduction, removal, or destruction. As a biochar project with intended soil application, GHG emissions are removed through biochar as a long-lived and persistent carbon sink.
Project compliance with applicable laws, statutes	The assessment team reviewed the “Telangana State Pollution Control Board (TSPCB)” and also reviewed compliance with

and other regulatory frameworks	"Solid Waste Management Rules: The Solid Waste Management Rules, 2016 in India. It can be observed that such policies and frameworks provide a comprehensive framework for waste management in India but there is no dedicated regulation or compliance requirement for cotton waste as well as for biochar produced from such waste. Hence, the assessment team confirms that there is no specific compliance law exclusively dedicated to biochar production in India
Double counting and participation under other GHG programs	• The assessment team confirms based on the Declaration on Statement of No-Double Accounting of emission Reduction Claim/15/ declaration provided by PP which state that the project is not included under any emissions trading program or any other mechanism that includes GHG allowance trading. Also in line with the requirement of VCS Standard.
No double claiming with emissions trading programs or binding emission limits	• The assessment team confirms based on the Declaration on Statement of No-Double Accounting of emission Reduction Claim/15/provided by PP which state that the project is not included under any emissions trading program or any other mechanism that includes GHG allowance trading. Also in line with the requirement of VCS Standard.
No double claiming with other forms of environmental credit	• The assessment team confirms based on the Declaration on Statement of No-Double Accounting of emission Reduction Claim/15/ declaration provided by PP which state that the projects have not sought or received another form of GHG-related environmental credit during this monitoring period. Additionally, the project being in the category of waste handling & disposal (WHD), is not eligible for the other environmental credits such as renewable energy certificate. This project is a stand-alone activity, never registered as an independent project and/or component project of any Programme Of Activities and/or instance of any group project; hence not eligible to claim any other environmental credits. Also, in line with the requirement of VCS Standard.
Supply chain (Scope 3) emissions double claiming	• PP or its authorised representative is not a buyer or a seller of the product whose emissions footprint is changed by the project activity. The same is confirmed from the interviewing the PP and its representative.

Sustainable development contributions

The assessment team has checked the supporting document provided by PP for the activities that result in SD contributions from the project activity for each SDGs. The audit team interviewed stakeholders during the site visit and also observed the project activity and its social deliverables. The reported SDGs of section 1.18.2 of the final PDMR and their contributions are found appropriate and aligned with the actual scenarios of the ground. The verification team reviewed the JPDMR and observed that some of the SDG indicators were only partially monitored during this initial phase. However, the project has provisions for more robust monitoring in future monitoring periods. In light of this, the Project Proponent has adopted a conservative approach and has currently reported contributions to 7 SDGs specific to the current monitoring period. The reported SDGs— SDG 1.1, 4.4, 5.1, 8.6, 8.8, 12.4, and 13—were supported by appropriate evidence, which was verified by the verification team. The assessment of these SDGs is presented in the table below. As per VCS requirements, the project meets the minimum criterion of achieving at least three SDGs.

The audit team has conducted an assessment before confirming the appropriateness of the monitoring of the SDGs claims, as follows:

SDG target & Indicator	Monitoring method	Remarks
SDG 1.1 Indicator is reported as "User defined indicator"	To be estimated by means of employment generated at project level. Thus, claim will be in numbers based on employee numbers.	The project has made a positive contribution to local employment by engaging a total of 25 individuals during the current monitoring period, in line with SDG 8: Decent Work and Economic Growth. This includes approximately 5 directly employed personnel and around 20 individuals engaged indirectly or on a contractual basis. The employment generated by the project has helped improve the financial stability of these individuals by providing consistent income opportunities. These jobs

			contribute to local economic development and promote inclusive growth in the region. As of 30 June 2023, the reported employment figures are consistent with previous records and reflect the total cumulative contribution to date. The information has been verified through interviews conducted during the site visit and review of employment-related records /28/ provided by the Project Proponent.
	SDG 3.9 Reduction in number of deaths and illness	Currently not adopted by PP as this period is pilot phase, however PP provisioned for future verification cycle,	The audit team has raised a Forward Action Request (FAR 02) for assessment of this SDG indicator during next verification cycle.
	SDG 4.4 Increase in number of youth and adults to have skills for job and entrepreneurship	The monitoring of the claim is limited to the number of new resources engaged at project level and giving them access to regular trainings.	The project has currently engaged around 25 individuals who are receiving regular training, access to technology, and opportunities to improve their skills. This helps them gain both direct and indirect job opportunities. In addition, farmers involved in the project—either by supplying agricultural waste or using biochar—are also gaining

			useful skills and support for entrepreneurship. This contribution is specific to the current monitoring period and aligns with the SDG 4.4 target. The reported contribution of 25 individuals reflects the impact achieved as of 30 June 2023. This has been verified by reviewing the training records /21/ and attendance sheets /21/ provided by the Project Proponent, which were found to be satisfactory.
	SDG 5.1 Considered as User defined indicator to improve gender ratio. Target is a min 10% of total employment as female.	This can be directly monitored from the employment records.	As of the current monitoring period, around 20% of the workforce involved in the project are women. This shows the project's effort to promote gender inclusion and provide equal job opportunities at the local level. The Project Proponent has also stated that this percentage is expected to grow as the project moves forward. The reported 20% female participation is based on data available up to 30 June 2023 and supports the claim under SDG 5.1. This has been verified through employment records /28/,

			attendance sheets /21/, and training participation lists/21/ showing female involvement, all of which were provided by the Project Proponent and found to be acceptable.
	SDG 8.6.1 User defined indicator has been considered for engaging youth resources for internship, skill or equivalent programs. Target is set as minimum of 2 youth in each year	This can be directly monitored from the employment records, trainings etc.	During the current monitoring period, the project has engaged three youth who were previously unemployed. These individuals are now part of the project team, gaining work experience and developing new skills. This demonstrates the project's contribution to promoting youth employment, in line with SDG 8.6. The Project Proponent has also mentioned that more youth are expected to be involved as the project continues. The contribution of three youth resources reflects the status as of 30 June 2023 and matches the data submitted. This has been verified through employment records/28/, attendance sheets/21/, and training participation lists/21/ provided by the Project Proponent, which

			were found to be acceptable.
	SDG 8.8.1 User defined indicator to ensure zero fatal & non-fatal occupational injuries.	Monitoring practice is considered from monthly monitoring statements which are recorded based on primary data.	During the current monitoring period, the project reported zero occupational injuries and zero fatalities. This reflects the effective implementation of health and safety measures, such as the use of personal protective equipment (PPE), proper handling tools, and compliance with standard operating procedures. These safety practices are monitored monthly using a dedicated reporting format. The zero-injury record aligns with the goals of SDG 8.8 and demonstrates the project's commitment to providing a safe working environment. This status, as of 30 June 2023, has been verified through grievance records/14/, stakeholder interviews conducted during the site visit, and incident and accident registers provided by the Project Proponent—all of which were found to be satisfactory.
	SDG 9.1 User defined indicator to	Currently not adopted by PP as	The audit team has raised a Forward

	achieve infrastructure development in the region that can ensure sustainability and resilience.	this period is pilot phase, however PP provisioned for future verification cycle,	Action Request (FAR 02) for assessment of this SDG indicator during next verification cycle.
	SDG 12.4.2 User defined indicator to achieve effective treatment of hazardous wastes	The claims will be directly monitored from the wastes measured and recorded at project level.	The project has effectively demonstrated the sustainable conversion of hazardous cotton stalk waste into biochar. During the current monitoring period, 51,280 kgs of cotton stalks were treated, producing 12,460 kgs of biochar. This initiative supports SDG 12: Responsible Consumption and Production by promoting proper waste management and encouraging the use of biochar in agriculture. The reported data aligns with the project's stated goals and procedures. The conversion process and the application of biochar have been well documented. The integration of waste treatment with resource recovery adds to the sustainability value of the project. As of 30 June 2023, the reported contribution is consistent with cumulative records, and no discrepancies were

			found between reported and verified data. These details were confirmed during the site visit and through verification of the Application log/14/, Biomass Weighing log/14/, Weigh Slip/14/ provided by the Project Proponent.
	SDG 13: User defined indicator to account tons of GHG removal achieved by project	Direct monitoring from the project database and ERR calculation	The project has effectively contributed to climate change mitigation by preventing the release of greenhouse gases through biochar production. During the current monitoring period, 51,280 kgs of cotton stalk waste were converted into approximately 12,460 kgs of biochar. This process has resulted in the removal or avoidance of 10,000 kgs of CO_2 equivalent emissions, aligning with the goals of SDG 13: Climate Action. The methodology used to estimate avoided emissions appears consistent with recognized biochar carbon sequestration practices. The calculations and underlying assumptions have been documented by the Project

			Proponent and found to be reasonable. The total CO_2e reduction reported as of 30 June 2023 matches cumulative contributions, with no inconsistencies found between reported values and source documentation. This indicator is based on ERR calculation, which has been verified by audit team.
Additional information relevant to the project	• *NA*		

3.2 Project Activity Instances in Grouped Projects

Not applicable and as it is not grouped project.

3.3 Safeguards

3.3.1 Stakeholder Engagement and Consultation

3.3.1.1 Stakeholder Identification

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Stakeholder identification	The assessment team gathered evidence from the project developer, including local stakeholder feedback, minutes of meetings, photos, attendance sheets, and invitations/29/, confirming that the main stakeholders—local farmers, biochar users, local authorities, community members, and contractors—were thoroughly and effectively identified and engaged by WeAct with the help of Aranya Agriculture Alternatives, which ensured all relevant stakeholders were properly involved and the project's conformance with the relevant VCS Program requirements.

	The audit team found the identified stakeholders are relevant, documentation are properly maintained, verified during the site visit; hence the audit team is able to accept this requirement.
Legal or customary tenure/access rights	Not applicable. The audit team reviewed the project design, roles of all stakeholders, especially farmers, and able to verify that there is no concern of legal or customary tenure rights involved at project level. The project does not involve any land rights or access rights to famers' area both for sourcing of feedstock and application of biochar. There are signed FPICs that confirm voluntary participation and free of any such rights.
Stakeholder diversity and changes over time	The assessment team gathered evidence from the project developer, including local stakeholder feedback, minutes of meetings, photos, attendance sheets, and invitations/29/, confirming that the identified stakeholders represent all levels of social, economic, and cultural backgrounds, ensuring diversity within the stakeholder groups, with consultations conducted in local and regional/national languages and accessible to all invitees, thus confirming the project's conformance with the relevant VCS Program requirements. The audit team could validate that project is designed only with monotype feedstock i.e. cotton stalks which will be procured from the local cotton farmers. Similarly, the biochar application is also considered for local farmers within 100 km radius. Also, the project is a single activity (not a grouped project) with provisions of deploying different production facilities, but within the project boundary. Therefore, the audit team is able to confirm that there is not likely to have concern of stakeholder diversity and change over time.
Expected changes in well-being	The assessment team, after verifying stakeholders' feedback forms and minutes of the meetings, confirms that there were no negative comments or specific inputs requiring immediate action. The overall outcome of the consultation was positive, with stakeholders showing strong support and willingness towards the project. Therefore, no updates to the project design or any part of the project activity are required. PP has reported expected changes in well-being and other stakeholder characteristics relative to the baseline scenario under the section 2.1.1; the reported information are found reasonable, hence accepted.
Location of stakeholders	The assessment team collected evidence from the project developer, including local stakeholder feedback, minutes of meetings, photos,

	attendance sheets, and invitations/29/, confirming that all stakeholders are from nearby villages in the project region where the project activity is being designed and implemented. Thus, the audit team assessed that the project is likely to impact the project area positively and hence the location of the identified stakeholders are inclusive.
Location of resources	The assessment team confirms that the transportation distance for both biomass collection and the biochar application site is less than 200 km, as verified through the logs records. Therefore, the project boundary established under the project will be the location of territories and resources that stakeholders own or to which they have customary access. Additionally, PP adopts the practice of FPIC with the farmers which indicates the voluntary participation and free of rights of the project resources including carbon credits.

3.3.1.2 Stakeholder Consultation and Ongoing Communication

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Stakeholder engagement process	The assessment team reviewed the newspaper invitation provided by the PP and confirms that to invite and engage local stakeholders, the PP identified relevant stakeholders across the project region and chose a suitable date and venue for the meeting. To ensure wide coverage, the PP published a notification in a state-level newspaper on March 17, 2023, three weeks before the meeting date. This notification was issued in both English and the local language. The overall process of stakeholder engagement is found acceptable based on the supporting evidences and stakeholders interviews. The information under the section 2.1.2 of the PDMR includes relevant information about the engagement process.

Consultation outcome	The audit team reviewed the consultation outcomes from the records of the stakeholders' consultation process. Following extract was assessed as the outcome summary: • Summary and the overall outcome of the meeting: On the day of the meeting, a proper arrangement was done for all the invitees so that they can easily reach the venue. The meeting was started with a welcome note from Mrs. Padmavathi Kappola, the Permaculture Specialist from "Aranya Agriculture Alternatives" who is a known personality among the communities due to her extensive work in the agriculture practices across the region. She put forwarded the objectives of the consultation and also gave a short description of the project activity. • The meeting was further addressed by Mr. Satish Reddy, Director of WeAct Pty Ltd., explained the background of the project from the perspective of carbon revenue. Mr. Uday Dodi, acting as the Biochar Technical Expert from WeAct addressed the gathering and responded to few project specific understanding amongst the attendees. • During the meeting Mrs. Padma demonstrated the preparation of soil with Biochar and its application. All possible types of comments, queries, know-how etc. were invited from all the attendees and properly responded by PP. In order to record the outcomes of the consultation, a dedicated questionnaire was designed by PP prior to the meeting and feedback/suggestions/inputs etc. were taken directly from all the attendees. Thus, the method of documenting outcomes of the meeting was transparent, open, based on real-time inputs. These feedback forms were considered as the primary records of the outcomes of the consultation. From the overall feedback, it can be concluded that there is no negative remark or there was no suggestion that relates to project design change or overall approach of the project. The feedback forms and concluding discussions with the stakeholders fairly concluded the following notes: • There is no discussion around consent to project design and implementation of the project, • There is no specific risks identified for the stakeholders and the region, instead expected positive outcome on many aspects. • There is no direct or indirect involvement of costs from any of the participants/beneficiaries of the project, WeAct is developing the project under direct financing with carbon, hence no negative remark on costs and benefits of the project, • There will not be any negative impact related to local laws and regulations including workers' rights etc. The audit team reviewed all these details reported above, interviewed with the key persons and other stakeholders involved in the consultation process. The team is able to assess that there was no negative outcome witnessed in the process and overall consultation outcomes are properly found acceptable as reported under the PDMR.

Ongoing communication	• **The mechanism for on-going communication with local stakeholders:** The audit team assessed that to establish an on-going continuous communication and feedback mechanism with the local stakeholders, an opinion poll was taken by PP during the feedback round of the consultation. The stakeholders were informed to select any of the types of communication protocol such as telephonic, feedback register at site office etc. As the documentary evidence confirms, there was a common suggestion received from majority of the respondents, to adopt one Feedback/Input Register for the input process. It was decided that this record book shall be kept at the office of Aranya such that local stakeholders can access any point of time and input their suggestions/concerns/grievances etc. Additionally, it was agreed that there will be one local point of contact assigned on behalf of PP to whom stakeholders can directly communicate in case of any emergency. The audit team verified all the supporting evidences regarding this communication process, also checked the physical copy of the register book during the site visit and found adequate. Hence accepted.
Stakeholder input	The assessment team, after verifying stakeholders' feedback forms and minutes of the meetings, confirms that there were no negative comments or specific inputs requiring immediate action. This was also assessed during the site visit from the stakeholders interaction and found satisfactory.

3.3.1.3 Free, Prior, and Informed Consent

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Obtaining consent	The audit team confirms that the project proponent (PP) adopted the practice of obtaining Free Prior Informed Consent (FPIC/32/) from all farmers involved in the project—whether supplying cotton stalks, utilizing biochar, or both. The FPIC letter was found to be adequate, as it includes comprehensive project information, clearly states the voluntary nature of participation, and explicitly excludes any rights, including claims to carbon credits. Based on the document review and findings from the site visit, the audit team affirms that the project does not involve any resources requiring customary rights or formal agreements for implementation. The initiative is entirely voluntary and does not implicate land rights, property rights, statutory authority, or other stakeholder entitlements. Instead, the benefits—such as biochar and its positive impacts—are intended for the stakeholders, particularly the participating farmers. It is noted that FPIC was not part of the initial stakeholder consultation process but was instead implemented during the project execution phase, at which point consents were duly obtained from farmers. The audit team verified that PP informed all stakeholders of the consultation meeting at least three weeks in advance through personal letters, local advertisements, banner publicity, and a

	newspaper announcement, ensuring broad outreach. Participation in the stakeholder consultation was entirely voluntary, and the positive feedback from attendees reflects their consent and support for the project. The audit team therefore confirms that consents were secured both prior to project commencement during the stakeholder consultation phase, and again during project implementation. During the first verification, the VVB reviewed all available FPIC forms /32/ and confirmed that verification methods included physical inspection of the forms, interviews with randomly selected beneficiaries (whose contact details were documented), and validation of the forms' bilingual nature (English and Telugu), which ensured clarity and ease of understanding for participants.
Outcome of FPIC discussion	The stakeholders attended the session and also supported the project. The feedback forms were received without any negative remark or concerns. This was confirmed from the on-site inspection. VVB could clearly verify and confirmed during the interview process that FPIC forms were transparent with bilingual texts (both English & local language of Telugu), The beneficiary provided unambiguous grant of VCUs rights to WeAct which are verified in the FPIC form page #2 section "Consent Section" which were in both languages. The audit team assessed that PDMR includes sufficient information about the FPIC process and outcomes. The team is able to confirm that the project has not encroached on land, does not involve any relocation of people, and forced physical or economic displacement. Also, PP signed FPIC forms with the beneficiaries who participated into the project, hence overall outcome is positive and acceptable.

3.3.1.4 Grievance Redress Procedure

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Development process	The audit team assessed that following process was used to develop the grievance redress procedure: An opinion poll was taken during the feedback round of the consultation. The stakeholders were open for all types of communication protocol such as telephonic, feedback register at site office etc. Based on the common suggestions received from majority of the respondent, The process concluded that one Feedback/Input Register shall be prepared and kept at the office of Aranya such that local stakeholders can access any point of time and input their suggestions/concerns/grievances etc. Additionally, there is one local point of contact assigned on behalf of PP to whom stakeholders can directly communicate in case of any emergency. This was confirmed from the on-site inspection.

	The audit team verified all the supporting evidences regarding this communication process, also checked the physical copy of the register book during the site visit and found adequate. Hence accepted.
Grievance redress procedure	Currently no grievance has been raised or received. However, as informed above, there is a particular process developed through which any grievance received shall be reviewed and addressed promptly. The audit team verified this from the physical records maintained at project site, followed by interactions with the stakeholders during the site visit, Hence, no redressal procedure has been established by PP during the current monitoring period, and is acceptable. This was confirmed from the on-site inspection.

3.3.1.5 Public Comments

Comments received	Actions taken by the project proponent	Evidence gathering activities, evidence checked, and assessment conclusion
No comment received during the public commenting period.	Not applicable	The project was listed and open for public comment from August 23, 2023, to September 22, 2023, during which no comments were received. The assessment team verified this information from the Verra website (https://registry.verra.org/app/projectDetail/VCS/4578).

3.3.2 Respect for Human Rights and Equity

3.3.2.1 Labor and Work

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Discrimination and sexual harassment	The assessment team checked the Human rights policy /24/ document which was developed by Aranya, approved & accepted by WeAct by the PP. There is an internal practice of monitoring and review of such parameter. The audit team reviewed the records, followed by interactions with the stakeholders to judge an independent opinion and confirms there is no discrimination or sexual harassment has occurred or will occur under the project activity.
Management experience	The assessment team verified that the project is being managed on the ground and at the operational level by Aranya, as confirmed through the official website of Aranya (https://permacultureindia.org/). The project is owned, controlled and managed by WeAct and dedicated teams are deployed with defined roles and responsibilities. Thus, the project is being managed

	via local entity Aranya and further supervised, coordinated and monitored by WeAct Pty Ltd. Both the entities are experienced in this sector. While WeAct is managing similar GHG projects globally, Aranya is experienced in implementing agriculture best practices in the country since last many years. The audit team reviewed the management practice in line with the organization structure included in the PDMR under section 6.3 and found appropriate.
Gender equity in labor and work	The assessment team checked the employe records/28/ provided by the PP and confirm the organization structure at project level has been designed and developed to include social aspects, such as attention towards gender equality in resources, equal pay structure etc. The audit team assessed that there is an internal practice of monitoring and review of such parameter. The audit team reviewed the records, followed by interactions with the stakeholders to judge an independent opinion and confirms there is no risk of gender bias at project level.
Human trafficking, forced labor, and child labor	The assessment team reviewed the Human Rights Policy document /24/, developed by Aranya and approved and accepted by WeAct by the PP. The team also based on the interviews confirms that the project does not and will not use victims of human trafficking, forced labor, or child labor. The audit team assessed that there is an internal practice of monitoring and review of such parameter under the policy. The audit team reviewed the records, followed by interactions with the stakeholders to judge an independent opinion. The team confirms that there is no risk of such human resource risks including any form of unfair labour practices.

3.3.2.2 Human Rights

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Human rights	The assessment team reviewed the Human Rights Policy document and confirms the project recognizes, respects, and the project will function under the required guidance of Human Rights and shall comply with the requirements of the United Nations Declaration on the Rights of Indigenous Peoples and ILO Convention 169 on Indigenous and Tribal Peoples. The audit team assessed that there is an internal practice of monitoring and review of human rights related attributes. The audit team reviewed the records, followed by interactions with the stakeholders to judge an independent opinion and confirms there is no risk of human rights.

3.3.2.3 Indigenous Peoples and Cultural Heritage

Item	Evidence gathering activities, evidence checked, and assessment conclusion

Preservation and protection of cultural heritage	The assessment team reviewed the Generic Policies & Practices document which is deployed by PP to safeguard such risk related to indigenous people and cultural heritage. Also, during the site visit the audit team was able to assess and confirms that there is no cultural heritage in the project sites, the production facility deployed during the current monitoring period does not fall near to any cultural heritage. Similarly, the project operation does not involve or interact with any activity related to indigenous people's rights, culture and cultural heritage. All participants (farmers) are voluntarily involved with FPIC in place; similarly local employment generated by the project is guided with proper policy measures (as assessed above in previous sub-sections) and fair equal practices which were assessed from the employment records, training records, etc. Additionally, during the stakeholders interaction VVB did not find any concern related to this parameter.

3.3.2.4 Property Rights

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Rights to territories and resources	The assessment team has reviewed and verified the board resolution document, confirming that the project has been independently and voluntarily initiated by WeAct Pty Ltd for the specific purpose of producing biochar from cotton stalks. Furthermore, the team has examined MOU/19/ between WeAct and Aranya Agriculture Alternatives, which pertains to the project's implementation. This is to reconfirm that the VVB has thoroughly assessed the MOU and can affirm that Aranya holds no legal, contractual, or equivalent rights or claims over the project or the associated carbon credits. The "Signed Declaration" page within the MOU explicitly confirms this. Therefore, there are no binding rights or formal engagements involved.The assessment team reviewed the overall project design and checked through supporting documents such as FPICs with the farmers, MOUs with local representatives, local contracts with vendors etc. Also, the production facility is managed by PP directly, during the current monitoring period Box-kiln was used in a specific project site which was a leased area, free from any resource and property rights.
Respect for property rights	

3.3.2.5 Benefit Sharing

Item	Evidence gathering activities, evidence checked, and assessment conclusion

Process used to design the benefit sharing plan	The audit team confirms, based on on-site observations, that there are no affected stakeholder groups associated with the project. Instead, the initiative establishes a beneficiary group, primarily consisting of farmers who receive biochar for soil application. In addition, the project proponent (PP), with the support of the Aranya team, regularly organizes awareness campaigns, training programs, and capacity-building sessions that actively engage local stakeholders. These efforts foster community involvement and contribute to overall socio-economic development. Although the project does not include a formal benefit-sharing mechanism, the audit team assessed that stakeholder—especially the farmers—gain both direct and indirect benefits. Direct benefits include income generated from the sale of feedstock, while indirect benefits involve the use of biochar to improve soil health. The audit team reviewed training record/21/ and employee record/28/, which confirm that the project provides several non-tangible benefits, such as skills enhancement through training, capacity building, and the creation of local employment opportunities. As a result, the project delivers meaningful socio-economic value to the community, even in the absence of a structured benefit-sharing arrangement.
Summary of the benefit sharing plan	Not Applicable
Approval and dissemination of benefit sharing plan	Not Applicable
Benefit sharing during the monitoring period	Not Applicable

3.3.3 Risks to Local Stakeholders and the Environment

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Risks to stakeholder participation	No Risk Identified at the project level. The stakeholders were informed and participations were voluntary.

Working conditions	No Risk Identified, the audit team found that adequate safety measures, trainings, etc. deployed at project site. There are policy measures adopted for achieving risk free work conditions across the project.
Safety of women and girls	The audit team assessed that project level employment includes female gender and required policy measures are adopted to derisk any probability of safety concerns.
Safety of minority and marginalized groups, including children	No Risk Identified as audit team did not identified any marginalized group and does not intervene any minority including children. The team found policy measures taken by PP to ensure regular monitoring, also during the site visit the team interacted with stakeholders and no such risk was identified or reported.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	The audit team assessed that project reduces the risks of such pollutants as compared to baseline. The production of biochar utilizes the cotton stalks which were used to burnt openly at baseline, without any management, The assessment team reviewed this from the desk review of the baseline report as well as acknowledgment received from The Mandal Agriculture Office (MAO) of Jharasangam into the communication letter submitted by PP confirming that there are no negative environmental and social impacts associated with the biochar production. The team also reviewed that PP has implemented policies and regular monitoring practices including Material Safety Datasheet protocol to reduce or prevent any such risk if arises.

3.3.4 Ecosystem Health

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Impacts on biodiversity and ecosystems	The audit team assessed that project is likely to reduce the risks of negative impacts on the biodiversity and ecosystem compared to baseline scenario. This is mainly caused by the sustainable use of cotton stalks and improvement in soil due to biochar application.
Soil degradation and soil erosion	The project does not lead to any degradation or soil erosion. The production of soil pits for biochar making does not lead to any form of soil degradation. Whereas, the application of biochar into the soil likely to improve soil carbon contents.
Water consumption and stress	The project activity does not depend on water availability, only minor water consumption is there in case of fire dosing of the pits; thus it does not foresee any risk of water stress

Usage of fertilizers	The audit team assessed that project does not lead to increase in fertilizers usage in the region, Instead, project is likely to reduce useage of chemical fertilizer due to soil application of biochar.

3.3.4.1 Rare, Threatened, and Endangered species

Item	Evidence gathering activities, evidence checked, and assessment conclusion
Species and habitat	Not Applicable as no rare, threatened or endangered species were identified in the project region.
...	Not Applicable

3.3.4.2 Introduction of Species

Species introduced	Evidence gathering activities, evidence checked, and assessment conclusion
Not Applicable	Not Applicable
Not Applicable	Not Applicable
Not Applicable	Not Applicable

Existing invasive species	Evidence gathering activities, evidence checked, and assessment conclusion
Not Applicable	Not Applicable
Not Applicable	Not Applicable
Not Applicable	Not Applicable

3.3.4.3 Ecosystem conversion

Item	Evidence gathering activities and evidence checked
Ecosystem conversion	Not applicable as the project is of non-AFOLU category.

3.4 Application of Methodology

3.4.1 Title and Reference

Following approved baseline & monitoring methodology is applied. Methodology:

VM0044- METHODOLOGY FOR BIOCHAR UTILIZATION IN SOIL AND NON-SOIL APPLICATIONS. Version: 1.1. Sectoral Scope: 13 /6/

3.4.2 Applicability

Applicable criteria for the selected baseline methodology VM0044 Version 1.1 /06/ is assessed by the validation and verification team by means of document review & on-site audit. The project applicability was confirmed against each condition in the approved methodology by the following methods.

- *VM0044 Version 1.1*

Methodology ID: VM0044	Applicability condition	Assessment and conclusion
The project activity must install and operate a new (greenfield) biochar production facility(ies) where the project proponent must 1) source waste biomass, 2) produce biochar and 3) ensure the biochar is utilized in soil or non-soil application. GHG benefits are credited only for the biochar that is utilized in the eligible soil and non-soil applications.	Eligible: The project activity is a greenfield biochar production facility. The feedstock is cotton stalk, which is a waste biomass. The produced biochar will be utilized for soil application only.	It has been assessed by the Assessment team that the project meets the applicability condition to prove the baseline scenario. The VVB independently corroborated and interviewed the stakeholders, and project is thus deemed as a greenfield project, utilizing waste biomass and have seen that the Biochar char is produced and distributed in the soil applications.
Technological Scope: 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 excluded from this methodology. The methodology is applicable to projects using either low or high technology production	Eligible: The project activity involves pyrolysis process and subsequently applied for soil application only. The project activity involves low technology production facilities (i.e. pit method and box kiln method) to produce biochar. There is a proper health & safety procedure proposed under this project to support the workers with safe working environment.	The validation & verification team assessed these requirements and confirms that the project utilizes the low technology facilities (mainly soil pit methods and box-kiln methods for production of Biochar. During the first monitoring period box-kiln method has been adopted. And at the project level there are three approaches kept under which soil pit methods (both regular earth soil pits and steel-shield soil pits) and moveable Box-kiln, both are established under the Joint PD-MR. It was also observed during the site visit that the biochar is utilized in soil application, all due health care and safety procedures are in place.

facilities to produce biochar, as per the definitions of each provided in Section 3 of this methodology. The biochar producers must have a health and safety program to protect workers from airborne pollutants and other hazards.		
Feedstocks and production scope: The feedstock used to produce biochar must meet all following conditions to be eligible: Feedstock must be purely biogenic waste biomass and not purpose-grown, Feedstock must have been otherwise left to decay or combusted for purposes other than energy production. Additional guidance on how to demonstrate fate of waste biomass in the absence of the project activity is provided in Appendix 2, Feedstock must not have been imported from other countries,	Eligible: The project activity involves only cotton stalk as feedstock, which is a biogenic waste biomass and hence not purpose-grown. In absence of the project, the feedstock would have been combusted without any energy production or similar purposes. The fate of the biomass feedstock is referred in line with the Appendix 2 of the methodology; a detailed baseline study has been conducted for the same. In order to assess the requirements of Appendix 2 of the methodology, PP has included an assessment table under the Appendix-4 of the PD-MR. The project boundary is limited to the Sangareddy district of Telangana state in India. The feedstock is also sourced within the	The Assessment team assessed these requirements and confirms that the project utilizes cotton stalk and waste biomass for production of Biochar. It was also observed during the site visit that in the absence of the project activity, the waste biomass would be let to decay. The feedstock is procured locally and within the Sangareddy district, the same is confirmed through the interviews with the local stakeholders. The feedstock meets the conditions laid out in the table 1 of the methodology. Hence, it meets all the requirements. It was also observed during the site visit that in the absence of the project activity, the waste biomass would be let to decay.

Feedstock must meet the sustainability conditions provided in Table 1 of the methodology. This table is not an exhaustive list of waste biomass examples.	same region. Hence, there is no import of feedstock. The feedstock being used under the project activity is cotton stalks, which falls under the Sustainability criteria (a) of the category-1 "agricultural waste biomass"; the project is designed to use "cotton stalks" (i.e. single biomass feedstock) directly from fields and not from a centralized biomass processing operation.	
Biochar made from a single or mixed eligible feedstock types must comply with the latest version of the IBI Biochar Testing Guidelines or the EBC Production Guidelines.	Eligible: The biochar under this project activity is produced from a single feedstock type, i.e. cotton stalk and follows the requirements of IBI Biochar guideline.	During site visit it was confirmed that the biochar is produced using cotton stalk and hence is deemed acceptable for this requirement.
The waste biomass used as feedstock to produce biochar and the resulting biochar to be utilized in soil or non-soil applications may be transported via ships, boats, and vehicles other than road transportation up to a distance of 200 km. However, it must only be transported by vehicles (i.e., road transportation) for distances more than 200 km as defined	Eligible: The biochar under this project activity is produced using waste biomass and shall be utilized only for soil applications in and around the fields where the biomass waste is generated. Hence there is no involvement of dedicated transportation facilities; hence Tool 12 is not applied. During the baseline study, an assessment was conducted related to the fate of the	The Assessment team is able to confirm through the interviews and records documented by the project developers that the biochar is utilized for soil applications. The procurement of waste biomass is within the 100kms range, the log book details have been verified and checked to confirm this.

under CDM Tool 12: Project and leakage emissions from transportation of freight.	biomass feedstock and their coverage. The identified regions (identified part of the feasibility assessment of this project) are defined within nearby periphery which are very much within a distance of 100 km from the identified biochar production site. Also, this distance related parameter can be further cross checked during verification from the Biochar Application logs.	
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.	Not applicable. The production process of biochar under the project activity does not include any additive.	This is not applicable. The production process of biochar under the project activity does not include any additive
Other evidence that may be used to demonstrate compliance with waste biomass	Not applicable as the biomass feedstock (i.e. cotton) is locally procured from the nearby fields where baseline is open	Not applicable. The audit team has checked that the project has not been applied under any

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 approved and/or endorsed by a relevant legislative body or international body such as the European Union, CORSIA, and national/state governments.	burning without any purpose or end use. Hence, no specific compliance criteria related to sustainability is involved. However, during the baseline assessment biomass feedstock availability and chain of custody of the feedstock to biochar was assessed. The requirements are fulfilled and availability of feedstock was fairly established which confirms that there is sustainability of biomass waste in the project region, The baseline study report could be referred for furtherance.	compliance scheme, hence no other evidence is required.
A. 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. B. Biochar is eligible to be used as a soil amendment on land other than wetlands. Eligible land types include cropland, grassland, and forest.	Eligible: The biochar produced under the project activity shall be utilized for soil applications within one year of its production.	The interview conducted during the site visit and the team also checked the biochar production & application logs. The records confirm that the utilization of biochar is within a year. Also, the audit team verified that the biochar produced during the current monitoring period used for soil application purpose only. Thus, it was confirmed that the biochar application shall meet the requirements of IBI Biochar Testing Guidelines. The team has reviewed the justification submitted by PP under the Appendix 2 of the PDMR and found acceptable. The audit team verified the H: Corg ratio of the biochar tested by authorized laboratory, The value confirmed by the lab report is 0.54 which is less than 0.7, hence acceptable.

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 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*		
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	Eligible: The biochar produced at the project is a long lived product.	PP demonstrated that biochar production deploys Pyrolysis method, is high temperature practice (referred in 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, 201917) "Pyrolysis temperature influences biochar stability, with temperatures >

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).		500°C generally leading to longer-term half-lives (> 1000 years)" (Ippolito et al.,202018). PP also demonstrated another notable study by Spokas (201019) supports the long-term stability of high-temperature biochar. The audit team accepted the justification considering the sources into the category of research articles.

Demonstration of feedstock as waste biomass:

According to Appendix 2 of the methodology, it outlines the steps to show that, in the baseline scenario (i.e., without the project), the biochar feedstock would have been considered waste biomass, as required by the applicability conditions.

Condition	Justification	Assessment and conclusion
Assessment of feedstock biomass use must cover the five years preceding the project start date. All qualitative and quantitative information on biomass use in the baseline scenario should be determined via consultation with the manager/landowner that the biomass is sourced from or with the contracted supplier (e.g., biomass broker/intermediary).	The project is inclusive of local cotton farmers as supplier of biomass feedstock; these farmers are conventional farmers since generations and hence availability of their cotton stalks in each season are a permanent scenario. This was established during the detailed Baseline Survey and Assessment (Report submitted), also acknowledged by Mandal Agriculture Office (MAO). Thus, the survey was primary with farmers as real time respondents and their inputs were taken for assessment considering their historic cotton farming and scenario of cotton wastes. Therefore, the condition related to assessment of "five years preceding the project start date" has already been addressed while conducting the survey and arriving at the baseline scenario.	The project includes local cotton farmers as suppliers of biomass feedstock. These farmers have a long-standing history of cotton cultivation, and the availability of cotton stalks each season is a consistent and ongoing practice. This was verified through a detailed Baseline Survey and Assessment, which involved direct engagement with the farmers and collection of primary data. The survey findings, supported by an acknowledgment from the Mandal Agriculture Office (MAO), confirm that cotton farming and the generation of cotton stalks have been a regular practice. The survey also captured information covering the five-year period preceding the project start date, as required by the methodology. Based on the evidence reviewed, the VVB concludes that the condition related to historical availability of feedstock has been adequately met and the baseline scenario is appropriately justified.
The following list specifies the allowable sources of information on biomass use in the baseline scenario with priority from higher to lower		Based on the review of submitted documents and supporting evidence, the project activity falls under Category

preference, as available. The principle of conservatism must be applied in all cases: 1. Where the source of biomass can be identified, and the biomass is not used in the baseline scenario: a. Historical management plans, receipts, or other records from the areas where the biomass is sourced from showing that the biomass was not used for alternative purposes in the five years preceding the project start date. These may be supplemented with other forms of evidence such as remote sensing (e.g., satellite imagery) or documentation from comparable sourcing areas. OR b. Substantiation via a signed attestation from the manager/landowner or supplier stating that the biomass was not used for alternative purposes in the	Yes, category 1 is applicable. The project includes only 'Cotton Stalk' as biomass feedstock for biochar production which has been identified and baseline scenario was also established as "in absence of the project, the feedstock would have been combusted without any usages or purposes". However, sources of information for this biomass feedstock at baseline scenario could not be identified from any historical management plans, receipts or from any other govt. records etc. This is because there was open burning practice by farmers and no waste management practice was observed. Therefore, PP has considered primary survey via third-party agency[1] to establish the baseline scenario, biomass feedstock, availability etc. Additionally, some of the public literatures[2] were reviewed, also acknowledgement (of the feedstock availability, baseline scenario) received from local Mandal Agriculture Office (MAO)[3]. Thus, option (a) is applicable in the given list that specifies the allowable sources of information on biomass use in the baseline scenario.	1, which is applicable. The project utilizes only cotton stalks as biomass feedstock for biochar production. The baseline scenario has been identified as open burning of cotton stalks by farmers without any specific use or purpose in the absence of the project. It is noted that no historical records, waste management plans, or government documentation exist to demonstrate past practices, due to the informal and unmanaged nature of open burning. To address this, the Project Proponent (PP) commissioned a third-party agency to conduct a primary survey to establish the baseline scenario, availability of biomass feedstock, and its historical handling. In addition, public literature sources and a formal acknowledgment from the local Mandal Agriculture Office (MAO) support the claims regarding feedstock availability and the baseline scenario. Accordingly, option (a) under the list of acceptable information sources—i.e., primary surveys conducted by independent third-party entities—has been met and is applicable. Furthermore, the signed survey responses from farmers confirm that the biomass had no alternate use historically. These responses, along with the signed FPIC forms from the feedstock suppliers, are deemed valid supporting documents. Hence, option (b) may also be considered applicable for additional substantiation. In conclusion, the verifier finds the justification of the baseline scenario to

[1] Baseline Survey Report (Feb 2023) is submitted.

[2] Sources:

- Cotton Outlook 2023: https://pjtsau.edu.in/files/AgriMkt/2023/March/cotton-March-2023.pdf?utm_source=chatgpt.com
- SEASON AND CROP COVERAGE REPORT YASANGI- 2023-24 (Dept. of Agriculture, Telangana): https://agri.telangana.gov.in/open_record_view.php?ID=1263

[3] The acknowledgement received from Mandal Agriculture Office (MAO) of Jharasangam on the letter dated 25th Jan 2024.

five years preceding the project start date. This includes new sources of biomass that did not exist (e.g., residues from a new food processing mill) before the project start date. The attestation must not deviate from other available evidence such as remote sensing (e.g., satellite imagery) or documentation from comparable sourcing areas.	**Note:** Additionally, as mentioned above the respondents (i.e. farmers) to the primary survey provided inputs stating that the biomass was not used for alternative purposes since beginning. The signed questionnaires from the farmers can be considered equivalent to the relevant documents for substantiation of this requirement. Similarly, the farmers who supply feedstock to the project sign FPIC form which is also an equivalent document for substantiation. Therefore, option (b) can also be referred.	be reasonable and consistent with methodological requirements, and confirms that both options (a) and (b) are applicable for demonstrating the use of cotton stalks in the baseline.
2. Where the source of biomass can be identified and (some or all) the biomass is used in the baseline scenario: a. Historical management plans, receipts, or other records from the areas where the biomass is sourced from showing that the biomass supply is sufficient to satisfy project demand without compromising future non-project biomass delivery commitments. This must be demonstrated through an analysis of historical biomass volumes delivered annually in the five years preceding the project start date combined with expected project- and non-project-related volumes for the duration of the project crediting period. OR b. Substantiation via a signed attestation from the manager/landowner or	Not applicable as the biomass has not been used in the baseline scenario.	Not applicable

supplier stating that the available biomass supply is sufficient to satisfy project-related demand without compromising future biomass delivery commitments. This must be supplemented by an analysis of historical biomass volumes delivered annually in the five years preceding the project start date combined with expected project- and non-project-related volumes for the duration of the project crediting period. The attestation must not deviate from other available evidence such as remote sensing (e.g., satellite imagery) or documentation from comparable sourcing areas.		
3. Where the source of biomass cannot be identified (e.g., the biomass is sourced from a biomass residue market with unknown producers): A. Demonstration that there is an abundant, unutilized surplus of the same or similar type of biomass in the project region. This must be demonstrated through an analysis showing that the total biomass quantity available is at least 25 per cent larger than the total biomass quantity used (including by the project facility) for that type of biomass. The analysis should be based on an annual assessment	Not applicable as the biomass source is identified.	Not applicable

	of biomass availability and use in the five years preceding the project start date. Where historical data is not available on an annual basis for the five years preceding the project start date, at least one year of data may be used as evidence. This should be complemented with additional evidence demonstrating that the available data is representative of the five years preceding the project start date. The project region should be adjusted to reflect characteristics specific to the biomass type and markets (e.g., wood residues for bioenergy production) where the project is located.		

3.4.3 Project Boundary

The spatial extent of the project boundary is demonstrated below, it encompasses the geographic area including:

1) *Initial waste biomass (i.e. cotton stalks) is sourced;*
2) *Waste biomass is treated for the purpose of biochar production using one or more of the given Approaches (i.e. Approach 1, 2 and/or 3) defined under the project design;*
3) *The final application of biochar into soils.*

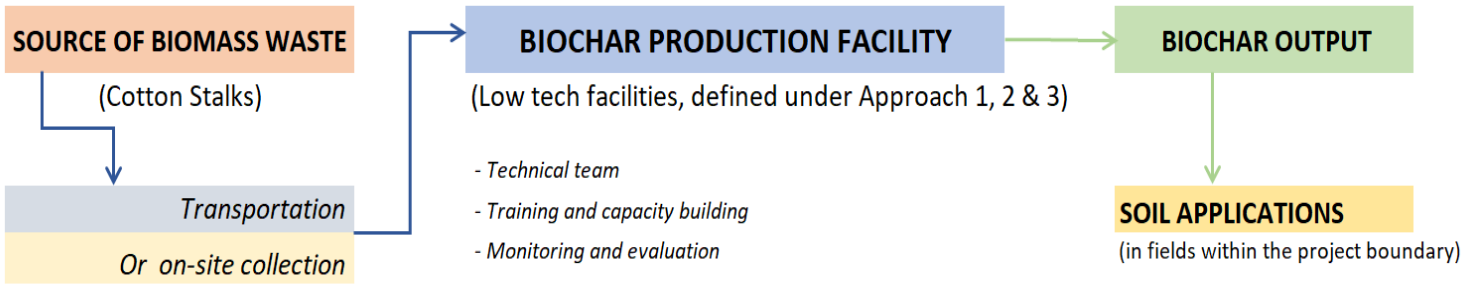

Fig : 4 Representative diagram of the overall Project Boundary

Following table defines the project boundary and identifies the relevant GHG sources, sinks and reservoirs for the project and baseline scenarios:

Source		Gas	Included?	Assessment and conclusion
Baseline	Feedstock production	CO_2	NO	Excluded. Waste biomass is considered renewable per eligibility CH4 No conditions. The assessment team confirms and it was appropriate to the applied methodology
		CH_4	NO	
		N_2O	NO	
		Other	NO	
	Feedstock transportation	CO_2	NO	Expected to be de minimis if distance between sourcing sites and production facility is less than 200 kilometers. The assessment team confirms and it was appropriate to the applied methodology
		CH_4	NO	
		N_2O	NO	
		Other	NO	
	Combustion, aerobic and anaerobic decomposition of feedstocks	CO_2	NO	Possible emissions from decay or combustion of biomass in the absence of project activity are excluded. Baseline emissions are assumed to be zero (a conservative assumption). The assessment team confirms and it was appropriate to the applied methodology
		CH_4	NO	
		N_2O	NO	
		Other	NO	
Project	Feedstock Production	CO_2	NO	Purpose-grown crops are ineligible, hence there are no emissions from feedstock production. Waste biomass is also considered renewable per the CDM renewable biomass definition (EB23 Annex 18) and applicability conditions (see Table
		CH_4	NO	
		N_2O	NO	

Source		Gas	Included?	Assessment and conclusion
		Other	NO	1). The assessment team confirms and it was appropriate to the applied methodology
	Pyrolysis, or thermochemical conversion (low technology systems)	CO_2	NO	Low technology systems are provided a default emission value based on published literature (Cornelissen et al., 2016). The assessment team confirms and it was appropriate to the applied methodology
		CH_4	YES	
		N_2O	NO	
		Other	NO	
	Electricity and/or fossil fuels consumed during eligible thermochemical process	CO_2	YES	Included. Emissions associated directly with project activity due to use of fossil fuel. However, there is no use of electricity in the process. The assessment team confirms and it was appropriate to the applied methodology
		CH_4	NO	
		N_2O	NO	
		Other	NO	
	Biochar transportation	CO_2	NO	Expected to be de minimis if distance between production facility and end-use destination is less than 200 kilometers. The assessment team confirms and it was appropriate to the applied methodology
		CH_4	NO	
		N_2O	NO	
		Other	NO	
	Pre-treatment of feedstocks (e.g., grinding, drying)	CO_2	NO	Excluded as there is no such pre-treatment occurs at project level. The assessment team confirms and it was appropriate to the applied methodology
		CH_4	NO	
		N_2O	NO	
		Other	NO	
	Biochar application (e.g., preparation of biochar for final use)	CO_2	NO	No direct or indirect emission is anticipated in the process. The assessment team confirms and it was appropriate to the applied methodology
		CH_4	NO	
		N_2O	NO	
		Other	NO	

3.4.4 Baseline Scenario

The baseline scenario assumes that without the project activity, cotton waste biomass (stalks) would primarily be burned without being utilized for any other purpose, such as producing biochar for soil or non-soil applications. According to the methodology's requirements, the waste biomass can only decay (aerobically or anaerobically) or be burned for purposes other than energy production. The emission avoidance potential of the project activity's feedstock has been excluded from consideration, which is a conservative assumption.

A detailed baseline survey was conducted, confirming that the baseline scenario involves the combustion of biomass for purposes other than energy production. Additionally, the emissions avoidance associated with the feedstock at the baseline is excluded. Therefore, the baseline scenario of the project complies with the methodology's requirements.

During the on-site interviews conducted, it was confirmed that the baseline scenario involves the combustion of biomass for purposes other than energy production. Additionally, the emissions avoidance associated with the feedstock at baseline has been excluded. The baseline scenario was also confirmed during the baseline survey conducted by third-party company. A third-party assessment was carried out to identify and establish the baseline scenario of this project. and in the survey it was confirmed that the combustion of biomass for purposes other than energy production.

Assessment on the Baseline Survey Data

Based on the data provided, the assessment team reviewed the baseline survey conducted during January 2023 and report was issued on February 25th, 2023. The supporting data and calculations etc. were also checked during the desk review, then verified by audit team during the on-site visit.

The audit team is able to confirm that the survey was conducted by PP as primary survey with the help of a third-party agency “FCF India Pvt. Ltd.”. The audit team conducted desk review of the party, found credible as they are an independent entity, into similar services with experience. Also the party does not have any involvement into the project. Therefore, the primary survey and the overall baseline assessment is reasonable, hence accepted.

The audit team interacted with the stakeholders during the site visit and also conducted desk review. The baseline scenario, biomass feedstock etc. are confirmed as resulted from the baseline survey. However there was no publicly available database, report, existing literature, existing survey data of similar industries in the same region; therefore primary survey was recognized as the best option. However, the audit team also reviewed that there was communication from PP with the local Mandal Agriculture Office (MAO) regarding the baseline scenario, waste, existing practices, etc. and acknowledgement was also received from MAO official. This letter serves the secondary reference or support. Therefore, primary survey of the baseline scenario is acceptable..

The section 3.4 of the PDMR includes the required information and justification of the baseline survey and its appropriateness. The information is cross checked with the survey report and found correct.

Assessment on the Baseline Evidence for VM0044

Based on the evidence provided i.e. “Baseline Survey and Study” to confirm the baseline scenario for VM0044 i.e. “waste biomass is either left to decay or combusted for purposes other than energy production” states that the cotton residue (cotton stalks) is burnt after the season every year and this falls under agri residue burning and the same was confirmed with the telephonic interview with who conducted the baseline survey. Additionally, the baseline scenario was reconfirmed from the interviews and discussions with the beneficiaries with whom the VVB team interacted during the site visit.

3.4.5 Additionality

Identify the method used by the applied methodology to demonstrate additionality. Describe in detail the steps taken to validate that the procedure for additionality (set out in the methodology or referenced tool) has been followed correctly and precisely.

For project methods, include at minimum information with respect to how the following have been assessed (as applicable):

- Adherence to regulatory surplus requirements. If the project is in a non-Annex 1 country and is claiming regulatory additionality due to non-enforcement of a law, confirm that the evidence provided is sufficient to support this claim.
- The appropriateness of data and parameters used in financial calculations and sensitivity analyses, including those taken from feasibility study reports.
- The suitability of the benchmark used for investment analysis.
- The credibility of each barrier identified in the barrier analysis.
- The appropriateness of the geographical region used in the common practice analysis.
- Information regarding similar projects identified in the common practice analysis, including essential distinctions between similar projects and the proposed project.
- The reasonableness of assumptions made in the demonstration of additionality.

For standardized methods, include at minimum information with respect to how the following have been assessed (as applicable):

- Adherence to regulatory surplus requirements.
- For performance methods, the appropriateness of the performance benchmark selected and the ability of the project to achieve the level of the benchmark.
- Adherence to all other criteria and procedures set out in the standardized method.

Provide details (including sources of information) of steps taken to cross-check data used in the additionality demonstration. Provide an overall conclusion regarding whether additionality is justified for the project.

The additionality of the project is demonstrated in accordance with the applied methodology taking into account the following parameters:

Project activities must not be mandated by any law, statute, or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute, or other regulatory framework.

The project is a biochar production activity by utilizing waste biomass (i.e. cotton wastes) which fate in absence of the project activity would have been open burning without production of biochar or similar products. Thus, from the existing or baseline scenario of the project it's evident that the project activities are not mandated by law, statue or any regulatory framework in the host country.

Additionality based on an activity method for the demonstration, as follows:

Step 1: Regulatory Surplus

The regulatory surplus scenario is demonstrated below in accordance with the rules and requirements regarding regulatory surplus set out in the latest version of the VCS Standard and VCS Methodology Requirements. As per VCS Standard, v4.7 "Regulatory surplus means that project activities are not mandated by any law, statute, or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute, or other regulatory framework."

As demonstrated under the previous section the biochar production in the state of Telangana or even in any state in the host country India is not a mandatory requirement. The Indian government has been promoting sustainable agriculture practices, including the use of organic amendments like biochar, through initiatives such as the National Mission for Sustainable Agriculture (NMSA) and the National Biochar Initiative. These initiatives aim to enhance soil fertility, improve crop yields, and promote sustainable agricultural practices but not a mandatory regulation or enforced law in the country.

Step 2: Positive List

As per the appendix 1 of the Methodology, it uses an activity method for demonstrating additionality with the processing of waste biomass to biochar as the basis for a positive list. This approach stipulates that the total waste biomass converted to biochar amounts to less than five percent of the total waste biomass available worldwide.

Five percent is the activity penetration threshold set by the VCS Methodology Requirements and is determined by taking the "Observed Activity (OA)" divided by the "Maximum Adoption Potential (MAP)". Where the result of this equation is less than five percent, the project activity may be considered additional.

Activity penetration is calculated as:

$$AP_y = \frac{OA_y}{MAP_y} \times 100$$

Where:

AP_y = Activity penetration of the project activity in year y (percent)

OA_y = Observed adoption of the project activity in year y

MAP_y = Maximum adoption potential of the project activity in year y

As per the baseline survey, the total observed adoption (i.e. the expected capacity of the project design) of the project activity in a year is about 100,000 tons. Thus, OAy = 100,000 tons/y

For the purposes of this methodology, the maximum adoption potential of this activity is the number of tons of waste biomass that could be converted to biochar worldwide. As per the demonstration under the Appendix 1 of the methodology, the maximum adoption potential of this activity is limited to MAPy = 1.369 billion tons.

Thus, the calculated activity penetration rate is

APy = [(0.1 million tons)/(1,300 million tons)] X 100

= 0.0077%, which is < 5%.

Thus, the project activity is deemed additional under the positive list.

3.4.6 Quantification of GHG Emission Reductions and Carbon Dioxide Removals

The procedure for quantification of baseline emissions removals is considered in accordance with the applied methodology. The relevant choices for this project activity are as follows:

Net GHG emission reductions and removals are calculated as per the equation 15, as follows:

$$ER_y = ER_{SS,y} + ER_{PS,y} - PE_{AS,y} - LE_y \quad (15)$$

Where:

ER_y = Net GHG emissions reductions and removals in year *y* (tCO_2e)

$ER_{SS,y}$ = GHG emission reductions at sourcing stage in year *y* (tCO_2e)

$ER_{PS,y}$ = GHG emission removals at production stage in year *y* (tCO_2e)

$PE_{AS,y}$ = GHG emissions at application stage in year *y* (tCO_2e)

LE_y = Total leakage emissions in year *y* (tCO_2e)

Sourcing Stage:

Emission reductions at the sourcing stage are calculated using equation 14, as follows:

$$ER_{SS,y} = BE_{SS,y} - PE_{SS,y} \quad (14)$$

Where:

$ER_{SS,y}$ = GHG emission reductions at sourcing stage in year y (tCO_2e)

$BE_{SS,y}$ = Baseline emissions at sourcing stage in year y; conservatively assumed default value of zero (tCO_2e)

$PE_{SS,y}$ = Project emissions at sourcing stage in year y, conservatively assumed to be zero (waste biogenic source material is considered as renewable biomass) (tCO_2e)

As per para 8.1.1 of the methodology, "Following the CDM EB23 Annex 18: Definition of renewable biomass, waste biomass may be classified as renewable. As the decay rate pathway of diverse feedstock types varies by region and time, the methodology defines the default net baseline emission avoidance as zero following a conservative scenario ($ER_{SS,y}$).

Thus, $ER_{SS,y} = 0$.

Production Stage:

In the baseline scenario at production stage, no biochar is produced for the purpose of the project activity and therefore no GHG removals or related emissions are considered.

Application Stage:

Emissions at application stage refer to GHG emissions associated with the post-production and end-use application of biochar. In the baseline scenario at application stage, since no biochar was produced, no GHG removals or related emissions are considered.

Project Emission :

Sourcing Stage:

At the sourcing stage, the methodology relies on the collection of waste biomass. Therefore, the emissions at the sourcing stage ($PE_{SS,y}$) are set to zero.

Production Stage:

In the project scenario, the net GHG balance depends on the organic carbon content at the biochar production stage. As per the Para 8.2.2 of the methodology, the equation 1 summarizes the carbon balance at the production stage y comparing the difference between the stabilized carbon content in the biochar and the resulting project emissions from feedstock pre-treatment (where applicable) and from conversion of waste biomass into biochar. The former includes emissions from energy consumption of drying and pre-processing feedstocks, and the latter includes other relevant emissions from the production facilities. The project emission removals during production at the biochar facility are as follows:

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

Where:

$ER_{PS,y}$ = GHG emissions removals at production stage in year *y* (tCO_2e)

$CC_{t,k,y}$ = Organic carbon content on a dry weight basis for biochar type *t* used for application type *k* in year *y* (tonnes)

$PE_{PS,t,p,y}$ = Project emissions at production stage for production of biochar type *t* at production facility *p* in year *y* (tCO_2e)

$\frac{44}{12}$ = Coefficient to convert organic carbon to tCO_2e

The project activity is designed to adopt low-technology[4] biochar production facility. Hence, as per the para 8.2.2.2 of the methodology, following steps are adopted:

Step 1: Estimate organic carbon content ($CC_{t,k,y}$) of biochar for low technology facilities

In low technology settings the total organic carbon content of the produced biochar is the foundation of the GHG calculations. The value is derived from the mass of biochar, its respective organic carbon content, and the decay rate of organic carbon in the biochar taken over a period of 100 years (100-year permanence value).

For low technology production facilities, a conservative approach has been selected, related to the organic carbon content of biochar (FCp), based on feedstock type and heating temperature as provided in Table 4 which draws from IPCC Method for Estimating the Change in Mineral Soil Organic Carbon Stocks from Biochar Amendments: Basis for Future Methodological Development. In Equation 6 below, permanence (the fraction of carbon in the biochar remaining after 100 years) is included.

[4] Low technology production facilities are all production facilities that do not meet the conditions defined under high technology production. The project includes earth-pits and box-kiln, which are categorized as low-tech facilities.

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

Where:

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

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

$F_{Cp,t,p}$ = 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.

$PR_{de,k}$ = 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 0.56[21] must be used where pyrolysis temperature is unknown. This follows a conservative approach for carbon permanence.

Determining F_{Cp}: Values for organic carbon content per tonne of biochar per production type

As per the provision of the methodology, project proponents using low technology production facilities may adopt values from IPCC (2019) for different feedstocks and production types (Table 4). Further, project proponents may also refer to other scientific literature such as Woolf et al. (2021).

PP has followed the default value as per the Table 4 of the methodology. Since the feedstock type if Cotton stalks and process follow pyrolysis method, it is considered to be in the category of woody biomass Feedstock and value considered as 0.77 for F_{cp}.

The Calculation:

Parameter		*Value*	*Unit / Remarks*
$M_{t,k,p,y}$	=	*25000*	*tons/yr*
$F_{Cp,tp}$	=	*0.77*	*For wood type, pyrolysis process - as per applied methodology*
$PR_{de,k}$	=	*0.56*	*Default value, as per methodology*
$CC_{t,k,y}$	=	*10780*	*tons*

***Step 2:** Estimate project emissions $PE_{PS,t,p,y}$ for low technology facilities:*

Emissions under the project scenario are determined using the following equation (7):

$$PE_{PS,p,y} = \left(P_{ED,p,y} + P_{EP,p,y} + P_{EC,p,y}\right) \times \frac{\sum_t \sum_k M_{t,k,p,y}}{M_{p,y}} \quad (7)$$

Where:

$PE_{PS,p,y}$ = Project emissions at the production stage at production facility *p* in year *y* (tCO_2e)

$P_{ED,p,y}$ = Emissions associated with the pre-treatment of waste biomass at production facility *p* in year *y* (tCO_2e)

$P_{EP,p,y}$ = Emissions associated with the conversion of waste biomass into biochar at production facility *p* in year *y* (tCO_2e)

$P_{ED,p,y}$ = Emissions due to the utilization of auxiliary energy for the purpose of pyrolysis at production facility *p* in year *y* (tCO_2e)

Determining $P_{ED,p,y}$:

Emissions associated with the pre-treatment of feedstock at production facility p in year y for low technology facilities.

Energy consumption for necessary pre-treatment of waste biomass must be accounted for. This may include feedstock preparation (e.g., feedstock agglomeration, homogenization, pelletizing) either inside the production facility or in field preparation, drying of wet biomass, or other processes. If the energy source is renewable, $P_{ED,p,y}$ must be zero. Otherwise, it must be calculated using the equation 8, as follows:

$$P_{ED,p,y} = P_{EDE,p,y} + P_{EDF,p,y} \quad (8)$$

Where:

$P_{ED,p,y}$ = Emissions associated with pre-treatment of feedstock at production facility *p* in year *y* (tCO_2e)

$P_{EDE,p,y}$ = Emissions associated with grid-connected electricity utilized for pre-treatment of waste biomass at production facility *p* in year *y* (tCO_2e). $P_{EDE,p,y}$ must be calculated as per the provisions of CDM *Tool 05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation.*

$P_{EDF,p,y}$ = Emissions associated with combustion of fossil fuels utilized for pre-treatment of waste biomass at production facility *p* in year *y* (tCO_2e). $P_{EDF,p,y}$ must be calculated as per the provisions of CDM *Tool 03: Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion*.

Since there is no pre-treatment involved in the current project design, hence ***this equation shall not be applied for any calculation.***

Determining $P_{EP,p,y}$:

Emissions associated with the thermochemical process (pyrolysis) at production facility p in year y for low technology facilities

In the absence of direct emission measurements that can reliably measure and report project emissions, data from peer-reviewed literature must be used in the following equation 9, as follows:

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

Where:

$P_{EP,p,y}$ = Emissions associated with the conversion of waste biomass into biochar at production facility p in year y (tCO_2e)

F_e = Average methane emissions from producing one tonne of biochar in year y (tCH_4/tonne). Values from Table 3 in Cornelissen et al. (2016)[22] 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 CH_4/tonne may be conservatively used based on the value for traditional kilns since simple low-cost technologies are known to emit higher levels of CH_4.[23] 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*

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

The Calculation:

Parameter		*Value*	*Unit / Remarks*	*Source*
F_e				*Table 3 in Cornelissen et al. (2016)* https://doi.org/10.1371/journal.pone.0154617
(a) For Soil Pit	=	*0.032*	*tCH4/tonne*	
(b) For Steel-shield soil Pit	=	*0.014*		
(c) For box kiln (Shallow steel type)	=	*0.026*		
GW_{PCH4}	=	*28*	-	*IPCC default value*

$P_{EPp,y}$	=	*22,400*	*tons*	*Applicable for regular soil pits*
	=	*9,800*	*tons*	*Applicable for Steel Shield soil pits*
	=	*18,200*	*tons*	*Applicable for box kiln*

These calculations were verified from the ER sheet, application of equations, input values etc. are found to be correct

Determining $P_{EC,p,y}$:

Emissions due to the utilization of auxiliary energy for the purpose of pyrolysis

When external energy is required to initiate and maintain the pyrolysis reactor, it must be accounted as project emissions. If the source of auxiliary energy is renewable, $P_{EC,p,y}$ must be zero. Otherwise, it must be calculated using the equation 10, as follows:

$$P_{EC,p,y} = P_{ECE,p,y} + P_{ECF,p,y} \quad (10)$$

Where:

$P_{EC,p,y}$ = Emissions due to the utilization of auxiliary energy for the purpose of pyrolysis at production facility p in year y (tCO_2e)

$P_{ECE,p,y}$ = Emissions associated with use of grid-connected electricity utilized for starting the reactor at production facility p in year y (tCO_2e). $P_{ECE,p,y}$ must be calculated as per CDM *Tool 05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation.*

$P_{ECF,p,y}$ = Emissions associated with combustion of fossil fuels utilized for starting the reactor at production facility p in year y (tCO_2e). $P_{ECF,p,y}$ must be calculated as per the provisions of CDM *Tool 03: Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion.*

Since this project is a low-technology facility and no pyrolysis reactor is involved, hence there is no use of any auxiliary energies. ***Hence, $P_{EC,P,y} = 0$.***

Application Stage:

As per para 8.2.3 of the methodology, in the project scenario, emissions associated with processing and utilizing biochar after its production will have a potential impact on the overall emission removal potential. Equation 11 below determines the GHG emissions at the application stage.

$$PE_{AS,y} = \sum_{k}\sum_{t}(E_{P,t,k,y} + E_{ap,t,k,y}) \quad (11)$$

Where:

$PE_{AS,y}$ = GHG emissions at application stage in year y (tCO_2e)

$E_{P,t,k,y}$ = Emissions from processing of biochar type t for application type k in year y (tCO_2e)

$E_{ap,t,k,y}$ = Emissions from utilization of biochar type t for application type k in year y (tCO_2e)

However, biochar produced in the project activity is not processed using any energy application such as grid electricity, fossil fuel etc. ***Hence, $E_{p,t,k,y}$ is Zero.***

GHG emissions resulting from fossil fuel combustion or mixing of biochar with fertilizer products are considered negligible. ***Thus, $E_{ap,k,y}$ is zero.*** *This information were verified by VVB team and found acceptable*

Leakage Emissions

In the case of biochar use, leakage emissions are primarily attributed to transport emissions at various stages of the biochar life cycle. Emissions due to activity-shifting leakage or biomass diversion are considered zero, as currently only waste biomass is eligible for biochar production. Quantification of leakage emissions are considered using equation 13, as follows:

$$LE_y = LE_{as,y} + LE_{bd,y} + LE_{ts,y} + LE_{tap,y} \quad (13)$$

Where:

LE_y = Total leakage emissions in year y (tCO_2e)

$LE_{as,y}$ = Leakage due to activity shift in year y (tCO_2e). Leakage due to activity shift is zero as use of purposely grown biomass for production of biochar is currently not allowed.

$LE_{bd,y}$ = Leakage due to biomass diversion in year y (tCO_2e). Leakage due to biomass (waste/residue) diversion is considered negligible since only biomass which would have been combusted or left to decay is utilized for biochar production.

$LE_{ts,y}$ = Leakage emissions from transportation of waste biomass from sourcing to biochar production facility in year y (tCO_2e). As per CDM *Tool 16: Project and leakage emissions from biomass*,[25] GHG emissions must be accounted for only if transportation distance is more than 200 km. Project proponent must use CDM *Tool 12: Project and leakage emissions from transportation of freight*[26] to calculate $LE_{ts,y}$.

$LE_{tap,y}$ = Leakage emissions from transportation of biochar from the production facility to the site of end application in year y (tCO_2e). As per CDM *Tool 16: Project and leakage emissions from biomass*, GHG emissions must be accounted for only if transportation distance is more than 200 km. Project proponent must use CDM *Tool 12: Project and leakage emissions from transportation of freight* to calculate $LE_{tap,y}$.

Determining $LE_{ts,y}$: Emissions related to leakage from transportation of biochar from sourcing to biochar production facility:

Project emissions from transportation of biochar from the place of origin of the waste biomass to the production site may have the following components:

(i) Transport emissions from field to the production facility

***$LE_{ts,y}$ is considered zero** if transportation distance (to and from—round trip) is less than 200 km.*

Project emissions from transportation of biochar shall be calculated as per the latest version of

"CDM Tool 12: Project and leakage emissions from transportation of freight".

Determining $LE_{tap,y}$: Emissions related to leakage from transportation of biochar from production facility to site of end-use application

Project emissions from transportation of biochar from facility to end-use application may have the following components:

Transport emissions from biochar facility to processing facility;

AND

Transport emissions from processing facility to end-use site;

OR

Transport emissions from biochar facility to end-use site.

***$LE_{tap,y}$ is considered zero** if transportation distance (to and from—round trip) is less than 200 km. Project emissions from transportation of biochar must be calculated as per the latest version of CDM Tool 12: Project and leakage emissions from transportation of freight.*
This information were verified by VVB team and found acceptable

Estimated GHG Emission Reduction and Carbon Dioxide Removals:

The procedure for estimation of net GHG emission reductions and removals include all relevant equations described under the previous section 5.3.

The ex-ante calculation (estimate[5]) of baseline emissions/removals, project emissions/removals, leakage emissions and net GHG emission reductions and removals in the table(s) below for the project crediting period, separately presented for different low-tech facilities proposed under the project design.

For Approach 1 (i.e. for low-tech facility with different Earth-pits):

Table A: For regular soil-pits:

Vintage Period	*Estimated baseline emissions or removals (tCO_2e)*	*Estimated project emissions or removals (tCO_2e)*	*Estimated leakage emissions (tCO_2e)*	*Estimated net GHG emission reductions or removals (tCO_2e)*
Year 1 (12 April 2023 to 11 April 2024)	*0*	*17,126*	*0*	*17,126*
Year 2 (12 April 2024 to 11 April 2025)	*0*	*17,126*	*0*	*17,126*
Year 3 (12 April 2025 to 11 April 2026)	*0*	*17,126*	*0*	*17,126*

[5] The ex-ante calculation will vary depending on the type of low-tech facility being used. PP has already proposed three different approaches under the project design, therefore ex-ante estimates are done for each type of facility. However, PP has anticipated that approach 1 (i.e. earth-pits) may become more suitable followed by the approach 2 and 3. Therefore, final calculation will be based on type of low-tech facilities (or combination) and may vary significantly as compared to the ex-ante estimate. Also, for the purpose of ex-ante estimate an annual projection of 100,000 tons of biomass waste is considered under this project activity which may lead to an annual avg. generation of about 25,000 tons of biochar on dry weight basis.

Year 4 (12 April 2026 to 11 April 2027)	*0*	*17,126*	*0*	*17,126*
Year 5 (12 April 2027 to 11 April 2028)	*0*	*17,126*	*0*	*17,126*
Year 6 (12 April 2028 to 11 April 2029)	*0*	*17,126*	*0*	*17,126*
Year 7 (12 April 2029 to 11 April 2030)	*0*	*17,126*	*0*	*17,126*
Total	*0*	*119,882*	*0*	*119,882*

Table B: For steel-shield soil-pits:

Vintage Period	*Estimated baseline emissions or removals (tCO_2e)*	*Estimated project emissions or removals (tCO_2e)*	*Estimated leakage emissions (tCO_2e)*	*Estimated net GHG emission reductions or removals (tCO_2e)*
Year 1 (12 April 2023 to 11 April 2024)	*0*	*29,726*	*0*	*29,726*
Year 2 (12 April 2024 to 11 April 2025)	*0*	*29,726*	*0*	*29,726*
Year 3 (12 April 2025 to 11 April 2026)	*0*	*29,726*	*0*	*29,726*
Year 4 (12 April 2026 to 11 April 2027)	*0*	*29,726*	*0*	*29,726*
Year 5 (12 April 2027 to 11 April 2028)	*0*	*29,726*	*0*	*29,726*
Year 6 (12 April 2028 to 11 April 2029)	*0*	*29,726*	*0*	*29,726*
Year 7 (12 April 2029 to 11 April 2030)	*0*	*29,726*	*0*	*29,726*
Total	*0*	*208,082*	*0*	*208,082*

For Approach 2 (i.e. for low-tech facility with box-kiln):

Table C: For box-kiln (i.e. falls under the category of shallow steel octagonal kiln):

Vintage Period	*Estimated baseline emissions or removals (tCO_2e)*	*Estimated project emissions or removals (tCO_2e)*	*Estimated leakage emissions (tCO_2e)*	*Estimated net GHG emission reductions or removals (tCO_2e)*
Year 1 (12 April 2023 to 11 April 2024)	*0*	*21,326*	*0*	*21,326*
Year 2 (12 April 2024 to 11 April 2025)	*0*	*21,326*	*0*	*21,326*
Year 3 (12 April 2025 to 11 April 2026)	*0*	*21,326*	*0*	*21,326*
Year 4 (12 April 2026 to 11 April 2027)	*0*	*21,326*	*0*	*21,326*
Year 5 (12 April 2027 to 11 April 2028)	*0*	*21,326*	*0*	*21,326*
Year 6 (12 April 2028 to 11 April 2029)	*0*	*21,326*	*0*	*21,326*
Year 7 (12 April 2029 to 11 April 2030)	*0*	*21,326*	*0*	*21,326*
Total	*0*	*149,282*	*0*	*149,282*

These calculations were verified from the ER sheet, application of equations, input values etc. and are found to be correct. The nature of the project and application of the methodology specifies no baseline emission or removal; whereas ERRs are accounted mainly due to removals at project level deducted by the estimated project emissions. These calculations and breakups are properly stated in the ER sheet.

3.4.7 Methodology Deviations

PP has considered a methodological deviation for two parameters:

(i) Method of measurement of Moisture Content

(ii) Frequency of monitoring of parameter H:Corg

The assessment:

The deviation related to the moisture content measurement method for the biomass and biochar, which is a monitoring and reporting parameter in the project to establish the dry weight of the biomass and produced biochar. The details of the deviation are as follows:

1) Methodology requires adjustment of moisture for both biomass and biochar

2) Methodology (version 01 which was considered at the time of project design and initial listing) does not mandate any specific method of measuring moisture content, however the current version 1.1 refers as follows:

"In cases where moisture content of feedstocks is required, ASTM D4442 20 Standard Test Methods for Direct Moisture Content Measurement of Wood and

Wood–Based Materials can be used as a guide. The method involves drying samples to a can be used as a guide. The method involves drying samples to a constant weight in a ventilated oven at 102 to 105 °C."

3) However, PP has initially evaluated this practice of oven dying method but found difficult to adopt this method as the project was initiated in a village level with low technology facilities under a decentralized approach with box kiln and soil pits. Therefore, PP has adopted direct measurement using Digital Moisture Meters. This approach was discussed (prior to adoption) with VERRA team and based on VERRA's response it was adopted during the first monitoring period.

Therefore, it has been considered under methodological deviation. More details are referred below for further clarity:

The assessment team reviewed the clarification of PP which states that prior to the listing of the VCS-PD-MR, PP has submitted a series if communications with VERRA team to clarify some requirements included under this methodology. There was one clarification related to moisture measurement and the following understanding was noted from VERRA's reply that: "as per the VCS Standard, "methodology deviations can be requested in certain cases where alternative methods may be more efficient for project-specific circumstances" which seems to fit your case with the use of digital moisture meters". Based on this clarification and based on the methodology which does not state such direct oven method as "only or mandatory" process, this deviation has been considered into the project. However, PP keeps both the provision, viz. (i) direct measurement using digital moisture meter and (ii) oven method under the monitoring requirements so that depending on the possibility and feasibility, one of the methods can be considered during a monitoring period.

Now, based on the above clarification, following assessment has been confirmed:

- The deviation will not negatively impact the conservativeness of the quantification of GHG emission reductions or removals. This is because the Digital meters are new, all technical specifications are provided; and values are comparable to prior experience of evaluating moisture contents in such products.

- The deviation relates only to the criteria and procedures for monitoring or measurement and does not relate to any other part of the methodology.

This information was verified by assessment team and found to be acceptable.

Regarding deviation of frequency of monitoring of parameter H:Corg:

The audit team reviewed the deviation submitted by PP as follows:
As per methodology, frequency of monitoring/recording of this parameter has been prescribed as "Each batch of biochar produced at the production facility". However, the current project activity is designed based on monotype feedstock and hence biochar-type produced is also same/uniform across the project. Additionally, the feedstock (i.e. Cotton stalk) is seasonal and hence biochar production is also seasonal.

Therefore, it is proposed that the value of H:C shall be evaluated using laboratory analysis once in each seasonal production as characteristic of the biochar output is expected to be uniform.

Overall assessment of the deviations:

A. The audit team confirms that the section 3.6 of the PDMR includes information and justification related to deviation in measurement of moisture contents. The audit team also rechecked the communication between PP & VERRA team related to the possibility of taking deviation in moisture measurement method. PP considered the deviation with a reference of the statement *"as per the VCS Standard, "methodology deviations can be requested in certain cases where alternative methods may be more efficient for project-specific circumstances"*. Here the audit team reviews that (i) the alternate method is the use of digital meter which is found to be reasonable as moisture meters are now used globally for similar purposes and results are also being used, (ii) this method is also found to be efficient mainly specific to the project circumstance. This is because the project pilot phase was situated in a village area and box-kiln was performing in open field during the season; therefore required facilities or to setup a proper space for oven drying method was not practical for PP, especially due to non-use of electricity in that production site; whereas digital moisture meter could easily be used to measure moisture efficiently through the pilot phase. Most of the pre-processing activities (such as equal size cutting of the samples, taking it to the specific area) as well as recoding of multiple parameters to arrive at moisture % are not involved in digital method, hence digital process used during the period was easy and efficient for PP. The audit team during the site visit also verified the records, log books, photographs taken during the moisture measurement, device technical details, etc. and this practice was found acceptable.

B. However, during the review it was also confirmed that this only a deviation during the pilot phase and as the project proceeds required amenities for adopting oven drying method shall be developed and used for moisture measurement. Therefore, during the current review at PRR stage the audit team further reviewed the possibility of implementing oven drying method by PP. It has been realized that PP has already setup the oven drying method for next season which includes all requirement tools & instruments such as manual cutter for preparing unfirm sample size, weighing scale, ovens, separate log book etc. Therefore, VVB approves the deviation.

C. Further, the audit team assessed that the digital method adopted during the current monitoring period due to which pre-processing requirements are not required; therefore consistency in samples or weight is not an input parameter during this deviation. Whereas, under the oven drying method such requirements will be included including samples to maintain constant size, weight etc. The audit team reviews that PP included justification of no negative impact on conservativeness of quantifying GHG removals. Additionally, the audit team has conducted desk review to compare such moisture % in similar type of production; the values are found comparable and even conservative than the values resulted at the project,

D. The consideration of frequency of measurement of H:C org parameter during the current MP is now included under the section 3.6. This deviation is found to be appropriate as current monitoring period was limited in biochar production as part of the pilot phase. It can be reasonably assessed that there was apparently no such batch variation during this pilot phase. The single testing and tested values are representative of the entire production. The value of this parameter was reported as 0.54 which was a lab tested value as per required protocol. This value is reported into the PDMR correctly.

E. The methodology prescribes the source of the value and method as “Laboratory analysis” and “to follow IBI Biochar Testing Guidelines or EBC Production Guidelines”. The audit team has verified and confirmed that the value reported is based on Lab analysis and as per required protocol. The biochar sample was tested by “Quality Service & Solutions”, VVB independently verified the credential of the entity with a desk review and confirmed that the agency is an “ISO 17025 :2017 NABL” authorized laboratory and hence credible entity in India to conduct test for such bio products. The report includes the Codes of the Method adopted for each parameter to calculate H:C ration; these codes are found as per the required Testing and EBC production guideline. Hence, the reported value is acceptable.

3.4.8 Monitoring Plan

The project activity uses the approved baseline and monitoring methodology VM0044. Assessment team considers the monitoring plan to be complying with the requirements of the methodology based on the following assessment. Details of the data collection and frequency of data recording and associated formats are described and observed to be adequate. The monitoring plan will give opportunity for real measurements of emission reductions that will be accrued.

The responsibilities and authorities for project management, procedures for monitoring and reporting, and QA/QC procedures have been systematically established and formalized.

Data / Parameter	*$FC_{p,t,p}$*	*VVB assessment*
Data unit	*Percent (%)*	*The monitoring parameter, Unit, and descriptions are found to be in line and adhere to the requirements, hence found to be OK.*
Description	*Organic carbon content of biochar for each biochar type t produced in production facility p per ton of biochar, on a dry weight basis (%)*	
Source of data	*Default value provided in Table 4 of the methodology: “values for Organic Carbon Content in Biochar from Table 4AP.1 of IPCC (2019)”.*	
Value applied:	*0.77*	
Justification of choice of data or description of measurement methods and procedures applied	*The project is designed based on single feedstock, i.e. Cotton Stalks as biomass waste. Therefore, the value has been considered for the category “wood” and for the pyrolysis process.* *Default value considered using IPCC (2019) states global estimates of organic carbon content of biochar as a function of feedstock and heating temperature.*	
Purpose of Data	*Calculation of project emissions*	
Comments	*Fixed for the entire crediting period.*	

Data / Parameter	*$PR_{de,k}$*	*VVB assessment*
Data unit	*Dimensionless*	*The monitoring parameter, Unit, and descriptions are found to be in line and adhere to*
Description	*Permanence adjustment factor due to decay of biochar (dimensionless)*	

	to be defined for application type k	*the requirements, hence found to be OK.*
Source of data	*Default Values from Table 4AP.2 of IPCC (2019), as prescribed under the methodology*	
Value applied:	*0.56*	
Justification of choice of data or description of measurement methods and procedures applied	*As per methodological choice, for low technology production facilities, project proponents must use a conservative default value of 0.56 (Figure 4Ap.1 in IPCC, 2019)* *Biochar is a stable material that may be used for soil and non-soil applications. As a material, it has a decay rate that must be accounted for. This parameter considers how much of the original carbon will remain in the biochar and may be accounted as a carbon sink after its final application.* ***IPCC and EBC are internationally recognized, and the data provided in** the guidelines are peer reviewed.*	
Purpose of Data	*Calculation of project emissions*	
Comments	*Fixed for the entire crediting period.*	

Data / Parameter	*GWPCH4*	*VVB assessment*
Data unit	*tonnes CO2e per tonne CH4 (t CO2e/t CH4)*	*The monitoring parameter, Unit, and descriptions are found to be in line and being a default value they adhere to the requirements, hence found to be OK.*
Description	*Global warming potential of methane*	
Source of data	*IPCC Fifth Assessment Report*	
Value applied:	*28*	
Justification of choice of data or description of measurement methods and procedures applied	*The VCS Standard requires that CH4 is converted to CO2e using the 100-year global warming potential derived from the most recent IPCC* *Assessment Report, fifth version, IPCC 2019.*	
Purpose of Data	*Calculation of project emissions*	
Comments	*Fixed for the entire crediting period.*	

Data / Parameter	*Biomass categories and quantities used for selection of the baseline scenario and production of biochar utilized in the project activity*	*VVB assessment*
Data unit	*tonnes (t) on dry basis*	*During the on-site inspection the same was confirmed, and also the source is produced and available at the sites, thus, the monitoring parameter, Unit, and descriptions are deemed acceptable.*
Description	***Category:*** *Agriculture waste (cotton stalks)* ***Source:*** *produced on-site during the season by the farmers, obtained from the farmers during the production phase* ***Fate in absence of the project activity:*** *in absence of the project activity the cotton stalks would have been openly combusted without further utilization.* ***Sustainability criteria compliance for respective category as indicated in Table 1:*** *In line with the table 1, the sustainability criteria are referred for the feedstock category "agricultural waste biomass". Here, the project proponent is using agricultural waste biomass directly from fields and not from a centralized biomass-processing operation. In the baseline agriculture waste biomass was burned without energy production (e.g., open burning of stubble). A baseline survey is referred in this regard.* *For selection of the baseline scenario, at validation, an ex-ante estimation of these quantities shall be provided.*	
Source of data	*On-site assessment of biomass categories and quantities*	
Value applied:	*100,000*	
Description of measurement methods and procedures applied	*Use weigh bridge or an equivalent measuring method.* *Adjust by moisture content in order to determine the quantity of dry biomass.*	
Frequency of monitoring/recording	*Data monitored continuously and aggregated at least monthly.*	
QA/QC procedures applied	*The biomass weighing data shall be recorded at the point of weighing and records shall be available during monitoring & verification. If required annual energy balance that is based on recorded quantities and quantities*	

	converted to biochar in a season can be referred.	
Purpose of Data	*Monitoring of eligible biomass categories and quantities used as feedstock for production of biochar*	
Comments	*NA*	

The value applied here is found to be the total capacity of the project for which this project has been designed, which has been found to be a feasible value. However, current utilization of the project capacity is on lower side.

		VVB Assessment
Data / Parameter	*Biomass categories and quantities used for selection of the baseline scenario and production of biochar utilized in the project activity*	*During the on-site inspection the same was confirmed, and also the source is produced and available at the sites, thus, the monitoring parameter, Unit, and descriptions are deemed acceptable.*
Data unit	*tonnes (t) on dry basis*	
Description	***Category:*** *Agriculture waste (cotton stalks)* ***Source:*** *produced on-site during the season by the farmers, obtained from the farmers during the production phase* ***Fate in absence of the project activity:*** *in absence of the project activity the cotton stalks would have been openly combusted without further utilization.* ***Sustainability criteria compliance for respective category as indicated in Table 1:*** *In line with the table 1, the sustainability criteria are referred for the feedstock category "agricultural waste biomass". Here, the project proponent is using agricultural waste biomass directly from fields and not from a centralized biomass-processing operation. In the baseline agriculture waste biomass was burned without energy production (e.g., open burning of stubble). A baseline survey is referred in this regard.* *For selection of the baseline scenario, at validation, an ex-ante estimation of these quantities shall*	

	be provided.	
Source of data	*On-site assessment of biomass categories and quantities*	*The monitoring procedure is verified during the site visit audit and found to be ok.*
Value applied	*100,000*	*The estimated value is found OK. The value is verified.*
Description of measurement methods and procedures applied	*Use weigh bridge or an equivalent measuring method.* *Adjust by moisture content in order to determine the quantity of dry biomass.*	*The monitoring procedure is verified during the site visit audit and found OK.*
Frequency of monitoring/recording	*Data monitored continuously and aggregated at least monthly.*	*The monitoring frequency and recording are found to be ok.*
QA/QC procedures applied	*The biomass weighing data shall be recorded at the point of weighing and records shall be available during monitoring & verification. If required annual energy balance that is based on recorded quantities and quantities converted to biochar in a season can be referred.*	*The process is found to be agreeable; assessment team has checked the same.*
Purpose of data	*Monitoring of eligible biomass categories and quantities used as feedstock for production of biochar*	*Assessment team has checked and found OK*
Calculation method	*NA*	-
Comments	*Baseline assessment study can also be referred to understand the various parameters prescribed under the Description Section above.*	*The same has been checked and found to be OK*

		VVB Assessment
Data / Parameter	$M_{t,k,p,y}$	*The monitoring parameter, Unit, and descriptions are found OK.*
Data unit	*tonnes (t)*	
Description	*Mass on dry weight basis of biochar type t and application type k produced at production facility p in year y*	
Source of data	*On-site measurements*	*The monitoring procedure is verified during the site visit audit and found OK.*
Description of measurement methods and procedures applied	*Use weighing tools (such as weighing scales and weighbridge). The moisture content is to be adjusted in order to determine quantity of dry weight biomass.*	*The monitoring procedure is verified during the site visit audit and found OK.*
Frequency of monitoring/recording	*Monitored continuously, recorded at least monthly*	*The monitoring frequency and recording are found to be ok.*
Value applied:	*To be applied on actual*	*The estimated value is found OK. The value is verified.*
Monitoring equipment	*Weighing scales and/or Weighbridge*	*Assessment team has checkedand found OK*
QA/QC procedures applied	*Calibrate weighing scales and/or weighbridge as per manufacturer's specifications or at least every three years. In case public weighbridges, the status of calibration can be verified from the operator.* *Amount of biochar applied must be cross checked with sales records or distribution records kept by the local representative.*	*The process of calibration is in line the assessment team has checked and found OK*
Purpose of data	*Calculation of project emissions*	*Assessment team has checked and found OK*
Calculation method	*NA*	-
Comments	*Each biochar quantity shall be weighed separately for each biochar type t and each biochar*	*It is acceptable.*

	production facility p. Moisture content shall be monitored for each batch of biochar type t. The weighted average value shall be calculated for each monitoring period. *However, the current project activity design is based on biochar produced using a single type of biomass waste, i.e. Cotton Stalk, Hence, biochar type "t" remains the same across the project.*	

		VVB Assessment
Data / Parameter	*$H:C_{org}$*	*The monitoring parameter, Unit, and descriptions are found OK.*
Data unit	*Dimensionless*	
Description	*Ratio of hydrogen to organic carbon*	
Source of data	*Laboratory Analysis*	*The monitoring procedure is verified during the site visit audit and found OK.*
Description of measurement methods and procedures applied	*Laboratory analysis following IBI Biochar Testing Guidelines or EBC Production Guidelines.*	*The monitoring procedure is verified during the site visit audit and found OK.*
Frequency of monitoring/recording	*To be taken samples from random batches of biochar produced at the production facility (please refer to "comments" below for more details)*	*The monitoring frequency and recording are found to be ok.*
Value applied:	*To be applied on actual*	*Assessment team has checked and found OK*
Monitoring equipment	*-*	*-*
QA/QC procedures applied	*Laboratory must be accredited and/or approved by the relevant national agency to conduct required material analysis.*	*The laboratory is a reputed approved agency.*
Purpose of data	*Used to demonstrate eligibility for use in soil applications. As per*	*Assessment team has checked and found OK*

	applicability condition 10 of the methodology, biochar used in soils must have an H:Corg of less than 0.7.	
Calculation method	*NA*	*-*
Comments	*The methodology provisions this value for each batch of biochar produced in the facility, However, the current project activity is designed based on monotype feedstock and hence biochar type is also same/uniform across the project. Additionally, the feedstock (i.e. Cotton stalk) is seasonal and hence biochar production is also seasonal. Therefore, it is proposed that the value of H:C shall be evaluated using laboratory analysis once in each seasonal production as characteristics of the biochar output is expected to be uniform.* *Additionally, this is only a reporting parameter and value is not used in the ER calculation. Therefore, for the initial validation and verification value can also be derived from published literature,*	*Assessment team has checked and found OK*

Data and Parameter Monitored:

All data and parameters monitored during the current monitoring period (12-April-2023 to 30-June-2023).

		VVB Assessment
Data / Parameter	$M_{t,k,p,y}$	*The monitoring parameter, Unit,and descriptions are found OK.*
Data unit	*tonnes (t)*	
Description	*Mass on dry weight basis of biochar type t and application type k* *produced at production facility p in year y*	

Source of data	*On-site measurements*		*The monitoring procedure is verified during the site visit audit and found OK.*
Description of measurement methods and procedures applied	*Use weighing scales.* *The moisture content has been adjusted in order to determine quantity of dry weight biomass.*		*The monitoring procedure is verified during the site visit audit and found OK.*
Frequency of monitoring/recording	*Monitored continuously, recorded both daily and monthly*		*The monitoring frequency and recording are found to be ok.*
Value applied:	*12.46*		*Assessment team has checked and found OK*
Monitoring equipment	***Weighing Scale:***		*Assessment team has checked and found OK*
	Make	*Hindustan Scale Company*	
	Serial number	*47421*	
	Accuracy class	*0.02*	
	Date of last calibration	*05 March 2023*	
	Weighbridge:		
	Make	*SRK Industries*	
	Serial number	*SP22UB50T031*	
	Accuracy class	*III, verification scale interval 10*	
	Date of last calibration	*15 January 2023*	
QA/QC procedures applied	*Calibration of the weighing scale and/or weighbridge is as per manufacturer's specifications or at least every three years. Currently*		*The calibration process is ok.*

	public weighbridge was used for measuring. *Amount of biochar produced and applied are available in logbooks for further cross checking.* *Thus, data quality shall be ensured from the cross-checking methods and also due to the regular or timely testing/calibration of the devices.* *Data will be stored both digitally and in hard copies upto 2 years beyond the end of the crediting period.*	
Purpose of data	*Calculation of project emissions*	*Assessment team has checked and found OK*
Calculation method	*NA*	-
Comments	*The current project activity design is based on biochar produced using a single type of biomass waste, i.e. Cotton Stalk, Hence, biochar type "t" remains the same across the project and usage is considered for soil-application only hence "k" = soil application. Also, production facility considered for this entire period was box-kiln, hence "p" = box-kiln.* *The moisture content values are recorded using moisture meter and to be included in the ER sheet.* *Both the monitoring equipment are available in the project. However, during the current monitoring period biochar weights were recorded using weighbridge only.*	*Assessment team has checked and found OK*

		VVB Assessment
Data / Parameter	*$H:C_{org}$*	*The monitoring parameter, Unit,*

Data unit	*Dimensionless*	*and descriptions are found OK.*
Description	*Ratio of hydrogen to organic carbon*	
Source of data	*Laboratory Analysis (see below "comments" section for details)*	*The monitoring procedure is verified during the site visit audit and found OK. The value was based on lab test conducted via accredited laboratory/30/.*
Description of measurement methods and procedures applied	*Laboratory analysis following IBI Biochar Testing Guidelines or EBC Production Guidelines.*	*The monitoring procedure is verified during the site visit audit and found OK.*
Frequency of monitoring/recording	*To be taken samples from random batches of biochar produced at the production facility (please refer to "comments" below for more details)*	*The monitoring frequency and recording are found to be ok PP has considered deviation in monitoring frequency while reporting this parameter.*
Value applied:	*0.54*	*Assessment team has checked and found OK*
Monitoring equipment	-	-
QA/QC procedures applied	*Laboratory is an accredited approved by the relevant national agency to conduct required material analysis.* *Thus, data quality shall be ensured from the certified lab tested reports which are from the accredited lab. Data will be stored both digitally and in hard copies upto 2 years beyond the end of the crediting period.*	*Assessment team has checked and found OK*
Purpose of data	*Calculation of project emissions*	*Assessment team has checked and found OK*
Calculation method	*NA*	-
Comments	*The current project activity it is proposed that the value of H:C shall be evaluated using laboratory analysis once in each seasonal production as characteristics of the biochar*	*Assessment team has checked and found OK*

	output is expected to be uniform. Also, this is only a reporting parameter and value is not used in the ER calculation. *Current value is considered from laboratory test report.* *QSS Lab Report reference: QSS/05/VSH/0442/23-24* *PP has also reviewed value from literature review which is found to have values in the range of 0.23 ~ 0,76.* *Source: Scientific Report, Published: 04 March 2016* *https://www.nature.com/articles/srep22644*	

		VVB Assessment
Data / Parameter	*Biomass categories and quantities used for selection of the baseline scenario and production of biochar utilized in the project activity*	*The monitoring parameter, Unit, and descriptions are found OK.*
Data unit	*tonnes (t) on dry basis*	
Description	***Category:*** *Agriculture waste (cotton stalks)* ***Source:*** *produced on-site during the season by the farmers, obtained from the farmers during the production phase* ***Fate in absence of the project activity:*** *in absence of the project activity the cotton stalks would have been openly combusted without further utilization.*	

	Sustainability criteria compliance for respective category as indicated in Table 1: *In line with the table 1, the sustainability criteria are referred for the feedstock category "agricultural waste biomass". Here, the project proponent is using agricultural waste biomass directly from fields and not from a centralized biomass-processing operation. In the baseline agriculture waste biomass was burned without energy production (e.g., open burning of stubble). A baseline survey is referred in this regard.* *For selection of the baseline scenario, at validation, an ex-ante estimation of these quantities shall be provided.*	
Source of data	*On-site assessment of biomass wastes*	*The monitoring procedure is verified during the site visit audit and found OK.*
Description of measurement methods and procedures applied	*Quantity measured using public weighbridge.* *Adjust by moisture content in order to determine the quantity of dry biomass.*	*The monitoring procedure is verified during the site visit audit and found OK.*
Frequency of monitoring/recording	*Data monitored continuously (for each trip) and aggregated monthly.*	*The monitoring frequency and recording are found to be ok.*
Value applied:	*51.28*	*Assessment team has checked and found OK*
Monitoring equipment	*Manual method, and use of weighbridge for measuring biomass quantity*	*Assessment team has checked and found OK*
QA/QC procedures applied	*The biomass weighing data was recorded at the point of weighbridge and records are available for verification. Thus, data quality shall be ensured from the cross-checking methods of data logs and also from the records maintained at the weighbridge operator.*	*Assessment team has checked and found OK*

	Additionally, there will be regular or timely testing/calibration of the devices. *Data will be stored both digitally and in hard copies upto 2 years beyond the end of the crediting period.*	
Purpose of data	*Monitoring of eligible biomass categories and quantities used as feedstock for production of biochar*	*Assessment team has checked and found OK*
Calculation method	*NA*	-
Comments	*The moisture content values are recorded and to be included in the ER sheet.*	*Assessment team has checked and found OK*

The monitoring plan and the QA/QC procedure would ensure the accurate monitoring of the data/parameters mentioned in the VCS PDMR throughout the implementation of the project activity.The Assessment team confirms that the monitoring procedures mentioned are best as per Industry norms.

Opinion: The assessment team confirms that:

(a) The monitoring plan mentioned in VCS Joint PD & MR is in compliance with the applied methodology VM0044 and any referenced tools;

I. Based on the interview with the PP, assessment team confirms that the project participant deputed the competent personnel to execute the monitoring approach and to follow the monitoring plan.

II. Based on the on-site audit, the assessment team confirms that monitoring arrangements described in the monitoring plan are feasible within the project design;

3.5 Non-Permanence Risk Analysis

The project activity does not require a non-permanence risk analysis. Hence this is not applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The monitoring plan has been implemented as per the Joint PD&MR /02/;

- *The monitoring complies with the requirement of the applied methodology /06/;*

- *The information inflow (from data generation, aggregation, to recording, calculation and reporting) is included above under each parameter and confirms to the requirement of the Joint PD&MR /02/;*

- *The values included in the monitoring report and corresponding emission reduction sheets are verified and included under monitoring parameter, wherever appropriate;*

Implementation Status	Assessment steps, evidence checked, & conclusion:
Project implementation	• The project has been implemented as per the project description provided in the section 4.1 of the joint PD&MR/2/. There are no material discrepancies between project implementation and the project description provided in the PDMR/02/.
Monitoring plan	• The monitoring plan and the QA/QC procedure would ensure the accurate monitoring of the data/parameters mentioned in the VCS PD throughout the implementation of the project activity. The assessment team confirms that the monitoring procedures mentioned are best as per Industry norms. • The assessment team confirmed based on the on-site audit, there is no material misstatements between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology.
AFOLU-specific project implementation	• Not applicable.

Evidence gathering methods employed at validation & verification process:

The project activity is not a grouped project with multiple instances. The current monitoring period jointly with the validation process is a pilot run of the project activity. However, the design of the project activity, baseline, additionality etc. are not limited to this first pilot phase rather the entire project is a single activity with coverage of the areas specified (referred in KML/31/ file) in the project boundary. Additionally, the audit team is able to confirm that entire project activity (i.e. sourcing, production and application of the biochar) is owned, controlled and managed by WeAct, not by the farmers/32/. It implies that increase in number of farmers will be equivalent to increase in number of suppliers and users, which can't be treated as addition of project activity instances. Also, under the three approaches included under the project design, the method

and/or number production facilities may vary but within the same project boundary and structure included at validation.

1. Therefore, method of gathering data, supporting evidence, reference materials etc. referred by the audit team as follows:1st set of data and supporting evidences received from PP via email & digital link, etc. which were considered for initial desk review
2. The publicly available VCS documents were accessed in the VERRA web database
3. The primary records and all data points were cross checked with original evidence during the site visit
4. Additional evidences and references were gathered from (i) desk review, (ii) from the interviews/interactions with stakeholders, and (iii) from prior/professional judgement of VVB.

.Opinion:

The assessment team concludes the following:

- There is no material discrepancies between project implementation and the project description provided in the PDMR/02/.
- The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters) is appropriate.
- There is no material discrepancies between the actual monitoring system and the monitoring plan set out in the PDMR/02/ as per the applied methodology.
- The GHG emission reductions or removals generated by the project have not included in an emissions trading program or any other mechanism that includes GHG allowance trading.
- The project has not participated or been rejected under any other GHG programs. Further the project has not received or sought any other form of environmental credit, or has become eligible to do during the validation or verification.
- The project is registered under VCS only. Hence the assessment team confirms that there is no double counting associated with project activity being participation of other GHG programs which is also verified from the no-double-counting declaration given by the PP/15/.

Hence it can be concluded based on the review of the project documents and the site visit that project has been implemented as described in the joint VCS joint PD&MR/2/.

4.2 Accuracy of Reduction and Removal Calculations

VVB was able to confirm that the monitoring plan contained in Joined PD & MR /02/ is in accordance with the approved methodology applied for the project activity.

The parameter stated in the monitoring plan and the applied methodology /06/ has been fulfilled in the current monitoring period.

The project neither has been rejected nor included in an ETs or other compliance or voluntary mechanism. This is confirmed from the declaration provided by the project participant. Hence no double counting of carbon credits is involved.

The monitoring plan has been implemented as per the Joint PD&MR /02/;

- The monitoring complies with the requirement of the applied methodology /06/;
- The information inflow (from data generation, aggregation, to recording, calculation and reporting) is included above under each parameter and confirms to the requirement of the Joint PD&MR /02/;
- The values included in the monitoring report and corresponding emission reduction sheets are verified and included under monitoring parameter, wherever appropriate;

Baseline Emissions:

Sourcing Stage
As per the section 5.1 of this report, the Baseline emissions at sourcing stage in year y; conservatively assumed default value of zero (tCO2e).

Production Stage:
In the baseline scenario at production stage, no biochar is produced for the purpose of the project activity and therefore no GHG removals or related emissions are considered.

Application Stage:
In the baseline scenario at application stage, since no biochar was produced, no GHG removals or related emissions are considered.

Project Emissions:

Sourcing Stage
As per the section 5.2 of this report, at the sourcing stage, the methodology relies on the collection of waste biomass (i.e. cotton stalks). Therefore, the emissions at the sourcing stage ($PE_{SS,y}$) are set to zero.

Production Stage:

In the project scenario, the net GHG balance depends on the organic carbon content at the biochar production stage. The equation 1 is referred, in this project activity the pre-treatment process is not involved, hence the latter includes other relevant emissions from the production facilities only. Thus, The project emission removals during production at the biochar facility are as follows:

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

Where:

$ER_{PS,y}$ = GHG emissions removals at production stage in year y (tCO_2e)

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

$PE_{PS,t,p,y}$ = Project emissions at production stage for production of biochar type t at production facility p in year y (tCO_2e)

$\frac{44}{12}$ = Coefficient to convert organic carbon to tCO_2e

The project activity has adopted low-technology[6] biochar production facility. Hence, as per the para 8.2.2.2 of the methodology, following steps are adopted:

Step 1: Estimate organic carbon content ($CC_{t,k,y}$) of biochar for low technology facilities

Equation 6 of the methodology applied:

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

Where:

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

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

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

$PR_{de,k}$ = 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 0.56[22] must be used where pyrolysis temperature is unknown. This follows a conservative approach for carbon permanence.

[6] The project design includes earth-pits and box-kiln, which are categorized as low-tech facilities. During the current monitoring period only box-kiln was utilized.

The value calculated for $CC_{t,k,y}$ for the current monitoring period as follows:

Parameter	Values	Units	Source
$M_{t,k,p,y}$	12.46	Tons	Production Log & Moisture data
$F_{Cp,tp}$	0.77	-	Default value provided in Table 4 of the methodology: "values for Organic Carbon Content in Biochar from Table 4AP.1 of IPCC (2019)".
$PR_{de,k}$	0.56	-	Default Values from Table 4AP.2 of IPCC (2019), as prescribed under the methodology

Thus, $CC_{t,k,y}$ = 5.4 tons

Step 2: Estimate project emissions $PE_{PS,t,p,y}$ for low technology facilities:

Emissions under the project scenario are determined using the following equation (7):

$$PE_{PS,t,p,y} = \sum_{t} [(P_{ED,p,y} + P_{EP,p,y} + P_{EC,p,y})] \quad (7)$$

Where:

$PE_{PS,t,p,y}$ = Project emissions at the production stage for production of biochar t at production facility p in year y (tCO_2e)

$P_{ED,p,y}$ = Emissions associated with the pre-treatment of waste biomass at production facility p in year y (tCO_2e)

$P_{EP,p,y}$ = Emissions associated with the conversion of waste biomass into biochar at production facility p in year y (tCO_2e)

$P_{ED,p,y}$ = Emissions due to the utilization of auxiliary energy for the purpose of pyrolysis at production facility p in year y (tCO_2e)

Here,

$P_{ED,p,y}$ = 0

(Since there is no pre-treatment involved in the current project design, hence **this equation shall not be applied for any calculation**)

$P_{EC,p,y}$ = 0

(Biochar produced in the project activity is not processed using any energy application such as grid electricity, fossil fuel etc. Also, GHG emissions resulting from fossil fuel combustion or mixing of biochar with fertilizer products are considered negligible.)

$P_{EP,p,y}$:

In the absence of direct emission measurements that can reliably measure and report project emissions, data from peer-reviewed literature must be used in the following equation 9, as follows:

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

Where:

$P_{EP,p,y}$ = Emissions associated with the conversion of waste biomass into biochar at production facility p in year y (tCO_2e)

F_e = Average methane emissions from producing one tonne of biochar in year y (tCH_4/tonne). Values from Table 3 in Cornelissen et al. (2016)[25] 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 CH_4/tonne may be conservatively used based on the value for traditional kilns since simple low-cost technologies are known to emit higher levels of CH_4[26]. 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*

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

The value calculated for $P_{EP,p,,y}$ for the current monitoring period as follows:

Parameter	Values	Units
F_e	0.026	tCH4/ton of biochar
GHG_{CH4}	28	-
$M_{t,k,p,y}$	12.46	Tons

Thus, $P_{EP,p,y,}$ = 9.07 tCO_2e

Leakage Emission:

As per the provision of the section 5.3 of the report, the Leakage emission is Zero.

(The transportation distance (to and from—round trip) for both biomass collection and the biochar application site is less than 200 km. This can be verified from the log's records. Additionally, feedstock is not purposely grown and there is no diversion of biomass for the biochar production in the project)

GHG Emission Reductions and Carbon Dioxide Removals:

The net GHG emission reductions and removals achieved for this monitoring period is as follows:

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

$ER_{PS,y}$ = (5.4 X 44/12) – 9.07 = **10 tCO_2e** (rounded down value)

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Reduction VCUs (tCO_2e)	Removal VCUs (tCO_2e)	Total VCUs (tCO_2e)
Year 1 (12-April-2023 t0 30-June-2023)	19.70	9.07	0	0	10	10
Total	19.70	9.07	0	0	10	10

The comparison of estimated ex-ante GHG emission reductions and removals and the achieved emission reductions and removals for this monitoring period:

Vintage period	Ex-ante estimated reductions/ removals	Achieved reductions/ removals	Percent difference	Explanation for the difference
Year 1 (12-April-2023 t0 30-June-2023)	4,674 tCO_2e[7]	10 tCO_2e	-99.79%	This is because during the current monitoring period only a very small portion of biomass was considered for biochar conversion as part of an initial pilot run. As per ex-ante estimate it was expected to have about 21,900 tons of biomass to be treated amounting to an estimated production of about 5,480 tons of biochar production during this monitoring period. Whereas total biochar produced (measured quantity) during

[7] This is the calculated ex-ante equivalent value for the current monitoring period.

				this period was only 12.46 tons.
Total	4,674 tCO2e	10 tCO_2e	-99.79%	

Opinion:

The verification team confirms that

- The complete data set for the identified and required parameter for this current monitoring period was available;
- The reported data has been cross checked with available records, wherever appropriate;
- The baseline, project and leakage emissions have been determined in accordance with the requirement of the applied methodology, as contained in the final Joint PD&MR /02/ and corresponding emission reductions spreadsheet;
- The assumptions, emission factors and default values used are justified.
- There is not double counting of emission reduction involved as the project the project neitherhas been rejected nor included in an ETs or other compliance or voluntary mechanism.

4.3 Quality of Evidence to Determine Reductions and Removals

All relevant documents were checked to assess the correctness and quality of data submitted by the project proponents, which are used to determine emission reductions.

All records needed for monitoring are archived in line with the requirements of the monitoring plan. No significant lack of evidence and missing data were detected during onsite audit discussion and inspection and the document review. Hence, the assessment team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures.

The assessment team can confirm that sufficient evidence is available for the whole monitoring period and the same is verifiable and that the data collection system meets the requirements of the monitoring plan and the applied methodology according to the assessment carried out on site and in the document review.

Assessment team confirms that the quality of evidence to determine the GHG reductions produced was found satisfactory. The detailed information flow with the roles and responsibilities of the individuals and the monitoring system have been provided in section 6.3 of the JPDMR/02/.

Evidences referred for verification of monitoring parameter and fixed parameter are defined under section 3.4.8. We further confirm that, sufficient evidence covering the entire monitoring period and at the required frequency were available. A list of referred documents for verification is also included in Appendix 1A of this report.

5 VALIDATION AND VERIFICATION OPINION

5.1 Validation and Verification Summary

WeAct Pty Ltd has commissioned "4K Earth Science Private Limited" to carry out the Joint Validation and Verification of the project "Biochar Project-1 by WeAct", with regard to the relevant requirements of VCS Standard Version 4.7/8/.

4KES commenced the validation and verification on the basis of the baseline and monitoring methodology VM0044: Methodology for Biochar Utilization in Soil and non-soil Applications, version 1.1/6/, the monitoring plan contained in the Joint PDMR /02/ (Version 5.0 dated *05-April-2025*) as per the process described under Section 2 of this report.

The validation service is for the first crediting period of 7 years from 12-April-2023 to 11-April-2030 and verification for the monitoring period 12-April-2023 to 30-June-2023 as reported in the Joint Project Description and Monitoring Report Version 5.0 dated *05-April-2025*. The project proponent correctly applied the baseline and monitoring methodology VM0044: Methodology for Biochar Utilization in Soil and non-soil Applications, version 1.1/6/. The assessment team confirms that the validation and verification of the GHG statement was conducted in accordance with ISO 14064-3: 2019.

The technical details of the project is verified from the technical specifications /16//25/, photos /18/ and during on-site audit and found consistent.

The scenario prior to the project activity is that the waste biomass (i.e. cotton stalks) is either left to decay or combusted. However, a survey related to the baseline scenario has been conducted in the project region and it has been established that the waste biomass (i.e. cotton stalks) only have the fate as: combustion of biomass and such burning mostly open burning which is a prevailing practice and a concern in the region.

Validation and Verification 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 estimated verified emission reductions (VERs).

A risk-based approach has been followed to perform this joint validation and verification. In the course of the joint validation and verification, 23 Corrective Action Requests (CAR) and 04 Clarification Requests (CL) were raised and successfully closed out. 02 Forward action request (FARs) was raised.

The joint validation and verification is based on the Joint PD & MR, additional documents related to baseline and monitoring methodology, ER calculation sheet, the subsequent background

investigation, follow-up interviews and supporting documents made available to the validation and verification team by project proponent.

The objective of this joint validation and verification activity is to have an independent third party for the assessment of the project design and monitoring report, estimated ER sheet, actual ER sheet and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. As a result of the validation and verifocation, the assessment team confirms that:

- The project fulfils criteria of VCS Standard Version 4.7/8/.

- The project is in line with all relevant VCS requirements.

- The project additionality is sufficiently justified in the Joint PD & MR.

- The monitoring plan is transparent, adequate and in line with applied baseline and monitoring methodology.

- The calculation of the Baseline emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 149,282 tCO2e for the entire 1st crediting period is most likely.

- The projects compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 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.

No restrictions or uncertainties were identified related to the joint validation and verification.

The management of the 'WeAct Pty Ltd' responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project final JOINT PROJECT DESCRIPTION & MONITORING REPORT Version 05 dated *05-April-2025*. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of 'WeAct Pty Ltd'. The development and maintenance of records and reporting procedures are in accordance with the JOINT PROJECT DESCRIPTION & MONITORING REPORT Version 05 dated *05-April-2025*.

The project has produced a net total of a total amount 10 tCO2 emission reduction. The monitoring period subject to this monitoring report is inclusive of first and last day of period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, 4KES planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated. Validation and Verification team confirm that, project complies with the

validation and verification criteria for projects and their GHG emission reductions or removals set out in VCS Version 4.7.

Therefore, 4KES is able to certify that the project is in full compliance with the VCS Standard Version 4.7 and recommend registration and issuance of the project activity.

5.2 Validation Conclusion

In our opinion the GHG emissions reductions reported for the project activity for the period 12-April-2023 to 11-April-2030 are fairly stated in the JPD&MR Version 5.0 dated 05-April-2025. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology VM0044 - Version 1.1/6/ and the VCS standard v4.7 /08/. Assessment team confirm that validation of the GHG statement was conducted in accordance with ISO 14064-3: 2019.

The validation is based on the Joint PDMR/02/, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the assessment team by project proponent as given in Appendix 1A of this report.

The review of the project design and the subsequent follow-up interviews have provided 4KES with sufficient evidence to determine the project's fulfilment of all the above stated criteria. No restrictions or uncertainties were identified related to the validation.

Therefore, 4KES is able to certify that the project is in full compliance with the VCS Standard Version 4.7/08/ and recommend registration of the project activity.

Crediting Period: *12-April-2023 to 11-April-2030 (inclusive of both dates)*

Validated estimated GHG emission reductions and carbon dioxide removals for the project crediting period:

Vintage period	Estimated baseline emissions (tCO_2e)	Estimated project emissions (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated reduction or removals VCUs (tCO_2e)	Estimated total VCUs (tCO_2e)
Year 1 (12 April 2023 to 11 April 2024)	*39,527*	*18,200*	*0*	*21,326*	*21,326*
Year 2 (12 April 2024 to 11 April 2025)	*39,527*	*18,200*	*0*	*21,326*	*21,326*
Year 3 (12 April 2025 to 11 April 2026)	*39,527*	*18,200*	*0*	*21,326*	*21,326*

Year 4 (12 April 2026 to 11 April 2027)	*39,527*	*18,200*	*0*	*21,326*	*21,326*
Year 5 (12 April 2027 to 11 April 2028)	*39,527*	*18,200*	*0*	*21,326*	*21,326*
Year 6 (12 April 2028 to 11 April 2029)	*39,527*	*18,200*	*0*	*21,326*	*21,326*
Year 7 (12 April 2029 to 11 April 2030)	*39,527*	*18,200*	*0*	*21,326*	*21,326*
Total	*276,687*	*127,400*	*0*	*149,282*	*149,282*

The non-permanence risk rating (%)	*NA*
If applicable, the Long-term Average (LTA), whether it has been properly updated, and if it has been reached.	*NA*

Vintage period	Estimated baseline emissions (tCO_2e)	Estimated project emissions (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated buffer pool allocation (tCO_2e)	Estimated reductions VCUs (tCO_2e)	Estimated removals VCUs (tCO_2e)	Estimated total VCU issuance (tCO_2e)
DD-MMM-YYYY to 31-Dec-YYYY	-	-	-	-	-	-	-
01-Jan-YYYY to 31-Dec-YYYY	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

5.3 Verification conclusion

The verification has been done with a reasonable level of assurance. In our opinion, the GHG emissions reductions reported for the project activity for the period 12-April-2023 to 30-June-2023 are fairly stated in the JPD&MR version 5.0 dated 05-April-2025. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology VM0044 - Version 1.1/6/ and the VCS standard v4.7 /08/. Assessment team confirm that validation of the GHG statement was conducted in accordance with ISO 14064-3: 2019.

Verification Period: *12-April-2023 t0 30-June-2023 (inclusive of both dates)*

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

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Reduction VCUs (tCO_2e)	Removal VCUs (tCO_2e)	Total VCUs (tCO_2e)
Year 1 (12-April-2023 t0 30-June-2023)	*0*	*9.07*	*0*	*0*	*19.70*	*10*
Total	*0*	*9.07*	*0*	*0*	*19.70*	*10*

The non-permanence risk rating (%)	*NA*
If applicable, the Long-term Average (LTA), whether it has been properly updated, and if it has been reached.	*NA*
Whether a loss has been appropriately accounted for, in accordance with the VCS Program rules, if applicable.	

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Buffer pool allocation (tCO_2e)	Reductions VCUs (tCO_2e)	Removals VCUs (tCO_2e)	Total VCU issuance (tCO_2e)
DD-MMM-YYYY to 31-Dec-YYYY	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

5.4 Ex-ante vs Ex-post ERR Comparison

Vintage period	Ex-ante estimated reductions/ removals	Achieved reductions/ removals	Percent difference	Explanation for the difference

Year 1 (12-April-2023 t0 30-June-2023)	*4,674 tCO_2e*[8]	*10 tCO_2e*	*-99.79%*	This is because during the current monitoring period only a very small portion of biomass was considered for biochar conversion as part of an initial pilot run. As per ex-ante estimate it was expected to have about 21,900 tons of biomass to be treated amounting to an estimated production of about 5,480 tons of biochar production during this monitoring period. Whereas total biochar produced (measured quantity) during this period was only 12.46 tons.
Total	*4,674 tCO2e*	*10 tCO_2e*	*-99.79%*	

[8] This is the calculated ex-ante equivalent value for the current monitoring period. Calculation is referred in the ER sheet.

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

Use the table below to describe the commercially sensitive information included in the project description to be excluded in the public version.

Section	Information	Justification	Assessment method conclusion
NA	NA	NA	NA

APPENDIX 1A: REFERENCE TABLE

Sl. No.	Name of document	Reference
/1/	Initial JOINT PROJECT DESCRIPTION & MONITORING REPORT	Version 01, dated 16/01/2023
/2/	Final JOINT PROJECT DESCRIPTION & MONITORING REPORT	Version 05, dated 05-April-2025
/3/	ER spread-sheet- version 2.1 corresponding to PROJECT DESCRIPTION & MONITORING REPORT Version 4, Dated- 25/03/2024	Version 02.1
/4/	Actual ER spreadsheet dated 25/03/2024	Version 02.1
/5/	CDM-EB: Clean Development Mechanism Validation and Verification Standard for project activity	Version 03.0
/6/	VM0044: METHODOLOGY FOR BIOCHAR UTILIZATION IN SOIL AND NON SOIL APPLICATIONS	Version 1.1
/7/	VCS Verified Carbon Standard: VCS Program Guide	Version 4.3
/8/	VCS Verified Carbon Standard: VCS Standard	Version 4.7
/9/	VCS Verified Carbon Standard: Registration and Issuance Process	Version 4.2
/10/	VCS Verified Carbon Standard: Validation and Verification Manual	Version 3.2
/11/	Monitoring Study Report	-
/12/	Site Visit Documents	-
/13/	Baseline Study and Project Feasibility Report	February 2023
/14/	Biochar – Application log for VCS MP-1	
	Biochar - Biomass weighing log for VCS MP-1	
	Biochar - Grievance Input Register VCS MP-1	
	Biochar - Weigh Slips VCS MP-1	
/15/	Declaration on statement of no double accounting of emission reduction claim for Aranya Agriculture Alternative Declaration on statement of no double accounting of emission reduction claim for WeAct	Dated: 15/06/2023 Dated: 12/01/2024
/16/	Technical specification.	

/17/	Biochar – Chemical Test Report done by Quality Services & Solutions (Gujarat)	
/18/	Photographic evidence of project	-
/19/	Memorandum of Understanding (MOU) agreement between WeAct Pty Ltd and Aranya Agriculture Alternatives	03/02/2022
/20/	Biochar – Moisture Data	-
/21/	Training Records Attendance Sheet	
/22/	Letter from Aranya on baseline scenario, acknowledged by District Mandal Agriculture Officer	25/01/2024
/23/	Baseline Study and Project Feasibility Report	February 2023
/24/	Policy for Safeguarding Human Rights in the Workplace Anti-Discrimination Policy Health and Safety Policy Policy for Protection of Rights of Indigenous People and Cultural Heritage	
/25/	Letter- Low Tech Specification This letter has been issued based on technical understanding and experience of the biochar making process by Samuchit Enviro Tech.	Dated: 27/01/2024
/26/	Material Safety Data Sheet (MSMD) Framework	
/27/	Borad resolution conducted by WeAct	Dated 16/03/2023
/28/	Employee records	
/29/	Local Stakeholder Feedback, Minutes of meeting photos, attendance sheet, and invitations	
/30/	Lab Test Report by Quality Service & Solutions (Gujarat)	Report No. QSS/05/VSH/0442/23-24 Dated 12/05/2023
/31/	KML file presenting the project boundary project	Attachment
/32/	Signed FPIC Forms (Free, Prior, Informed, Consent)	

APPENDIX 2: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS, FORWARD ACTION REQUESTS (CAR/CL/FAR)

Table 1. CL from this joint validation and verification

CL ID	01	**Section no.**	ER Sheet	**Date:** 02/02/2024
Description of CL				
PP need to clarify how moisture has been recorded. PP need to provide the details of the instrument used along with calibration details in the MR report.				
Project participant response				**Date:** 03/02/2024
PP would like to clarify that the moisture of the biomass and also the biochar are recorded using digital moisture meters. This has been clarified under the page 60 of the Joint VCS-PD-MR (under the section 6.3 of the listed PD). The details of the moisture meter, their specifications etc. are submitted to VVB and information are also included under Appendix 2 of the Joint PD-MR. The revised PD-MR is now submitted to VVB. PP would like to clarify that moisture content is not listed as a direct monitored or monitoring parameter as no specific table is there for moisture in the methodology. However, moisture measurement is prescribed under other parameters to ensure dry weights. Hence, PP has considered moisture measurement and included part of the monitoring plan. Also, PP would like to clarify that prior to the listing of the VCS-PD-MR, PP has submitted a series if communications with VERRA team to clarify some requirements included under this methodology. The clarification related to moisture measurement was understood from the VERRA's reply that "as per the VCS Standard, "methodology deviations can be requested in certain cases where alternative methods may be more efficient for project-specific circumstances" which seems to fit your case with the use of digital moisture meters". The copy of the email communication is submitted to VVB. Also, as per updated version 1.1 of the Methodology, it is mentioned that "In cases where moisture content of feedstocks is required, ASTM D4442 -20 Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials **can be used as a guide**". So, methodology also suggest this as an option/guide for moisture content measurement but does not state it as "only or mandatory" process. Therefore, PP has included this consideration of digital meters under the Methodology Deviation under Section 3.6 of the Joint PD-MR.				

Documentation provided by project participant	
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024. Details of the moisture meter.	
DOE assessment	**Date:** 25/04/2024
PP has provide mail communication with Verra. Audit team checked the email communication and cross checked PD_MR and other details of the moisture meter and found satisfactory and hence CL is closed,	

CL ID	02	**Section no.**	1.6	**Date:** 02/02/2024
Description of CL				
PP need clarify how the project has been implemented on the ground. Do they have branch offices on the ground? Or PP work with any partner on ground? Since PP address provided in the section 1.5 is of Australia. How the PP is implementing the project in India?				
Project participant response				**Date:** 03/02/2024
PP would like to clarify that the project is being implemented and operated on ground with the help of local entity "Aranya Agriculture Alternatives". In this regard, PP has included information about Aranya under the following sections: (a) Under section 1.16.3 "The project activity does not include a long supply chain network of organizations, instead entire project is locally managed, operated and biochar is produced with the help of a local representative entity using locally manufactured low technology facilities". Here a footnote reference #4 is included to mention about Aranya. (b) Under the Section 6.3 (under the figure 6) (c) Under the Section 2.2 (where local office of Aranya has been referred and it has been established as the point of contact for mechanism for on-going communication with local stakeholders. Further PP would like to clarify that there is no direct local office set of WeAct Pty Ltd. Australia in India or near the project region. Therefore, Aranya serves the local representation of WeAct. This has been referred under the section 4.1, there is a particular MoU between the parties. For better clarity, a footnote reference has been added under the section 1.5 which includes further details of Aranya.				
Documentation provided by project participant				
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024. Copy of the MoU between WeAct & Aranya.				
DOE assessment				**Date:** 25/04/2024
Audit team checked the revised PD_MR and copy of MOU and found satisfactory and hence CL is closed,				

CL ID	03	Section no.	Appendix 3	Date: 02/02/2024
Description of CL				
1. As per IBI Standard v2.1, the section 3.1 specifies "General Feedstock Material Requirements" and 3.2 Best Management Practices for Biochar Production, Material Handling and Storage, PP need to demonstrate Municipal wastes are not used for biochar production and biochar manufacturer should provide a relevant material safety data sheet (MSDS), biochar should be tested for self-heating and flammability during 9 storage and transport and tackle the weathering effects. 2. As per section 4 of the same standard, PP need to identify a test category detailed to test the biochar. PP need to clarify what steps it has taken to address the above requirements in appendix 3.				
Project participant response				**Date: 25/03/2024**
1. PP would like to further justify that a detailed baseline study and project feasibility assessment was conducted by PP via a third party agency; which confirms that cotton waste being utilized under the project activity is not part of municipal wastes. The baseline scenario (as established under primary survey) confirms that cotton stalks are only burnt at fields after the harvesting season; which rules out all possibility of treating them as municipal waste. Additionally, biochar supply chain considered under the project includes cotton waste sourcing, biochar production and biochar utilization; which are considered in-situ and instant batch wise production of biochar. Therefore, raw material storage related concerns are eliminated; similarly biochar produced from the project is being utilized in the nearby fields which will be before the next cotton cropping season. Thus, safety issues related concerns are minimized under the project. Nevertheless, PP has developed on MSDS framework for operation which is being followed to ensure best management practice with biochar in line with the IBI Standard. The copy of the MSDS framework has been submitted to VVB. **2.** Since the methodology requires testing of biochar for H:C ration, hence PP considers "Test Category-A" as per the biochar IBI Standard. PP has included more details under the Appendix 3 of the Joint PD-MR to clarify above two points.				
Documentation provided by project participant				
Revised VCS Joint PD-MR, version 03, 25-March-2024 MSDS Framework, version 01.				
DOE assessment				**Date:** 25/04/2024
MSDS record has been checked and found satisfactory. As per the IBI standard PP has used Category A for testing purpose. PP has updated Appendix of the joint PD MR and revisions seems satisfactory. Hence CL is closed.				

CL ID	04	Section no.	2.3.5 of PD	Date: 02/02/2024
Description of CL				
PP need to submit carbon agreements with end users.				

Project participant response	Date: 25/03/2024
PP would like to clarify that for the purpose of ensuring carbon rights and prior informed to beneficiaries, **"Free, Prior, and Informed Consent (FPIC)" forms** were signed with the beneficiaries (i.e. with both cotton waste suppliers and biochar users). The copies of the FPCI forms specific to the MP1 submitted to VVB for review and acceptance.	
Documentation provided by project participant	
Signed Free, Prior, and Informed Consent (FPIC) forms were submitted.	
DOE assessment	**Date:** 25/04/2024
FPIC forms has been checked and found ok and hence CL is closed.	

Table 2. CAR from this Joint validation and verification

CAR ID	01	Section no.	Methodology applicability and general requirements	Date: 02/02/2024
Description of CAR				
1. As per VCS website (https://verra.org/methodologies/vm0044-methodology-for-biochar-utilization-in-soil-and-non-soil-applications/) all new projects and projects on the Verra Registry must complete validation using the new version 1.1. PP has used Version 1.0 of the methodology and hence PP has been requested to update the PD and excel sheet with Version 1.1. 2. PP need to use latest VCS Joint project description and monitoring report template version 4.3 for this project. 3. There are many page breaks and empty pages in between the pages. PP need to have proper format. 4. Font used in the template is not in line with the template requirements.				
Project participant response				**Date:** 03/02/2024

1. At the time of completion and listing of the Joint VCS PD-MR, the version 1.1 of the Methodology was not published, hence version 01 has been applied as the applicable version. However, the methodology version is now updated and required information across the PD is now updated as per the version 1.1.
2. PP has now transited all information from the existing template to the new template version 1.1 of the Joint VCS PD & MR. The version 02 of the document shall be referred.
3. PP has rechecked the published version of the Joint VCS PD & MR (both PDF and the word file), it is found to have proper format as per prescribed font type, size, colour and without any blank pages. PP assumes that empty page break or any formatting error found in the word file could be due to downloading error or change in different operating system.

   PP has now transited the entire template into the new version 1.1. The revised updated version 02 of the document submitted to VVB both in word and PDF file, the same can be referred to check the consistency.

4. As already explained under the response #3, PP assumes that there could be formatting error during downloading of the files by VVB, whereas published version of the document is consistent as per template requirement. Nevertheless, PP has updated the entire template as per version 1.1 and this revised document does not have any formatting error.

Documentation provided by project participant	
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024.	
DOE assessment	**Date:** 25/04/2024
PP has used latest methodology and VCS templates and found satisfactory and hence CAR is closed.	

CAR ID	02	**Section no.**	PD content page	**Date:** 02/02/2024
Description of CAR				
PP need to update the content page				
Project participant response				**Date:** 03/02/2024
PP has updated the entire template as per version 1.1.				
Documentation provided by project participant				
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024.				
DOE assessment				**Date:** 25/04/2024
PP has updated the content page and found satisfactory and hence CAR is closed.				

CAR ID	03	Section no.	Section 1.1 of PD	Date: 02/02/2024
Description of CAR				
As per VCS PD template requirements, PP need to provide total GHG emission reductions and removals. PP has mentioned only annual average emissions in the section. Since this project has applied for joint validation and verification, PP need provide the summary of the project implementation status in the section.				
Project participant response				**Date:** 03/02/2024
PP has updated the information under the section 1.1 of the Joint VCS PD & MR. The required information related to the implementation status of the project is included under the section 1.1. However, more details related to the implementation of the project are already part of section 4.1 of the document.				
Documentation provided by project participant				
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024.				
DOE assessment				**Date:** 25/04/2024
PP has provided total GHG ERs in section 1.1 of revised PD and found satisfactory and hence CAR is closed.				

CAR ID	04	Section no.	1.3 and section 3 of PD	Date: 02/02/2024
Description of CAR				
1. PP need to provide health and safety procedures adopted under this project to support the workers with safe working environment. How that has been monitored in this project monitoring period. 2. Justification provided for point 7 i.e "*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, as appropriate, within the first year of its production"* is not sufficient. PP need to provide proper justification how the produced biochar has been used within one year of production. 3. Since biochar is produced in this project from agriculture waste, PP need to demonstrate how it meets the sustainability criteria mentioned in table 1 of the methodology with proper justification. a. PP must demonstrate how the project activity is not leading to a decline in soil carbon stocks or a reduction in crop productivity, or that in the baseline agriculture waste biomass was burned without energy production. 4. PP need to demonstrate and provide justification for all eligible biochar end-use application criteria mentioned in methodology. 5. PP need to give details on how the requirements of IBI Biochar guideline has been met for feedstock type used in the project. If certain criteria are not applicable, PP need to justify how the criteria is not applicable. Some of the criteria is missing from the PD.				
Project participant response				**Date:** 03/02/2024

1. For the purpose of adopting health & safety in operation, PP has provisioned for Training Sessions related to Health & Safety best practices. The training evidence is submitted to VVB. The details of the training session and the related photographs confirm that adequate safety gears, caution practices etc. are being followed on site.
2. PP has included more information for this particular clause #7.

   PP would further like to update that for the current monitoring period (12 April 2023 to 30 June 2023), the production data considered only for the period 12-April-2023 to 08-May-2023, which is currently (as on 03-January-2024) less than one year of production. Also, the produced biochar has been utilized in the soil application. These information can be verified from (i) the biochar production logs, (ii) biochar application logs.

   Thus, PP would like to further iterate that the biochar production under this project is seasonal and the condition related to "how the produced biochar has been used within one year of production" shall be monitored and confirmed from the biochar production & application logs, which are maintained by Arnya team on regular basis.

3. PP would like to clarify that this particular condition "(a) PP must demonstrate how the project activity is not leading to a decline in soil carbon stocks or a reduction in crop productivity, or that in the baseline agriculture waste biomass was burned without energy production" can be verified from the Baseline Study & Project Feasibility Report.

4. In the revised updated VCS-PD & MR, PP has updated all the eligibility criteria for biochar end-use in line with the latest applicable version of the methodology.

5. PP has updated the particular section under the PD to include justification related to all criteria as per IBI Biochar guideline requirements.

Documentation provided by project participant
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024. **ER sheet, version 02, dated 03-Feb-2024** **Supporting documents via Dropbox link.**

DOE assessment	**Date:** 25/04/2024
PP has provided baseline report from FCF and appendix 3 has been added to PD which describes IBI requirements. Audit checked all the documents submitted by the PPD and found satisfactory and hence CAR is closed.	

CAR ID	05	**Section no.**	1.7 and 1.8	**Date:** 02/02/2024

Description of CAR	
1. Ownership section is not clear and not in line with VCS standard. 2. PP need to provide evidence to prove start date 12/04/2023.	
Project participant response	**Date:** 03/02/2024
1. The project ownership is completely with WeAct Pty Ltd. as the biochar production is completely undertaken by WeAct, similarly the produced biochar is also owned and controlled (i.e. distribution for soil application) by WeAct. The particular section in the PD is now update and more information related to ownership included. 2. The start date of the project activity has been considered as per VCS guideline. As per the VCS Standard, the project start date of a non-AFOLU project is the date on which the project began generating GHG emission reductions or removals. Therefore, the start date of this project activity is considered as the date of production of first batch of biochar under the project activity and this date is 12 April 2023. This date can be referred from the biochar production log, where batch-1 of the biochar is referred. A total gross quantity of 1750 kg of biochar was produced and after adjusting the moisture the final quantity is 1093.75. The production log is submitted as evidence.	
Documentation provided by project participant	
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024. **ER sheet, version 02, dated 03-Feb-2024** **Supporting documents via Dropbox link.**	
DOE assessment	**Date:** 25/04/2024
PP has provided the production log document to prove start date which is acceptable. PP has revised the ownership section in the revised PD. All the revisions and documents found satisfactory and hence CAR is closed.	

CAR ID	06	Section no.	1.10	Date: 02/02/2024
Description of CAR				
Source of Estimated GHG emission reductions or removals (tCO2e) is not traceable in excel sheet. PP need provide the excel sheet with complete calculations.				
Project participant response				**Date:** 03/02/2024

PP would like to clarify that the ER sheet included the values of the biochar production from the production logs (denoted as “Actual data monitored”) and the calculated values are included under the sheet “ER Calculation MP1”. Also, all applied equations are include under the ER sheet. However, PP has further updated the ER sheet by adding separate sheets for ex-ante projected values and for real GHG removals for the current MP. Please refer to the updated ER sheet, version 02.
Documentation provided by project participant
ER sheet, version 02, dated 03-Feb-2024

DOE assessment	**Date:** 25/04/2024
PP has provided proper links to all the values in ER sheet and found satisfactory and hence CAR is closed.	

CAR ID	07	**Section no.**	1.11	**Date:** 02/02/2024
Description of CAR				
1. PP need to provide the scientific references to the specifications provided for 3 approaches technologies. Since this project is already implemented, PP need to provide the images of the technologies implemented in the PD. 2. PP need to provide the details of the biochar application. Who are the end users, how they will be determined, how biochar will be distributed, how biochar has impacts on soil, etc need to be discussed. 3. Detailed procedure on biochar production along with application process need to be provided to meet the criteria that the application of biochar does not have loss 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.				
Project participant response				**Date:** 03/02/2024

1. PP would like to clarify that the technology type used by the project activity is a low-technology facility, hence specific scientific reference is not available. However, under the applied methodology the low technology facility has been defined as "Low technology production facilities are those that do not meet all of the conditions given under the definition of high technology production facility".

   Therefore, PP would like to refer to this particular definition where high-tech facility includes:

   (i) Reference of EBC Guidelines for Sustainable Production of Biochar that includes:
   (a) the pyrolytic greenhouse gases produced during pyrolysis must be recovered or combusted greenhouse gases are not allowed to escape into the atmosphere ;

   (b) at least 70 percent of the heat energy produced by pyrolysis must be used (taking into consideration heat transfer inefficiencies to ensure that energy is recovered as well as biochar,

   (c) pollution controls such as a thermal oxidizer or other emissions controls are present that meet local, national or international emission thresholds; and

   (d) production temperature is measured and reported.

   If any of these conditions are not met, the facility is categorized as a low technology production facility. Since the three approaches included under this project design includes particular facilities, viz. (a) in situ earth pits and (b) moveable Box Kiln, these two types don't include the particular conditions above mentioned for high-tech facility. Therefore, these are categorized under low-tech facility. Additionally, as per EBC or IBC guidelines there is no specific criteria defined/prescribed for such low tech facilities, hence there is no scientific references for the low tech facilities demonstrated under this project.

   Additionally, the design specifications of the pits and box were considered based on prior experience and experimental actions performed by the technical team deployed by WeAct. Additionally, a particular chapter/section is available under the Project Feasibility Report which describes references for technical specifications of low-tech facilities.

   Also, as required the images of the low-technology types are submitted to VVB. PP would like to clarify that during the current MP only the approach 2 (i.e. moveable box-kiln) was used for production, hence real-time project specific images are also submitted.

2. PP has included more information about the biochar application under the section 1.11 of the PD.

3. PP would like to clarify that the particular criteria of loss of less than 50% carbon measured by dry weight basis is no applicable for soil-application. As per section 3 of the methodology and further referred under footnote 6 of the methodology, this is confirmed that particular criteria is for only non-soil application.

Documentation provided by project participant

Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024.
DOE assessment **Date:** 25/04/2024
1. Justification provided PP is satisfactory. 2. PP has revised the PD and found as satisfactory. 3. Justification is satisfactory. Audit team cross checked the revised PD with justification provided by PP and verified against the latest methodology and found satisfactory and hence CAR is closed.

CAR ID	08	**Section no.**	1.12	**Date:** 02/02/2024
Description of CAR				
PP need to provide the reference to the geo coordinates mentioned in the section. PP also mentioned that *Zaheerabad as region. what is the significance of region in this project.*				
Project participant response				**Date:** 03/02/2024
PP would like to update that the project activities under this project mainly falls under the region of Zaheerabad. Also, the project is designed for mono type feedstock which is Cotton stalk and within the Sangareddy district Zaheerabad is the main region for such cotton production. Additionally, the local partner entity Aranya has been operational for their permaculture practices in the Zaheerabad region from many year with prior experience with the farmers. PP has included a footnote reference to specify the geo-coordinates of the project region.				
Documentation provided by project participant				
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024. **A KML file is submitted for reference.**				
DOE assessment				**Date:** 25/04/2024
Justification provided by PP is satisfactory and audit team checked the revised PD and fond the information is satisfactory and hence CAR is closed.				

CAR ID	09	**Section no.**	1.13 and 1.14	**Date:** 02/02/2024
Description of CAR				

1. PP need to provide more information how conditions prior to the project has been established. There are no methods mentioned or process mentioned in the section. 2. PP need to discuss on EIA for this project in section 1.14.
Project participant response **Date:** 03/02/2024
1. PP would like to clarify that the conditions prior to the project activity has been described under the section 1.13 and these conditions can be referred/verified from the Baseline Study and Project Feasibility Report. PP has updated the relevant section to provide more details and cross references related to the conditions prior to the project. 2. PP has updated the section 1.14 of the PD to provide information related to EIA.
Documentation provided by project participant
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024.
DOE assessment **Date:** 25/04/2024
Audit team checked baseline report and revised PD and changes are within the requirements and found satisfactory and hence CAR is closed.

CAR ID	10	**Section no.**	1.15	**Date:** 02/02/2024
Description of CAR				
PP need to give undertaking that project has not been registered neither is seeking registration under any other GHG programs other than VCS under VERRA and also satisfy all conditions mentioned in the section1.15				
Project participant response				**Date:** 03/02/2024
PP has submitted the required undertaking specific to the conditions prescribed under section 1.15 of the PD.				
Documentation provided by project participant				
Undertaking from WeAct, dated 15-Dec-2023				
DOE assessment				**Date:** 25/04/2024
PP has submitted the undertaking and found satisfactory and hence CAR is closed.				

CAR ID	11	**Section no.**	1.17	**Date:** 02/02/2024
Description of CAR				

1. Footnote 4 is not properly refenced. Why pp has mentioned Aranya Agriculture Alternatives name in this footnote. 2. How did PP arrived the number 20% in SDG goal 5 in the table 1. 3. PP need to provide evidence to employment records, training records, safety protocols adopted, etc for all SDG selected. 4. PP need to provide the justification on how PP decided cotton stalk as hazardous waste. 5. SDG value 13 is not proper in the table 1. Total ER achieved need to be provided.

Project participant response	**Date:** 03/02/2024

1. PP would like to clarify that the Footnote #4 is to inform details about the local representative of the project on behalf of PP WeAct Pty Ltd. Since PP has already update more information about Aranya under the previous sections (as already responded under CL 01), hence footnote #4 is now suitably revised.

2. PP would like to refer to the SDG indicator 1, it has been informed that there are 5 direct employment and 25 indirect employment during the current monitoring period. As per gender distribution, 2 out of the 5 resources are female and out of 25 resources 5 are female. Hence, calculated % comes above 20% in terms of gender ration. Hence, 20% has been reported under the SDG 5.

3. PP has uploaded all the supporting documents into the shared Dropbox folder. The same is now submitted to VVB for further access and review.

4. PP would like to clarify that a baseline study has been conducted for this project, and it has been observed that (based on the survey data, also as per secondary research included under the report) the cotton residue (cotton stalks) is burnt after the season every year and this falls under agri residue burning which has been prescribed as hazardous practice.

5. PP has updated the last column of the SDG 13 and total ER achieved during the current monitoring period has been reported.

Documentation provided by project participant
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024. **ER sheet, version 02, dated 03-Feb-2024** **Supporting documents via Dropbox link.**

DOE assessment	**Date:** 25/04/2024
PP ahs provided proper justification in the revised PD and provided supporting documents for SDGs. All the information provided found satisfactory and hence CAR is closed.	

CAR ID	12	**Section no.**	2.4	**Date:** 02/02/2024
Description of CAR				

PP need to update public comment period details as per the template requirements.	
Project participant response	**Date:** 03/02/2024
PP has updated the dates of public commenting period in the revised document.	
Documentation provided by project participant	
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024.	
DOE assessment	**Date:** 25/04/2024
PP has updated the revised PD and hence CAR is closed.	

CAR ID	13	**Section no.**	3.3	**Date:** 02/02/2024
Description of CAR				
PP need to update the project boundary GHG gases as per new version 1.1 of the methodology with proper justification.				
Project participant response				**Date:** 03/02/2024
PP would like to confirm that the project boundary GHG details section is now updated in line with the revised Methodology version 1.1				
Documentation provided by project participant				
Revised Joint VCS PD-MR, version 02, dated 03-Jan-2024.				
DOE assessment				**Date:** 25/04/2024
Audit team checked PD_MR and found satisfactory and hence CAR is closed.				

CAR ID	14	**Section no.**	3.4	**Date:** 02/02/2024
Description of CAR				
PP need to provide the details of baseline study in the section, how, when, where the baseline study conducted along with the results of the study need to be provided in the section. PP need to submit the baseline survey data for audit.				
Project participant response				**Date:** 03/02/2024
PP would like to confirm that the section 3.4 of the VCS join PD & MR is now updated and more information related to the baseline study and project feasibility assessment has been included.				

Documentation provided by project participant	
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024.	
DOE assessment	**Date:** 25/04/2024
Audit team checked PD_MR and found satisfactory and hence CAR is closed.	

CAR ID	15	**Section no.**	3.5 and whole PD	**Date:** 02/02/2024
Description of CAR				
PP must use latest VCS standard version 4.5 and its requirements in whole PD how project complies with the standard requirements.				
Project participant response				**Date:** 03/02/2024
PP has applied requirements of version 4.5 of the VCS standard while updating the version 02 of the VCS Joint PD & MR.				
Documentation provided by project participant				
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024.				
DOE assessment				**Date:** 25/04/2024
Audit team checked PD_MR and found satisfactory and hence CAR is closed.				

CAR ID	16	**Section no.**	5	**Date:** 02/02/2024
Description of CAR				
PP need provide an example calculation of ER in this section along with sources of all values used for calculations.				
Project participant response				**Date:** 03/02/2024
PP has updated the ER sheet and included a reference calculation sheet with all sources of input values and applicable equations etc.				
Documentation provided by project participant				
ER sheet, version 02, dated 03-Feb-2024				
DOE assessment				**Date:** 25/04/2024
Audit team checked ER sheet and found satisfactory and hence CAR is closed.				

CAR ID	17	Section no.	Appendix 1	Date: 02/02/2024
Description of CAR				
Details provided for the LSC meeting is not sufficient. PP need to provide MoM, analysis of feedback forms, etc need to be provided.				
Project participant response				Date: 03/02/2024
PP would like to clarify that due to the larger size files it was difficult to include all details of LSM under the VCS document, therefore summarized information were included and some references were submitted under the Appendix 1. However, PP has now updated the LSM related information as per the new template requirements, the refence images are in Appendix 2 (earlier Appendix 1 in the previous version of the PD) with more information and all supporting documents related to LSM meeting are now submitted.				
Documentation provided by project participant				
Revised Joint VCS PD-MR, version 02, dated 03-Feb-2024. Supporting documents via Dropbox link.				
DOE assessment				Date: 25/04/2024
Audit team checked PD_MR and documents of LSC meeting and found satisfactory and hence CAR is closed.				

CAR ID	18	Section no.	7	Date : 02/02/2024
Description of CAR				
1. PP need to provide the database of the biochar facilities 2. PP need to provide the database of final application places along with geo coordinates, application type, monitoring tools used in project, records of biochar sourcing, QA/QC procedure adopted, etc as per monitoring plan mentioned in the methodology.				
Project participant response				Date: 03/02/2024
PP would like to confirm that all databases related to biochar production, application and also for sourcing/collection cotton stalks are submitted to VVB. The original records were made available during the on-site visits.				
Documentation provided by project participant				
Supporting documents via Dropbox link.				
DOE assessment				Date: 25/04/2024
Audit team checked supporting documents and found satisfactory and hence CAR is closed.				

CAR ID	19	Section no.	Section 5 of PD	Date : 02/02/2024
Description of CAR				
PP need to mention the values used for the quantification in this section with proper justification for the selection.				
Project participant response				**Date: 25/03/2024**
PP has already included the values related to the baseline emissions, project emissions and leakage emissions under the Section 5 of the PD. The section is now further revised.				
Documentation provided by project participant				
Revised VCS-Joint PD&MR submitted, version 03.				
DOE assessment				**Date:** 25/04/2024
PP has revised the PD and now required parameter values are available and hence CAR is closed.				

CAR ID	20	Section no.	Excel sheet	Date : 02/02/2024
Description of CAR				
The excels sheet has 39526.67 while PD document mentions 39527 for baseline emissions. PP need to maintain the consistency across the documents.				
Project participant response				**Date: 25/03/2024**
PP has shown the calculated value upto 2 decimal points, whereas final value reported was rounded value. However, the values are now made consistent in both excel and PD sections.				
Documentation provided by project participant				
Revised VCS-Joint PD&MR submitted, version 03, dated 25 March 2024. ER sheet, version 02.1, dated 25 March 2024				
DOE assessment				**Date:** 25/04/2024
PP has checked the revised documents and found the consistency in the reported values. Hence CAR is closed.				

CAR ID	21	Section no.	4.1 and excel sheet	Date : 02/02/2024
Description of CAR				

PP mentions that during this monitoring period, the project activity undergone a pilot run as per the designed specification under the Approach 1 (i.e. earth-pits) and 2 (box-kiln). However, in the ER Calculation_MP1 excel sheet, ER estimation is missing for 1 earth pit approach. PP need to clarify on this. Also pp need to mention in the same section where 1 (i.e. earth-pits) and 2 (box-kiln) are constructed.

Project participant response	**Date: 25/03/2024**
PP would like to clarify that Project activity has been designed to include all the three options under the two approaches. i.e. Earth Pits and Box-kiln. These options were evaluated in pre-project scenario, which can be referred in Baseline and Feasibility study report. Therefore, all options were included as part of the project design. This can be further referred from the Low-Technology reference letter issued by "Samuchit Enviro Tech". However, during the current Monitoring Period (i.e. MP1) only "box-kiln" was only used as very less volume of cotton wastes were handled as pilot run. Therefore, MP1 calculations are applicable only for Box-kiln.	
Documentation provided by project participant	
Resubmitted: **(i)** Baseline study and Project feasibility assessment report, conducted by third party agency **(ii)** Low-Technology reference letter & specifications issued by "Samuchit Enviro Tech".	
DOE assessment	**Date:** 25/04/2024
Justification provided by the PP is satisfactory and hence CAR is closed.	

CAR ID	22	**Section no.**	6.1	**Date :** 02/02/2024
Description of CAR				
Table format is not proper for parameter "Biomass categories and quantities used for selection of the baseline scenario and production of biochar utilized in the project activity" PP need to add value applied row to the table.				
Project participant response				**Date: 25/03/2024**
The table for the particular parameter under the section 6.1 has been now updated.				
Documentation provided by project participant				
Revised VCS-Joint PD&MR submitted, version 03.				
DOE assessment				**Date:** 25/04/2024
PP has updated and corrected the table format and hence CAR is closed.				

CAR ID	23	Section no.	6.3	Date : 02/02/2024
Description of CAR				
PP need to submit the database of sourcing stage, production stage and application stage for this monitoring period.				
Project participant response				Date: 25/03/2024
PP has submitted all the databases maintained across the biochar production supply chain which includes Sourcing data, Production data and application data. These values can be correlated with the values included under the ER sheet.				
Documentation provided by project participant				
Resubmission of databases.				
DOE assessment				Date: 25/04/2024
Databases has been checked and found satisfactory and CAR is closed.				

Table 3. FAR from this joint validation and verification

Following FARs are raised during this joint validation and verification

FAR ID	01	Section no.	1.5 & 1.13 of PDMR	Date: 15/12/2024
Description of FAR				
VVB reviewed the referred section 3.2.5 of the VCS Standard v4.7. This section is not required to apply to the project activity. Whereas, for the clarification of grouped & non-grouped project, the audit team referred to section 3.6.4 & 3.6.5 of the VCS Standard. As per 3.6.4. "Both grouped and non-grouped projects can have multiple project activity instances". In furtherance the audit team reviewed Sections 3.6.10 – 3.6.17. It has been assessed that the design of the project activity, baseline, additionality etc. are not limited to this first pilot phase rather the entire project is a single activity with coverage of the areas specified (i.e. the KML) in the project boundary. Additionally, the audit team is able to confirm that entire project activity (i.e. sourcing, production and application of the biochar) is owned, controlled and managed by PP only, not the farmers. Therefore, increase in number of farmers will be equivalent to increase in number of suppliers and users, hence not considered as addition of project activity instances. Also, under the three approaches of production type, the methods and/or number production facilities may vary but within the project boundary. Therefore, the justification of the project as a "Non-grouped" project is acceptable to VVB, however for reassurance the VVB concludes this with a FAR as follows: **"During each upcoming verification, the geo-coordinates of the Biochar Production facilities shall be checked to ensure that they are within the registered project boundary".**				

Project participant response	**Date: DD/MM/YYYY**
Documentation provided by project participant	
DOE assessment	**Date: DD/MM/YYYY**

FAR ID	02	Section no.	1.18.2/Table 1 of PDMR	Date: 15/12/2024
Description of FAR				
VVB validated the updated SDGs under the section 1.18.2 of the PDMR during the PRR assessment. The indicators are updated appropriately with "user defined indicator" wherever applicable. The justification of the claims and their presentation are found reasonable hence accepted. The audit team interviewed stakeholders during the site visit and also observed the project activity and its social deliverables. The reported SDGs and their contributions are found appropriate and aligned with the actual scenarios of the ground. However, some of the SDGs are provisioned for future adoption for their monitoring & reporting in upcoming verification cycle. Therefore, for reassurance of appropriateness the VVB concludes the SDG table 1 with a FAR as follows: **"During the next verification cycle, the following SDGs shall be demonstrated by PP for further validation and confirmation:** **SDG #3.9, #9.1, #14, #15 and #17".**				
Project participant response				**Date: DD/MM/YYYY**
Documentation provided by project participant				
DOE assessment				**Date: DD/MM/YYYY**

APPENDIX 3: COMPETENCE OF TEAM MEMBERS

Certificate of Competence							
Name	☒ Mr. ☐ Ms.	**Ma Paa Puratchikkanal**					
Qualification Procedure		*Fulfils the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.*					
Appointed to work as:							
		CDM Validator/Verifier	**Team Leader**	**Team Member**	**Technical Expert**	**Technical Reviewer**	**Financial Expert**
Appointed		Yes	Yes	Yes	Yes	Yes	Yes
Appointed Date		15/07/2023					
Authorized to work as Technical Expert for:							
Authorized Technical Area		**Sectoral Scope**		**TA Code**		**Technical Area within the scope**	
		Energy industries (renewable - / non-renewable sources)		1.1		Thermal energy generation	
		Energy industries (renewable - / non-renewable sources)		1.2		Renewables	
		Energy demand		3.1		Energy demand	
		Construction		6.1		Construction	
		Waste handling and disposal		13.1		Solid waste and wastewater	
		Waste handling and disposal		13.2		Manure	
		Agriculture		15.1		Agriculture	
Authorized to work as Local Expert for:							

Country/Countries	India and Sri Lanka
Compliance check by: Anand S. R.	

Certificate of Competence

Name	☒ Mr. ☐ Ms.	**Praveen Babu S**
Qualification Procedure		*Fulfils the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.*

Appointed to work as:

	Validator/Verifier	**Team Leader**	**Team Member**	**Technical Expert**	**Technical Reviewer**	**Financial Expert**
Appointed	Yes	No	Yes	Yes	No	No
Appointed Date	15/07/2023					

Authorized to work as Technical Expert for:

Authorized Technical Area	**Sectoral Scope**	**TA Code**	**Technical Area within the scope**
	Energy industries (renewable - / non-renewable sources)	1.2	Renewables

Authorized to work as Local Expert for:

Country/Countries	India
Compliance check by: M.P. Kanal	

Certificate of Competence		
Name	☒ Mr. ☐ Ms.	**Koteswara Rao**
Qualification Procedure		*Fulfils the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.*

Appointed to work as:

	Validator/Verifier	**Team Leader**	**Team Member**	**Technical Expert**	**Technical Reviewer**	**Financial Expert**
Appointed	No	No	No	Yes	No	No
Appointed Date	29-07-2019					

Authorized to work as Technical Expert for:

Authorized Technical Area	**Sectoral Scope**	**TA Code**	**Technical Area within the scope**
	Agriculture	15.1	Agriculture

Authorized to work as Local Expert for:

Country/Countries	India

Compliance check by: Anand S. R.	

Certificate of Competence							
Name	☐ Mr. ☒ Ms.	**Swati S Acharya**					
Qualification Procedure		*Fulfils the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GCC/GHG Projects.*					
Appointed to work as:							
		Validator/Verifier	**Team Leader**	**Team Member**	**Technical Expert**	**Technical Reviewer**	**Financial Expert**
Appointed		Yes	Yes	Yes	Yes	No	No
Appointed Date		15-07-2023					
Authorized to work as Technical Expert for:							
Authorized Technical Area		**Sectoral Scope**		**TA Code**	**Technical Area within the scope**		
		Energy industries (renewable - / non-renewable sources)		1.2	Renewables		
Authorized to work as Local Expert for:							
Country/Countries		India					
Compliance check by: Anand S. R.							

APPENDIX 4: ABBREVIATIONS

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
EB	Executive Board
ESIA	Environmental and Social Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse Gases
IPCC	Intergovernmental Panel for Climate Change
ISO	International Organization for Standardization
MP	Monitoring Period
MR	Monitoring Report
MW	Mega Watt
MWh	MegaWatt hour
PD	Project Description
PP	Project proponent
QA/QC	Quality Assurance/Quality Control
tCO2	Tonnes of Carbon Dioxide
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit