CredibleCarbon

AFRICAN CARBON STANDARD

APPROVED METHODOLOGY

CC-M003-L

Land, Soil Carbon and Ecosystem Restoration Projects

Soil organic carbon, biomass carbon, avoided degradation, restoration, managed fire-regime and remotely sensed monitoring projects.

Version 1.0 (June 2026)	Draft for Consultation	Applicable to African Projects

Document Control

Field	Detail
Methodology reference	CC-M003-L
Title	Land, Soil Carbon and Ecosystem Restoration Projects
Standard	African Carbon Standard — Credible Carbon
Version	1.1
Status	Draft for Consultation
Scope of application	African land-based projects crediting soil organic carbon, biomass carbon, avoided degradation, restoration and managed fire regimes
Sectoral scope	Agriculture, forestry and other land use (AFOLU)
Permanence	30-year contractual permanence obligation from first issuance
Guiding principle	AMPED — Additional, Measured, Permanent, Excellent Data

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1. Introduction and Scope

This methodology provides a practical framework for quantifying carbon sequestration, avoided carbon losses and emissions reductions from land-based projects seeking credits from the Credible Carbon Registry. It is intended for African projects where land-management changes can be monitored through field data, management records, remotely sensed data and conservative models.

The focus is on permanent accumulation of carbon in soils, grasslands and trees. Eligible activities include soil organic carbon enhancement through no-till regenerative farming, improved grazing or rangeland management, reforestation or revegetation, restoration of degraded ecosystems, and fire-regime management where the project reduces damaging high-intensity fire impacts.

The methodology is intended to support, not remove, Credible Carbon's insistence that all projects be **AMPED — Additional, Measured, Permanent and supported by Excellent Data**. The emphasis on excellent data to support project claims remains a hallmark of all Credible Carbon projects and supersedes narrow compliance with methodologies. Remote sensing may be used as a core data source where it is appropriate to the carbon sink being credited. It may support mapping, stratification, fire history, canopy cover, vegetation condition, biomass proxies, disturbance detection, leakage assessment and monitoring. Remote sensing is not a replacement for laboratory-tested soil analysis when assessing changes in soil organic carbon.

2. Applicability Conditions

Condition	Requirement
Defined land parcel	The project must have a mapped spatial boundary with GPS coordinates, cadastral parcels or GIS polygons.
Defined tenure	Ownership of the land must be identifiable to a recognised legal entity in the country of the project. This does not exclude robust communal ownership or common-property legal entities.
Carbon pool identified	The project must identify which pools are credited: soil organic carbon, above-ground biomass, below-ground biomass, litter/deadwood.
Management change	The project must demonstrate a change from baseline land management, degradation risk or fire regime that is attributable to the project intervention.
Permanence commitment	Land projects must include a 30-year contractual permanence obligation from first issuance.
Monitoring data	Field measurements, remote sensing, management logs, model inputs and maps must be sufficient for third-party verification.
Remote sensing fit-for-purpose	Any remote-sensing dataset must be spatially and temporally appropriate for the carbon claim and supported by ground truth, field calibration or conservative validation where used to quantify credits.
REDD+	Credible Carbon does not issue credits for REDD+ activities

3. Physical Location, Baseline and Project Boundary

The physical boundary is the mapped land area under project control or recognised management authority. The PIN must include maps, GIS files or coordinates, ownership/management evidence, vegetation or land-cover strata, and any excluded areas. Stratification should separate areas with materially different vegetation, soils, management history, degradation risk or fire regime.

Where remote sensing is used, the PIN must identify the spatial resolution, acquisition period, sensor or product, processing steps and how the data aligns with the project boundary and strata. The project boundary must be checked against recent imagery to confirm land cover, disturbance and excluded areas.

The temporal boundary is the period over which carbon stock changes are credited. The baseline must be reviewed at least every three years, and a project may have a maximum lifespan of 30 years.

4. Baseline Scenario

- A baseline year must be stipulated, noting that the baseline may not exceed three years prior to the date of project registration. A project may have a lifespan of a maximum of 30 years from its baseline year.
- The baseline describes the land use, management, degradation trajectory and carbon stock dynamics that would occur without the project. The baseline must be specific to the project area and stratified where necessary.
- The baseline must be appraised and adjusted at least every three years via the PIN submission prior to verification.

Project type	Default baseline	Evidence required
Soil carbon / improved grazing	Continuation of current or extractive grazing, tillage, erosion, burning or soil-degrading management practices.	Historical land use, stocking records, laboratory soil carbon data reporting both soil organic carbon and changes in soil bulk density.
Restoration / revegetation	Deserted and degraded land, invasive dominance or anthropogenically generated low-biomass condition, over-grazing, or net anthropogenic biomass extraction for fuel or construction.	Record of tree planting, tree inventories documenting growth, photos, field plots, remote sensing of canopy or grassland.
Fire-regime management	Higher-risk unmanaged or poorly managed fire regime causing greater carbon loss.	Fire history, satellite burned-area data, fire intensity/severity evidence, ecological fire-interval context, evidence of legal burns and the creation of firebreaks.

5. Additionality

The project must show that the land-management innovation is not a regulatory requirement in the applicable jurisdiction. The case for regulatory surplus can be supported by one or more of the other proofs listed below.

Additionality test	Specific evidence for land projects
Regulatory surplus	Regulatory surplus is the central proof of additionality under the Credible Carbon Standard. The project must show that the specific restoration, soil carbon, fire-management or avoided-degradation activity is not required by law or bylaw in the project jurisdiction. Projects may apply an E+ principle, where laws or bylaws have been specifically introduced to reduce greenhouse gas emissions subsequent to the project country signing the Paris Accord. Similarly, the requirement for regulatory surplus should not eliminate projects that support the application of the laws or are listed in the country's Nationally Determined Contribution.
Financial barrier	The requirement of regulatory surplus may be supported by evidence of financial barriers to commencing or sustaining the project activity.
Common practice	The requirement of regulatory surplus may be supported by evidence that comparable land in the area is not managed in the same way across at least 50% of the land area.

6. Permanence

Land-based projects must include the following contractual permanence requirement in the registration agreement.

4A. Permanence (Land Projects) — The Project Owner acknowledges that this is a land-based project and commits to maintaining the carbon stocks and emission reductions generated by the Project for a minimum period of thirty (30) years from the date of project registration in the Credible Carbon registry. This permanence obligation is contractual in nature and applies in addition to the registry rules and the applicable laws of the project jurisdiction.

7. Emission Reduction / Removal Quantification

Net carbon savings are calculated as the project carbon stock or avoided carbon loss, minus the baseline carbon stock or baseline emissions, less project emissions and leakage. The accounting approach must match the credited pool and project type.

Accounting route	Land-project calculation approach
Agroforestry and tree planting	Use tree inventories and conservative estimates of carbon permanently sequestrated in tree biomass to calculate carbon sequestration over time.

Accounting route	Land-project calculation approach
Modelled soil carbon change	Use laboratory analysis of soil organic carbon to 30 cm depth. Estimates must apply modifications for changes in soil bulk density.
Biomass restoration	Use field inventory, allometric equations and mapped strata to estimate above- and below-ground biomass carbon.
Fire management	Quantify the difference between expected baseline carbon loss and project carbon loss from a managed fire regime, avoided wildfire severity, reduced area burned or avoided degradation. Satellite burned-area and severity products may be used as supporting evidence.
Net credits	ER/R = project carbon sink − baseline carbon sink − project emissions − leakage − uncertainty/permanence deductions where applicable.

8. Fire Regime and Avoided Carbon Losses

For fire-prone ecosystems, the baseline must explicitly describe the expected fire regime in the absence of the project: fire frequency, seasonality, area burned, likely intensity and affected carbon pools. The project scenario must describe how management changes the regime through prescribed burning, firebreaks, invasive alien clearing, fuel-load management, early detection, rapid response or reduced high-intensity wildfire risk.

Credits may be claimed for avoided carbon losses where the project can demonstrate that above- and below-ground carbon stocks are protected relative to the baseline. Claims must be conservative and must not double count natural post-fire recovery as permanent sequestration unless supported by repeated measurements or an accepted model.

9. Project Emissions, Leakage, Displacement, Buffers and Conservativeness

Source	Treatment
Enteric fermentation	Quantify emissions from livestock, game or other animals used in land management.
Displaced grazing, harvesting or cultivation	Assess whether activities move outside the project boundary. Deduct where material. Remote sensing of surrounding areas may be used to screen for displacement.
Fuel used for restoration, alien clearing or fire management	Include as project emissions where material.
Biomass removal from clearing	Account for the fate of biomass where material; burning or decomposition emissions may need to be deducted.
Fire-reversal risk	Address through the permanence obligation, monitoring and conservative crediting.

Source	Treatment
Uncertainty in soil or biomass estimates	Apply conservative assumptions, including for changes in soil bulk density.
Displacement	The project must monitor whether carbon-reducing activities have been displaced to adjacent land. Where displacement is evident on adjacent parcels, the associated carbon losses must be deducted.
Buffers	No buffer requirement; however, as per the Credible Carbon Standard, projects remain financially liable for any carbon losses relative to the credited savings, regardless of the cause of the loss.

10. Poverty Impact and Sustainable Development

Land projects must demonstrate a discernible poverty impact that includes but goes beyond the creation of work. The PIN should quantify jobs, person-days, training, beneficiaries and revenue-sharing commitments.

11. Source Data / Model Accepted

Data accepted	Preferred evidence
Spatial boundary and strata	GIS polygons, cadastral maps, vegetation maps, soil maps, land-cover classifications, GPS points.
Remote-sensing inputs	Satellite, aerial or drone-derived data used for land-cover classification, vegetation condition, canopy cover, canopy height, biomass proxies, fractional cover, NDVI/EVI or other vegetation indices, fire scars, fire severity, disturbance and leakage screening. Source, resolution, date range and processing method must be documented.
Soil carbon	Georeferenced soil samples taken within the same month of the year, bulk density, depth, laboratory carbon analysis.
Biomass carbon	Tree/shrub/grass plots, DBH or height measurements, species/functional-group data, allometric equations, biomass expansion and root:shoot factors. Remote sensing may upscale biomass from calibrated plot relationships.
Fire regime	Burned-area satellite products, active-fire datasets, fire-severity indices, fire incident logs, firebreak records, prescribed-burn plans, fire intensity/severity evidence.
Management activities	Alien-clearing records, grazing plans, stocking records, restoration planting logs, photos, invoices, labour records.
Models	Accepted soil-carbon, biomass, remote-sensing or fire-loss models with transparent inputs, local calibration or validation where possible, and conservative assumptions to counter uncertainty.

12. Monitoring and Verification

Parameter	Frequency	Method
Project boundary and land use	At registration and each verification	GIS review, satellite imagery, site visit, land-management records.
Remote-sensing indicators	At baseline and at least annually where used for monitoring; after material disturbance events	Archived imagery or processed products showing land cover, canopy/vegetation condition, fire scars, disturbance, erosion or leakage indicators.
Soil carbon / biomass plots	At baseline and at a repeat interval appropriate to the pool	Field sampling protocol, lab results, plot remeasurement and depth.
Fire events and fire management	Annually and after material fire events	Burned-area maps, incident logs, satellite fire products, photos, management reports.
Management activities	Ongoing; annual summary	Work logs, invoices, payroll, photos, contractor reports.

13. Data and Evidence Hierarchy

Credible Carbon applies an evidence hierarchy when assessing whether project data is sufficiently robust for credit issuance. The verifier should use the best available evidence and apply conservative exclusions or discounts where data quality is weak.

Tier	Evidence type	Project-specific examples
1	Primary field and spatial records	Georeferenced soil samples, lab reports, biomass plots, GIS boundaries, permanent-plot records, calibrated drone/LiDAR/SAR/optical outputs with field validation.
2	Corroborating records	Satellite imagery, remote-sensing products, fire logs, grazing records, restoration work logs, invoices, photos, patrol records.
3	Documented model outputs	Transparent soil/biomass/fire or remote-sensing models with input data, assumptions, calibration, validation and uncertainty treatment.
4	Operator declaration	Accepted only for management activities also supported by photos, invoices, logs, satellite evidence or site inspection.

14. Community Engagement and Stakeholder Consultation

The project must demonstrate that adequate stakeholder engagement has been conducted before third-party verification. The PIN should include a public notice or equivalent local communication, a comment period or consultation opportunity, a record of material issues raised, and a functioning grievance channel. The PIN and audit process must:

- Identify directly affected stakeholders, including workers, land users, neighbours, community organisations or off-takers as relevant.
- Record the engagement method, date, participants, issues raised and project response.
- Keep evidence such as notices, attendance registers, photos, meeting notes, emails, messaging-app notices or letters of support.
- Explain how stakeholder feedback was addressed and how grievances can be submitted during the crediting period.

15. Verification Requirements

Third-party verification is required before credits are issued. The verifier must answer the Credible Carbon assessment questions and confirm that the project is real, operational, conservatively quantified, additional, monitored and poverty-positive.

Verification area	Minimum requirement
Site visit	Verifier inspects representative strata, restoration/fire-management areas, plots, boundaries and management evidence.
Field data review	Verifier checks sampling design, lab results, plot data, allometric equations and GIS aggregation.
Remote-sensing review	Verifier checks imagery/product source, date range, resolution, processing workflow, boundary alignment, validation approach, uncertainty treatment and whether outputs are used only for appropriate claims.
Model review	Verifier confirms model inputs, parameters, uncertainty treatment and conservative assumptions.
Permanence and reversal review	Verifier confirms the 30-year permanence clause, reversal-risk register and any fire/degradation events.
Poverty impact	Verifier reviews employment, community stewardship, training, revenue-sharing or local-benefit evidence.
Legal ownership of credits	Verifier must establish that the audited legal entity is the rightful owner of the credits and that no other party is claiming, or intends to claim, credits from the same activities or land.

16. PIN Requirements Summary

The PIN must provide enough information for Credible Carbon and the verifier to assess eligibility, additionality, quantification, ownership, poverty impact, stakeholder engagement and monitoring without relying on unsupported assumptions. It must include:

- Mapped boundary, tenure/management authority and stratification.
- Credited carbon pools and baseline land/fire/degradation scenario.
- The 30-year permanence clause in the registration agreement.
- Field, remote-sensing, spatial and model data with uncertainty treatment.

- Leakage, project emissions, reversal risk and fire regime addressed.
- Additionality, poverty impact, stakeholder engagement and monitoring evidence.
- Net greenhouse gas emissions saving per year.