Baseline and Additionality Assessment

The baseline and additionality assessment is a requirement for eligibility under the Puro Standard. The assessment is made by the CO2 Removal Supplier and verified by the independent 3rd party auditor. The assessment made in this document will be publicly available in the Puro Registry.

The Puro Standard only certifies durable carbon removals from the atmosphere that are net-negative and does not certify emissions reductions or avoidance. The CORCs (Carbon dioxide removal certificates), issued therefore represent a net carbon removal (1 tCO2eq. net) from the atmosphere to a durable storage of minimum 100 years, from which are subtracted any supply-chain emissions from the project, any re-emissions over the guaranteed storage time, and any baseline removals taking place in a baseline scenarios.

The CO2 Removal Supplier must in this assessment:

- **Define** and quantify all reasonable **baseline alternatives** to the proposed project activity to remove carbon with carbon financing. A baseline is a scenario that reasonably represents the natural and anthropogenic carbon removals to a permanent storage (storage durability over 100 years) in the absence of the carbon removal activity proposed by the CO2 Removal Supplier. Although anthropogenic emissions may take place in the baseline scenarios, these emissions do not constitute a reference point for the quantification of CORCs (only the baseline removals do).
- Demonstrate **carbon additionality to the baseline**, meaning that the project must convincingly demonstrate that it is resulting to higher volumes of carbon removals than the likely baseline alternatives (question A1.).
- Demonstrate **regulatory additionality,** meaning that the project is not required by existing laws, regulations, or other binding obligations (question A2.).
- Demonstrate **financial additionality**, meaning that the CO2 removals achieved are a result of carbon finance and that the project activity would not be economically viable without the carbon finance. The project activity can have substantial other non-carbon income sources, if the carbon finance through CORCs is significant for the economic viability of the project. To demonstrate financial additionality, CO2 removal Supplier must provide the responses in this form and must be able to provide full project financials for verification.

Reference documents: Puro Standard general Rules v3.0, rule 2.1.3 and Additionality Assessment requirements

Activity name	Activity description	Removals to storage (100+ yr) due to project activity (human activity)	Natural removals to storage (100+ yr)
Baseline: *[Name]*	*(Activity existing before the project and continuing if the project did not exist)*	None / Some *(please quantify)*	None / Some *(please quantify)*
Traditional burning of wood pruning from olive trees.	It's crucial to prune the branches of olive trees at the end of each harvest season for several reasons. Failure to prune olive trees at the end of the harvest season can have detrimental effects on next year's crop. Without pruning, the trees may become	NONE	NONE

	overgrown and unmanageable, leading to reduced sunlight penetration, increased susceptibility to pests and diseases, and lower fruit set. This can result in diminished yields and inferior fruit quality, ultimately impacting the farmer's profitability and the overall health of the olive grove. In summary, pruning is of vital importance for olive tree maintenance as it promotes tree health, encourages fruit production, and ensures optimal yields in subsequent harvests. It is an essential cultural practice that should be diligently carried out at the end of each harvest season to maximize the productivity and longevity of olive groves. Traditionally, these pruned cuttings of the olive tree branches are burnt in-situ immediately after cutting. Thus returning to the atmosphere the carbon previously captured via photosynthesis by the olive tree.		
Alternative scenario 1: *[Name]*	*(Other likely activity that can replace the baseline activity, if none leave blanc)*	None / Some *(please quantify)*	None / Some *(please quantify)*
Natural decomposition of wood pruning from olive trees.	*Like the aforementioned baseline scenario, the alternative to this baseline scenario is that* these pruned cuttings of the olive tree branches are left on the ground to decompose after cutting. Thus, returning to the atmosphere the carbon previously captured via photosynthesis by the olive tree.	NONE	NONE
Project activity: *[Name]*	*(Other likely activity that can replace the baseline activity, if none leave blanc)*	None / Some *(please quantify)*	None / Some *(please quantify)*
Euthenia Energy Biochar production facility, Lucena, Cordoba, Spain	The pruned cuttings of the olive tree branches are recollected and transported to the biochar facility after cutting. Then passed through a Kiln and subjected to a thermal process and transformed via pyrolysis into biochar, (fixed carbon). The biochar is then transported to eligible activities to be stored for more than 100 years.	**22,000 CORCs/year**	NONE

A1. Does the project lead to higher volumes of carbon removal than the baseline?	Yes / No
Yes, the project significantly leads to higher volumes of carbon removal than the baseline, which would be zero without the biochar facility. Without the facility, there would be no systematic process in place to convert biomass into biochar, which sequesters carbon for long periods. The biochar facility initiates and facilitates the conversion of organic residues into a stable form of carbon, effectively removing CO2 from the atmosphere and securing it in a manner that would not occur naturally. This enhanced carbon removal, compared to the baseline, underscores the facility's contribution to mitigating climate change by providing a tangible and measurable reduction in atmospheric carbon levels.	YES

A2. Is the project required by existing laws, regulations, or other binding obligations ?	Yes / No
The project is not required by any existing laws, regulations, or other binding obligations. The principal activity of the biochar facility, which is the production of biochar, is entirely voluntary. This initiative has been undertaken with the primary objective of contributing to climate action by sequestering carbon. By choosing to operate outside the realm of legal compulsion, the facility demonstrates a proactive commitment to environmental sustainability and a dedication to combatting climate change. The project aligns with voluntary market mechanisms and sustainability goals, emphasizing its role as a leader in innovative and responsible climate solutions.	NO

A3. Is the project first-of-its-kind?	Yes / No
Yes, the project is indeed first-of-its-kind here in Spain. The biochar facility represents a pioneering effort in the country, introducing innovative technology and processes for carbon sequestration through biochar production. As the first facility in Spain focused on this specific application, it sets a precedent for sustainable practices and contributes to the advancement of biochar technology as a viable solution for climate change mitigation. This pioneering status not only highlights the project's uniqueness but also its potential to inspire similar initiatives and encourage broader adoption of biochar across the region.	YES

A4. Is the project dependent on carbon finance?	Yes / No
Yes, the project is dependent on carbon finance to achieve financial viability. The economic model of the biochar facility relies significantly on the revenue generated from carbon credits, which are integral to offsetting operational costs and supporting the financial sustainability of the project. Without carbon finance, the substantial initial investment and ongoing expenses related to innovative biochar production and carbon sequestration would render the venture economically infeasible. Carbon finance not only enables the project to maintain its operations but also supports its objective to contribute effectively to climate change mitigation.	YES

A5. Does the project need a large investment to achieve carbon removal?	Yes / No
Yes, the project requires substantial investment to achieve effective carbon removal. A significant initial investment was necessary to establish the biochar facility and implement the technology needed for efficient carbon sequestration. Additionally, ongoing investments are crucial to continually enhance the technology and improve the quality of the biochar produced. These enhancements are vital for maximizing the level of climate action by increasing the amount of carbon sequestered. Such financial commitments demonstrate the project's dedication to environmental sustainability and its proactive role in combating climate change through advanced biochar production.	YES

A6. If investment is needed, is/was carbon finance considered when the investment decision is/was made?	Yes / No
Yes, carbon finance was a critical consideration in the investment decision for this project. Before proceeding with the investment, an exhaustive due diligence exercise was conducted, during which carbon finance was identified as a key component of the project's financial strategy. This evaluation ensured that the revenue from carbon credits would play an integral role in supporting the project's financial sustainability and its capacity to deliver meaningful climate action. By incorporating carbon finance into the financial model, the project was able to align its economic pursuits with its environmental objectives, facilitating the decision to invest in this pioneering biochar facility.	YES

Some projects may demonstrate additionality through simple cost analysis: this is applicable for projects where ex-ante investment analysis is not applicable, because a large investment is not needed. Example of such project could be charcoal producers starting to produce biochar for soil applications using existing equipment with minor adaptations.

Financial Additionality – large investment is not needed (Answer to A5 is "no")	Project response
Please describe adaptations needed and the related cost items and include evidence in attachment.	NOT APPLICABLE
Please summarize the simple cost analysis here and provide additional calculation spreadsheet in attachment. All formulas used in the spreadsheet shall be readable to the verifier and all relevant cells shall be viewable and unprotected. Mark confidential when needed.	NOT APPLICABLE

If large investment is needed, , CO_2 Removal Suppliers can be guided by the CDM Methodological Tool 27 of the UNFCCC Clean Development Mechanism "Investment Analysis" to demonstrate financial additionality.

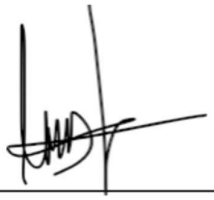
Financial Additionality – large investment is needed (Answer to A5 is "yes")	Project response
Please show your calculations to determine the benchmark rate for either equity IRR or WACC, whichever you are using. Please include documentation of how the rate is suitable for the technology and region.	We have estimated an equity Internal Rate of Return (IRR) of 14.7% in our base case scenario ("Economic Model_Euthenia Energy Center v2 with sensitivity (with VCC)"). To benchmark this return, we analyzed the 57 largest publicly traded companies in the SP500 environmental and waste management sector by market capitalization. Using the Capital Asset Pricing Model (CAPM) and adjusting for Spain's country risk premium (as detailed in the methodology section of the supporting document "Benchmarking Cost of Equity.docx"), we arrive at a required Cost of Equity of 10.4%. Our projected Equity IRR comfortably exceeds the required Cost of Equity, providing a sufficient margin to accommodate potential variations in key parameters while still delivering returns that exceed market expectations for equity holders.

	Please find attached additionality Excel Spreadsheets economic model: **Puro Earth Economic Model Euthenia Energy Center SL (NO VCC).xlxs** **Puro Earth Economic Model Euthenia Energy Center SL (WITH VCC)_with sensitivity.xlxs**
Please state how CORC revenues change the expected IRR or NPV of the project.	CORC revenue are critical for the success of the project. Once the biochar market develops at prices above 50Eur/tons, the expected IRR is more resilient to fluctuations in CORCs prices. We can observe from the "Sensitivity Analysis" Sheet that with higher biochar prices the project can sustain +/- 10% variations in CORCs pricing and remain economically attractive (Equity IRR > Cost of Equity). In the base case scenario, the project can sustain +/- 5% variations to CORC revenues and remain economically attractive. Please find attached additionality Excel Spreadsheets economic model: **Economic Model_Euthenia Energy Center v2 (without VCC).xls** **Economic Model_Euthenia Energy Center v2 with sensitivity (with VCC).xls**
Please conduct a sensitivity analysis in relation to the investment analysis and summarize the results here.	Our sensitivity analysis carried out reveals the project's resilience to market fluctuations, specifically concerning variations in the market prices of biochar and carbon credits and the investment. The results indicate that, even with potential shifts in these economic factors, the biochar project remains financially viable and capable of meeting its environmental objectives. This robustness underscores the project's strategic planning and commitment to maintaining its positive impact on climate action, regardless of market conditions. The financial rates and the discount rates are similar to those considered by financial experts in biomass valorization projects. Please find attached additionality Excel Spreadsheets economic model: **Economic Model_Euthenia Energy Center v2 with sensitivity (with VCC).xls**

Please provide full calculation spreadsheet file as an attachment. All formulas used in the spreadsheet shall be readable to the verifier and all relevant cells shall be viewable and unprotected. Mark confidential when needed.	Please find attached additionality Excel Spreadsheets economic model: **Economic Model_Euthenia Energy Center v2 (without VCC).xls** **Economic Model_Euthenia Energy Center v2 with sensitivity (with VCC).xls**

I hereby declare that all information provided is truthful and precise to the best of my knowledge.

AT MARBELLA, THE 26/03/24

Signature: 

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