SDG BLOCKCHAIN ACCELERATOR

MENTORSHIP FEEDBACK FORM

Mentorship Report: Karbon Ledger

Mentor: No.Witness Labs
Team: Karbon Ledger
Dates: September – October 2025
Number of Sessions: 2

Executive Summary

The mentorship between *Karbon Ledger* and *No.Witness Labs* focused on strengthening the project's foundations for **data integrity, verification transparency, and audit preparedness** within its blockchain-enabled carbon measurement solution.
Across two mentorship sessions, attention was given to how hardware instrumentation and software reporting can be aligned to produce verifiable, tamper-resistant measurement data suitable for environmental monitoring and stakeholder trust.

The discussions emphasized **data provenance, calibration traceability, and secure data flow design** as prerequisites for future audit readiness. While the team is still at the early stages of implementing its integrity framework, the mentorship helped define key steps and technical pathways to reach formal verification maturity in subsequent development phases.

Session 1 – System Architecture and Verification Scoping (September 18, 2025)

Overview:
The first session provided a technical review of *Karbon Ledger's* architecture and development roadmap. The focus was on understanding how hardware-generated carbon measurements interface with the blockchain layer responsible for storage and verification.

Key Discussion Points:

- Overview of system components and hardware–software integration.

- Identification of critical integrity checkpoints between sensor output and data anchoring.

- Definition of early-stage documentation practices for calibration and measurement validation.

Challenges Addressed:

- Aligning sensor data formats with on-chain data structures.

- Ensuring measurement traceability and minimizing risk of data loss or alteration in transit.

Key Observations:

- The team presented a comprehensive roadmap and demonstrated solid technical awareness of the challenges in hybrid (hardware + blockchain) systems.

- Audit readiness was identified as a medium-term goal requiring gradual process formalization rather than immediate implementation.

- The importance of recording calibration metadata and maintaining hardware verification logs was emphasized.

Recommendations:

- Develop a **data provenance map** linking each device to its blockchain transaction reference.

- Introduce a **calibration log template** documenting measurement accuracy and firmware details.

- Research applicable **environmental data verification standards** (e.g., ISO 14064, GHG Protocol) to inform system design.

Risks and Cautions:

- Strong competition within the environmental monitoring space — market differentiation will depend on verifiable trust.

- Hardware reliability and calibration drift could impact credibility if not continuously validated.

Action Items for Next Session:

1. Review internal data validation workflows.

2. Outline the structure for a preliminary security and integrity review.

3. Identify areas where formal audit procedures could later be introduced.

Engagement Evaluation (1 – 5 Scale):
Openness to Mentorship – 5   Preparedness – 4   Responsiveness – 5   Implementation – 4   Collaboration – 5

Mentor Remarks:
The mentor noted that *Karbon Ledger* demonstrated strong technical grounding and realistic expectations regarding audit implementation timelines. The team's systematic approach to documenting its processes was recognized as a key enabler of future verification readiness.

Session 2 – Integrity Framework Design and Audit Preparation Roadmap (October 17, 2025)

Overview:
The second mentorship session built upon the architectural review to explore how *Karbon Ledger* could progressively move toward an audit-supportive system design. The focus was on developing an internal framework for **data validation, documentation, and integrity assurance**, rather than executing a formal audit process.

Key Discussion Points:

- Review of data flow between devices and blockchain nodes.

- Discussion on checksum validation and metadata tracking for measurement events.

- Planning steps for a gradual audit preparation process, including documentation practices and simulated testing.

Progress Observed:

- Draft version of a **data-integrity checklist** prepared by the team.

- Introduction of a structured documentation process for calibration verification and hardware testing.

- Early exploration of cryptographic tagging and event logging to enhance traceability.

Recommendations:

- Establish a **controlled testing environment** for evaluating data consistency between hardware and software layers.

- Define internal **audit-readiness milestones**, such as producing calibration reports, version-controlled documentation, and event logs.

- Begin consultation with independent verification specialists once core data integrity mechanisms are stable.

Risks and Mitigations:

- Hardware performance variability and environmental factors could affect measurement accuracy — implement continuous monitoring safeguards.

- Audit readiness will require dedicated time and resources to align technical components with compliance documentation.

Action Items for Continued Development:

1. Continue building internal documentation and calibration records.

2. Conduct internal validation trials to test data flow consistency.

3. Reassess audit-readiness level after pilot deployment.

Engagement Evaluation (1 – 5 Scale):
Openness to Mentorship – 5   Preparedness – 5   Responsiveness – 5   Implementation – 5   Collaboration – 5

Mentor Remarks:
The team demonstrated notable progress in structuring a pathway toward audit readiness. While not yet ready for formal third-party verification, *Karbon Ledger* successfully identified and began implementing the foundational elements of an integrity assurance framework.

Mentor's Overall Reflections

Karbon Ledger has established a clear direction for achieving audit preparedness through structured documentation, calibration tracking, and integrity assurance measures. The mentorship clarified the sequence of steps required to move from concept to verification maturity, reinforcing the value of continuous calibration validation and transparent data provenance.

Overall Outlook:
Promising – The team is developing a solid foundation for future audit readiness and compliance alignment. With continued focus on documentation, data validation, and technical refinement, *Karbon Ledger* is on track to meet verification standards over time.

Post-Accelerator Continuation:
The *Karbon Ledger* team and *No.Witness Labs* have agreed to maintain collaboration through **post-accelerator mentorship**, concentrating on phased audit preparation, security reviews, and the integration of verification processes into future product releases.