

# **Independent Validation Report Carbon credits**

## **Project Audit Report - Facility and Output audit**

Project details				
CO2 Removal Supplier:	Euthenia Energy Group			
Address:	C/ Arturo Rubinstein, 5 - Local II, C.P. 29602, MARBELLA 29602, Andalusia, Spain			
Contract Date:	11.11.2024			
Type of associated credits:	Removal			
Industry/Sector:	Biochar Methodology			
Materiality Threshold:	5%			
Framework Reference:	Puro Standard General Rules Version 3.1.			
Methodology approved:	Biochar Methodology Edition 2022 V3			

Project Overview					
	Production Facility Name:	EUTHENIA ENERGY CENTER, S.L.			
	Facility ID	272454			
	Production Facility Location:	Camino Maturinas Km 2,7 14900 Lucena (Córdoba) PLANTA. C/ Arturo Rubinstein, 5 - Local II C.P. 29602, Marbella (MÁLAGA) OFICINA			
General information	Reporting period:	01-03-2024 to 30-11-2024			
	Description:	Euthenia Energy Group produces biochar through their pyroylsis plant. The biochar produced removes carbon from the atmosphere and increases crop yields when spread on crop fields.			
	Biochar produced (dry metric tonnes) during the reporting period:	1091.7			

Quantification of CO <sub>2</sub> Removal					
Life cycle greenhouse gas emissions, scaled per tonne of biochar used					
Life cycle stage Result Unit					
Ebiomass	0.16	tonne CO2-eq / tonne biochar			
Eproduction	0.11	tonne CO2-eq / tonne biochar			
Euse	0.01	tonne CO2-eq / tonne biochar			
Estored	2.29	tonne CO2-eq / tonne biochar			
CORC factor	2.01	CORCs / tonne biochar			
Life cycle g	reenhouse gas emissions, totals over report	ting period			
Ebiomass	178.86	tonne CO2-eq			
Eproduction	120.91	tonne CO2-eq			
Euse	6.68	tonne CO2-eq			
Estored	-2504.85	tonne CO2-eq			
CORCs issued (considering all decimals, source: CORCs summary)	2198.41	CORCs			
Life-Cycle Inventory Reference:	Euthenia-Energy-CenterLCA-report 29.10.24.				
Life-Cycle Inventory date (latest update):	04.12.2024				
CORC Summary date:	04.12.2024				

	Site visit details				
Site visit conducted:	Yes				
Date of Site visit:	20.12.2024				
Number of days for site visit:	1				
Auditing team in charge of site visit:	Patricia PINILLA, Leonard BARKLEY				
Conclusion of site visit:	During the site visit, interviews were conducted with key personnel responsible for operational activities, finance, and the preparation of the LCA report. Documentation relevant to the LCA calculations and compliance verification, such as invoices, calibration certificates, supplier sustainability certifications, and other related records, was also reviewed. At the time of the visit, the facility was undergoing an upgrade and was not operational; therefore, live observation of the processes was not possible. The CO2 Removal Supplier was however able to provide a detailed video of the process, from biomass received to biochar. Furthermore, the CO2 Removal Supplier was able to provide documentation (invoices, biochar logs) that the facility has been operational and eligible for monitoring period 01.03.2024 to 30.11.2024.				

Audit Scope					
Audit type	Confirmed during the audit?				
	Company documents	Yes			
	Additionality	Yes			
	Environmental and social safeguards	Yes			
P 121	Biomass types	Yes			
Facility audit	Biochar production facility	Yes			
	Biochar end-use types	Yes			
	MRV Procedures	Yes			
	LCA Report & Calculations	Yes			
	Records of biomass used	Yes			
O	Records of biochar produced	Yes			
Output audit	Records of biochar used	Yes			
	Updated LCA calculations & supporting data	Yes			

The audit findings and details are provided in Annex 1: Methodology Compliance Checklist and Annex 2: Findings and Recommendations.

OPINION - EUTHENIA ENERGY CENTER				
OPINION - validated as satisfactory:	Normec Verifavia has conducted a reasonable assurance validation of the carbon emission removal units (CORCs) reported by Euthenia Energy Group using the accompanying data and documentation provided by the Puro Registry. Based on the validation work performed for the facility and output audit (see Annex 3), the data is accurate and compliant with the Puro Standard, confirming that 2,198 CORCs are set to be issued. Each CORC represents the removal of at least one tonne of CO2eq.			
	VALIDATION TEAM			
Lead Auditor:	Patricia Pinilla			
Auditor:	Leonard Barkley			
Independent Reviewer:	Nicolas Duchêne			
Independent Technical Reviewer (in- training):	Nilay Warkhedkar			
Signed on behalf of Normec Verifavia :	Normec Verifavia SAS Tour Egée 9-11 Allée de l'Arche 92400 Courbevoie FRANCE			
Name of authorised signatory:	Patricia PINILLA			
Date of Opinion(s):	09.01.2024			
Name of Verifier:	Normec Verifavia SAS			
Contact Address :	9-11 Allée de l'Arche, 92400 Courbevoie, France Tel: +33 143 227 194 Email: patricia.pinilla@normecgroup.com			
Date of contract:	11.11.2024			

### **Project Audit Report**

	Euthenia Energy Group						
	Annex 1 - Methodology compliance checklist						
Guideline Ref	Requirement	Requirement Met	Verification Remarks Insert auditors comments				
	Standi	ng Data Confirma					
	- A certified trade registry extract for the CO2 Removal Supplier or CO2 Removal Supplier registering Production Fac	Y	The registration of the company was received under the name of Euthenia Energy Center SL.  Source: Company registration 'Certificacion registral'				
1.2.5. The following	- Evidence of the location of the Production Facility		A site visit is perfomed and the location is confirmed during this process. Also, in section 3 of Stationary Source Testing Report the location can be evidenced.  Source: Eurocontrol report document EEC.				
standing data has been	- Evidence of the Removal Method(s) for which the plant is eligible to receive CORCs		The removal method has been calculated using Puro Registry's approved methodology, Biochar Edition 2022 Version 3, and this was also confirmed by the auditor during the audit process.				
collected from Puro and checked			First validation of Production facility and Output audit, not applicable.				
for consistency against other	- If the Production Facility has benefited from public support, evidence to show this		No public funding is received from local authorities, this was confirmed during site visit by the CO2 Removal Supplier.				
evidence:	- Documentation on Environmental and Social Safeguards imposed	Y	The CO2 Removal supplier has shared sufficient evidence related to Environmental and Socialsafeguards including its environmental permit and studies. This includes an Environmental Risk Assesment by Ecolin (consulting company), Environmental impact and Safety Assesment report. Additionality, the stakeholder engagement report was evidenced and found accurate.  Source: Proyecto ActividadCalificación Ambiental_EEC 2024 and Environmental Evaluation Report EUTHENIA ENERGY				
	Evic	lence Confirmation	n n				
	- Proof of sustainability of raw material for forest biomass (FSC, SFI, PEFC, other certifications)	Y	The CO2 Removal Supplier poses a contract with a PEFC (Programme for the Endorsement of Forest Certification) Certified supplier for which the certificate was evidenced.  Source: CERTF. PEFC Ingecor				
	- Proof of sustainability of raw material for waste biomass	Y	The CO2 Removal Supplier a contract with a certified supplier (Sure-EU Certification) for which the certificate was received. The feedstock received are agricultural residues (such as olive pruning) and forestry residues (such as pine wood chips from sustainable forest management)  Source: CERTIFICADO SURE INGECOR AGROFORESTAL_2025				
			Biomass tests are conducted and analyzed before engaging with a supplier.  Source: IE-LAE-I-30794-23 EUTHENIA ENERGY CENTER				
	- Proof of product quality: laboratory analysis of total organic carbon content, hydrogen content and H/Corg	Y	A representative sample of biochar is sent to a laboratory every three months. The sample is collected by taking biochar from production every two hours over several days before being sent for analysis.  Source: Biochar lab analysis tests - 2024 03 22 TCAL LABORATORY and 2024 07 26 RUHR LABORATORY				
5: All necessary evidence has been provided to the auditor by the Production facility as per	- Proof of production volume: documentation for the whole period and methodology applied to calculate the dry mass of biochar produced.	Y	The CO2 Removal Supplier has implemented a measuring process for the weighting of containers used for storing biochar outputs from the system. Every morning and afternoon the operator will do a reference containers weight for calculating the total mass of the biochar. Also, the CO2 Removal supplier mantains a procedure for calculating the dry mass based on their internal humidity measurements and lab analysis. During the audit, reports of weights were received and found accurate and used accordingly in the LCA calculations and CORC's summary report.  Source: Protocolo 7.2: Cálculo del Biochar Producido				
Section 5 of the Biochar Guidelines and	- For mobile units or carbonizer operator: proof of load cell measurement of the biochar for the whole period, and water input measurement.	N/A	No documentation is provided because the CO2 Removal Supplier does not operate any mobile units.				
has been used to complete the compliance checklist.	- Proof of end use of biochar: offtake agreement, shipment, and other records indicating the intended use of biochar.	Y	The CO2 removal supplier demonstrates how the biochar will be utilized, as detailed in the purchasing agreements or Memoranda of Understanding with their clients. The supplier also provides invoices from clients with whom they have agreements; only these agreements are considered eligible for generating CORCs. The biochar's end use is designated for agricultural purposes, aligning with the Puro Standard's methodology.  Source: MOU signed with customers: Carbon Vivo and Ingecor.				
	- Justification on the soil temperature selected for the calculation of the biochar sequestration.	Y	The soil temperature is obtained from a database that can be computed using Python, ensuring consistency and reliability. It aligns with the intended end-use, as verified through a protocol provided by the CO2 Removal supplier, specifically tailored to meet these requirements.  Source: Protocolo: Selección de Temperatura del Suelo para el Cálculo de la Permanencia del Biochar en Diferentes Áreas de Uso				
	- Proof of sales	Y	The CO2 Removal supplier provided proof sales in the form of invoices and contracts for the whole reporting period. This was received and match accurately to tracking files for data collection.  On this aspect, we have suggested a recommendation for next verification cycle to have a more detailed tracking system in order to be more visible on the biochar sold for non-eligible activities under the framework.  Source: Proof of sales for the reporting period				
	- Proof of no double counting/C positive marketing	Y	The CO2 Removal supplier provided proof of decoupling the biochar with the carbon removal (CORCs) this can be evidence in all invoices generated to customers.  Source: Proof of sales for the reporting period				

	Eligibility Checklist				
1,1,1	Biochar is used in applications other than energy.	Y	The CO2 Removal supplier has provided the auditor with a sustainability proof document related to the end use of the biochar, along with agreements for the proper use of the final product. The CO2 Removal supplier only considers uses that are eligible for CORCs and most of the biochar is sold to specific suppliers which are in responsible for the correct application in the soil.		
1.1.2	Biochar is produced from sustainable forest or waste biomass raw materials (consult list of raw materials).	Y	The CO2 Removal supplier has provided the auditor with a proof of sustainability document relating to the source of the raw materials.  Source: CERTIFICADO SURE INGECOR AGROFORESTAL_2025		
1.1.3	LCA 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	Y	The LCA calculation file provides the necessary details to calculate the carbon footprint of biomass, biochar production, and the end use of biochar, encompassing the entire lifecycle from cradle to grave. During the validation process, source documents for the data entered into the model were sampled and verified. These included biomass tonnage, lab analysis results (carbon content and humidity), and fuel usage. Additionally, assumptions such as transport distances, biogas consumption rates, emission factors, and other relevant parameters were evaluated.  Source: 04c_puro_LCA Model Euthenia_v2024-Rev May_rev041224 and 04c_puro_LCA Model Euthenia_v2024-Rev Mar_rev041224		
1.1.4	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 processess (eg. Biodigesters, cement production) is permitted.	Y	The input fuel for ignition/pre-heating is monitored monthly through meter readings of the stock, and the CO2 removal supplier maintains records of invoices for the received fuel.  Source: LCA Data collection sheet		
1.1.5	Pyrolysis gases are combusted or recovered. Bio-oil and pyrolysis gases can be stored for later use as renewable energy or materials.	Y	The CO2 Removal supplier has enhanced the recovery and treatment of gases. The process is now designed for improved recovery and will also store excess syngas in the upcoming plant upgrades.  Source: Euthenia-Energy-Center_LCA-report 29.10.24 rev and design Mass & Energy Balance-0124		
1.1.6	The molar H/Corg ratio is less than 0.7.	Y	The independent lab analysis of the biochar shows that the ratio is less than 0.7 H/C, roughly 0.4 Source: 2024 07 26 RUHR LABORATORY		
1.1.7 + 1.1.8	Evidence of safe handling and transport is provided and adequate for the production facility.	Y	The production facility mantains processes for handling the biochar went it is recently taken out of the furnace and let it cool down. The material is stored and its temperature is controlled regularly. This was explained during the site visit.		

	Production Facility Checklist (Desktop and Verbal Confirmation)					
1.2.1	Evidence of Production Facility eligibility under the general rules of Puro Standard.	Y	The CO2 removal supplier has provided the documents required by the Puro Audit Index, and these were found satisfactory for this audit. The auditor confirms that the production facility complies with the eligibility criteria of the Puro Standard General Rules Version 3.1.			
1.2.2	The Production Facility demonstrate Environmental and Social Safeguards.  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.		During the site visit, the use of safety equipment was observed, and fire safety measures were explained, including the presence of fire extinguishers on the premises. Regarding environmental safeguards, the plant has been approved by local environmental authorities, and the relevant documentation was presented to the auditor.			
1.2.3			Euthenia provided financial documentation indicating that revenue from CORC sales, along with the sale of pure biochar, is essential for continuing biochar production. Currently, there is no government mandate or law requiring the production of biochar. Also, verbal confirmation of this was obtained during the site visit of the production facility.  Source: Baseline & Additionality Assessment Euthenia 2024 10 22 and Economic Model_Euthenia Energy Center v2 (without VCC) / with Sensitivity analysis.			
	The Production Facility's documentation system is accurate and reliable	Y	The auditor confirms that the documentation for the production facility provided during the verification process was accurate and reliable. Source document sampling was conducted and concluded satisfactorily.			
	The quantity of the biochar produced and sold is quantified and documented in a reliable manner	Y	The CO2 Removal supplier provided proof sales in the form of invoices and contracts for the whole reporting period. This was received and match accurately to tracking files for data collection.  On this aspect, we have suggested a recommendation for next verification cycle to have a more detailed tracking system in order to be more visible on the biochar sold for non-eligible activities under the framework.  Source: Proof of sales for the reporting period			
1,2,4	Relevant meters are in place and they are calibrated;	Y	The weights used for mass measurements (inputs and outputs) are calibrated, and the data is recorded in internal software. The scale uses IMS software for tracking. Calibration certificates, which are up to date, were observed during the site visit and included in the audit package.			
1.2.4	The emissions from the cultivating, harvesting and transporting of the biomass are estimated and calculated in a reliable manner	Y	The biomass emissions are based on the weight of biomass, which is then converted to land area, then finally multiplied by the Ecoinvent emission factor.			
	The energy use of the Production Facility can be quantified and the emissions from the process calculated	Y	The CO2 removal supplier tracks the amount of fuel used in the pyrolysis plant and applies the relevant emission factor to this value. Additionally, electricity consumption is monitored through meter readings conducted every three months by their tenant.  It is recommended to increase the frequency of meter readings to every two months to enhance tracking and follow-up.			
	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	Υ	It was explained by the CO2 removal supplier the different assumptions and calculations for estimating the CO2 removed by the final product on their pyrolisis system. It was confirmed by the auditor that this indeed is accurate and all inputs were crosschecked to source documents.			
3.1	Life cycle assessment (LCA) shall follow ISO standard, WRI GHG protocol or similar method.	Y	The LCA Report and calculations follow ISO 14040/40 guidelines.  Source: Euthenia-Energy-CenterLCA-report 29.10.24 rev			
3.2	The CO2 Removal Supplier shall provide 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 shall include emissions from production and supply of the biomass, from biomass conversion to biochar, and from biochar distribution and use.	Y	The LCA calculation file contains the necessary details to calculate the carbon footprint of biomass, biochar production, and the end use of biochar, covering the entire lifecycle from cradle to grave. During the validation process, source documents for the data entered into the model were sampled and verified. These documents included biomass tonnage, lab analysis results (carbon content and humidity), and fuel usage. Additionally, assumptions such as transport distances, biogas consumption rates, emission factors, and other relevant parameters were thoroughly evaluated.  Source: 04c_puro_LCA Model Euthenia_v2024-Rev May_rev041224 and 04c_puro_LCA Model Euthenia_v2024-Rev Mar_rev041224			
3.3	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 Registry	Y	The baseline chosen is zero in order to remain conservative. No additional further documentation required.			

	Calculation Checklist		
	Qbiochar = Quantity of biochar produced and sold to end user. (dry char)	Y	For the reporting period, the CO2 Removal Supplier calculated the quantity of dry biochar produced as 1,091 dry tonnes. After a thorough examination of the LCA, this figure was found to be accurate.
4.2	FpTHTs = c + m x H/Corg	Y	The permanence factor over a given time horizon was calculated accurately following Puro Standard template and for this reporting period the average is 78.3%, as reported in the CORC Summary report.
"-	C Biochar = carbon content of biochar	Y	The carbon content is determined through test analysis. The average content for this reporting period is 80%, as reported in the CORC Summary report.
	Estored = biochar carbon storage = Qbiochar x Cbiocharorg x FpTHTs x 44/12	Y	The total Biochar carbon storage for this period is 2504.8 tCO2eq.
4.3	Ebiomass = LCA emissions of production and supply of biomass	Y	The total Biomass related emissions are 178.8 tCO2eq.
4.4	Eproduction = LCA emissions from biochar manufacturing	Y	The total Biochar manufacturing emissions are 120.9 tCO2eq.
4.5	Euse = LCA emissions of the use of biochar, including distribution up to the point of final use	Y	The total Use and Distribution emissions are 6.6 tCO2eq.
	CORCs = Estored - Ebiomass - Eproduction - Euse	Y	It is confirmed that the CORCs were correctly calculated using the specified formula, and the supporting results were verified and found to be accurate.
4.1	Quantity of CORCs (in evidence).	Υ	The CORCs verified for this period total 2,198 units.
	Confirm consistency.	Y	After verifying the data collected for LCA inputs and CO2 removal credits, the auditor confirms that it is consistent from the source documents to its use in the calculation sheet.

## **Project Audit Report**

## **Euthenia Energy Group**

## Annex 2 - Misstatements, Non-compliances and Recommended Improvements

Α.	Scope:	Misstatements that were not corrected before the issuance of the validation report	Material?
A1	Puro Standard General Rules Version 3.1.	N/A	N/A
A2			
A3			
A4			
A5			
В.	Scope:	Untreated non-compliances identified during verification with the reference framework	Material?
	Scope: Puro Standard General Rules Version 3.1.	Untreated non-compliances identified during verification with the reference framework	Material?
B1			
B1 B2			
B1 B2 B3			

<u>C.</u>	Scope:	Recommended Improvements, if any	Material?
C1		Electricity monitoring can be enhanced through more frequent meter readings and the use of a more detailed tracking file for this data source.	No
C2		A more detailed tracking file for biochar production, including invoice references and intended uses, will enhance transparency and facilitate cross-checking of overall production and sold volumes.	No
C3			
C4			
C5			

## **Project Audit Report**

## **Euthenia Energy Group**

## Annex 3 - Further information of relevance to the Opinion

# Objectives and scope

## Scope of audit: Puro Standard General Rules Version 3.1.

Validate, to a reasonable level of assurance, the compliance of the project developed by Euthenia Energy Group with Puro Standard's methodology specifications for the issuance of CO<sub>2</sub> Removal Credits (CORCs) in the Puro Registry (as summarized in the attached Opinion Statement). Additionally, confirm the rigor and accuracy of the Life Cycle Analysis (LCA), as well as the validity of input data, supporting documentation, and data collection procedures.

of the Validation:

Responsibilities: The CO<sub>2</sub> Removal Supplier and Puro Registry are solely responsible for the preparation of the GHG emissions removals based on the LCA Methodology for the purposes of the scope identified above, in accordance with the rules of the reference framework (as listed in the attached Opinion Statement); for any information and assessments that support the claimed data; for determining the objectives in relation to GHG information and for establishing and maintaining appropriate procedures.

Puro Registry is responsible for:

- issuing the approved credits on its registry and assigning to the CO<sub>2</sub> Removal Supplier account;
- enforcing the requirements of the guidelines as outlined in the Scheme Criteria below;
- agreeing on certain aspects of the verification process.

Normec Verifavia is responsible for, in accordance with the validation contract, carrying out the validation of the project proposed by the CO2 Removal Supplier to confirm the amount of the associated removed emissions which serve as base for the issuing of carbon removal credits in Puro Registry, independent of the CO2 Removal Supplier. It is the responsibility of Normec Verifavia to form an independent opinion, based on the examination of information and data presented in the LCA Report and audit package, and to report that opinion to the CO2 Removal Supplier and Puro Registry. We also report if, in our opinion:

- the LCA calculation is or may be associated with misstatements (omissions, misrepresentations or errors); or
- the lead auditor/auditor has not received all the information and explanations that they require to conduct their examination to a reasonable level of lassurance: or
- · improvements can be made to the CO<sub>2</sub> Removal Supplier's performance in calculation and reporting of the emissions removal and/or compliance with the reference framework and the scope rules on calculation and reporting as outlined in the Scheme Criteria below.

Work performed & Normec Verifavia conducted an examination having regard to the validation criteria referenced in the documents outlined below. Based upon our risk analysis, basis of the opinion: this involved examining evidence to give us reasonable assurance that the amounts and disclosures relating to the data have been properly prepared in accordance with the methodologies and criteria, as outlined in the reference documents below. This also involved assessing where necessary the estimates and judgments in preparing the data; and considering the overall adequacy of the presentation of the data and its potential for material misstatement.

### Materiality level: 5%

GHG quantification is subject to inherent uncertainty due to the designed capability of measurement instrumentation and testing methodologies and incomplete scientific knowledge used in the determination of emissions factors and global warming potentials.

# Reference documents cited :

## Conduct of the Validation - Project Assurance

- 1) Principles of EN ISO 14065:2020 General principles and requirements for bodies validating and verifying environmental information
- 2) Principles of EN ISO 14064-3:2019 Specification with guidance for the validation and verification of GHG assertions
- 3) Principles of ISO 17029:2019 conformity assessment- general principles and requirements for validation and verification bodies.
- 4) Normec Verifivia Assurance Management System Manual AMSM (version 9.7, Nov 2024)
- 5) Verifavia Assurance Protocol (Version 1.2, May 2024)

## Scheme Criteria:

## Rules etc of Project Assurance

- 1) Puro Standard General Rules Version 3.1.
- 2) Approved Methodology by Puro Registry: Biochar Methodology Edition 2022 V3
- 3) Guidance documents for Validation and Verification templates and other guidelines provided by Puro Registry: Biochar compliance checklist, templates for baseline and additionality statements, etc.