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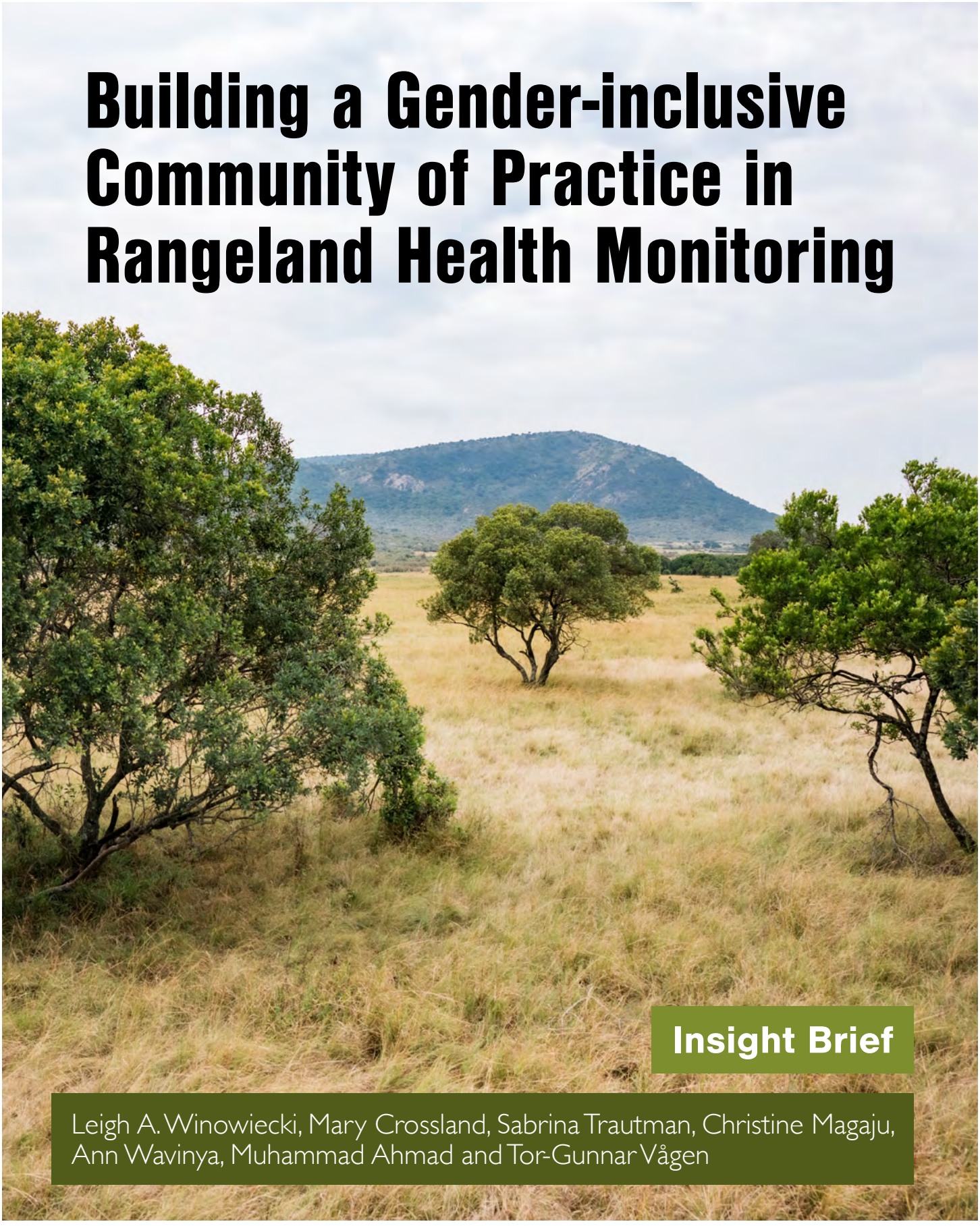
Building a Gender-inclusive Community of Practice in Rangeland Health Monitoring



Insight Brief

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Project background

Restoration of Rangeland Carbon Sinks for Increased Community Climate Resilience and Agricultural Outcomes:

Building a Gender-inclusive Interactive Platform for Monitoring and Co-learning

The project focuses directly on addressing key knowledge and capacity gaps to enhance rangeland health monitoring and have four key areas of work.

Rangelands in East Africa represent vast areas, providing livelihoods for millions of people and for a wide range of wildlife species. However, many of these rangelands are highly degraded and there is a need for restoration of the productivity of these ecosystems to ensure that they continue to provide critical ecosystem services. There are significant opportunities for increased carbon storage in rangelands as they have the potential to store significant amounts of soil organic carbon (SOC) if well managed, particularly given their spatial extent. In addition, restoration of degraded rangelands represents a critical pathway for conservation by reducing current pressures on protected areas due to land degradation and increased competition for resources. Healthy rangelands are important for local livelihoods by providing income from livestock as well as from tourism.

This project aims to provide a robust evidence base for sustainable management of rangeland health, informing management and monitoring by making this evidence available through user-friendly tools and platforms. This also includes dedicated capacity development modules targeted at women and youth.

Building a gender-inclusive community of practice in rangeland health monitoring

Establishing of a network of rangeland health Learning Sites across East Africa

Assessing soil organic carbon dynamics in rangelands across East Africa to inform adaptive management and enhance community resilience

Building multistakeholder action for restoration of rangeland health for resilience, climate change and agricultural outcomes

About this brief

This brief summarizes the capacity development activities undertaken to build gender inclusive community of practice in rangeland health monitoring. Specifically, the brief outlines the critical need to address gender inequalities in rangeland health monitoring and synthesises reflections from women and youth on skills they have built through the capacity development activities. The brief also highlights the impact these activities are having not only in their own agency and development, but also the wider implications and impact they want to create in their communities as a result of the skills they have built and been exposed to.

Context

Persistent gender inequalities in social, economic, and political spheres continue to hinder the full participation of women and youth in rangeland management. In East African pastoral societies, women, despite being primary livestock keepers and managers of rangeland resources, often face limitations due to entrenched gender roles and norms. These constraints restrict their access to and control over critical resources like land and livestock and exclude them from governance institutions and decision-making processes. Consequently, men typically own and control more productive assets and have a greater influence on rangeland management decisions. Perceptions of rangeland degradation and priorities for restoration are frequently shaped by gender-specific roles that dictate where individuals spend their time and the resources they depend upon. For instance, women often bear a disproportionate burden in caring for families and undertaking labour-intensive tasks such as collecting firewood, fetching water, and feeding livestock. Restoration efforts that regenerate water sources and woody resources can significantly benefit rural women by reducing the distance and time required for these activities. However, without women's representation in decision-making processes, their needs and priorities risk being overlooked.

To develop effective and equitable strategies for rangeland restoration, it is crucial to understand gender dynamics and how they relate to perceptions, priorities, and progress monitoring.

By including diverse women and other marginalized groups like youth in rangeland health monitoring, we can enhance their participation in decision-making and implement innovations that address their specific needs.

Under UN Sustainable Development Goal 4, Kenya, like all other countries, are expected to provide equal opportunities for technical, vocational, and higher education and relevant skills for decent work to all citizens, regardless of gender. However, there is a significant gender gap within science and technology, with women and girls being under-represented in many STEM industries and having limited access to digital technologies and skills. In Kenya, the gender gap in STEM education is particularly pronounced, with only 36% of students admitted to STEM courses being female[1]. Women also score lower than men in the country's key ICT indicators, with women less likely to have access to a mobile phone, less likely to have internet access, and less likely to use a computer[2].

Engaging women and youth in rangeland restoration monitoring

Bringing women into science and the process of monitoring rangeland health can lead to more creative solutions and innovations that meet women's needs while promoting gender equality. The project supports women and youth engagement in rangeland health monitoring by strengthening their skills in data collection and analysis through targeted recruitment and facilitating inclusive learning environments. The project is leveraging training as an opportunity to raise awareness among all participants about how gender shapes science and knowledge, fostering inclusive work environments. This includes building the capacity of men to be more inclusive of women in their work and to understand the impact of gender dynamics on scientific outcomes.

Project strategies for engaging women in rangeland monitoring

Gender-inclusive training on using the Land Degradation Surveillance Framework (LDSF) and conducting vegetation surveys with at least 50% female participation.

Women-focused workshops on using the R statistical programming language for analysing LDSF data and collaborative seminars with R-Ladies Nairobi, an organization promoting gender diversity in the R-user community in Nairobi, Kenya.

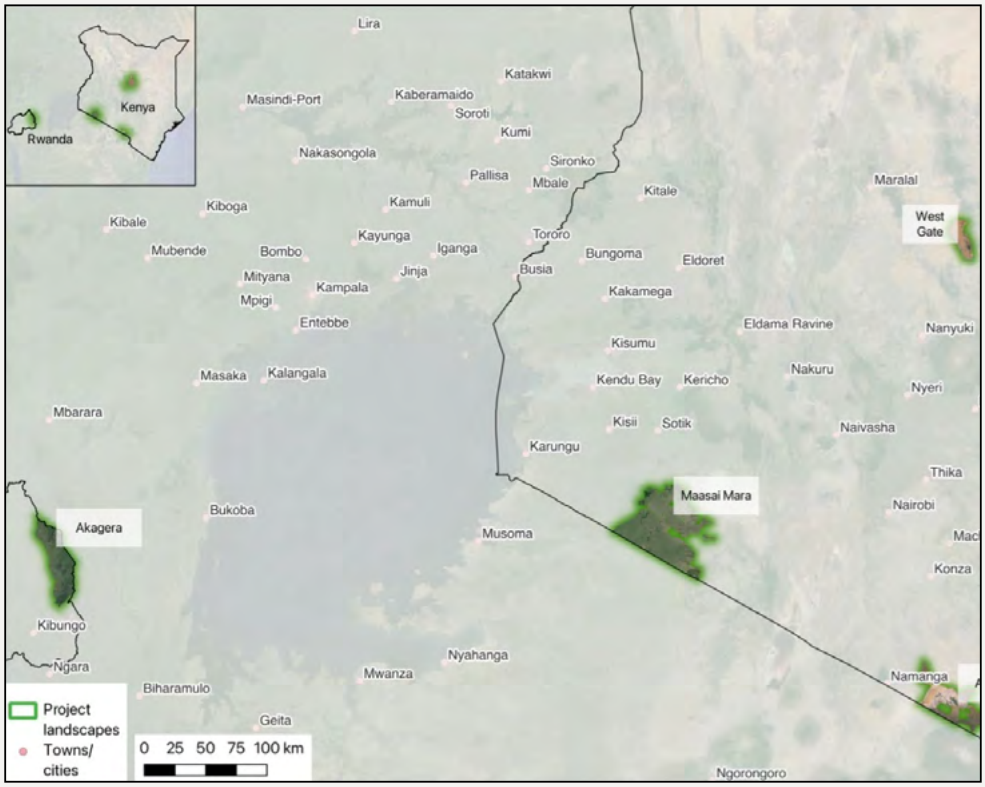
1. https://nation.africa/kenya/blogs-opinion/blogs/low-girls-enrolment-stem-exclude-women-development-1930874
2. https://www.ca.go.ke/wp-content/uploads/2018/02/National-ICT-Survey.pdf

Rangeland health monitoring

Rangeland monitoring in this project has been focused within 'action' landscapes. Specifically, key criteria for site selection has included:

1. Rangelands adjacent to conservation areas;
2. Overlap with USAID NatCap locations;
3. Strong partnership in the landscape;
4. Fills knowledge gaps on the impact of management, including community conservation and grazing management, on ecosystem health;
5. Represents climatic and degradation gradients across East Africa.

The selection of these action landscapes has also been on community areas to allow key engagement of women and youth into the rangeland health monitoring.



Map: *Landscapes selected for rangeland health monitoring.*

Rangeland health monitoring through the Land Degradation Surveillance Framework (LDSF)

There are real opportunities for targeting, prioritizing and tracking land management investments but landscapes are diverse, so we need monitoring methods that capture this variability.

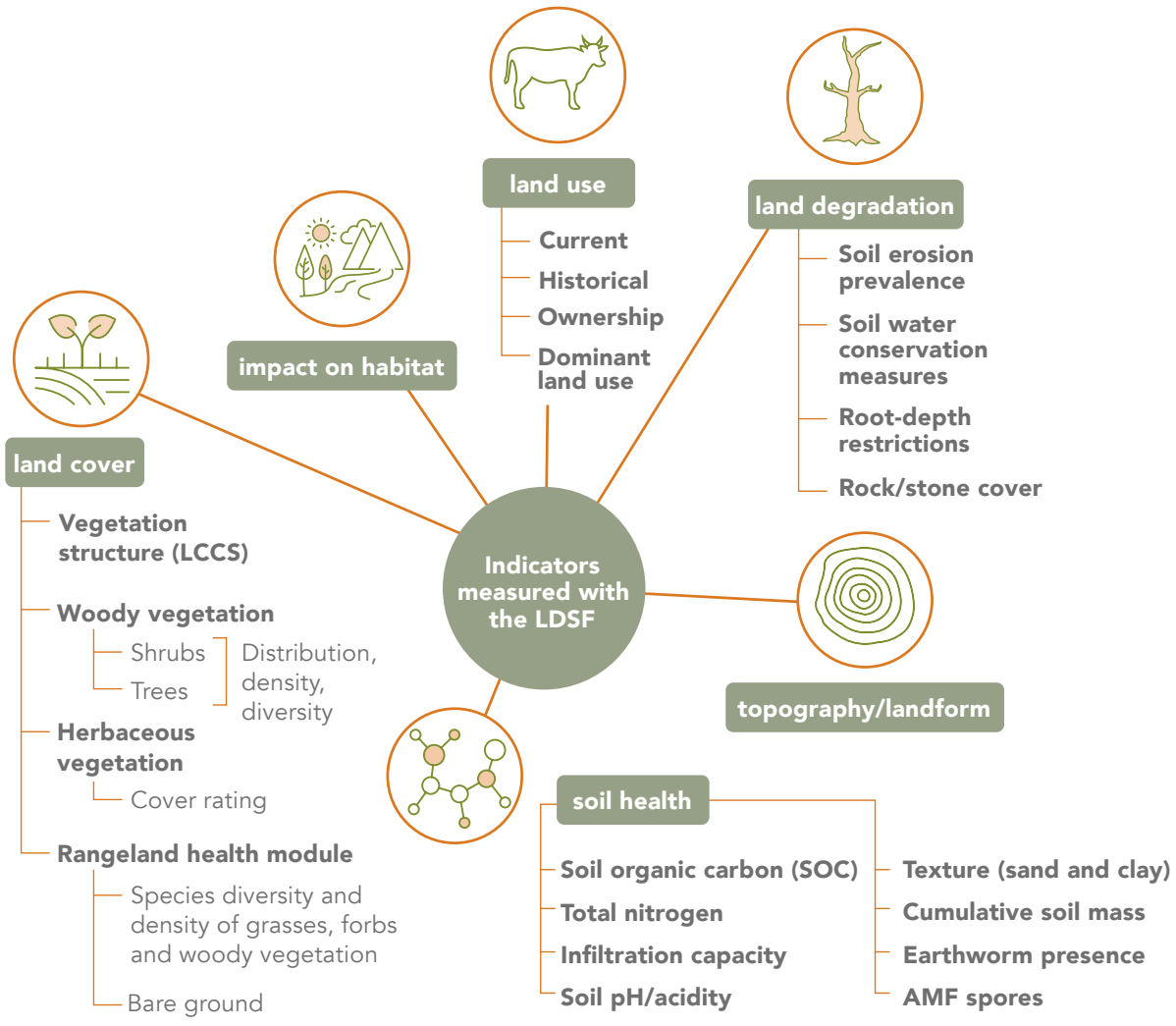
The Land Degradation Surveillance Framework (LDSF) is designed to provide a biophysical baseline at landscape level, and a monitoring and evaluation framework for assessing land degradation processes and the effectiveness of rehabilitation measures (recovery) over time.

- A **systematic field-based assessment** of multiple variables at the same geo-referenced location.
- **Consistent methods** to assess soil health and land degradation status.
- **Monitoring changes** over time and across multiple scales.
- **Spatial assessments (maps)** of indicator sets to effectively target interventions to avoid land degradation or restore degraded areas.
- **Robust statistical analysis** on drivers of degradation and ecological constraints.
- **Quantitative carbon accounting** for climate change mitigation action.

The LDSF is a comprehensive method for **assessing soil and land health**, from the field to the use of new and advanced data analytics. The LDSF provides a consistent set of indicators and field protocols to assess the health of an ecosystem, including vegetation cover and structure, tree, shrub and grass species diversity, current and historic land use, infiltration capacity, soil characteristics and land degradation status. The LDSF can be used as a **monitoring framework** for detecting change over time.

The LDSF was developed in response to the need for **systematic and science-based assessment and monitoring** of soil and ecosystem health at scale, using a robust and consistent indicator framework that is:

- **Specific:** The indicator should accurately describe what is intended to be measured, and should not include multiple measurements in one indicator.
- **Measurable:** Regardless of who uses the indicator, consistent results should be obtained and tracked under the same conditions.
- **Attainable:** Collecting data for the indicator should be simple, straightforward, and cost-effective.
- **Relevant:** The indicator should be closely connected with each respective input, output or outcome.
- **Time-bound:** The indicator should include a specific time frame.



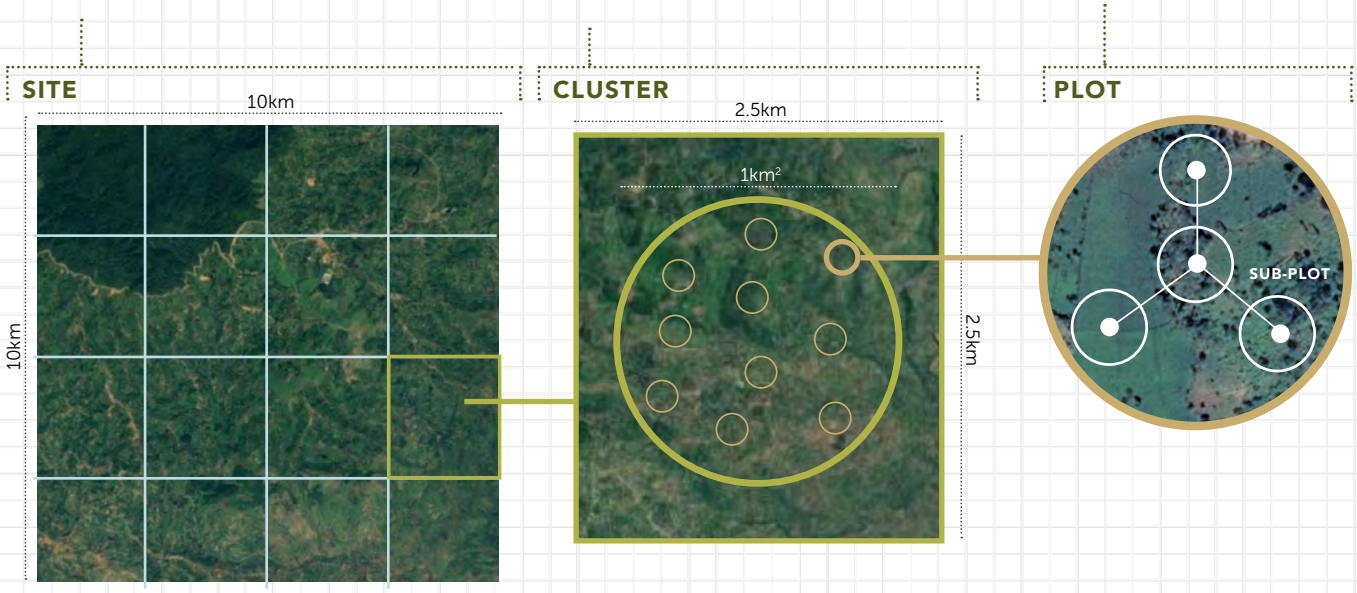
Data collection in the field

Data is collected at multiple spatial scales to understand how the various indicators vary across the landscape. This nested hierarchical sampling design enables robust spatial statistics, important for setting baselines and for tracking changes over time.

Sites [100km²] are selected at random across a region or watershed, or they may represent areas of planned activities (interventions). Each site is divided into 16 tiles of 2.5km x 2.5km each.

Within each tile, random centroid locations are generated for clusters. **Clusters [1km²]** are the basic sampling units and are made up of **10 plots [1000m²]**. Using each cluster centre-point, the sampling plots are randomized.

Each plot consists of four **sub-plots [100m²]**.

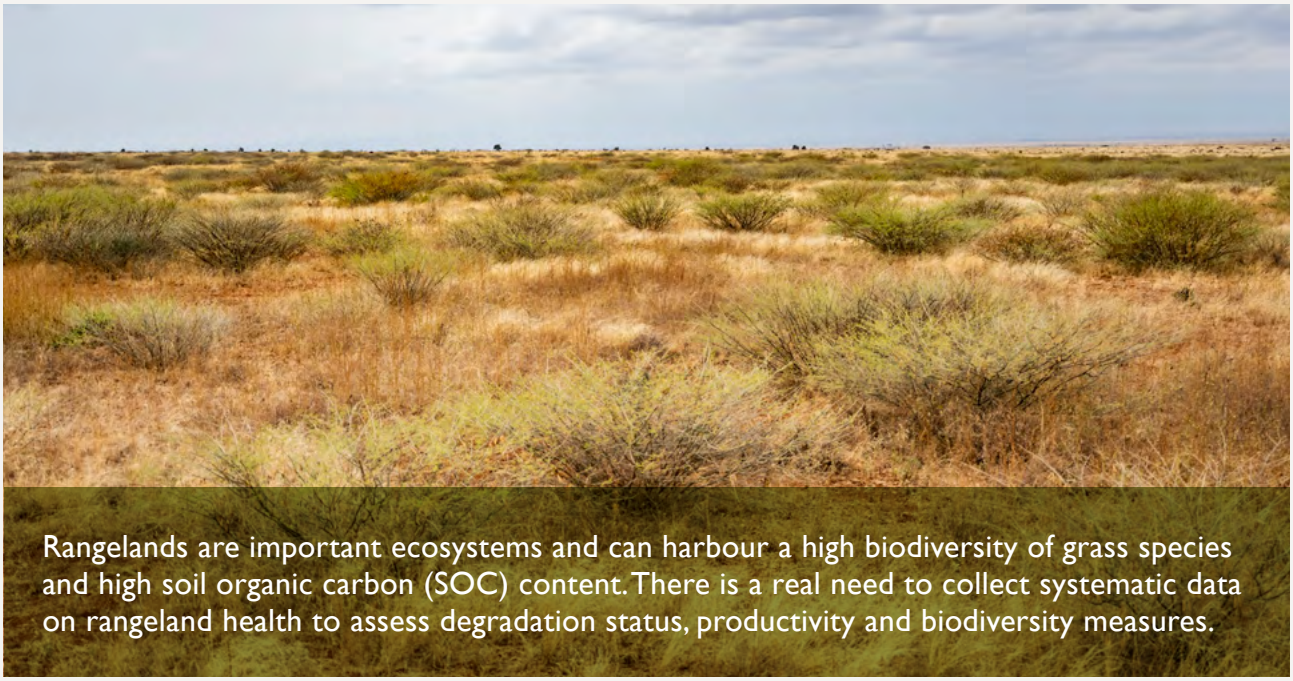


Field observations are made at the plot and sub-plot level. Each site has 160 plots and 640 sub-plots. The randomization applied in the LDSF minimizes bias in the sampling as well as captures the biophysical variability in the landscape.

Rangeland health

The LDSF rangeland module aims to assess the health of a rangeland and can be applied in each LDSF plot (1000 m^2) in both the dry and wet seasons.

The rangeland health assessments are conducted using the transect method. A stick/pin is placed every 2m along two 28m transects (one N-S and E-W). At each point the nearest annual grass, perennial grass, forb and woody vegetation is identified.



Rangelands are important ecosystems and can harbour a high biodiversity of grass species and high soil organic carbon (SOC) content. There is a real need to collect systematic data on rangeland health to assess degradation status, productivity and biodiversity measures.

Key rangeland indicators that are measured include:

Nearest perennial grass species

Distance to nearest perennial grass

Nearest annual grass species

Distance to nearest annual grass

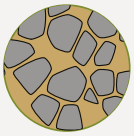
Bare ground

Nearest forb species

Distance to nearest forb

Nearest woody plant species (<1.5 m height)

Distance to nearest woody plant



Rock cover

Presence of leaf litter

Point under canopy

Presence of dung

Women and youth build key skills in landscape scale rangeland monitoring through the LDSF field data collection

Field training on LDSF

Field training includes all aspects of LDSF such as GPS navigation, electronic data entry and upload, vegetation classification, soil sampling, infiltration measurement, woody, forb and grass biodiversity measurements and land degradation assessments.

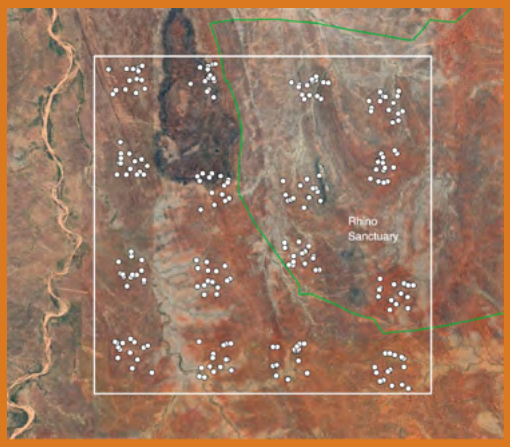
“It is important that local communities including women and youth are not just recipients of evidence and information on how well their environment is doing. They need to be part of the monitoring efforts. From the field data collection all the way to analysing the data. The LDSF trainings are helping community members learn how to monitor their landscape and giving them a chance to explore and understand their land a little bit better.”

Christine Magaju, Land Health Researcher CIFOR-ICRAF

Sera Conservancy

Rangelands in northern Kenya are severely degraded. Hence, there is an urgent need for interventions to actively restore degraded areas. With one of the largest carbon projects in the world, more robust assessments of soil organic carbon is critically needed to better understand how current restoration efforts are impacting soil organic carbon across these conservancies, including grazing management and active restoration.

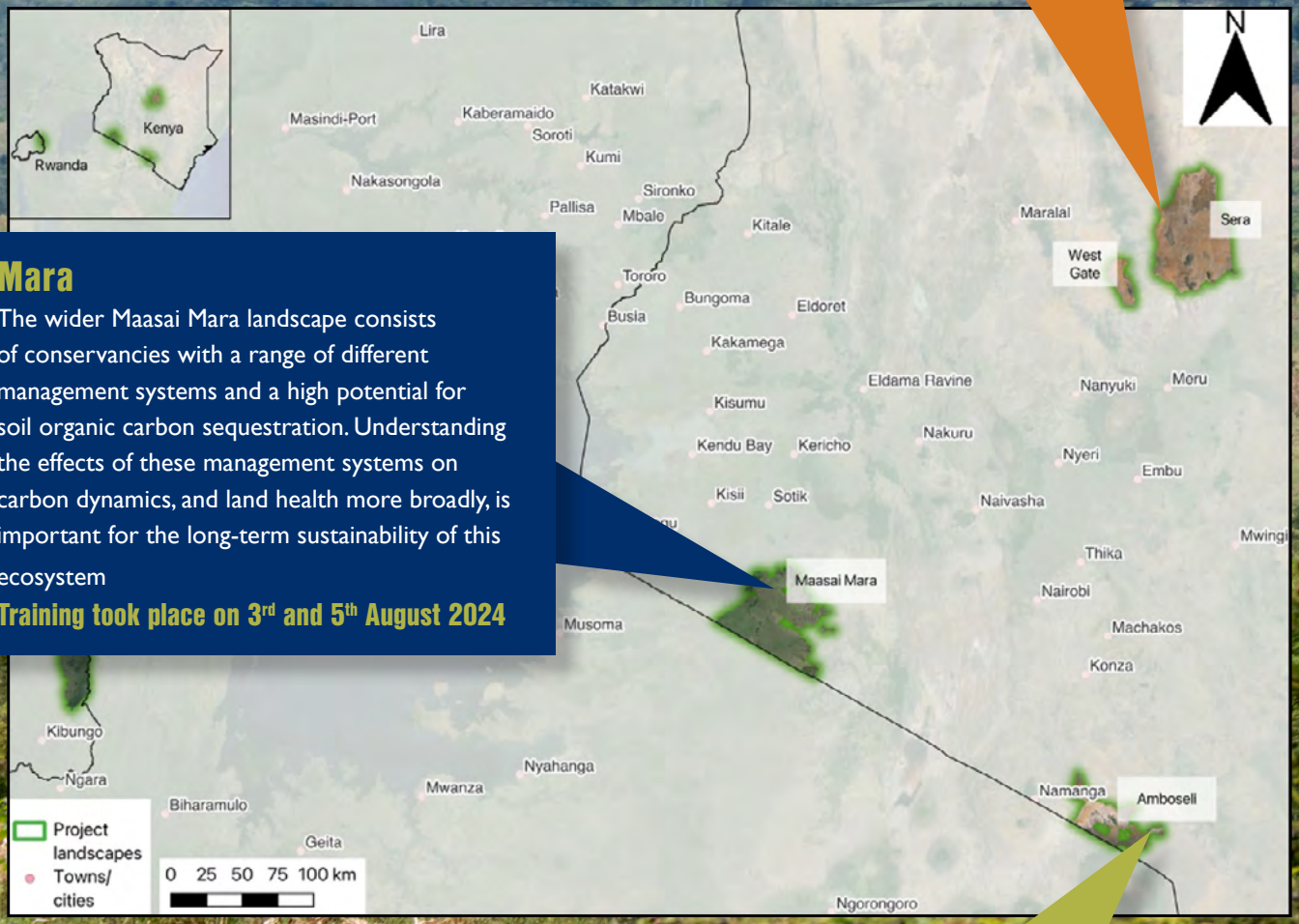
Training took place on 28th and 29th June 2024



Mara

The wider Maasai Mara landscape consists of conservancies with a range of different management systems and a high potential for soil organic carbon sequestration. Understanding the effects of these management systems on carbon dynamics, and land health more broadly, is important for the long-term sustainability of this ecosystem

Training took place on 3rd and 5th August 2024



Amboseli

The Amboseli ecosystem is an important conservation area with high rates of land degradation. Spatially explicit assessments of land degradation and soil health are critical for the design of interventions to restore rangeland health within the ecosystem, and for monitoring of the impacts of changes in management.

Training took place on 11th September 2024 at the Noonkotiak Grass Seed Bank

Women at the core of the community of practice on rangeland health monitoring

Sera Conservancy
Training on LDSF Sampling
28th-29th June 2024

Amboseli Ecosystem
Training on LDSF Sampling
6th September and 11th September 2024

Wider Maasai Mara Landscape
Training on LDSF Sampling
3rd July and 5th July 2024

Reflections from women and youth engaged in rangeland restoration

After the LDSF fieldwork, **17 field women and youth engaged in data collection were interviewed** and invited to share their reflections on what they had learned. Most of the staff reflected they had enjoyed learning new, practical skills such as soil sampling and plant identification. The new knowledge they had gained about soil carbon, soil fertility and soil structure, and its relationship with plant growth and water infiltration was also frequently mentioned. The interviewees mentioned that the LDSF data collection and data entry was interesting, with key skills acquired such as the ability to interpret maps of soil carbon. Salayah Leparlero who attended the Sera Conservancy training said that participating in the fieldwork had also taught her commitment and patience, which she valued.

> **"We will all take care of our environment. My perception was changed about the area during field work because of the nature and wildlife we saw. I realised we have a lot of biodiversity".**
>
> Leporole, Sera Conservancy.

When reflecting on how they would apply their new **knowledge and skills**, most of the staff intended to immediately use their new knowledge on their own homesteads and farms. They planned to control water runoff, build terraces, conserve trees and grasses, and treat soil as valuable. In addition, most of the participants were intent on sharing their knowledge about soil and plant species and their relationship with livestock and overall landscape health with their community. Further, many said that integrating their new understanding into **grazing management decisions** would multiply the benefits for their region. Mourine Wanjiku Karanja who attended the Maasai Mara training planned to use her new knowledge in decision support for a grazing program, as well as to develop a herbarium.

I was able to understand the relationship between soil, vegetation and water. ...I could also use the knowledge and give advice to my parents on the type of soil and region where we could place our kitchen garden".

Sophia Lepartingat, Sera Conservancy.

When probed on which part of the training they had enjoyed most, the practical skills of soil sampling and learning to identify plant species were a key skill and learning highlight. Interacting with knowledgeable people in the project team, the opportunity to conduct research, the visits to different sites as part of the LDSF field sampling and the team work were also greatly enjoyed.

Most of the data collection team felt that their own attitude to their landscape had changed as a result of the training. They had **developed a better understanding of the interconnectedness of ecosystems, as well as the impacts that rangeland management practices can have (both positive and negative) on ecosystems**. Sharing this knowledge was high on their list of priorities. Newton Leturesh, who attended the fieldwork in Laingarinyoni conservancy mentioned that educating women and young people about soil was important for future generations.

Benson Tumuke, who attended the fieldwork in Laingarinyoni conservancy said he now understands how to help the community decide where to build a dam, which will make a significant positive impact. Although most of the field data collectors mentioned changes in the way they see their landscape as the most significant way in which the training had influenced them, Susan Nanjala (Sera conservancy) added that the training had also built her confidence.

(I learned that) The ecosystem works as a whole. Everything within the ecosystem is interrelated to the other, for example infiltration rate shows the rate of percolation, which is useful for plant growth, not only that it shows the soil structure and porosity for seed germination and growth. Also, how deep the roots can manage to penetrate".

Mourine Wanjiku Karanja, Maasai Mara.

Some of the participants mentioned specific discoveries they had made as part of the LDSF data collection, such as the importance of trees in creating microclimates, and two others mentioned having discovered how important conservation really is. Understanding the landscape better was another positive outcome of the training that was mentioned by Leah Raayo Morera (OCR conservancy).

The key messages the field data staff wanted to share with leaders in their community and with policymakers centred around landscape governance, community inclusion in restoration, the importance of participation, the need for grazing committees to understand the impacts of overstocking and overgrazing on the landscape, and the importance of education and conservation. Veronica Rukunya from Noonkotiak grass seed bank in Amboseli called for investment in grass banks to improve the income of women and farmers, and Tnayai Eve Karerian (Noonkotiak grass seed bank) highlighted the importance of organic fertiliser for soil improvement.

It (this training) has changed me because before the LDSF, as women, we were not involved in field work especially in heavy labour activities like walking long distances where the areas are bushy. I appreciate the LDSF a lot because they really consider gender equality. In the future I will do any work that I will be appointed to do. What a man can do, a woman can do better".

Mercy Leporole, Sera Conservancy.

When reflecting more broadly on how the training empowers women, many of the field data staff linked their new knowledge to women being better able to generate income from growing grass for sale and making hay. The importance of providing learning opportunities for women to come together was mentioned frequently, and was directly linked by many participants to immediate livelihood benefits for women, as well as benefits for their children and the health of the rangelands.

Let's prioritise sustainable land management practices that prevent overgrazing, soil erosion and biodiversity loss".

Agnes Naisiae, Maasai Mara.

Engaging community members, especially the youth in the LDSF activities has provided a learning opportunity in addition to a job opportunity for them. This knowledge and experience will be cascaded to the rest of the community.

These engagements have helped create social capital among the community members involved. Most of them did not know each other at the beginning of the field activities but they now have a sense of community among themselves.

Engaging the youth in these activities and training has also made communication and sharing of information in the community easier. For example, it's now easier to share what needs to be done to restore/ protect the environment since some members in the community are aware and can share with others."

Leah Raayo Morera, OCR conservancy, Amboseli.

Project team

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