

MORE DURABLE, MORE CREDIBLE: INSIDE THE NEW PURO.EARTH BIOCHAR METHODOLOGY AND WHAT IT MEANS FOR STAKEHOLDERS IN INDIA

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Background

Puro.earth is a leading carbon removal standard, widely used to certify durable carbon dioxide removals (CDR). Its methodologies provide the basis for issuing CO₂ Removal Certificates (CORCs), which represent verified net-negative emissions.

Puro.earth released an updated [2025 Biochar Methodology](#), building on its 2022 v3 version. This brief compares the two editions and explores key implications for Indian stakeholders, particularly emerging biochar producers and project developers.

Key Differences Between 2022 v3 and 2025 Edition

1. Carbon Durability Shift

- The 2022 v3 methodology was based on a 100-year permanence model (CORC100+) tied to the H/C_{org} ratio while the 2025 edition introduces a 200+ years (CORC200+) model, incorporating both H/C_{org} ratios and regional soil temperature data.
- This change aligns the crediting model with emerging science and market demand for greater permanence.

2. Expanded Eligibility and Use Cases

- The 2025 version expands on eligible biochar applications, especially in non-soil sectors such as concrete, construction materials, water treatment, and industrial use.
- The methodology is now more inclusive of different reactor types, ranging from artisanal kilns to large-scale industrial plants – especially relevant for Asia and India.

3. Enhanced LCA and Quantification Framework

- While both editions use cradle-to-grave Life Cycle Assessment (LCA), the 2025 edition provides more refined guidance on emissions quantification, especially around co-products like heat, bio-oil, and syngas.

4. Baseline and Additionality Rules

- Earlier, the default baseline was zero, with the option to present a justified alternative. The 2025 edition encourages more project-specific baselines, provided there is robust scientific justification.
- There is a stricter bar for financial and regulatory additionality, ensuring that projects genuinely rely on carbon finance to exist and are not required by existing laws, regulations, or other binding obligations.

5. Monitoring, Reporting, and Verification (MRV)

- The 2025 methodology strengthens activity-based monitoring requirements, with more detailed expectations across feedstock sourcing, biochar quality, and usage verification.
- It introduces clearer rules on testing frequency, lab accreditation, and data handling, ensuring consistency and accuracy across reporting cycles.

Table: Summary of Key Differences Between 2022 v3 vs. 2025 Edition

Aspect	2022 v3	2025 Edition
Carbon Permanence Model	Based on 100-year modeling using a linear equation tied to H/C _{org} ratio	Shift to a 200+ year horizon, factoring in H/C _{org} and soil temperature
CORC Label	CORC100+ (100-year durability)	CORC200+ (200+ year durability)
Feedstock and Sustainability	General sustainability requirements; listed by type	Expanded specificity, including safeguards for invasive species and stricter LCA baselines
Production Flexibility	Assumes engineered pyrolysis with emissions controls	Accommodates broader reactor types, from artisanal to industrial
Quantification Approach	Life cycle assessment (LCA) broken into biomass, production, and use stages	Refined LCA and accounting for co-product emissions, aligned with ISO 14040/44 standards
Application Scope	Focus on soil and non-energy use	Broader set of use cases, increasing flexibility in end-use pathways
Certification & Monitoring	Defined monitoring and third-party audit mechanisms	Strengthened and activity-based monitoring
Co-product Allocation	Basic rules for heat/electricity/byproducts in LCA	More explicit emissions allocation guidelines for co-products
Additionality & Baseline	Conservative (zero) baseline by default	Baseline can be project-specific if scientific justification is provided

What This Means for Indian Biochar Producers

Opportunities

- **Recognition of diverse production systems:** The methodology now allows for artisanal production systems (e.g., Kon-Tiki and small-scale reactors), potentially lowering barriers for rural and community-level projects.
- **Longer carbon storage = higher credit value:** The move to CORC200+ could enhance credit value, helping Indian developers access premium buyers in carbon markets.
- **Inclusion of broader end uses:** Projects using or planning to use biochar in construction, water treatment, or animal feed may now be better accommodated under the new methodology, widening the end-use applications.

Considerations

- **Increased LCA and monitoring complexity:** More robust quantification may require additional technical capacity, especially for lifecycle modelling and co-product accounting.

- **Higher evidence burden for additionality:** Producers must justify baseline emissions scientifically if deviating from defaults, which may require additional data collection.
- **Need for temperature-adjusted permanence factors:** Projects must consider soil temperature-based corrections – which may vary significantly across India's agro-climatic zones.

Conclusion

The 2025 update reflects the growing maturity of the global carbon removal ecosystem. As India scales up its CDR sector, methodologies like Puro.earth's will be central in ensuring integrity and market access. The 2025 edition introduces scientific sophistication and flexibility, both critical for India's varied production landscapes. While the bar for MRV and additionality is now higher, these changes are directionally aligned with growing expectations for rigor and transparency in global carbon markets.

For Indian producers – especially those eyeing international carbon removal buyers – early alignment with CORC200+ standards could provide a competitive edge.

For policymakers involved in the Carbon Credit Trading Scheme (CCTS) offset mechanism, this is a good reference for setting globally-aligned methodologies for Biochar Carbon Removal (BCR) credits.

CRIA remains committed to supporting this transition through capacity-building, standards engagement, and ecosystem convening.

About CRIA: The [Carbon Removal India Alliance \(CRIA\)](#) is the only non-partisan industry-led coalition dedicated to catalysing and supporting the growth of a thriving durable carbon dioxide removal (CDR) sector in India; and exists to accelerate the development, commercialisation, deployment, and co-benefits of CDR technologies in India. Most of the leading Indian CDR project developers are CRIA members.

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