

Preliminary Assessment Public Summary

This *Preliminary Assessment Public Summary*, prepared by Puro.earth, contains general information about the CO₂ Removal Supplier and its project, as evaluated at the time of the Preliminary Assessment (PA). 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 CO₂ Removal Supplier.

The *PA 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	Terraton
Company address	350 California Street Suite 400 San Francisco, CA 94104 California
Business ID	14063482
KYC status	Complete
CO ₂ Removal Project	
Methodology	Biochar, Edition 2022, Version 3
Production Facility name	Three Mountains Biochar Facility
Facility registration date	11/22/2024
Production Facility ID	526130
Production Facility location	Ashanti Region, Ghana
Host Country of removal	Ghana
Has this facility been registered in another registry?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, additional information:
Preliminary Assessment Details	
Date of assessment	14/03/2025
Status of assessment	Concluded
Conclusion of assessment	Passed

2. Non-Technical Project Summary*

The Three Mountains Cocoa Biochar Project converts agricultural waste, specifically cocoa pods, into biochar using industrial-scale pyrolysis equipment. This process sequesters carbon while producing a valuable soil amendment that improves soil fertility and agricultural productivity. The biochar equipment also combusts all gases and oils to generate additional heat for the biomass dryer. The project is located in the Ashanti Region of Ghana and contributes to climate change mitigation by reducing CO₂ emissions and promoting sustainable farming practices. It also supports local farmers by purchasing waste biomass and creating economic opportunities.

*Filled by the Supplier. Between 150-200 words

The definition of CO₂ Removal Supplier and Production Facility can be found in the Puro Standard.

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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 CO₂ 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 CO₂ Removal Supplier must undergo a third-party audit before issuing CO₂ Removal Credits (CORCs). **Passing the preliminary assessment does not guarantee a success in the third-party audit.**

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	The facility has identified cocoa pods and husks as biomass feedstock. These biomass feedstock types are compatible with category N-16 (residues from the processing of coffee, cocoa or tea) from the EBC/WBC Positive List of Feedstock.	TMC Biomass types and origins list.xlsx	Required to be passed	Technical eligibility
c1.2	Biomass feedstock sustainability and chain-of-custody can be demonstrated, if applicable	Passed	The supplier has identified the feedstock source; however, comprehensive record-keeping from origin to consumption will be necessary for the Audit.	TMC Biomass types and origins list.xlsx; Biochar_feedstock_purchaser_agreement_TMC signed.pdf	Required to be passed	Technical eligibility
c1.3	Bioenergy leakage related to feedstock use is minimal	Assessed	The supplier has not identified alternative uses for agricultural cocoa residues that could entail energy	TMC Biomass types and origins list.xlsx	Required to be assessed	Technical eligibility

			production in the local context. Hence, bioenergy leakage is deemed minimal.			
c1.4	<i>Land use change related to feedstock use is minimal</i>	Assessed	Cocoa cultivation is recognized as a driver of deforestation in Ghana. The supplier is committed to sourcing biomass feedstock that originates from sustainable and certified sources and has identified a third-party certification standard (likely by Rainforest Alliance) to demonstrate sustainably sourced cocoa biomass.	Biochar_feedstock_purchaser_agreement_TMC signed.pdf	Required to be assessed	Technical eligibility
c1.5	<i>Sourcing of biomass is secured (e.g. letters of intent, contracts)</i>	Assessed	A feedstock supplier has been identified, and the parties have signed an agreement.	Biochar_feedstock_purchaser_agreement_TMC signed.pdf	Not required	Maturity & Quality
c2	Planned biochar production equipment is technically sound	Passed			<i>Passed if required sub-criteria are met</i>	
c2.1	<i>Several options of reactor design have been identified</i>	Passed	The Supplier has identified a reactor from the Dingli Group, namely a Feed Rate 4 TPH Biomass Carbonization Unit, which is a rotary kiln pyrolyzer with conveyance systems.	TMC Biochar production equipment questionnaire.xlsx TMC Biochar Facility Layout.pdf 20241009-dlyi24-Feed Rate 4 TPH Biomass Carbonization Production Line.pdf	Required to be passed	Technical eligibility
c2.2	<i>Reactor design has been decided, contracted, or purchased</i>	Assessed	The Feed Rate 4 TPH Biomass Carbonization Unit from the Dingli Group has been selected but has not yet been contracted or purchased.	TMC Biochar production equipment questionnaire.xlsx TMC Biochar Facility Layout.pdf 20241009-dlyi24-Feed Rate 4 TPH Biomass Carbonization Production Line.pdf	Required to be assessed	Maturity & Quality
c2.3	<i>Reactor design is vetted, regarding production of biochar with H/C ratio below 0.7</i>	Passed	Pyrolysis temperatures are expected to be between 550-650°C, with residence time of 22-25 minutes with drum speed of 1.5-2.0 rpm. The selected equipment and feedstock types are deemed possible to produce biochar with an H/C below 0.7, which will need to be confirmed by laboratory analysis.	TMC Biochar production equipment questionnaire.xlsx ; Dingli Goup Equipment Biochar CORC analysis- palm kernal shells.pdf	Required to be passed	Technical eligibility
c2.4	<i>Reactor design is vetted, regarding risk for CH₄ emissions</i>	Passed	Pyrolysis gases are combusted via high-efficiency burners operating between 750-850°C within the combustion chamber, with a residence time of 1-2 seconds in excess oxygen conditions. Automatic control of excess oxygen enhances combustion efficiency. If operated according to standard procedures, the risk of CH ₄ emissions is anticipated to be minimal.	TMC Biochar production equipment questionnaire.xlsx; TMC Biochar Facility Layout.pdf; 20241009-dlyi24-Quotation for Biomass Crushing, Drying, and Carbonization Production Line.pdf; 20250306-Updated process flow drawing.pdf;	Required to be passed	Technical eligibility

c2.5	<i>Reactor design is vetted, regarding air pollutant emissions in line with local regulation</i>	Passed	The pyrolysis system is designed to minimize CO emissions and is also equipped with dust collectors to eliminate particulate matter (PM). The supplier identified this as necessary to comply with the local regulatory requirements of Ghana.	TMC Biochar production equipment questionnaire.xlsx ; TMC Environmental Evaluation Report.docx	Required to be passed	Technical eligibility
c2.6	<i>Facility design is vetted, regarding disposal of waste streams, including any liquid streams (wastewater, oil, tars)</i>	Passed	The equipment is designed to operate without generating wastewaters or condensating oils. Disposal of liquid/solid waste streams is expected to be negligible. Adequate management of these streams will be verified during Output Audits.	TMC Biochar production equipment questionnaire.xlsx; 20241009-dlyiz4-Quotation for Biomass Crushing, Drying, and Carbonization Production Line.pdf; 20250306-Updated process flow drawing.pdf; TMC- Puro Additionality v1.9.docx; 20250306-Updated layout drawing.pdf	Required to be passed	Technical eligibility
c2.7	<i>Facility is co-producing bioenergy (e.g. heat, power) for internal use</i>	Assessed	Part of the thermal energy generated from the combustion of volatile combustible gases is intended to be used to sustain the pyrolysis.	TMC Biochar production equipment questionnaire.xlsx	Required to be assessed	Maturity & Quality
c2.8	<i>Facility is co-producing bioenergy (e.g. heat, power, fuel) for external use</i>	Assessed	The facility currently does not plan on producing energy for external purposes.	TMC Biochar production equipment questionnaire.xlsx	Required to be assessed	Maturity & Quality
c3	Biochar planned end-use(s) is(are) eligible	Passed			<i>Passed if required sub-criteria are met</i>	
c3.1	<i>Biochar end-uses are eligible</i>	Passed	Biochar will be used as a soil amendment mixed with pig manure in local agricultural and forest land.	TMC Biochar end-use plans.docx	Required to be passed	Technical eligibility
c3.2	<i>Plans of biochar end-uses are tangible</i>	Assessed	The biochar will be given to local smallholder farmers. Additionally, the Three Mountains project is exploring a partnership with the government of Ghana to sell excess biochar to an existing organic fertilizer distribution program for cocoa famers. These plans must be supported by supporting evidence (e.g., correspondence with local government) and records of biochar use.	TMC Biochar end-use plans.docx	Required to be assessed	Maturity & Quality
c3.3	<i>Biochar environmental quality thresholds are known for the identified end-uses</i>	Assessed	Environmental quality thresholds for the intended end-uses have not yet been shared. These thresholds must be demonstrated during audit.	No evidence provided	Required to be assessed	Maturity & Quality
c4	Additionality is demonstrated	Passed			<i>Passed if required sub-criteria are met</i>	
c4.1	<i>Carbon storage additionality to baseline</i>	Passed	Without the project activities, the agricultural residues would decay directly in the fields (e.g. composting) or be open-air combusted. There are no alternative scenarios identified where the residues would be combusted with energy recovery. Thus, the project is deemed additional to the baseline.	TMC- Puro Additionality v1.9.docx	Required to be passed	Technical eligibility

c4.2	<i>Financial additionality of facility</i>	Passed	The supplier has demonstrated with a cash flow model that the biochar project is financially additional. Carbon revenue will be the only source of income for this project.	Terraton Biochar Facility Feedstock Estimations - TMC v3.xlsx; TMC- Puro Additionality v1.9.docx	Required to be passed	Technical eligibility
c4.3	<i>Regulatory additionality</i>	Passed	The project is not required by existing laws, regulations, or other binding obligations in Ghana.	TMC- Puro Additionality v1.9.docx	Required to be passed	Technical eligibility
c4.4	<i>Production equipment is newly built (i.e. not an existing facility or a retrofit of existing facility)</i>	Assessed	The equipment will be newly built.	TMC Biochar production equipment questionnaire.xlsx	Required to be assessed	Maturity & Quality
c5	Facility has monitoring, reporting, and LCA capabilities or tangible plans	Passed			<i>Passed if required sub-criteria are met</i>	
c5.1	<i>Protocol for biomass and biochar record keeping is prepared</i>	Assessed	A protocol for monitoring and data collection has not yet been prepared, but the supplier intends to contract an MRV partner to help develop these protocols.	TMC - Terraton MRV plan.docx MRV+.pdf	Required to be assessed	Maturity & Quality
c5.2	<i>Protocol for dry mass determination of biochar is prepared</i>	Assessed	The supplier intends to continuously measure the dry mass of the biochar at the production site using in-line mass and moisture meters. This must be further refined and turned into an operating procedure that can be followed.	TMC Biochar Monitoring and Testing Methodology.docx	Required to be assessed	Maturity & Quality
c5.3	<i>Protocol for biochar sampling and laboratory analysis is prepared (permanence and environmental quality)</i>	Assessed	The supplier has identified the laboratory methods to be used for biochar quality control and intends to use sampling methods in line with the European Biochar Certificate for biochar sampling. This must be further refined to include more details describing the sampling protocols and turned into an operating procedure that can be followed.	TMC Biochar Monitoring and Testing Methodology.docx	Required to be assessed	Maturity & Quality
c5.4	<i>Monitoring and reporting plan of facility emissions is prepared</i>	Assessed	A monitoring and reporting plan has been drafted. It needs to be expanded to include a more comprehensive evaluation of the biochar project's supply chain emissions before being converted into more precise operating procedures.	TMC - Terraton MRV plan.docx MRV+.pdf	Required to be assessed	Maturity & Quality
c5.5	<i>An LCA model specific to the facility's operation is prepared</i>	Assessed	An LCA model has not yet been prepared.	No information provided	Not required	Maturity & Quality
c6	Facility has likely co-benefits and positive SDG impacts	Passed			<i>Passed if required sub-criteria are met</i>	
c6.1	<i>Facility-specific co-benefits have been identified</i>	Assessed	Co-benefits from biochar-related activities have not been described, although the production and	No evidence provided	Required to be assessed	Maturity & Quality

			application of a biochar-based fertilizer is expected to have agronomic benefits.			
c6.2	<i>Facility-specific SDG targets or indicators have been identified</i>	Assessed	No information relating to SDG targets and indicators was provided in this submission.	No evidence provided	Required to be assessed	Maturity & Quality
c7	Facility team has access to relevant knowledge and skills	Passed			<i>Passed if required sub-criteria are met</i>	
c7.1	<i>Relating to biomass sourcing, handling, processing</i>	Assessed	Three Cocoa LTD. has expertise in key areas relevant to biomass sourcing, handling, and processing, specifically relating to cocoa. It is evident that the capacity to manage cocoa biomass supply chains exists.	TMC Management Bios.docx; Terraton Bios;.docx; MRV+.pdf	Not required	Maturity & Quality
c7.2	<i>Relating to thermochemical processes</i>	Assessed	The company also has expertise in optimizing biochar production through automation and process improvements.		Not required	Maturity & Quality
c7.3	<i>Relating to biochar use</i>	Assessed	The supplier has expertise in sustainable agricultural practices and has experience working with Ghanaian communities. The team has knowledge in biochar use for carbon sequestration and soil enhancement.		Not required	Maturity & Quality
c7.4	<i>Relating to monitoring and carbon accounting</i>	Assessed	The supplier has identified an experienced third-party MRV partner to provide support relating to monitoring and carbon accounting.		Not required	Maturity & Quality
c8	Environmental and social safeguards	Passed			<i>Passed if required sub-criteria are met</i>	
c8.1	<i>Stakeholder consultations have been planned or conducted</i>	Assessed	Stakeholders have been identified, and consultations are planned for March 2025. Dedicated communication channels, ongoing engagement with authorities and quarterly community meetings facilitate continuous engagement.	TMC Puro Stakeholder Engagement Report.docx	Required to be assessed	Maturity & Quality
c8.2	<i>Regulation applicable to facility has been identified</i>	Assessed	The supplier has identified the Environmental Protection Agency Act (Act 490) and the Renewable Energy Act (Act 832) as applicable regulations for the facility.	TMC Puro Environmental and Social Safeguard.docx	Required to be assessed	Maturity & Quality
c8.3	<i>Procedures to acquire relevant permits have been identified, started, or completed</i>	Assessed	The supplier has identified a permit required for particulate emissions from the facility. The process of acquiring the permit does not seem to have started yet.	TMC Biochar production equipment questionnaire.xlsx	Required to be assessed	Maturity & Quality