



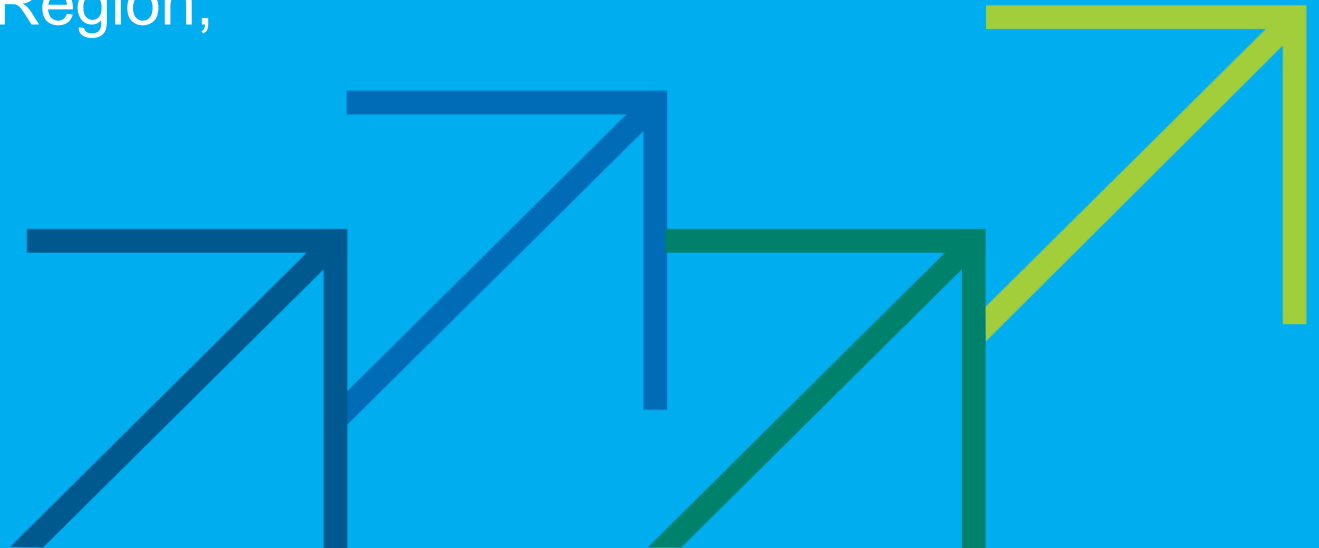
**KGID
2025**

**Green Growth:
The Path to
Sustainable Jobs**

From Technology to Terrain: Advancing Soil Carbon Sequestration in Mpumalanga through the KGGTF–World Bank Partnership

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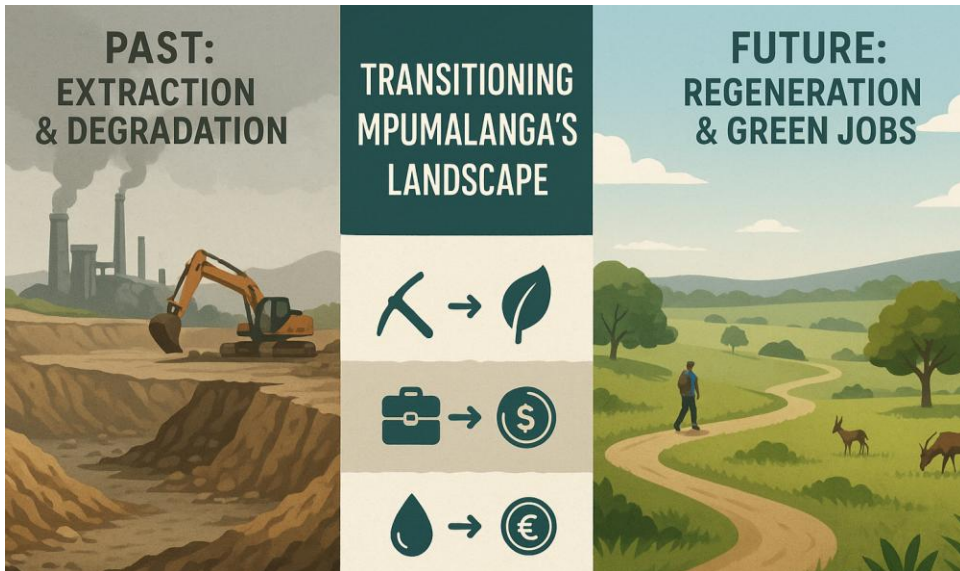
Global Context: Climate & Carbon Finance

- The WB mobilized >\$40 billion for climate action in FY 2024; over 60 countries now receive support to access carbon markets.
- SCALE (Scaling Climate Action by Lowering Emissions) fund and the Partnership for Market Implementation (PMI) help countries generate high-integrity credits aligned with Article 6.
- Carbon finance links emission reductions and removals to performance-based payments; key for developing countries to monetize nature-based solutions.



Mpumalanga: Restoring Nature, Reviving Economy

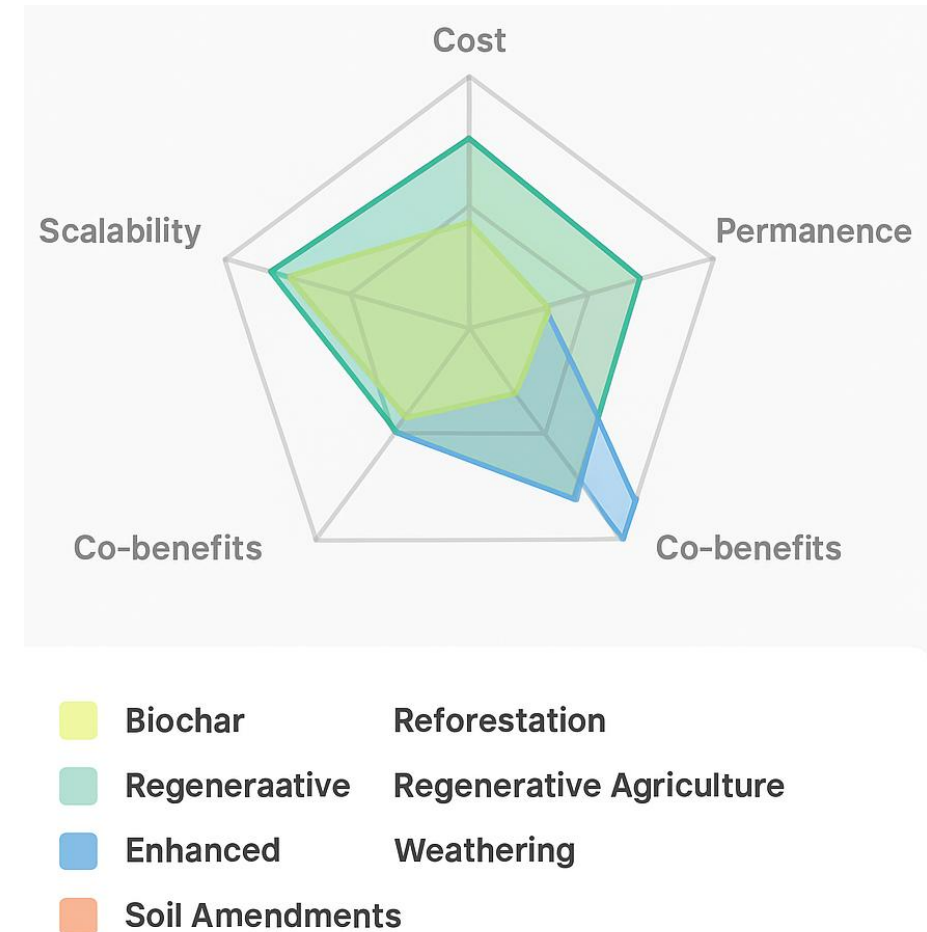
- Mpumalanga = biodiversity hotspot and coal heartland; large areas of retired mining land ready for repurposing.
- Provincial targets: +8.3 % protected-area expansion; biodiversity economy as a growth pillar.



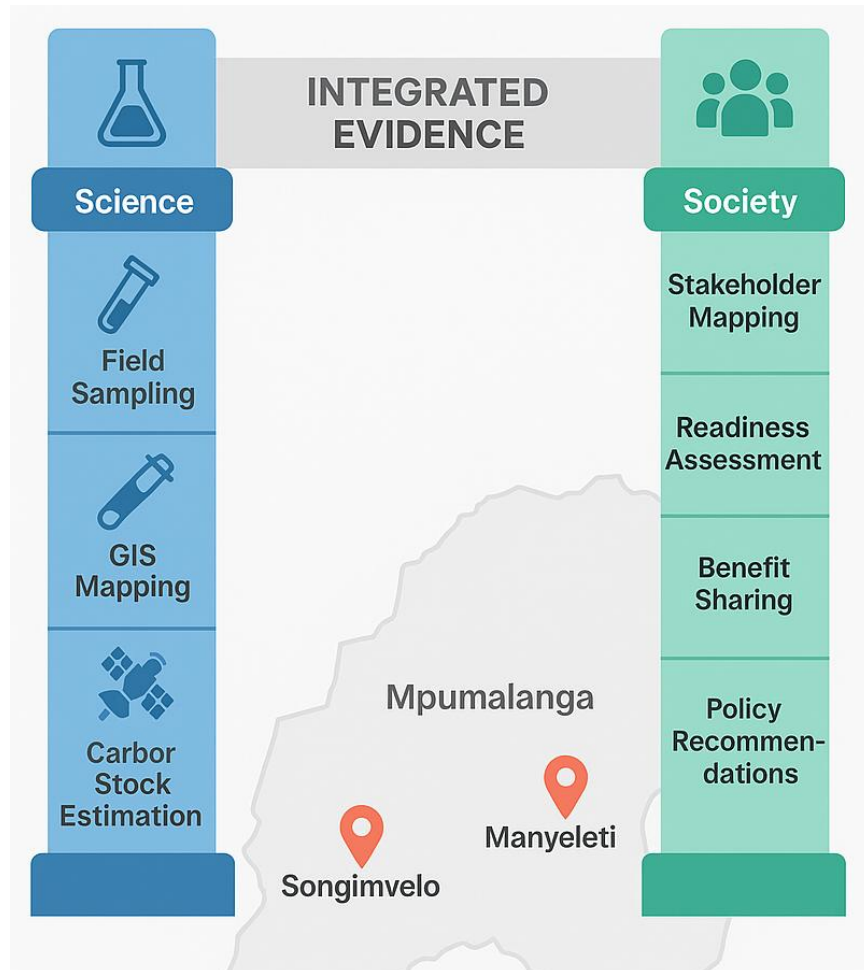
The WB + KGGTF collaboration supports these goals by identifying carbon-sequestration technologies and soil opportunities to underpin climate resilient land-use planning.

Comparative Analysis of Carbon Sequestration Methodologies and Technologies

- **Tapping into Korean Expertise:** National Institute of Green Technology
- **Objective:** Identify suitable methodologies and technologies to enhance soil carbon sequestration in Mpumalanga.
- **Scope:** (i) Global case reviews of biological and technological sequestration (biochar, reforestation, enhanced weathering); (ii) Policy and MRV framework analysis for carbon offset generation; (iii) Capacity-building design for MTPA and SANBI to mainstream carbon and biodiversity planning.
- **Key Findings:** (1) Integrated approaches (biochar + vegetation restoration) show highest sequestration potential; (2) Mpumalanga requires enhanced MRV and policy instruments to participate in carbon markets; (3) Korea's technology cases offered transferable models for mine rehabilitation.



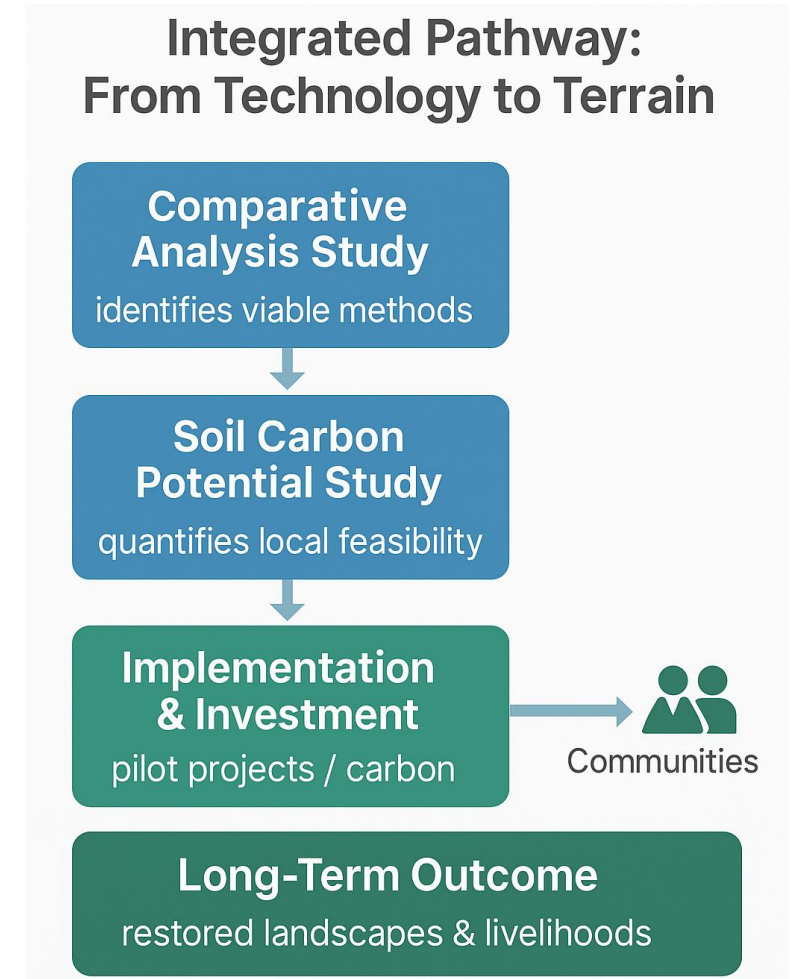
Soil Carbon Potential Assessment



- **Objective:** Quantify soil organic carbon potential and community readiness in Songimvelo and Manyeleti Nature Reserves.
- **Two-Pillar Framework:**
 - Biophysical Assessment – field sampling (0–100 cm depths), lab analysis, GIS modeling for SOC stocks and sequestration capacity.
 - Socio-Institutional Assessment – stakeholder mapping, readiness analysis, benefit-sharing and inclusive participation design.
- **Expected Outputs:** baseline SOC maps, carbon credit feasibility, economic valuation under USD 5–50/tCO₂ scenarios, and policy roadmap.

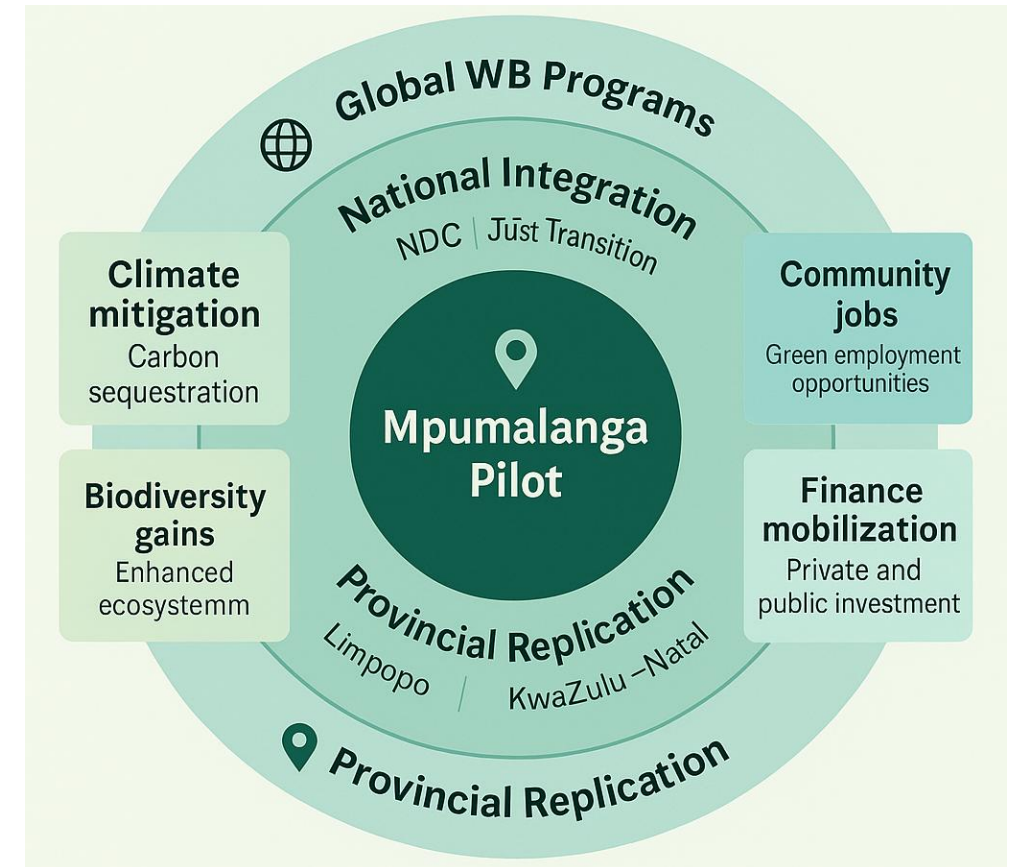
Integrated Pathway: From Comparative Study to Field Evidence

- Comparative analysis = “What technologies work best.”
- Soil carbon study = “Where and how they can be applied.”
- Together they create a technical and institutional roadmap for carbon-finance-ready projects in Mpumalanga.
- Builds provincial capacity for science-based planning, carbon MRV, and community inclusion.



Impact and Scalability

- Supports South Africa's Just Transition Framework and provincial green economy targets.
- Provides a replicable model for other provinces and WB clients in Africa and beyond.
- Informs future carbon investment vehicles under SCALE, PROGREEN, and Carbon Market Development Initiative.
- Lays groundwork for community benefit-sharing and biodiversity co-benefits.



Thank You