

SESSION REPORT | African Soil Seminar | Nairobi, 28-30 November 2016

SOIL RESTORATION FOR ACHIEVING THE 2063 + 2030 AGENDAS IN AFRICA: LINKING GLOBAL AMBITIONS TO LOCAL NEEDS

Title	Soil Carbon for Climate and Development: How to prioritize smallholders through goals, techniques and implementation
Date	Monday 28 November 2016
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Co-Hosts	Kenya Agricultural & Livestock Research Organization (KALRO) World Agroforestry Centre (ICRAF) Global Soil Forum, Institute for Advanced Sustainability Studies (IASS)
Facilitator	Prof. Boniface Kiteme , Centre for Training and Integrated Research in ASAL Development (CETRAD)

1 | DESCRIPTION

Soils are increasingly considered as potential carbon sinks; whether under the UNFCCC Lima-Paris Action-Agenda' "4 per mil", climate-smart agriculture (CSA) initiatives, or Nationally Determined Contributions (NDCs) of many African countries. At the same time, maintaining soil organic carbon (SOC) content is fundamental for functioning of other soil ecosystems functions. The UN Convention to Combat Desertification (UNCCD) warns that reduced SOC content can lead to land degradation and ultimately lower land and agricultural productivity. Restoring soil health is an important component of restoration agendas, including African Forest Landscape Restoration Initiative (AFR100).

While 'triple wins' of aiding in climate change mitigation, adaptation, and food security are expected from increasing carbon in soils, triple wins will not materialize easily. There are tradeoffs between these goals that must be made explicit and addressed. To that end, the accuracy and reliability of SOC assessments and understanding the drivers of land and soil health becomes critical.

This session looked at complexities surrounding climate change and soil carbon from the lens of achieving restoration benefits, increasing food security and resilience, including adaptation. It was devoted to answering the question: *What would it mean to prioritize smallholder food security in linking soils and climate*, on the levels of:

- (i) policy and programming;
- (ii) research and technology; and,
- (iii) implementation.



2 | PROCEEDINGS AND DISCUSSIONS

Plenary and Panel Discussion:



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In the **opening plenary**, **Leigh Winowiecki** of ICRAF began the proceedings by outlining the session's objectives and giving an overview of the interlinkages between soils and climate change in current international policy agendas. Sustainable management of soils is receiving increasing attention in international policy agendas many of which see soil carbon as key to more sustainable development.

Guided by session facilitator Prof. Boniface Kiteme of CETRAD, the ensuing **panel discussion** brought together representatives from the four co-hosting governments and NEPAD. Each of them gave a brief introduction as to how their respective ministry or institution is working at the interface of soil management and climate change.

Fortunée Dossou-Worou, the focal point for UNCCD in Benin's Ministry for the Environment gave a brief overview of Benin's fight against desertification and climate change, highlighting the key policy instruments, including the national strategy on Carbon as well as the Integrated Investment Framework for Sustainable Land Management. She pointed to mobilization of financial resources as a key challenge in striving for more sustainable management of soils and mentioned Benin's experimentation with an Eco-Tax as a potential way of moving forward.

Daniel Marangu of the Kenyan Ministry of Environment, and member of the Task Force currently drafting a national soil management policy, explained how vulnerable Kenya is to the impacts of climate change because of its economic dependence on rain-fed agriculture. He gave an illustrative summary of Kenya's numerous policy initiatives tackling climate change and land restoration.

Michel Tankoano, representative of the Environmental Ministry of Burkina Faso, provided an overview of Burkina Faso's Nationally Determined Contributions under the Paris Climate Agreement. The government intends to protect or restore the productivity of more than five million hectares of land and forests in order to reap multiple benefits such as achieving food security and creating green employment. As lessons learnt from Burkina's many years of experience in striving for more sustainable land management, he stressed inter alia the importance of long-term orientation in policies and programmes, the engagement of all affected actors and the need for equitable access to and security of tenure, and a number of further structural conditions.



Binyam Yakob Gebreyes of the Ethiopian Ministry for the Environment stressed that for a country like Ethiopia, sustainable management of land resources is no luxury but rather a must; a survival strategy. To achieve its ambitious NDCS, Ethiopia is working towards a climate-resilient green economy and combining a top-down and bottom-up approach simultaneously and relying on community-based organizations for successful implementation.

Mamadou Diakhite of NEPAD outlined the many different programs through which NEPAD works towards more sustainable land management, either through advocacy and raising awareness or through concrete technical assistance and implementation. recently, the AFR100 initiative is mobilizing more and more African countries around the restoration cause. Though sensitizing governments remains a challenge, NEPAD sees more and more impact investors coming in and supporting the strife for land restoration.

The ensuing discussions pointed out that there is often the public illusion that all agriculture is green which is far from the reality. Several interventions stressed that one needs to be aware of the central role of land politics and its effects on both food security and the fight against climate change. A reoccurring argument was that smallholder farmers, women and youth in particular, are involved and heard still much too rarely at the different levels of policy-making, research and implementation of programmes. Participants also stressed the importance of establishing soil carbon baselines at national level and developing countries need for support in this area. A final point of discussion was the need for a better understanding of urban drivers of land degradation.

Bazaar Discussions:

In the second part of the session, a marketplace bazaar was set up to facilitate cross-site and multi-stakeholder learning. Partners hosted multi-media stations that were visited by participants. The session was guided by key focal questions which were further discussed in plenary.

At the **KALRO station**, a case study of improving carbon sequestration in an area with high accumulation of sodium in the soil stressed the importance of context-adequate development of best-fit technologies based on systematic soil profile characterization.

At the **ICRAF station**, the ICRAF GeoScience Lab highlighted utility and use of the systematic land and soil health assessments combined with socio-economic datasets into evidence-based stakeholder decision making through the SHARED approach (StakeHolder Approach to Risk-informed and Evidence-based decision-making). Specific tools such as open-source dashboards were demonstrated, for example the Resilience Diagnostic and Decision Support Tool for Turkana County in Kenya (<http://landscapeportal.org/turkanaSHARED/>)

The combined station of the **University of Addis Ababa** and Ethiopian Soil Science Society comprised of two presentations:

- one showcasing technological options for increasing soil biomass ranging from balanced fertilization through composting to application of termite mound material or milled rocks
- and one introducing a community by ecosystem approach to developing context-adequate technology packages for improved land management

At the **AfSIS Station**, participants were introduced to the collaboration between ICRAF, the Bill and Melinda Gates Foundation (BMGF), and other partners to scale-out the utility of soil spectroscopy to enable landscape-scale assessments:

<https://www.worldagroforestry.org/sd/landhealth/soil-plant-spectral-diagnostics-laboratory>.

At the **INERA station**, participants learned about the adaptability of tied ridging as soil and water conservation techniques for sorghum production in the South Sudan Zone of Burkina Faso.

At the **Vi Agroforestry station**, participants were introduced to the NGO's project promoting a package of Sustainable Agricultural Land Management (SALM) practices and carbon sequestration within smallholder farming systems in Bungoma, Kisumu and Siaya Counties of Western Kenya under the verified carbon standard (VCS) methodology VM0017. The project has so far worked with 29,497 small-holder farmers participating through 1,730 farmer groups. In the project, yield is used as an indicator of carbon.

At the **IDID station**, participants learned about the challenges faced in implementation of climate projects in smallholder farming contexts, such as limited freedom of decision-making given to farmers in project implementation or the lack of coordination between political decision makers and development institutions.



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Closing Plenary Discussion:

In the final part of the session, Prof Boniface Kiteme motivated the plenary to discuss the guiding questions:

What are key technologies that enable the triple win?

What are key technologies that prioritize food security or resilience?

- Agroforestry: enhances food security, resilience and climate change adaptation and mitigation.
- Dispersed inter-planting: meaning trees are grown alongside crops usually in rows in between plots.
- Agro-ecology: technologies enabling tackling of climate risks (combination of agro-ecology and agroforestry, renewable energy).
- Climate Smart Agriculture which improves soil biomass.

- Technologies that monitor the success of the proposed technologies for triple win.
- Cost-benefit and trade-off analysis should be conducted on the various technologies.
- Technologies that improve production systems by putting the smallholders at the heart of the interventions.
- Value chains that address collaboration, capacity building and accountability.
- Processes of formulating and better understanding of our decision making.
- Systematic and effective monitoring of trends and impacts of central importance for successful implementation of initiatives such as Land Degradation Neutrality or AFR100; speed, accuracy, reliability are key aspects of such monitoring systems.

What principle policy elements must be in place to achieve out-scaling of these technologies, taking into account local perspectives?

- Linking research with the beneficiaries of the technology already developed and/or in the process of development so that the technologies can be utilized.
- Public private partnerships and involvement of the private sector through either legislative requirement and/or incentivized participation.
- Valorization of indigenous knowledge.
- Sufficient effort to understand and meet the needs of farmers.
- Holistic approaches are needed since no single technology can function as a silver bullet.
- Farmer-based extension approaches – for example demonstrations, learning sites and farmer to farmer.
- Organizing farmers into common interest groups in order to enable collective bargaining.
- Up-scaling farmer groups into cooperative societies to enhance growth and networking.



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Finally, Prof Boniface Kiteme asked the government and NEPAD representatives that spoke at the session’s opening panel to **name one action point they take home and strive to implement back in their countries**. The panelists suggested they will:

- Work to achieve up-scaling of the proven triple win technologies and of successful implementation approaches, such as that of Vi Agroforestry’s carbon project in Kenya;
- Strive to enhance governmental leadership on sustainable land management; and,
- Work to improve the fit between technologies, crops and agroecological context conditions.



3 | KEY MESSAGES

1. No one single technology can address an agro-ecosystem. Instead, we need technology packages that are tailored to each ecosystem, possibly using an Options by Context (OxC) approach.
2. Essential elements to achieve out-scaling of such technologies are governmental leadership, stakeholder involvement, much improved cooperation between research and extension and financing solutions that actually work for smallholder farmers and rely on public-private partnership.
3. Assessments of Soil Organic Carbon (SOC) are needed for accounting and targeting.
4. Partnerships are key, national, cross-national, local, International, etc.

Further Information: [IISD Highlights](#) [Global Soil Week](#)