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 (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 CO_2 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 Industrial, Inc.
Company address	350 California Street Suite 400, San Francisco CA 94104, California
Business ID	4204139
KYC status	Completed
CO_2 Removal Project	
Methodology	**Biochar, Edition 2022, Version 3**
Production Facility name	Sanbra Foods Biochar Facility
Facility registration date	2024/12/18
Production Facility ID	586233
Production Facility location	Effiduase, Kumasi 00000, Ghana
Host Country of removal	Ghana
Has this facility been registered in another registry?	☒No ☐Yes, additional information:
Preliminary Assessment Details	
Date of assessment	2025/05/28
Status of assessment	Completed
Conclusion of assessment	Passed

2. Non-Technical Project Summary*

Sanbra Foods Biochar 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 CO_2 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 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.**

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

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.

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.	Sanbra Foods 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 multiple local sources of feedstock through a partnership with Sanbra Foods and Commodities Limited, the facility's operator. Sanbra Foods procures cocoa	Sanbra Foods Biomass types and origins list.xlsx; COCOA POD HUSK WASTE COLLECTION BEST	Required to be passed	Technical eligibility

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			pods and husks directly from farmers affiliated with EMFED Farms and Trading Company Ltd. Comprehensive record-keeping will be necessary for the Audit.	PRACTICES (1).pdf; SANBRA FOODS BIOCHAR.pdf; PROJECT_SOCIAL IMPACT.pdf; SUSTAINABLE AGRICULTURAL WASTE COLLECTION GUIDELINES_SANBRA FOODS (1).pdf		
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 production in the local context. Hence, bioenergy leakage is deemed minimal.		Required to be assessed	Technical eligibility
c1.4	*Land use change related to feedstock use is minimal*	Assessed	The supplier is committed to sourcing cocoa husks and pods through environmentally responsible and community-engaged practices. While crop residues are not the primary driver of land use change, it is recognized that cocoa cultivation can be associated with deforestation in Ghana.		Required to be assessed	Technical eligibility
c1.5	*Sourcing of biomass is secured (e.g. letters of intent, contracts)*	Assessed	The supplier declared a partnership with Sanbra Foods and Commodities, which is responsible for procuring cocoa pods and husks directly from farmers. However, no information has been provided to confirm whether the sourcing arrangements have been formally secured.	Sanbra Puro Project Description.docx; Sanbra Food Company Registration Docs.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 has identified a reactor from the Dingli Group, namely a Feed Rate 4 TPH Biomass Carbonization Unit, which is a rotary kiln pyrolizer with conveyance systems.	Sanbra Biochar production equipment questionnaire.xlsx ; 20241009-dlyi24-Quotation for Biomass Crushing, Drying, and Carbonization Production Line.pdf; 20250306-facility process flow drawing.pdf; 20250306-facility layout drawing.pdf	Required to be passed	Technical eligibility
c2.2	*Reactor design has been decided, contracted, or purchased*	Assessed	The Feed Rate 4 TPH Biomass Carbonization Unit from the Dingli Group has been selected but has not yet been contracted or purchased.	Sanbra Biochar production equipment questionnaire.xlsx	Required to be assessed	Maturity & Quality
c2.3	*Reactor design is vetted, regarding production of biochar with H/C ratio below 0.7*	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.	Sanbra Biochar production equipment questionnaire.xlsx	Required to be passed	Technical eligibility
c2.4	*Reactor design is vetted, regarding risk for CH_4 emissions*	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.	Sanbra Biochar production equipment questionnaire.xlsx ; 20241009-dlyi24-Quotation for Biomass Crushing, Drying, and Carbonization Production Line.pdf; 20250306-facility process flow drawing.pdf; 20250306-facility	Required to be passed	Technical eligibility

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c2.5	*Reactor design is vetted, regarding air pollutant emissions in line with local regulation*	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.	layout drawing.pdf; Sanbra Environmental Evaluation Report.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	The equipment is designed to operate without generating wastewaters or condensating oils. Disposal of liquid/solid waste streams is expected to be negligeable. Adequate management of these streams will be verified during the Audit.		Required to be passed	Technical eligibility
c2.7	*Facility is co-producing bioenergy (e.g. heat, power) for internal use*	Assessed	Part of the thermal energy generated from the combustion of volatile combustible gases is intended to be used to sustain the pyrolysis.	Sanbra Biochar production equipment questionnaire.xlsx	Required to be assessed	Maturity & Quality
c2.8	*Facility is co-producing bioenergy (e.g. heat, power, fuel) for external use*	Assessed	The facility currently does not plan on producing energy for external purposes.	Sanbra Biochar production equipment questionnaire.xlsx	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	Biochar will be applied as a soil amendment, blended with compost and manure, and used on local croplands and within agroforestry systems.	Sanbra Puro Project Description.docx; Sanbra Biochar end-use plans 2025.docx	Required to be passed	Technical eligibility
c3.2	*Plans of biochar end-uses are tangible*	Assessed	The biochar will be distributed through a network of local smallholder farmers—many of whom are existing suppliers of cocoa beans to Sanbra Foods. In addition, Sanbra Foods is also exploring a formal partnership with the Government of Ghana to distribute surplus biochar through an existing national organic fertilizer program. These plans must be supported by supporting evidence (e.g., correspondence with local government) and records of biochar delivery and end-use.	Sanbra Puro Project Description.docx; Sanbra Biochar end-use plans 2025.docx	Required to be assessed	Maturity & Quality
c3.3	*Biochar environmental quality thresholds are known for the identified end-uses*	Assessed	Environmental quality thresholds for the intended end-uses have not yet been shared. These thresholds must be demonstrated during Audit.	No information provided	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	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.	Sanbra Puro Additionality v1.9.docx	Required to be passed	Technical eligibility
c4.2	*Financial additionality of facility*	Passed	The supplier has demonstrated with a cash flow model (and a sensitivity analysis) that the production of biochar without CORC revenue is unviable; minor refinement is required. Despite the sale of biochar as a soil amendment, the sale of CORCs is	Sanbra Puro Additionality v1.9.docx; Sanbra Terraton Biochar Facility Feedstock Estimations - v4.xlsx	Required to be passed	Technical eligibility

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			integral to the profitable running of the project and the payback of the initial investment.			
c4.3	*Regulatory additionality*	Passed	The project is not required by existing laws, regulations, or other binding obligations in Ghana.	Sanbra Puro Additionality v1.9.docx	Required to be passed	Technical eligibility
c4.4	*Production equipment is newly built (i.e. not an existing facility or a retrofit of existing facility)*	Assessed	The equipment will be newly built.	Sanbra Biochar production equipment questionnaire.xlsx	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 data record keeping has not been prepared yet. However, the supplier plans to implement CarbonFuture's Digital MRV+ system, which provides secure monitoring records, automated reporting, and real-time access to project data. A preliminary MRV plan has been outlined, detailing the data storage system, archival period, and finale management—including both electronic filing and backup paper documentation.	Carbonfuture_MRV+.pdf; Sanbra - Terraton MRV plan.docx	Required to be assessed	Maturity & Quality
c5.2	*Protocol for dry mass determination of biochar is prepared*	Assessed	Protocol for dry mass determination of biochar has not been yet prepared.	No information provided	Required to be assessed	Maturity & Quality
c5.3	*Protocol for biochar sampling and laboratory analysis is prepared (permanence and environmental quality)*	Assessed	Protocol for biochar sampling and laboratory analysis has not been yet prepared.	No information provided	Required to be assessed	Maturity & Quality
c5.4	*Monitoring and reporting plan of facility emissions is prepared*	Assessed	A preliminary MRV plan has been prepared, identifying responsible for data collection, inspection, and reporting. Monitoring equipment has been specified, including high-level calibration requirements and planned calibration frequency. The plan outlines high-level monitoring parameters for biomass sourcing, biochar production, and application. It requires further development to include a more comprehensive evaluation of the biochar project's supply chain emissions and to serve as a step-by-step operational protocol, with clear links to the record-keeping system.	Sanbra - Terraton MRV plan.docx	Required to be assessed	Maturity & Quality
c5.5	*An LCA model specific to the facility's operation is prepared*	Assessed	The LCA model has not yet been developed; however, the supplier has engaged CHM Analytics, an LCA consultant, to support its preparation.	Sanbra Puro Project Description.docx	Not required	Maturity & Quality
c6	**Facility has likely co-benefits and positive SDG impacts**	**Passed**			*Passed if required sub-criteria are met*	

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c6.1	*Facility-specific co-benefits have been identified*	Assessed	Project will improve soil fertility and agricultural productivity by promoting sustainable farming practices. It will also create economic opportunities by supporting local farmers.	Sanbra Puro Project Description.docx; Sanbra - Terraton MRV plan.docx	Required to be assessed	Maturity & Quality
c6.2	*Facility-specific SDG targets or indicators have been identified*	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**			*Passed if required sub-criteria are met*	
c7.1	*Relating to biomass sourcing, handling, processing*	Assessed	Sanbra Foods 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.	Terraton Bios.docx; Carbonfuture_MRV+.pdf	Not required	Maturity & Quality
c7.2	*Relating to thermochemical processes*	Assessed	The supplier also has expertise in optimizing biochar production through automation and process improvements.		Not required	Maturity & Quality
c7.3	*Relating to biochar use*	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	*Relating to monitoring and carbon accounting*	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**			*Passed if required sub-criteria are met*	
c8.1	*Stakeholder consultations have been planned or conducted*	Assessed	No evidence has been submitted indicating that stakeholder consultation has been planned or conducted.	No evidence provided	Required to be assessed	Maturity & Quality
c8.2	*Regulation applicable to facility has been identified*	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.	Sanbra Puro Environmental and Social Safeguard.docx	Required to be assessed	Maturity & Quality
c8.3	*Procedures to acquire relevant permits have been identified, started, or completed*	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.	Sanbra Biochar production equipment questionnaire.xlsx	Required to be assessed	Maturity & Quality

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