



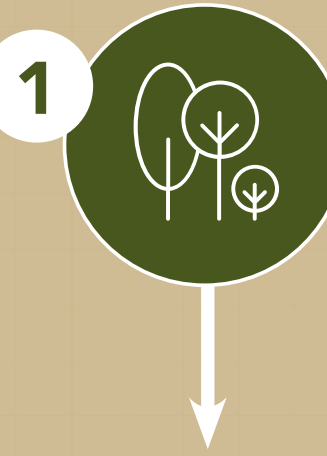


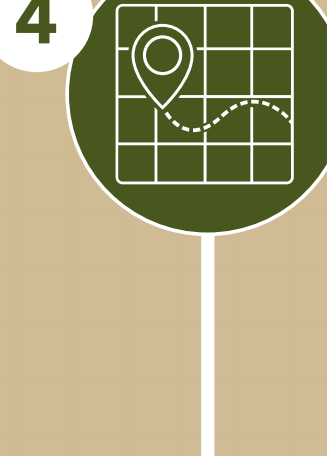


# THE LAND DEGRADATION SURVEILLANCE FRAMEWORK

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

## Data collection and analysis

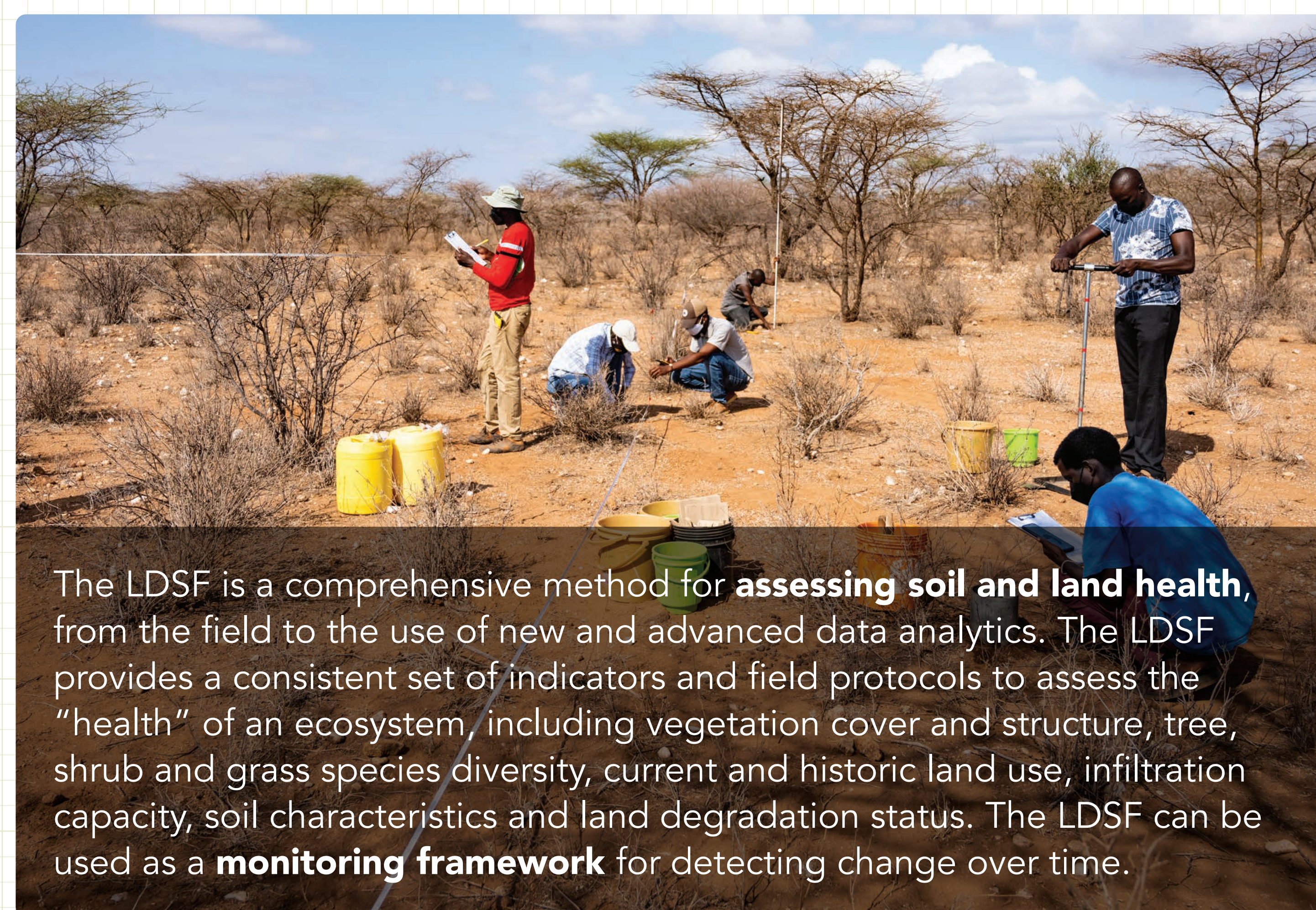
The LDSF was developed in response to the need for indicator frameworks to measure and monitor soil and land health in a consistent, quantifiable, efficient and replicable way across landscapes.

By applying a **multi-scale approach**, the framework can be used to conduct robust statistical analysis and inference, including **spatial assessments and predictive maps** with a high level of accuracy. These outputs can in turn be used to **improve the targeting and design of land management**, including land restoration efforts, and to monitor the effectiveness of different practices in terms of meeting restoration targets and ensuring sustainability.

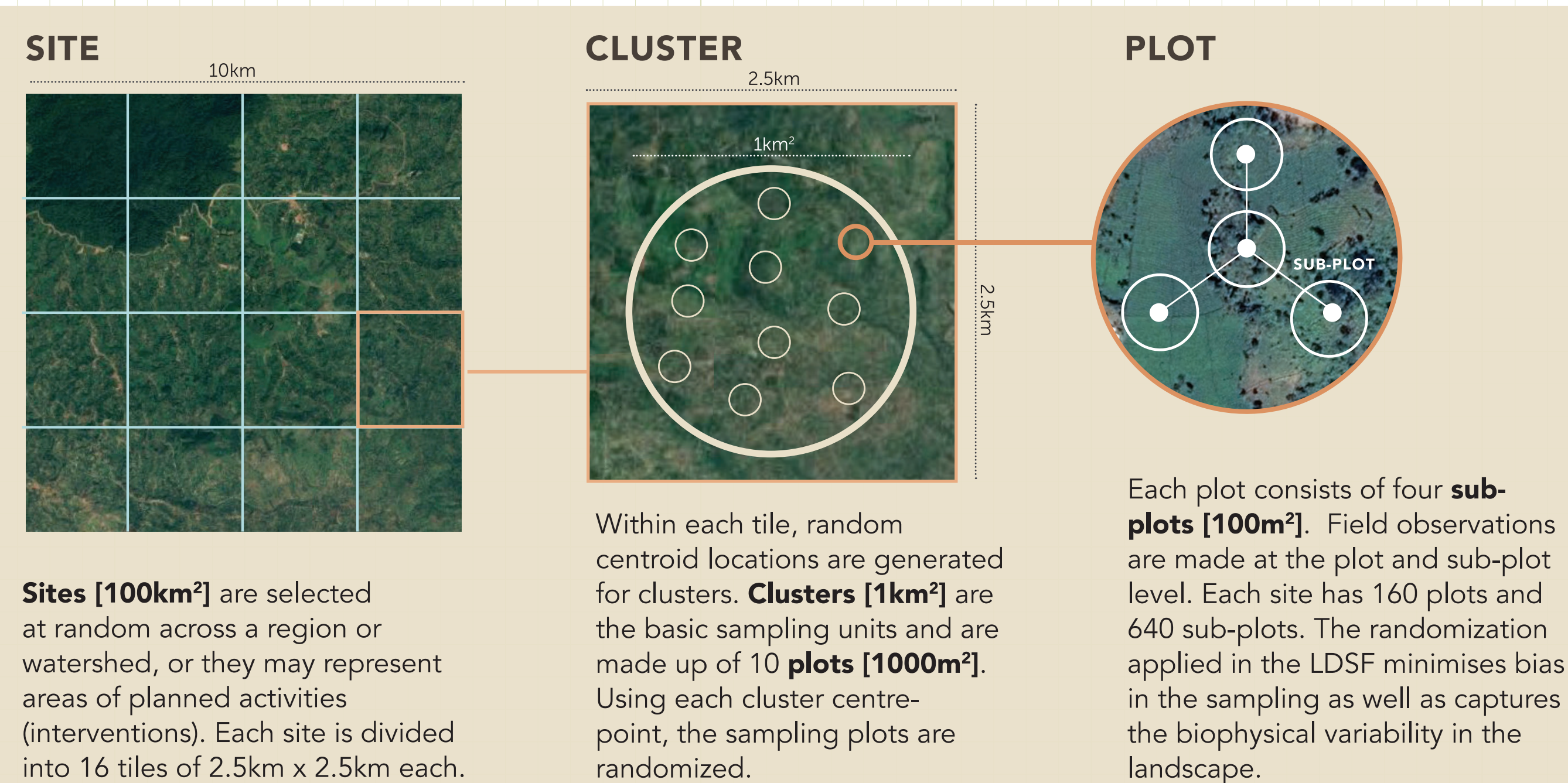
-  **Data is collected in the field** at multiple spatial scales in a nested hierarchical sampling design, enabling robust spatial statistics that are important for setting baselines and tracking changes over time.
-  All georeferenced LDSF data are stored in the **ICRAF LDSF Database** for efficient and safe storage, fast retrieval and to facilitate analysis. Data quality is checked.
-  All data are subjected to advanced data analytics and robust statistical analysis. Soil samples are analysed using MIR spectroscopy to predict key soil properties.
-  **Outputs:** The LDSF measures a wide range of indicators, that serve as a **valuable biophysical baseline**. Data from multiple global sites are used to create **predictive mapping outputs** at multiple spatial scales. These indicator calculations and high resolutions maps can be interactively visualised through a dashboard. For more information, visit: <http://landscapeportal.org>.
-  **Capacity development is undertaken with partners.**
-  The LDSF provides on the ground evidence combined with other knowledge sources and models to provide the overall picture of land health to **support stakeholders' evidence-based decision making**.

Evidence is generated through **systematic on the ground data collection, citizen science to crowd source data** from apps and models to produce data and maps. This evidence is applied through **capacity support, training and stakeholder engagement** to ensure the critical value of having the right information in the right format, demonstrating relationships in the systems (vegetative cover, soil health, etc.) to support decision making around land health.

This allows programs, projects and government agencies a systematic way to provide both a baseline on ecosystem health and track critical indicators of soil and land health over time.



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.



**Field training** includes all aspects of the LDSF such as: GPS navigation; electronic data entry and upload; LCCS vegetation classification; soil sampling; infiltration measurements; woody biodiversity measurements; and land degradation assessments.

**Data analytics training** to explore the LDSF data with R statistics: tidying and visualizing data; applying mixed-effect models to assess key indicators of land and soil health; database development; data management.

**Remote sensing (RS) training** to explore key concepts, methods and applications of RS, including: the use of open source GIS and remote sensing software; basic analysis using RS data.

The LDSF has been applied consistently across multiple projects in over 40 countries across the global tropics. This allows for robust and accurate assessments and mapping of key indicators of soil and land health at scales relevant for various stakeholders.

## CONTACT

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**Landscape Portal** <http://landscapeportal.org>

**Land Degradation Surveillance Framework** <http://landscapeportal.org/blog/2015/03/25/the-land-degradation-surveillance-framework-lds/>