Preliminary Assessment Public Summary

This *Preliminary Assessment Public Summary*, prepared by Puro.earth, contains general information about the CO_2 Removal Supplier and its project, as evaluated at the time of the Preliminary Assessment. It also includes a *Non-Technical Project Summary* and a *Criteria Assessment Report* detailing: i) key criteria assessed and their associated outcomes, ii) Puro's comments, and iii) evidence provided by the CO_2 Removal Supplier. The *Public Summary* serves as a transparent communication tool, enabling potential investors, buyers, and stakeholders to quickly understand the supplier's carbon removal capabilities and assessment status.

The supplier has also received an extended *Preliminary Assessment Report*. This confidential document offers in-depth insights, including specific remarks and actionable recommendations to guide the supplier's progression through the certification journey.

1. Supplier and Project Information

CO_2 Removal Supplier	
Company name	Climeverse Pvt. Ltd. (operating as Equilibrium)
Company address	WeWork Prestige Central (HD-134), 36, Infantry Road, Bangalore, Karnataka - 560001
Business ID	U72900KA2021PTC156152
KYC status	Completed
CO_2 Removal Project	
Methodology	**Biochar, Edition 2022, Version 3**
Production Facility name	Murudagiri Biochar Facility
Facility registration date	15 September 2025
Production Facility ID	219121
Production Facility location	Industrial Area, Gadag District, Karnataka, India (Lat: 15.21784°, Long: 75.885795°)
Host Country of removal	India
Has this facility been registered in another registry?	☒No ☐Yes, additional information:
Preliminary Assessment Details	
Date of assessment	11 November 2025
Status of assessment	Final
Conclusion of assessment	Passed

2. Non-Technical Project Summary*

The Murudagiri Biochar Facility transforms invasive Prosopis juliflora and the harvest residue corn cobs into biochar using pyro-gasification. This process locks carbon from the atmosphere into a stable form that remains stored in soils for centuries. The biochar improves soil fertility, water retention, and crop resilience, delivering co-benefits to local farmers. In addition, the facility produces renewable syngas, which is reused on-site for energy and planned for future commercialization as a sustainable alternative to fossil fuels.

*Filled by the Supplier. Between 150-200 words

The definition of CO_2 Removal Supplier and Production Facility can be found in the Puro Standard.

3. Criteria Assessment Report

Reminder: Sub-criteria either concern the Production Facility's technical eligibility or its maturity and quality. There are three types of sub-criteria:

- **Required to be passed:** These correspond to the core criteria related to the eligibility of a Production Facility. Suppliers must meet these criteria, as they may otherwise be impossible or costly to change at a later stage of the certification journey.
- **Required to be assessed**: These criteria are important for evaluation but do not necessarily determine pass or fail at this stage, as it is understood that the suppliers may be at different stages of development.
- **Not required:** These criteria are optional at this stage. They may provide additional information about the project maturity but are not essential for passing the preliminary assessment.

For a facility to be considered eligible for listing, all the sub-criteria that condition eligibility must be met (i.e. passed or assessed). If one of those sub-criteria is not met, the facility in its current state of development is not eligible for listing.

Disclaimer: The assessment has been made against the criteria in the current version of the methodology. Puro.earth relied on the CO_2 Removal Supplier for the correctness of the provided information during the time of the preliminary assessment and will make no representation as to the accuracy or completeness of this report. The CO_2 Removal Supplier must undergo a third-party audit before issuing CO_2 Removal Credits (CORCs). **Passing the preliminary assessment does not guarantee a success in the third-party audit.**

Important Notice Regarding Biochar Methodology Update: This Preliminary Assessment has been conducted against Edition 2022, but to some extent, reflected some important changes in the updated Biochar Methodology – Edition 2025.

Overall evaluation: Preliminary Assessment is **Passed**.

Table 1. Criteria and sub-criteria assessment by Puro based on the documents submitted.

ID	Criteria / Sub-criteria	Outcome	Comment	Evidence reviewed	Requirement for listing	Purpose of criteria
C1	**Planned biomass feedstock(s) is(are) eligible**	**Passed**			*Passed if required sub-criteria are met*	
C1.1	*Biomass feedstocks are identified and compatible with EBC positive list*	Passed	Two feedstocks are identified. The woody biomass feedstock, *Prosopis juliflora* (considered invasive), is proposed as F-03 (Wood, wood residues from mechanical processing), S-05 (General landscaping residues) or S-04 (Biomass from nature conservation). Corn cobs are proposed as Ag-05 (Harvest residues). These feedstocks sourced in India are suited for biochar production, under both Editions 2022 and 2025 of the biochar methodology.	Executive Summary; [Equilibrium] Biomass Types and Origins List – BCH.xlsx; Selected Feedstock.pdf; [Equilibrium] Project Description.pdf	Required to be passed	Technical eligibility

c1.2	*Biomass feedstock sustainability and chain-of-custody can be demonstrated, if applicable*	Passed	*Prosopis juliflora*, as an invasive species, is subject to authorized harvesting plans, while corn cobs as agricultural residues are subject to legal sourcing. A comprehensive set of documentation was provided for biomass sourcing, including a draft harvesting plan for the invasive species, an MRV plan, including overview of monitoring parameters for biomass, and a stakeholder engagement plan describing feedstock sustainability. Together, these documents show that the supplier is likely to meet the feedstock sustainability and chain of custody requirements for the relevant feedstock categories.	Selected Feedstock.pdf; Comprehensive MRV Plan for Mundargi.docx; Harvesting Plan for Prosopis Juliflora- Feedstock Removal; [Equilibrium] Stakeholder Engagement Plan.pdf	Required to be passed	Technical eligibility
c1.3	*Bioenergy leakage related to feedstock use is minimal*	Passed	Ample proof is provided, showing that neither feedstock has a significant regional bioenergy market. Under Edition 2025, leakage related to feedstock use is hence also likely to be mitigated, noting as well that the facility is planned to valorize energy co-products in later years of operations.	Selected Feedstock.pdf; Baseline and Additionality Questionnaire_ Signed.pdf; Revival of the Mundargi gasification facility – Memo.pdf; Equilibrium Mundargi Pre Assessment LCA.xlsm; [Equilibrium] Project Description.pdf	Required to be assessed	Technical eligibility
c1.4	*Land use change related to feedstock use is minimal*	Assessed	Removal of invasive *Prosopis juliflora* will be conducted according to the company's Harvesting Plan in compliance with Section 1.1.2 of the 2022 Biochar Methodology v3, and carries a minimal risk of negative land use change. Processing of corn cobs does not appear to have any significant risk of land use change.	Selected Feedstock.pdf; Baseline and Additionality Questionnaire_ Signed.pdf; [Equilibrium] Project Description.pdf; Harvesting Plan for Prosopis Juliflora- Feedstock Removal	Required to be assessed	Technical eligibility
c1.5	*Sourcing of biomass is secured (e.g. letters of intent, contracts)*	Assessed	No formal agreements are presented demonstrating a secured sourcing of biomass. However, ample research and templates have been composed, which demonstrate a knowledge of the biomass resources available in the surroundings of the facility in a radius of 50 to 100 km.	Selected Feedstock.pdf; [Equilibrium] Project Description.pdf; NOC Format.pdf	Not required	Maturity & Quality
c2	**Planned biochar production equipment is technically sound**	**Passed**			*Passed if required sub-criteria are met*	
c2.1	*Several options of reactor design have been identified*	Passed	The supplier intends to use downdraft fixed-bed gasifiers (2 reactors, with a capacity to process about 1200 kg of biomass per hour each). The gasifiers were originally designed for power production and are now repurposed for biochar production. The gasifier manufacturer is declared to be OVN Bioenergy Pvt Ltd.	[Equilibrium] Mundargi Reactor Info.pdf; [Equilibrium] Biochar Production Equipment Questionnaire.xlsx; Revival of the Mundargi gasification facility - Memo.pdf	Required to be passed	Technical eligibility
c2.2	*Reactor design has been decided, contracted, or purchased*	Assessed	The two production lines were manufactured in 2009 and installed in 2014 but stopped operation in 2020. The reactors are in place at	Comprehensive MRV Plan for Mundargi.docx; [Equilibrium]	Required to be assessed	Maturity & Quality

			the facility owned by the supplier. The facility is currently undergoing modifications, which are expected to be completed by mid-December 2025.	Project Description.pdf; [Equilibrium] Biochar Production Equipment Questionnaire.xlsx		
c2.3	*Reactor design is vetted, regarding production of biochar with H/C ratio below 0.7*	Passed	The supplier provided a laboratory analysis of a biochar sample made from *prosopis juliflora* (one of the feedstocks considered), produced in a gasifier from a different equipment provider, albeit operating in similar conditions (about 800°C, 6h residence time). The results showed an H/C ratio around 0.1. Under similar operating conditions, it is expected that corn cob biochar would also have an H/C ratio below 0.7. Laboratory analyses will need to be conducted by the supplier for the audits.	Comprehensive MRV Plan for Mundargi.docx; [Equilibrium] Biochar Production Equipment Questionnaire.xlsx; [Equilibrium] Biochar Equipment Design: Test Results	Required to be passed	Technical eligibility
c2.4	*Reactor design is vetted, regarding risk for CH_4 emissions*	Passed	The gasifier's design supports complete combustion of the generated syngas under normal operation. As the syngas passes through a charcoal bed, it is reformed into more readily combustible compounds. The gas burner features multiple air inlets and turbulence-enhancing devices, with airflow automatically regulated. The system also includes a pressure release safety mechanism, whose activation must be closely monitored during operation.	Comprehensive MRV Plan for Mundargi.docx; [Equilibrium] Biochar Production Equipment Questionnaire.xlsx; [Equilibrium] Process Flow Diagram.pdf; [Equilibrium] Combustion and Dilution Chamber.pdf; [Equilibrium] Puro-gassifier Process Flow Diagram.pdf	Required to be passed	Technical eligibility
c2.5	*Reactor design is vetted, regarding air pollutant emissions in line with local regulation*	Passed	Relevant local regulations are stated alongside environmental impacts and risks. Emissions tests have not been reported yet. Noting that the reactor was previously operational (for power productions), it is expected to still be able to comply with local regulation. Regular monitoring of CO, Nox and SO_2 is expected for obtention of permits.	[Equilibrium] Environmental Evaluation Report_Signed.pdf; [Equilibrium] Biochar Production Equipment Questionnaire.xlsx; Environmental and Social Safeguards Questionnaire (Final).docx	Required to be passed	Technical eligibility
c2.6	*Facility design is vetted, regarding disposal of waste streams, including any liquid streams (wastewater, oil, tars)*	Passed	Management of waste streams is described, including liquid and solid waste, and their handling is integrated into the design of the facility. Estimates of waste generation during operations have not been provided yet, but will need to be monitored during operations. Compliance with local regulations remain to be validated.	[Equilibrium] Environmental Evaluation Report_Signed.pdf; [Equilibrium] Biochar Production Equipment Questionnaire.xlsx; Environmental and Social Safeguards Questionnaire (Final).docx	Required to be passed	Technical eligibility
c2.7	*Facility is co-producing bioenergy (e.g. heat, power) for internal use*	Assessed	Reactor gases are combusted, with energy recovery for drying wet biomass, as shown in engineering design documents.	[Equilibrium] Biochar Production Equipment Questionnaire.xlsx; Mundargi Biochar_Additionality_Final version.xlsx; Puro-gassifier Process Flow Diagram.pdf	Required to be assessed	Maturity & Quality

c2.8	*Facility is co-producing bioenergy (e.g. heat, power, fuel) for external use*	Assessed	Syngas revenues are anticipated in year 2-3. However, no clear plan is stated for how these revenues will be accomplished.	[Equilibrium] Biochar Production Equipment Questionnaire.xlsx; [Equilibrium] Mundargi Biochar_Additionality_Final version.xlsx; [Equilibrium] Baseline and Additionality Questionnaire_Signed.pdf; [Equilibrium] Project Description.pdf; [Equilibrium] SDG Reporting.docx	Required to be assessed	Maturity & Quality
c3	**Biochar planned end-use(s) is(are) eligible**	**Passed**			*Passed if required sub-criteria are met*	
c3.1	*Biochar end-uses are eligible*	Passed	End use is stated as being incorporated into agricultural soils. Field trials of biochar formulations are underway through university partnerships.	[Equilibrium] Biochar Application Document.pdf	Required to be passed	Technical eligibility
c3.2	*Plans of biochar end-uses are tangible*	Assessed	The company is undertaking field trials of their biochar in formulation as well as engaging farmers in training and feedback. These indicate a readiness to use the biochar in agricultural soils.	[Equilibrium] Biochar Application Document.pdf	Required to be assessed	Maturity & Quality
c3.3	*Biochar environmental quality thresholds are known for the identified end-uses*	Assessed	The section "Impact of Enriched Biochar on Soil Properties" in the Biochar Application Document demonstrates a high level of understanding of the application constraints for biochar in soil. Analyses remain to be provided for the audits, with particular attention for biochar produced from gasification reactors.	[Equilibrium] Biochar Application Document.pdf	Required to be assessed	Maturity & Quality
c4	**Additionality is demonstrated**	**Passed**			*Passed if required sub-criteria are met*	
c4.1	*Carbon storage additionality to baseline*	Passed	Baseline conditions are sufficiently described for both the invasive species and agricultural residue.	[Equilibrium] Baseline and Additionality Questionnaire_Signed.pdf; [Equilibrium] Project Description.pdf; [Equilibrium] Biochar Application Document.pdf	Required to be passed	Technical eligibility
c4.2	*Financial additionality of facility*	Passed	Claim of financial additionality is provided based on a cash flow model and sensitivity analysis, which shows that the facility requires CORC revenues to achieve a positive IRR.	[Equilibrium] Mundargi Biochar_Additionality_Final version.xlsx; [Equilibrium] Baseline and Additionality Questionnaire_Signed.pdf	Required to be passed	Technical eligibility
c4.3	*Regulatory additionality*	Passed	It is stated that the Indian government, national or local, does not have any regulations requiring the production of biochar.	[Equilibrium] Baseline and Additionality Questionnaire_Signed.pdf,	Required to be passed	Technical eligibility

				[Equilibrium] Project Description.pdf		
c4.4	*Production equipment is newly built (i.e. not an existing facility or a retrofit of existing facility)*	Assessed	The facility was built in 2014 as a gasification facility. Due to the dropping cost of solar electricity and economic disruptions of the COVID19 pandemic, the facility was shut down in 2020. For this project, it is being converted into a pyro-gasification process with the addition of new machinery.	Revival of the Mundargi Gasification Facility – Memo.pdf; [Equilibrium] Mundargi Biochar_Additionality_Final version.xlsx; Puro-gassifier Process Flow Diagram.pdf	Required to be assessed	Maturity & Quality
c5	**Facility has monitoring, reporting, and LCA capabilities or tangible plans**	**Passed**			*Passed if required sub-criteria are met*	
c5.1	*Protocol for biomass and biochar record keeping is prepared*	Assessed	A protocol for biomass and biochar record keeping is not provided as a standalone document. The draft harvesting and sustainable sourcing plan was found to include a description of Chain of Custody requirements. Further work is needed before the audit.	[Equilibrium] Comprehensive MRV Plan for Mundargi.docx, [Equilibrium] Selected Feedstock.pdf; Harvesting Plan for Prosopis Juliflora- Feedstock Removal	Required to be assessed	Maturity & Quality
c5.2	*Protocol for dry mass determination of biochar is prepared*	Assessed	A protocol is not explicitly written. The dMRV service provider used by the Supplier intends to support in data collection. Further work is needed before the audit.	[Equilibrium] Comprehensive MRV Plan for Mundargi.docx; Equilibrium Mundargi Pre Assessment LCA.xlsx	Required to be assessed	Maturity & Quality
c5.3	*Protocol for biochar sampling and laboratory analysis is prepared (permanence and environmental quality)*	Assessed	A protocol is not explicitly written. The dMRV service provider used by the Supplier intends to support in data collection. Further work is needed before the audit.	[Equilibrium] Comprehensive MRV Plan for Mundargi.docx; Equilibrium Mundargi Pre Assessment LCA.xlsx	Required to be assessed	Maturity & Quality
c5.4	*Monitoring and reporting plan of facility emissions is prepared*	Assessed	The dMRV service provider used by the Supplier intends to support in data collection and processing for calculation of project emissions.	[Equilibrium] Comprehensive MRV Plan for Mundargi.docx; Equilibrium Mundargi Pre Assessment LCA.xlsx	Required to be assessed	Maturity & Quality
c5.5	*An LCA model specific to the facility's operation is prepared*	Assessed	An LCA model was provided, with a supporting spreadsheet model (using Puro's template), illustrating that LCA modelling has started. The LCA mode has adequate type of emission factors, and mostly complete inventory modelling.	Equilibrium Mundargi Pre Assessment LCA.xlsm	Not required	Maturity & Quality
c6	**Facility has likely co-benefits and positive SDG impacts**	**Passed**			*Passed if required sub-criteria are met*	
c6.1	*Facility-specific co-benefits have been identified*	Assessed	The Stakeholder Engagement plan demonstrates proficiency regarding community engagement, stating several co-benefits:	[Equilibrium] Environmental and Social Safeguards Questionnaire	Required to be assessed	Maturity & Quality

			reduced residue burning, FPIC-aligned decision making, economic opportunities from improved soil, and provision of biochar for free or low-cost to communities receiving biochar. Additional co-benefits are identified, including invasive species removal and valorization of agricultural residues.	(Final).docx; [Equilibrium] Environmental Evaluation Report_Signed.pdf; [Equilibrium] Project Description.pdf; Revival of the Mundargi Gasification Facility – Memo.pdf; [Equilibrium] Project Description.pdf; [Equilibrium] Executive Summary.pdf		
c6.2	*Facility-specific SDG targets or indicators have been identified*	Assessed	The activity is stated to contribute to several SDGs: SDG 2 End Hunger, through application of biochar to agricultural soils; SDG 7 Affordable and clean energy, stating the integration of pyrolysis gasses in the internal process, and the intention to supply syngas externally. Other SDGs are stated but not described: SDG 8, SDG 13, SDG 15.	[Equilibrium] SDG Reporting.docx, [Equilibrium] Project Description.pdf	Required to be assessed	Maturity & Quality
c7	**Facility team has access to relevant knowledge and skills**	**Passed**			*Passed if required sub-criteria are met*	
c7.1	*Relating to biomass sourcing, handling, processing*	Assessed	Specific team qualifications are not stated. However, the provided documents demonstrate an aptitude in biomass sourcing, handling, and processing.	[Equilibrium] Offstream_s_ Role_Signed.pdf; [Equilibrium] Selected Feedstock.pdf	Not required	Maturity & Quality
c7.2	*Relating to thermochemical processes*	Assessed	With multiple years of operating the facility, the Plant Manager has expertise in gasification systems and thermochemical processes. The plant manager oversees training operating teams.	[Equilibrium] Project Description.pdf; [Equilibrium] Biochar Production Equipment Questionnaire.xlsx	Not required	Maturity & Quality
c7.3	*Relating to biochar use*	Assessed	Specific team qualifications are not stated. However, several of the documents provided demonstrate an aptitude in biochar use, and collaboration with external parties (e.g. universities).	[Equilibrium] Biochar Application Document.pdf	Not required	Maturity & Quality
c7.4	*Relating to monitoring and carbon accounting*	Assessed	Specific team qualifications are not stated. Several of the documents provided demonstrate an aptitude in monitoring and carbon accounting, using Offstream's services for data management and reporting.	[Equilibrium] Comprehensive MRV Plan for Mundargi.docx; Equilibrium Mundargi Pre Assessment LCA.xlsx	Not required	Maturity & Quality
c8	**Environmental and social safeguards**	**Passed**			*Passed if required sub-criteria are met*	
c8.1	*Stakeholder consultations have been planned or conducted*	Assessed	The Stakeholder Engagement plan describes a comprehensive plan that includes partnership with the local Panchayat, local NGOs/CBOs, local farmers, and the wider community, and includes a record of public consultation. A formal grievance mechanism is described.	[Equilibrium] Stakeholder Engagement Plan.pdf; [Equilibrium] Environmental and Social Safeguards Questionnaire (Final).docx	Required to be assessed	Maturity & Quality
c8.2	*Regulation applicable to facility has been identified*	Assessed	State Pollution Control Board of India (SPCB) and more specific regulations are described. EIA and ERA are declared to not be required in the local jurisdiction for this activity type.	[Equilibrium] Baseline and Additionality Questionnaire_Signed.pdf,	Required to be assessed	Maturity & Quality

				[Equilibrium] Project Description.pdf; [Equilibrium] Biochar Production Equipment Questionnaire.xlsx; [Equilibrium] Environmental and Social Safeguards Questionnaire (Final).docx		
c8.3	*Procedures to acquire relevant permits have been identified, started, or completed*	Assessed	The Environmental and social safeguards questionnaire demonstrates progress toward meeting environmental permit requirements (consent to establish and content to operate).	[Equilibrium] Baseline and Additionality Questionnaire_Signed.pdf, [Equilibrium] Project Description.pdf	Required to be assessed	Maturity & Quality