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Lighthouse Story: Kenya - Sustaining and Enhancing the Adoption of Sustainable Agricultural Land Management (SALM)

Best Practices Strengthening Climate Resilience

Focus Area: Climate Adaptation and Mitigation Project

PROJECT OVERVIEW

Building on the GIZ & BMZ funded ProSoil programme, which has reached 180,000 farmers since 2015, the Western Kenya Soil Organic Carbon Project promotes Sustainable Agricultural Land Management (SALM) practices among smallholder farmers in Kakamega, Siaya, and Bungoma counties in western Kenya. **The project aims to restore degraded lands, improve agricultural productivity, strengthen climate resilience, and generate carbon credits based on soil organic carbon (SOC) sequestration.** These carbon revenues support agricultural extension services, creating a self-sustaining model for continued climate action.

Agriculture in western Kenya is dominated by small-scale subsistence farming that faces declining crop yields from erratic rainfall, declining soil fertility and land degradation. These factors threaten food security and household incomes for smallholder farmers, making sustainable land management practices essential for survival and adaptation. The project addresses these challenges through three integrated approaches:

- **Conservation Agriculture (CA):** prevents losses of arable land while regenerating degraded lands. It promotes maintenance of a permanent soil cover, minimum soil disturbance, and diversification of plant species.
- **Integrated Soil Fertility Management (ISFM):** A combination of soil testing, composting, liming, and the balanced use of mineral and organic inputs with key agronomic practices like planting, fertilization, irrigation, intercropping, contouring, agroforestry and minimal soil tillage.
- **Agroforestry:** The integration of trees, crops, and/or livestock in a symbiotic manner to optimize ecosystem services, enhance productivity, and promote environmental sustainability.

To date, more than 31,000 farmers and 9,000 hectares have been registered under Verra, with an additional 35,000 farmers being onboarded in 2025. Carbon credit revenues generated from SOC sequestration are reinvested to provide farmers with bi-annual training for 20 years. This innovative financing mechanism ensures the project's sustainability while delivering continuous climate adaptation benefits.

PROJECT SNAPSHOT

Name:	Western Kenya Soil Carbon Project (WEKSOCAP)
Location:	Western Kenya Countries of Kakamega, Bungoma and Siaya
Objective:	- 100,000 small farmers targeted - 32,000Ha brought under SALM in 6 years - 3.5 million tCO2e carbon sequestered over 20 years
Duration:	October 2019 – September 2029
Funded by:	GIZ
Partners:	GIZ, Soil Carbon Certification Services

THE CLIMATE CHALLENGE

- **Climate-driven agricultural instability:** Western Kenya's farming systems face increasing threats from droughts, erratic rainfall, and extreme weather that reduces productivity highly. Limited irrigation infrastructure heightens risks of crop failure and food insecurity.

Jane Atieno from the Ralwala Farmers Group in Siaya Count, proudly stands in her maize and bean intercrop field on 18th November 2024.

Joseph Wafula of Bright Londo group in Bungoma County applies mulching as a soil cover on his bean farm on 22nd May 2024

Alice Agoi from Eshikomere Farmers group in Kakamega County managing her Mucuna Cover Crop for improved soil health on 12th September 2023.

- **Soil degradation and fertility decline:** High population pressure has resulted in overcultivation, fragmented land holdings, and unsustainable soil management practices. This has caused widespread soil fertility loss and declining productivity.
- **Pests and disease:** Rising temperatures and changing precipitation have accelerated crop pest and disease proliferation. This forces farmers to increase reliance on synthetic fertilizers and pesticides, raising costs while further degrading soil health.

THE PROJECT STRENGTHENS CLIMATE RESILIENCE

- **Sustainable Agricultural Land Management (SALM)**: The project combines conservation agriculture, integrated soil fertility management, and agroforestry to build soil organic matter and improve water retention. These practices enable crops to withstand droughts and erratic rainfall while preventing erosion, directly strengthening farm-level climate resilience.
- **Reduced climate vulnerability through crop diversification**: Agroforestry systems and crop diversification reduce farmers' dependence on climate-sensitive crops while providing multiple income streams. Trees provide microclimatic benefits, wind protection, and alternative products during crop failures, building resilience to climate shocks.
- **Long-term adaptive capacity:** Carbon credit revenues fund farmer training and extension services for 20 years, ensuring communities can adapt farming practices as climate conditions change. Rising carbon prices create opportunities for additional investment.

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"My farm was heavily degraded, but through the training and support I received, I've not only restored my land but also multiplied my yields from 4 to 18 bags. Now, my family is food secure, and I see new opportunities to grow economically from my farm."
- ALICE ATIENO, A farmer in Siaya County, Kenya

IMPACT AND LESSONS LEARNED

Farmers practicing Conservation Agriculture and Integrated Soil Fertility Management earned two to three times the income of conventional farmers, proving the economic viability of climate-smart farming. These practices improved soil health through diversified microbial communities, leading to higher yields while achieving carbon sequestration of 3.38 tCO2e/ha/year. The project has issued 57,955 verified carbon units, with revenues expected to quadruple by 2027, creating self-sustaining financing that reduces donor dependency.

Sustainable Agricultural Land Management creates 'triple-win' outcomes by simultaneously delivering soil health, climate mitigation, and food security benefits. Carbon credit mechanisms effectively incentivize long-term behavioral change, demonstrating that environmental and economic objectives can be mutually reinforcing. The integrated approach combining technical training with financial incentives provides a scalable model for replication in climate-vulnerable regions, supporting adaptation and mitigation while strengthening rural livelihoods.

KEY TAKEAWAYS

- **Prioritize mitigation approaches with adaptation co-benefits:** Sustainable Agricultural Land Management practices demonstrate how climate mitigation can simultaneously strengthen adaptation. Soil carbon sequestration improves water retention, soil fertility, and crop resilience while contributing to global climate goals.
- **Market-based financing sustains climate resilience:** Carbon credit mechanisms provide viable pathways for financing long-term climate adaptation without donor dependency.