Preliminary Assessment Public Summary

This is a *Preliminary Assessment Public Summary* prepared by Puro.earth, which contains general information about the CO2 Removal Supplier, a non-technical summary of the project, and a table containing details about the criteria assessed. The CO2 Removal Supplier has received an extended Preliminary Assessment Report that includes additional remarks and recommendations for the continuation of the certification journey.

1. Supplier and project information

CO_2 Removal Supplier	
Company name	Accend AS (agent), on behalf of: Biopower Tana AS
Company address	Kvartsittveien 146, 9842 Tana, Norway
Business ID	NO 926127721
KYC status	Completed for Agent, Not started for Biopower Tana AS
CO_2 Removal Project	
Methodology	**Biochar, Edition 2022, Version 3**
Production Facility name	Biopower Tana
Facility registration date	2024-05-30
Production Facility ID	654367
Production Facility location	Tana, 9842, Norway
Host Country of removal	Norway
Has this facility been registered in another registry?	☒No ☐Yes, additional information:
Assessment details	
Date of assessment	2024-10-22
Status of assessment	Final
Conclusion of assessment	Passed

2. Non-technical project summary*

BiopowerTana is planning to establish a biochar-based fertilizer production facility in Austertana, Norway. The company aims to create a sustainable fertilizer by utilizing local waste materials, including forestry waste, dairy waste, slaughterhouse waste, animal and fish farming by-products, and quartzite stone dust. The wood waste will be processed using an established pyrolysis technology, already in use in the APAC region into carbon-rich biochar, which will be combined with the nutrients and sterilized before pelletizing. The biochar-based fertilizer will improve soil properties, enhance crop yields, reduce CO2 emissions, and promote biodiversity. The company also plans to offer biochar as a carbon capture solution, with an expectation of up to 2000 carbon credits per year. Initially targeting local farmers in northern Norway, Biopower Tana's expansion plans include scaling to other regions and possibly international markets by 2026.

*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.**

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 is planning to process woody biomass of different types, forestry biomass (requiring sustainability demonstration), trees damaged by invasive insects, as well as end-of-life industrial wood streams (pallets, construction and demolition).	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 biomass from forestry operations is planned to be PEFC certified. For damaged trees, relevant authorizations and proofs need to be collected. Adequate record-keeping by the supplier remains to be demonstrated at a later stage.	Biomass types and origins list.xlsx	Required to be passed	Technical eligibility
C1.3	*Bioenergy leakage related to feedstock use is minimal*	Assessed	There are alternative uses or treatments for the different types of biomasses, some involving use as firewood, export	Biomass types and origins list.xlsx, Tana Norway Project 082023.pdf	Required to be assessed	Technical eligibility

			for treatment elsewhere with possible energy generation, or degradation on forest floor. The facility is planning to recover thermal energy for biomass feedstock drying, but also drying and sanitizing of nutrient-rich feedstocks (manure, digestate) used in production of a biochar-fertilizer compound. Hence, bioenergy leakage is deemed minimal.			
c1.4	*Land use change related to feedstock use is minimal*	Assessed	Given the identified biomass sources, land use change is deemed to be minimal.	Biomass types and origins list.xlsx	Required to be assessed	Technical eligibility
c1.5	*Sourcing of biomass is secured (e.g. letters of intent, contracts)*	Assessed	Discussions with biomass suppliers and authorities have been initiated, and some agreements have been obtained for some of the feedstocks.	Positive reply to request use biomass from Local authority- signert 17.11.2023.pdf Preliminary reply to request to use biomass from local authority.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	A single equipment design plan was identified. The equipment design is from Carbon Powered Mineral Technology & Products Pty Ltd (Australia).	Updated Biochar production equipment questionnaire 140624_14thSept2024.xlsxTana Norway Project 082023.pdf	Required to be passed	Technical eligibility
c2.2	*Reactor design has been decided, contracted, or purchased*	Assessed	The reactor design has been decided, but not yet installed. It is planned to be installed in 2024, but the reactor has not yet been contracted or purchased.	Updated Biochar production equipment questionnaire 140624_14thSept2024.xlsxTana Norway Project 082023.pdf	Required to be assessed	Maturity & Quality
c2.3	*Reactor design is vetted, regarding production of biochar with H/C ratio below 0.7*	Passed	At the selected operating pyrolysis temperature (650-700°C), with residence times of 18-20 minutes, and with the feedstock selected (different wood types) , it is deemed possible to produce biochar with H/C well below 0.7. Product tests from a comparable facility and feedstock have been provided and are below the threshold H/C ratio of 0.7. Actual product test results will need to be provided for audit.	Tana Norway Project 082023.pdf; Biochar sample from comparable facility using comprable feedstock.pdf	Required to be passed	Technical eligibility
c2.4	*Reactor design is vetted, regarding risk for CH_4 emissions*	Passed	The reactor design and methods to ensure complete combustion of pyrolysis gas and oils indicate that the pyrolysis equipment has a low risk of CH_4 emissions.	Updated Biochar production equipment questionnaire 140624_14thSept2024.xlsx Tana Norway Project 082023.pdf	Required to be passed	Technical eligibility
c2.5	*Reactor design is vetted, regarding air pollutant emissions in line with local regulation*	Passed	An emission test (conducted in 2019) was provided by the manufacturer, for a similar unit but for an unknown biomass feedstock. The test included measurements of the most common air pollutants (PM, SO_2, NOx, CO, H_2SO_4 (mist), Cd, Hg, NO_2, H_2S, F_2, HF, Cl_2, HCl, VOCs). In Norway, the	Updated Biochar production equipment questionnaire 140624_14thSept2024.xlsx emission test result.docx	Required to be passed	Technical eligibility

			facility will be subject to the same emission limits as biomass pellet incinerators; but environmental permit does not necessarily require prior testing. The reactor is deemed able to be below the threshold set in Norway.			
c2.6	*Facility design is vetted, regarding disposal of waste streams, including any liquid streams (wastewater, oil, tars)*	Passed	Gas and oil will be combusted, hence minimizing the formation of oil and tar by-products. Some other solid and liquid waste may be generated in small amounts (thermal oil from heat exchangers; process water).	Updated Biochar production equipment questionnaire 140624_14thSept2024.xlsx ; Environmental Evaluation Report.docx	Required to be passed	Technical eligibility
c2.7	*Facility is co-producing bioenergy (e.g. heat, power) for internal use*	Assessed	The facility is planning to recover thermal energy for biomass feedstock drying (energy use internal to biochar production), but also drying and sanitizing of nutrient-rich feedstocks (manure, digestate) used in production of a biochar-fertilizer compound (energy use external to biochar production but integrated within the same process).	Updated Biochar production equipment questionnaire 140624_14thSept2024.xlsx ; Tana Norway Project 082023.pdf	Required to be assessed	Maturity & Quality
c2.8	*Facility is co-producing bioenergy (e.g. heat, power, fuel) for external use*	Assessed	No other external energy uses are planned (besides the energy use for drying and sanitizing of nutrient-rich feedstocks integrated within the same process).	Updated Biochar production equipment questionnaire 140624_14thSept2024.xlsx ; Tana Norway Project 082023.pdf	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	The biochar will be combined with abattoir waste, dairy waste, and quartz dust, followed by sterilization at 120°C and then pelletization. The resulting product is an NPK fertilizer expected to be used as a soil additive.	Updated Biochar production equipment questionnaire 140624_14thSept2024.xlsx	Required to be passed	Technical eligibility
c3.2	*Plans of biochar end-uses are tangible*	Assessed	The facility design combines biochar production with fertilizer production. No information was provided on how the biochar-fertilizer compound will be distributed to end-users.	Tana Norway Project 082023.pdf;	Required to be assessed	Maturity & Quality
c3.3	*Biochar environmental quality thresholds are known for the identified end-uses*	Assessed	A laboratory report from Eurofins was provided for biochar produced from a comparable facility including analysis on heavy metals and polycyclic aromatic hydrocarbons. However, the supplier has not indicated whether the threshold limits for the type of end use are known.	ØRAS test 210623.pdf; Biochar sample from comparable facility using comparable feedstock.pdf (same document)	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, biomass feedstocks would decompose or be burned (with or without energy recovery). Only this project activity would result in sequestration.	Puro additionality questions to suppliers v1.8	Required to be passed	Technical eligibility

c4.2	*Financial additionality of facility*	Passed	Preliminary budget and IRR calculations make the case that carbon finance revenues are required for the project to be financially viable.	Puro additionality questions to suppliers v1.8 Preliminary budget and IRR calculation September 2023_Confidential.xlsx	Required to be passed	Technical eligibility
c4.3	*Regulatory additionality*	Passed	There are no laws or binding obligations to produce biochar in Norway.	Puro additionality questions to suppliers v1.8	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.	Updated Biochar production equipment questionnaire 140624_14thSept2024.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	MRV procedures are not yet developed, but record keeping will follow templates from the project developer Accend AS.	Audit Document Index with Comments and Documentation.xlsx	Required to be assessed	Maturity & Quality
c5.2	*Protocol for dry mass determination of biochar is prepared*	Assessed	MRV procedures are not yet developed, but the supplier expects to precisely monitor biochar parameters (e.g. moisture) as these are important to also ensure the quality of the biochar-fertilizer compound.	Audit Document Index with Comments and Documentation.xlsx	Required to be assessed	Maturity & Quality
c5.3	*Protocol for biochar sampling and laboratory analysis is prepared (permanence and environmental quality)*	Assessed	MRV procedures are not yet developed, but biochar sampling and testing is expected to be done at least annually, using a laboratory accredited for biochar testing.	Audit Document Index with Comments and Documentation.xlsx	Required to be assessed	Maturity & Quality
c5.4	*Monitoring and reporting plan of facility emissions is prepared*	Assessed	MRV procedures are not yet developed, but data reporting for project emission calculation will follow templates from the project developer Accend AS.	Audit Document Index with Comments and Documentation.xlsx	Required to be assessed	Maturity & Quality
c5.5	*An LCA model specific to the facility's operation is prepared*	Assessed	An LCA model and report has been shared. The model is parameterized and can be updated based on data monitoring.	BioPower Tana Biochar LCA v1.0.pdf; LCA calculation BioPower Tana January 2024 v1.xlsx.pdf	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	No information was included in this submission; although the production of a biochar-fertilizer compound is expected to have agronomic benefits.	No information provided.	Required to be assessed	Maturity & Quality
c6.2	*Facility-specific SDG targets or indicators have been identified*	Assessed	No information was included in this submission.	No information 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	The supplier is working with Accend AS, a project developer with experience in biochar certification under the Puro Standard. No additional information was provided	UnniBeate_Sekkester.pdf (CV); Audit Document Index with Comments and Documentation.xlsx	Not required	Maturity & Quality
c7.2	*Relating to thermochemical processes*	Assessed			Not required	Maturity & Quality

c7.3	*Relating to biochar use*	Assessed	regarding the team of the supplier (Biopower Tana AS), beside the CV of its CEO.		Not required	Maturity & Quality
c7.4	*Relating to monitoring and carbon accounting*	Assessed			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 supplier declares having consulted key stakeholders (including, local municipality, land owners, forest owners, fertilizer customers, transporters), but documentation of those consultations have not been shared nor summarized.	Audit Document Index with Comments and Documentation.xlsx	Required to be assessed	Maturity & Quality
c8.2	*Regulation applicable to facility has been identified*	Assessed	The supplier has identified permitting needs from the local municipality and regional authorities, as well as regulation regarding air pollutant emissions for such facilities.	Audit Document Index with Comments and Documentation.xlsx; Updated Biochar production equipment questionnaire 140624_14thSept2024.xlsx	Required to be assessed	Maturity & Quality
c8.3	*Procedures to acquire relevant permits have been identified, started, or completed*	Assessed	The facility has been preliminarily approved by the local authority, but not yet formally permitted. However, an environmental permit for a similar facility already exists in Norway, indicating that this facility has the potential to also obtain such permit.	Audit Document Index with Comments and Documentation.xlsx; Example of approved environmental permit for similar pyrolysis reactor in Norway.pdf	Required to be assessed	Maturity & Quality