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Audit Report 2024

In accordance with the following requirements:

Puro.earth - Biochar Methodology

Ecoera AB
31138 Falkenberg
Operator's No.: PE-71004

Contact details operator

Name and address

Ecoera AB
Snaragårdsvägen 4
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Mobile: -
Fax: -
Email: david.andersson@ecoera.se

Contact person(s)

Mr. David Andersson

Audit visit details

Date

08.08.2024

Duration

1 h 45 m

Persons present including their function

ANDERSSON David, Project Manager & Associate ECOERA

MUNGE Alexander, LCA Developer CHM Analytics

Philipp Seitz, bio.inspecta AG, Auditor

very good

not satisfactory

Clarity of documentation

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Audit visit preparation:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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O.K
 Corrective action required
 Not verified
 Not relevant

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				1	Audit Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.01	Audited Standard: <i>Puro.earth CO2 Removal Marketplace General Rules 3.1 – Biochar Methodology (Annex A)</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.02	Type of Audit: <i>Output Audit</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.03	Auditing Body: <i>bio.inspecta AG, Ackerstrasse 117, CH-5070 Frick www.bio-inspecta.ch</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.04	Audit order assigned to an impartial auditor, free from any conflicts of interest, capable and qualified to complete this audit according to Puro Standard. <i>Auditor (name/surname): Philipp Seitz</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.05	Audit ID: <i>PE-71004</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.06	Audit Date: <i>08.08.24</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.07	Production Facility Location: <i>Skånefrö 27650 Hammenhög</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.08	Production period: <i>09.08.22 - 01.08.23</i>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.09	Audit could be finished within the scheduled time frame <i>Because of the newness and difficult understanding of the Puro templates, more time is required. Audit could not be finished within the scheduled time frame.</i>
				2	Standing Data Confirmation

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 Not verified
 Not relevant

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				2 Standing Data Confirmation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>2.01 The standing data has been collected from Puro and checked for consistency against other evidence. (GL Ref.1.2.5.)</p> <p><i>Submission of Trade registry is a prerequisite to embark on the EBC certification process; location evidenced; removal method eligible; no public support! Proof of output volume: Production figures have been consolidated as number of bags and in m3. For conversion into tonnage, the bulk density (dry matter) of Eurofins analysis AR-22-fr-040914-01 pertaining to pu-se-27-2 was applied which is legitimate because P1500 participates with 95% of production in said crediting period. Evidence of the date on which the Production Facility became eligible to receive CORCs: See first validation report of 22.12.2020 (puro.earth_bio.inspecta_inspection-report_Ecoera_V1_22122020).</i></p>
				3 Evidence Confirmation

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 Corrective action required
 Not verified
 Not relevant

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				3 Evidence Confirmation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>3.01 All necessary evidence has been provided to the auditor by the Production facility and has been used to complete the compliance checklist. (GL Ref. 5.)</p> <p><i>Proof of product quality: Primary evidence confirmation is EBC certification (https://www.easy-cert.com/htm/suchresultat-detail.htm?id=0d846ea1-9167-416b-969a-1bcc1e6ba71d&db=bio). The crediting period 09.08.2022. – 01.08.2023 corresponds to batch periods ba-se-27-1-3 (P500) & ba-se-27-2-3 (P1500). Proof of output volume: Production figures have been consolidated as number of bags and in m3. For conversion into tonnage, the bulk density (dry matter) of Eurofins analysis AR-22-fr-040914-01 pertaining to pu-se-27-2 was applied which is legitimate because P1500 participates with 95% of production in said crediting period. Proof of sales: As a last resource, production records have to be corroborated with consolidated sales records. It is assumed that containers shipped to private customers cannot be traced properly and therefore possibly burned if the biochar in a pot of soil is discarded in a normal trash bin; therefore, only biochar shipped to business customers through the big bag format (1m3/2.4m3) have been included as carbon sink. Improved records give a clear account of volumes sold in the period laid down for validation. Proof of no double counting: Customers of big bag formats can be traced through the shipping document to the physical location where biochar was applied.</i></p> <p><i>A high-resolution customer list with contact details for all B2B biochar sold is available to check if allegations of double counting arise.</i></p>
				4 Eligibility Checklist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>4.01 Biochar is used in applications other than energy. (GL Ref. 1.1.1.)</p> <p><i>It is assumed that containers shipped to private customers cannot be traced properly and therefore possibly burned if the biochar in a pot of soil is discarded in a normal trash bin; therefore, only biochar shipped to business customers through the big bag format (1m3/2.4m3) have been included as carbon sink. Customers of big bag formats can be traced through the shipping document to the physical location where biochar was applied. A high-resolution customer list with contact details for all B2B biochar sold is available to check if allegations of double counting arise.</i></p>

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				4 Eligibility Checklist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.02 Biochar is produced from sustainable forest or waste biomass raw materials (consult positive list of biomasses). (GL Ref. 1.1.2) <i>Produced from pelleted waste biomass residual from cereal cleaning (AG-05: Harvest residues such as straw, cabbage, leaves, stalks, husks as per EBC Positive List of permissible biomasses V10-3).</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.04 Pyrolysis reactor input fuel for heating is not a fossil fuel. Unless only used for ignition/pre heating or in a mobile unit and the emissions are fully included in the LCA. The use of waste heat from other industrial processes (eg. Biodigesters, cement production) is permitted. (GL Ref. 1.1.4.) <i>Fossil fuel (propane) only used for ignition of the burner, turned off after burner reaches 6-700 degree Celsius (EBC and Puro.earth allow fossil fuels as starter).</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.05 Pyrolysis gases are combusted or recovered. Bio-oil and pyrolysis gases can be stored for later use as renewable energy or materials. (GL Ref. 1.1.5.) <i>For both plants P500 & P1500, pyrolysis gas flows first through a filter, where biochar particles are removed, into the burning chamber. Exhaust gases, after heating up the carbonization chambers, are cleaned in the cyclones before being released into the atmosphere.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.06 The molar H/Corg ratio is less than 0.7. <i>The molar H/Corg ratio significantly below 0.7 (0.32) according to EUROFINS analytical reference report AR-22-FR-040914-01.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.07 The biochar produced meets any product quality requirements existing in the jurisdiction where biochar is used and for the specific applications considered (GL Ref 1.1.7). <i>Biochar qualifies for the highest EBC classification classes FeedPlus and AgroBio and can be used indiscriminately in Sweden. It meets all requirements of the respective application classes of the European Biochar Certificate and A5 Swedish country annex.</i>

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 Not verified
 Not relevant

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				4 Eligibility Checklist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>4.08 Evidence of safe handling and transport is provided and adequate for the production facility. (GL Ref. 1.1.8.)</p> <p><i>Before transport to the pyrolysis plant, residual biomass is pelletized, it does therefore not present any health hazard e.g., dust. Moisture level of biochar is increased to minimum 30% prior to bagging, thereby stopping the exothermic reaction. Further, big bags are handled based on a particular schedule: they are kept for 3 days in the pyrolysis hall and another 3 days in cold storage before they are delivered or eventually stacked in the warehouse.</i></p>
				5 LCA Checklist

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 Not verified
 Not relevant

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5 LCA Checklist				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>5.01 LCA complete and shows: carbon footprint of the biomass production and supply , emissions from the biochar production process , carbon footprint of the biochar end use - cradle to grave. (GL Ref. 1.1.3)</p> <p><i>Includes all required emission sources of emission categories A1 – A4 and B1 (A1 Material: Pellet production for use as raw material; packaging; A2 Transport: Pellets to pyrolysis units; A3: Manufacturing: LPG for priming; electricity; A4 Transport to end-use and application; B1 Infrastructure. Emissions A1-A4 and B1 revised and corrected if necessary. Emission calculations backed by metering of emission drivers. A1 Because seed screening and pelletising is not equipped with weighing facilities, the exact amount of pellets is unknown. Trucks with destination to silo No. 3 which is reserved for pyrolysis are being weighed full and empty before and after offloading. By the number of trucks bound to the storage silos (for heat generation) the total amount can roughly be estimated. As electricity consumption for pellet manufacturing is based on actual meter readings, KW per ton of pellets can be measured. A3 LPG use for priming is based on actual invoices. A3 Metering technology for electricity consumption for biochar production installed; yet electricity calculation continues to be based on nominal KWh output data provided by manufacturer since the SCADA technology which enjoys a full overview and monitoring of all electricity consumption has only recently been installed (mid of the crediting period), reason why the approach based on the nominal output is more accurate at this stage. Carbon content of biochar: According to EUROFINS analytical reference report AR-22-FR-040914-01 P500 the carbon content is 74.3%. Requirement 1.1.6: Priming gas LPG used for ignition only to heat the burner up to 6-700 degree Celsius before pyrolysis gas enters and consequently priming gas is turned off (EBC and Puro.earth allow fossil fuels as starter); 1.1.7: Gases recovered into the burner and converted into heat; 1.1.8: Waste heat >> Combined nominal heat output of both units supplied to neighbouring Hammenhög village (Total output 900 KWh). The quantity of waste heat used exceeds 70% (waste heat of Pyreg plant s is the first to be introduced into district heating); 1.1.9 Carbon content constantly between >70% across EUROFINS reference analyses (see carbon content for relevant analysis above); 1.1.10 The molar H/Corg ratio significantly below 0.7 across EUROFINS reference analysis (see H/Corg ratio for relevant analysis above); 1.1.11 The molar O/Corg ratio significantly below 0.4 across EUROFINS reference analyses (see O/Corg ratio for relevant analysis below).</i></p>

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 Not verified
 Not relevant

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5 LCA Checklist				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>5.02 The CO2 Removal Supplier provides a life cycle assessment (LCA) for biochar activity including disaggregated information on the emissions arising at different stages. The system boundary is set cradle-to-grave and includes emissions from production and supply of the biomass, from biomass conversion to biochar, and from biochar distribution and use. (GL Ref. 3.1)</p> <p><i>LCA provided by CHM Analytics that is specialized on life cycle assessments. The system boundary is set cradle-to-grave and includes disaggregated information on the emissions arising at all stages from supply and conversion of biomass to biochar, its distribution and application.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>5.04 The default baseline emission scenario for the project activity feedstock is zero, which is a conservative assumption since it is not taking into account methane emissions derived from decay of manure or combustion of waste biomass. If a non-zero baseline presented, needs to be accepted by Puro.earth</p> <p><i>The default baseline emission scenario for the project activity feedstock is zero.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>5.03 Life cycle assessment (LCA) follows ISO standard, WRI GHG protocol or similar method. (GL Ref. 3.2)</p> <p><i>LCA is performed according to ISO 14044.</i></p>
6 Production Facility Checklist (Desktop and Verbal Confirmation).				

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				6 Production Facility Checklist (Desktop and Verbal Confirmation).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.01 Evidence of Production Facility eligibility under the general rules of Puro Standard. (GL Ref. 1.2.1)</p> <p><i>The produced biochar is not used for energy purposes. Biochar produced during the period has been marketed and sold as soil amendment (§1.1.1). The feedstock consists exclusively of pellets made from agricultural processing residues (§1.1.4.). §1.1.2 not applicable. The facility is EBC-certified (§1.1.7). Compliance with comparable conditions is outlined in this report, and all process emissions have been calculated in the LCA using the cradle-to-grave approach. The following emissions have been accounted for: Harvesting of the wood, chipping, transport of wood chips to the production site, the manufacturing of the biochar on site, transportation of the biochar, and use of the biochar (§1.1.3). Pyrolysis gases are captured and combusted to maintain the carbonisation process. (§1.1.5). The remaining gases are combusted and exhausted. The exhaust emissions have been analysed and quantified (§1.2.4). The produced biochar has a high, stable carbon content. The lab analysis performed by Eurofins demonstrated an organic carbon content of 74.3% in the dry state, which corresponds to the gross capture of 2.172 kg CO₂/kg (§5.3.3). The produced biochar has a H/C_{org} molar ratio of 0.32 (Eurofins, 2022), well below the 0.7 threshold (§1.1.6). Skanefro has implemented appropriate measures to ensure the safe storage and transport of the biochar, including quenching of the biochar to minimum 30%. They can provide a material safety data sheet for transport and storage (§1.1.8). The potential for methane emissions from stockpiling of wet feedstock onsite and at the supplier has been considered in accordance with the criteria of the EBC. There are no emissions from feedstock storage. The potential for fugitive release of syngas from pyrolysis is considered negligible.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.02 The Production Facility demonstrate Environmental and Social Safeguards. (GL Ref. 1.2.2.)</p> <p><i>The LCIA process characterises and assesses the effects of environmental releases identified in the LCI into impact categories such as global warming, acidification, carcinogenics, respiratory effects, eutrophication, ozone depletion, ecotoxicity, and smog. The global warming impact category is the only one that must be considered.</i></p>

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				6 Production Facility Checklist (Desktop and Verbal Confirmation).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.03 CO2 Removal Supplier shall be able to demonstrate additionality, meaning that the project must convincingly demonstrate that the CO2 removals are a result of carbon finance. Even with substantial non-carbon finance support, projects can be additional if investment is required, risk is present, and/or human capital must be developed. To demonstrate additionality, CO2 removal Supplier must provide full project financials and counterfactual analysis based on Baselines that shall be project-specific, conservative and periodically updated. Suppliers must also show that the project is not required by existing laws, regulations, or other binding obligations. (GL Ref. 1.2.3)</p> <p><i>An additionality statement submitted by the CO2 Removal Supplier has been approved.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.04 The Production Facility's documentation system is accurate and reliable (GL Ref. 1.2.4)</p> <p><i>Production figures have been consolidated as number of bags and in m3. For conversion into tonnage, the bulk density (dry matter) of Eurofins analysis AR-22-fr-040914-01 pertaining to pu-se-27-2 was applied which is legitimate because P1500 participates with 95% of production in said crediting period.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.05 The quantity of the biochar produced and sold is quantified and documented in a reliable manner (GL Ref. 1.2.4)</p> <p><i>Production figures have been consolidated as number of bags and in m3. For conversion into tonnage, the bulk density (dry matter) of Eurofins analysis AR-22-fr-040914-01 pertaining to pu-se-27-2 was applied which is legitimate because P1500 participates with 95% of production in said crediting period. Only biochar shipped to business customers through the big bag format (1m3/2.4m3) have been included as carbon sink because it is assumed that containers shipped to private customers cannot be traced properly and therefore possibly burned if the biochar in a pot of soil is discarded in a normal trash bin.</i></p>

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				6 Production Facility Checklist (Desktop and Verbal Confirmation).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.06 Relevant meters are in place and they are calibrated (GL Ref. 1.2.4)</p> <p><i>Production figures have been consolidated as number of bags and in m3. For conversion into tonnage, the bulk density (dry matter) of Eurofins analysis AR-22-fr-040914-01 pertaining to pu-se-27-2 was applied which is legitimate because P1500 participates with 95% of production in said crediting period.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>6.07 The emissions from the cultivating, harvesting and transporting of the biomass are estimated and calculated in a reliable manner (GL Ref 1.2.4)</p> <p><i>Use of residual biomass from grain crops cleaning. Emissions from harvesting and transportation of the crops into the cleaning facility are not accounted for as they would have been harvested and transported regardless; they are further accounted for in another business operation (grain crops production). The cradle boundary is therefore from the point of biomass residue creation in the grain crops cleaning unit where pellet production initiates. Emissions from electricity consumption for pellet production represents the first emission source of the system boundary). There are 2 variables that determine emissions from A1 Raw material: (1) Pellet input and (2) Electricity consumed per unit of pellet produced (1) Pellet input: Due to the lack of metering technology of the silos that feed the pyrolysis unit, trucks with destination to silo 3 which is reserved for the pyrolysis unit are being weighed. The conservative conversion factor b/ween biochar and biomass = 0.20 formerly applied is hence not applicable anymore. (2) Electricity: The submitted electricity consumption for pellet manufacturing is now based on actual meter readings. Transport emissions are based on tonkm. The wet weight of biomass required for production of the biochar quantities claimed for the actual crediting period are multiplied with the return distance from pellet factory to the pyrolysis unit; the return voyage is accounted for because trucks return empty.</i></p>

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 Not relevant

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				6	Production Facility Checklist (Desktop and Verbal Confirmation).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.08	<p>The energy use of the Production Facility can be quantified and the emissions from the process calculated (GL Ref. 1.2.4)</p> <p><i>A3 LPG use for priming is based on actual invoices. A3 Metering technology for electricity consumption for biochar production installed; yet electricity calculation continues to be based on nominal KWh output data provided by manufacturer since the SCADA technology which enjoys a full overview and monitoring of all electricity consumption has only recently been installed (mid of the crediting period), reason why the approach based on the nominal output is more accurate at this stage.</i></p>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.09	<p>The auditor goes through the Quantification of CO2 Removal requirements with the CO2 Removal Supplier, so that the Supplier is able to calculate the CO2 Removal independently in its Output Report</p> <p><i>This happened during the onsite EBC audit on 08.08.24. Both Supplier and Auditor were not able to fully calculate the CO2 removal independently because of the sophisticated LCA reporting templates which requires expert knowledge inherent to LCA developers. Open issues have been resolved in a conference call with the LCA provider.</i></p>
				7	Calculation Checklist

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 Corrective action required
 Not verified
 Not relevant

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				7	Calculation Checklist
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.01	<p>Qbiochar = Quantity of biochar produced and sold to end user. (dry char) (GL Ref. 4.2.)</p> <p><i>Production figures have been consolidated in the course of the validation process, firstly as number of bags and in m3. Because of the lack of bag-wise moisture-readings and lack of reliability of the moisture content provided by the lab analysis, the bulk density (dry matter) of Eurofins analysis AR-22-fr-040914-01 pertaining to pu-se-27-2 was applied for conversion of volume into weight. Application of a single bulk density is legitimate because P1500 participates with 95% of production in said crediting period. As a last resource, production records have to be corroborated with consolidated sales records. It is assumed that containers shipped to private customers cannot be traced properly and therefore possibly burned if the biochar in a pot of soil is discarded in a normal trash bin; therefore, only biochar shipped to business customers through the big bag format (1m3/2.4m3) have been included as carbon sink. Improved records now give a clear account of volumes sold in the period laid down for validation.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.02	<p>FpTHTs = $c + m \times H/C_{org}$ (GL Ref. 4.2.)</p> <p><i>Provided in the Gross embodied CO2 calculator at given soil temperature and selected time horizon = 0.909.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.03	<p>C Biochar = carbon content of biochar (GL Ref. 4.2.)</p> <p><i>The organic carbon content of the biochar was measured at 74.3% in the 2022 analysis of biochar, in the dry state (AR-22-FR-040914-01, 2022). Therefore, the mass of captured CO2 contained in each dry mt of biochar can be expressed as $3.664 \times 0.743 = 2.722$ tonnes CO2/tonne of biochar.</i></p>

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 Corrective action required
 Not verified
 Not relevant

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7 Calculation Checklist				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>7.04 Estored = biochar carbon storage = Qbiochar x Cbiocharorg x FpTHTs x 44/12 (GL Ref. 4.2.)</p> <p><i>The laboratory test shows that the biochar has a H/Corg ratio of 0.32, indicating a good level of stability. Using the combination of H/Corg ratio and an average soil temperature of 5°C, as the main application sites are in the Nordics, it has been determined that 91.% of biochar is durable at 100 years. A 9% buffer has therefore been factored into the carbon removal calculation per the Puro.Earth methodology for biochar.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>7.05 Ebiomass = LCA emissions of production and supply of biomass (GL Ref. 4.3.)</p> <p><i>The assessed period operations data shows that 4.39 tonnes of dry pellets were required to produce 1 dry tonne of biochar during the study period. The distance between the pellet production in Tommarp to the pyrolyzing units in Hammenhög is 7.2 km. It is assumed that the transport vehicles return empty. The distance was therefore doubled (=14.4 km) to account for a round trip. Transport emissions are based on tonkm of wet biomass (pellets). As emission factor an industry-standard factor for diesel-powered truck was used.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>7.06 Eproduction = LCA emissions from biochar manufacturing (GL Ref. 4.4)</p> <p><i>Emissions from the production process of the biochar are limited to electricity for the pyrolysis units, LPG for priming and process emissions. Moreover, allocated emissions arise from the infrastructure, the Pyreg reactors.</i></p>

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 Not verified
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7 Calculation Checklist				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>7.07 Euse = LCA emissions of the use of biochar, including distribution up to the point of final use (GL Ref 4.5)</p> <p><i>The bagged biochar is transported to the customer by truck. The volume-weighted average distance travelled for biochar to customers is 568 km. Greenhouse gas emissions from biochar transport have been calculated using the tkm transported, including the biochar and packaging mass. The transport to end user has been modelled using the Ecoinvent dataset "transport, freight, lorry > 32 metric ton, EURO6 - RER". The biochar is mainly mixed with manure or compost for use as a soil improvement medium and with feed when used as animal feed. So, as a conservative assumption to assess application emissions, the Ecoinvent dataset "solid manure loading and spreading, by hydraulic loader and spreader - CH" has been used, considering that mechanical means are used in both end-uses.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>7.08 CORCs = Estored - Ebiomass - Eproduction - Euse</p> <p><i>For 09.08.22 – 01.08.23, the net carbon removal is 2.172 tonnes CO2e/t of dry biochar.</i></p> <p><i>CORCs: 436,16</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>7.09 Quantity of CORCs (in evidence).</p> <p><i>Given the mass of 200,78 dry tonnes sold during the assessed period, the resulting total CO2e removed was 436,16 t CO2.</i></p> <p><i>CORCs: 436,16</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>7.10 Confirm consistency.</p> <p><i>Consistency confirmed following corrective measures.</i></p>
9 Overall conclusion				

O.K
 Corrective action required
 Not verified
 Not relevant

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				9 Overall conclusion
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.01 Overall conclusion: <i>The validator confirms that the LCA calculation for crediting period 09.08.22 - 01.08.23 provides a credible and faithful account of output volumes and emissions, and thus of declared carbon dioxide removals eligible for CORCs as stated in the Output statement.</i>

Auditor’s evaluation and recommendation

Non-compliance	Corrective action	Deadline
Puro.earth - Biochar Methodology		
<p>5.01 Electricity calculation continues to be based on nominal KWh output data provided by the manufacturer since the SCADA technology which enjoys a full overview and monitoring of all electricity consumption has only recently been installed (mid of the crediting period), reason why the approach based on the nominal output is more accurate at this stage</p>	<p>For next crediting period, the actual metered electricity must be laid down instead of being based on the nominal output declared by the manufacturer.</p>	
<p>6.09 Both Supplier and Auditor were not able to fully calculate the CO2 removal independently because of the sophisticated LCA reporting templates which requires expert knowledge inherent to LCA developers. Open issues have been resolved in a conference call with the LCA provider.</p>		

The Right to be Heard

The undersigned has reviewed the outcome of the audit documented in this report and confirms the completeness and accuracy of the information provided in the audit and the content of this report.

He/ she has taken note of the non-conformities, measures, deadlines and sanctions described in this report.

The undersigned has the option of submitting a counter-notification in writing to bio.inspecta AG within three working days of receipt of this report. If no reply is received within this period, the contents of this report shall be deemed to be acknowledged.

Frick, 10.09.2024

Falkenberg,

bio.inspecta AG / q.inspecta GmbH
International Department

Ecoera AB



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Philipp Seitz

name, first name.....

Auditor

function.....