Regreening Africa Insights Series #10

INTEGRATING LAND RESTORATION MONITORING: COMBINING THE SOCIO-ECONOMIC AND BIOPHYSICAL ASPECTS

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As a large scale, multi-country, multi-stakeholder restoration initiative, Regreening Africa offers a unique opportunity to generate actionable lessons on the cost-effectiveness and impact of local, national and global restoration efforts. As part of the Regreening Africa Insights Series, this brief shares key learnings and insights on our integrated Monitoring, evaluation and learning approach that brings together biophysical and socio-economic information. Data from structured household surveys and field data collection, satellite imagery and citizen science were combined to give unique insights on regreening processes, outcomes and impact.

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Photographs by Kelvin Trautman
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KEY INSIGHTS

Bringing science, evidence and monitoring to the global and local restoration agenda accelerates impact on the ground.

Regreening Africa has **integrated several innovative monitoring approaches** to understand the dynamics of restoration practice adoption and the resulting land-health and livelihood trends and implications through deep integration across components and partners. The project has innovated with combining systematic biophysical surveys, citizen science and household surveys.

Bringing together and interrogating evidence from multiple monitoring approaches has allowed a detailed evidence-based understanding of key trends especially around land health status which has come from both systematic land health assessments and citizen science via the Regreening App. Using structured household surveys at the start and the end of the project as well as 'uptake' surveys, at different intervals during the implementation period, with households exposed to restoration practices across the 8 countries has allowed for a detailed understanding of household level adoption of restoration options. By geo-referencing the data, this household data can be combined with highly accurate landscape level understanding of land health dynamics to provide a novel unpacking of key trends and the implications of adoption of different restoration practices.

The Regreening Action Index was an important innovation emerging from the programme. The index considers the extent, intensity and diversity of practice as well as intrahousehold equity, recognising that no one dimension of action can capture the full extent of practice.

Recognizing that the impacts of restoration with trees can take many years to materialize, **net returns per capita were modelled to understand the long term (next 5 and 10 years) benefits** that could be obtained from integrating trees in the farming system.

Having a clear theory of change for the project at design stage is important to the development of a robust monitoring, evaluation and learning approach. Annual reflection is critical to ensure adaptive learning and changes to the monitoring approaches based on implementation contexts.

Continual evidence-based dialogue between scientists and practitioners has stimulated methodological innovations, such as the deployment of the citizen science driven Regreening Africa App, to generate robust, real-time evidence across scales. Integrated into online dashboards, this evidence is accessible in an actionable form by multiple stakeholders and delivers evidence at low cost with a high numbers of data collection points.

Co-learning, facilitated dialogue and monitoring is essential to build trust, support adaptive implementation and meaningful impact. Annual Joint Reflective Learning Missions (JRLMs) are carried out in each country and integrated into adaptive programme planning within Regreening Africa. The JRLMs were an important convening platform to discuss the monitoring information and address necessary adaptive changes in implementation. They provided a critical point to discuss and interrogate the evidence and change plans within the programme time frame based on real time evidence that was emerging from the monitoring.

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TARGETED INVESTMENTS IN LANDSCAPE RESTORATION ARE URGENTLY NEEDED – AND THEY NEED TO BE PRIORITISED, TRACKED AND FARMER-CENTERED.

Background

–Importance of monitoring for successful and impactful land restoration across a wide range of landscapes

There is considerable commitment globally to both halt and reverse land degradation. The Bonn Challenge, as an example, is a global effort to restore 150 million hectares of degraded land by 2020, and a further 200 million hectares by 2030.[1] The New York Declaration on Forests is seeking to halve deforestation by 2020, and to end it by 2030.[2]

There are also several important regional initiatives, such as the African Forest Landscape Restoration Initiative (AFR100) which aims to restore 100 million hectares by 2030.[3] Under the United Nations Convention to Combat Desertification (UNCCD)[4] at least 122 countries have committed to ensuring that human activities aim for Land Degradation Neutrality (LDN), which includes the setting of specific LDN targets, including the Great Green Wall (GGW) initiative.[5] Launched in 2007 by the African Union, the GGW initiative aims to restore the continent's degraded landscapes and transform millions of lives in the Sahel. The project is being implemented across 22 African countries, with the ambition to restore 100 million hectares of currently degraded land; sequester 250 million tons of carbon and create 10 million green jobs by 2030.[6]

Regreening Africa plays a crucial role in catalysing the realisation of global commitments on restoration of degraded lands made by African countries under the African Forest Landscape Restoration Initiative (AFR100), as well as meeting multiple objectives on climate change, biodiversity, action against desertification and sustainable development. Other commitments include the Nationally Determined Contributions (NDCs) under the United Nations Framework Convention on Climate Change (UNFCCC), Land Degradation Neutrality (LDN) targets under the United Nations Convention to Combat Desertification (UNCCD), and conservation of biodiversity through strategies and action plans under the Aichi Targets.

Making the invested Euro stretch farther and with multiple benefits, while restoring – or 'regreening' – one million hectares of farm and communal land across eight sub-Saharan African countries was the challenge set by the European Union to the Regreening Africa partnership. It's a partnership of organizations that approach development from three different perspectives – policy, implementation and research. the research partner, World Agroforestry (ICRAF), also plays the lead role in programme coordination in partnership with five international and national non-governmental organizations (NGOs): World Vision, Oxfam, Care International, Catholic Relief Services, and Sahel Eco. The countries where this bold and innovative effort is taking place, thanks to the support of the governments concerned, are Ethiopia, Ghana, Kenya, Mali, Niger, Rwanda, Senegal, and Somalia.

For Regreening Africa, tackling the challenge of delivering on global and regional commitments to land restoration requires ambitious but proven and effective approaches that are adaptable to local contexts that can be accurately monitored, verified and evaluated and scaled to other contexts.

1. https://www.bonnchallenge.org/about-the-goal
2. United Nations. (2014) New York Declaration on Forests: Declaration and Action Agenda. https://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/Forests/New%20York%20Declaration%20on%20Forests_DAA.pdf
3. https://afr100.org/
4. https://www.unccd.int/convention/about-convention
5. https://www.unccd.int/actions/achieving-land-degradation-neutrality
6. https://www.unccd.int/our-work/ggwi

Regreening Africa

An integrated approach to monitoring

The Regreening Africa programme is about catalyzing meaningful, transformative change by moving people to 'regreen' or restore their landscapes so that they benefit now and their children continue to reap benefits in the future.

It is a unique attempt to use processes of structured learning, underpinned by scientific research and local knowledge, to inform an adaptive, iterative system of delivering better development outcomes at scale.

The Regreening Africa programme was designed as a research in development programme in which ICRAF led research components that fed directly into the development process, to support programme implementation and to evidence impact. The project set a bold goal of restoring one million hectares of land and benefitting 500,000 households. To realize these overall targets, the programme adopted a monitoring and evaluation system through which both short-term outputs and mid-term or longer-term outcomes and impacts would be assessed.

The overall monitoring objective was to assess the programmes progress towards the key targets and objectives and to estimate impact to drive lessons for future restoration projects.

The aim of this innovative approach of combining satellite imagery and data from the household surveys was to track and understand the impact of land restoration activities on key biophysical indicators and socio-economic outcomes and to combine more structured surveys with lower sample numbers with messier and larger number citizen sourced data.

WHAT REGREENING AFRICA MONITORED	MONITORING TOOL OR APPROACH USED
Track and understand the impact of land restoration activities on key biophysical indicators	Combining systematic biophysical surveys and citizen science with household surveys at baseline and endline
Exposure to regreening practices – defined as the % of households (HHs) in targeted exposed to training, extension and farmers being able to access information on training	NGO partners reported reach in terms of trainings and outreach and household surveys reported the percentage of households that reported being reached. NGO implementing partners in each country were supported with a strong theory of change and outlined a scaling approach for their intervention model delivery. While there is some variation across the implementing partners and countries, their intervention models are similar, involving community mobilization and training and the use of lead farmers, local groups or extension agents to further train and/or provide advisory support to others.
Uptake of new or scale up existing regreening and other sustainable land management practices. This was to understand a major programme target of how many households have taken up Regreening practices.	On an annual or semi-annual basis, uptake surveys (to collect data on the breadth and depth of regreening practice adoption) were undertaken in all countries. Uptake surveys were carried out using a structured questionnaire which was modified to each country's context. The questionnaire was developed to capture data on exposure and uptake of specific agroforestry technologies and practices promoted by the Regreening Africa project. It was administered only to households living in village clusters that were reached early in the program implementation. Uptake surveys also reported on the Regreening Action Index, which was an important innovation emerging from the programme baseline. The index considers the extent, intensity, and diversity of practice as well as intrahousehold equity, recognizing that no one dimension of action can capture the full extent and quality of practice. Uptake surveys were used to adaptively manage and refine scaling models and approaches in each country. Final uptake data for direct intervention sites was taken from the endline survey data as compared to the situation at the baseline survey.

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WHAT REGREENING AFRICA MONITORED	MONITORING TOOL OR APPROACH USED	
 **Practices taken, the extent, location and species of trees, agroforestry training and support, tree products, nutrition and wealth, gender dimensions**	Household surveys, interviewing the same men and women (where possible) were conducted in each country at baseline and endline. Where possible, the same households interviewed during the baseline survey were re-interviewed in the endline survey to allow for comparison. Household uptake of practices was measured for those surveyed that had had exposure to the programme and then extrapolated over the project target area using population data. Extent of practice, measured in hectares, considered the area where practices were taken up or enhanced for those surveyed and then extrapolated to the target area using the average land holding size. Impact evaluation strategy was expected to experimentally assess impact of the programme by comparing households that had been engaged intensively in the programme throughout the implementation period (treatment group) with those that had not (control group).	The Regreening App enabled the collection of data at farm level on a range of land restoration practices and captured extent of land under regreening, species, survival rates and use of products from the trees. In communal areas and leveraging sites, the areas reported were calculated based on farmer field boundaries, or FMNR intervention area boundaries. Accessible communication in the form of WhatsApp groups have been developed and extensively deployed to facilitate real-time exchange on results from the monitoring approaches, learning and timely reflections that can be channelled back into programme planning, implementation and learning.
 **Tracking indicators of land and soil health**	The Land Degradation Surveillance Framework (LDSF) was developed in response to the need for indicator frameworks to measure and monitor soil and land health in a consistence, quantifiable, efficient and replicable way across landscapes and continents. This data is collected in the field and analysed to understand drivers of degradation, prioritise areas for implementation of interventions and monitor changes over time. Two LDSF sites were surveyed under the programme to fill gaps in the existing database.	Using the LDSF database, predictive models were applied to satellite imagery of the main cropping fields of sampled households (through household surveys and the App) to derive three key indicators of land health: fractional vegetation cover, soil organic carbon (SOC), and erosion prevalence. With spatial assessments at high resolution, the results can be used to target land degradation hotspot areas for intervention and to track progress overtime.
 **Greening of target areas**	Polygons (areas under regreening) from the Regreening App were analysed using satellite imagery to understand the level of 'regreening' over the life of the project. Regreening was assessed using earth observation data from Landsat 8. A particular plot was flagged as "greening" based on whether the vegetation signal from that plot was increasing beyond a 95th percentile for two months in a row, or more when the green signal was greater than what would be expected in a normal year (looking back to 2014) given normal rainfall and growth patterns.	
 **Identifying relevant stakeholders that need to be engaged to address prioritised barriers and strategies and tracking influence on policy wider practice and investment decisions.**	The Outcome Mapping approach was used to support Regreening Africa to track progress towards a more conducive enabling environment for the scaling of land restoration options. Policy and governance bottlenecks were identified through national SHARED workshops, team discussions and JRLMs. Engagement activities were designed to address the bottlenecks with the specific stakeholders targeted in this advocacy identified and the behavioural shift expected by those stakeholders recorded. Each year project teams updated their outcome mapping to reflect on engagements, impacts in terms of behaviour shifts and to plan the following years activities.	

Multiple monitoring tools allow us to triangulate key findings and evidence between restoration practices, landscape health changes, and livelihood benefits

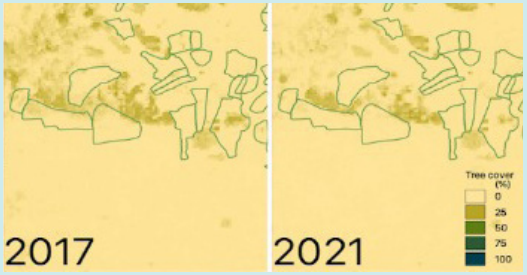
- Exposure to agroforesty related training, advice, extension
- Uptake of regreening practices
- Projected farm income
- Details and size of individual farmer plots
- Agroforestry practices underway
- Number of trees planted and tree survival rate
- Understand tree species diversity
- Tree nursery information
- Implementation of FMNR
- Details on training and engagements (incl. gender participation)

Household surveys

Regreening Action Index indicates:

- intra-household equity
- extent of restoration
- diversity of restoration
- intensity of restoration

Tracking land health changes



Map and monitor changes in vegetation and soil organic carbon, even in marginal areas

- Tree cover
- Soil organic carbon
- Erosion

With spatially explicit information on multiple indicators of land health, the effects of interventions can be assessed across multiple scales

Community engagement and crowd sourcing

Facilitated reflection and cross-learning engagements

BASELINE (2018) SURVEYS — **UPTAKE SURVEYS** — **ENDLINE (2022) SURVEYS** — **DECISION DASHBOARD** — **REMOTE SENSING** — **SYSTEMATIC FIELD SAMPLING WITH THE LDSF** — **CITIZEN SCIENCE USING THE REGREENING APP**

Surveillance and analytic tools on land degradation dynamics

There is a critical need to quantify and track degradation and restoration impact at scale and across many different types of context. This requires the use of a range of different approaches that are robust, timely and relevant to provide evidence to support land restoration initiatives.

MAPPING CHANGE OVER TIME

The **Land Degradation Surveillance Framework (LDSF)** was developed in response to the need for indicator frameworks to measure and monitor soil and land health in a consistence, 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, biophysical shifts and ensuring sustainability.

The LDSF is:

- Systematic sampling framework
- Data-driven network of sites
- Robust, spatially explicit assessments of soil and land health
- Assesses multiple indicators, at geo-referenced locations

The LDSF has been implemented systematically across programmes and initiatives in over 40 countries, and has established a vast database which Regreening Africa benefited from.

The LDSF is a powerful means of restoration monitoring as it:

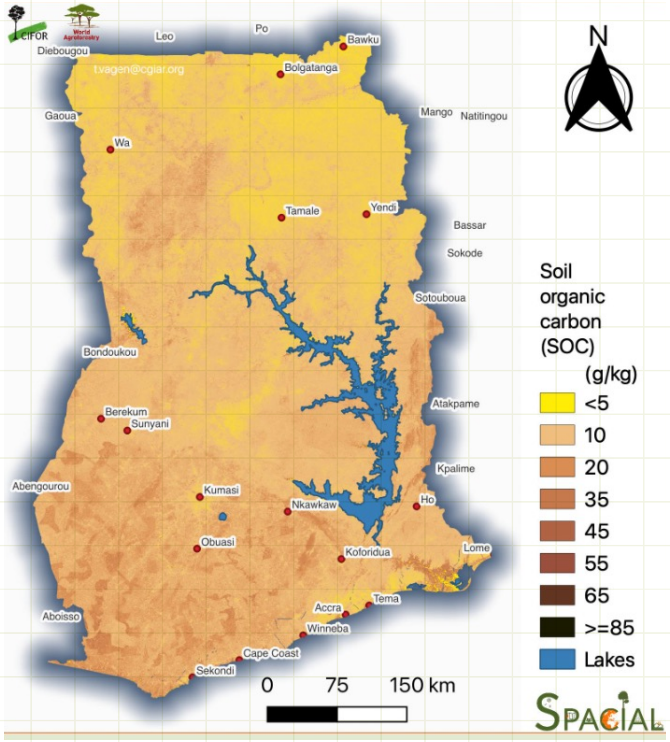
- Is consistently applied across landscapes and context
- Requires low-tech equipment
- Implements hierarchical sampling design
- Is enabled by advancements in soil spectroscopy
- Measures multiple indicators of soil and land health at geo-referenced locations

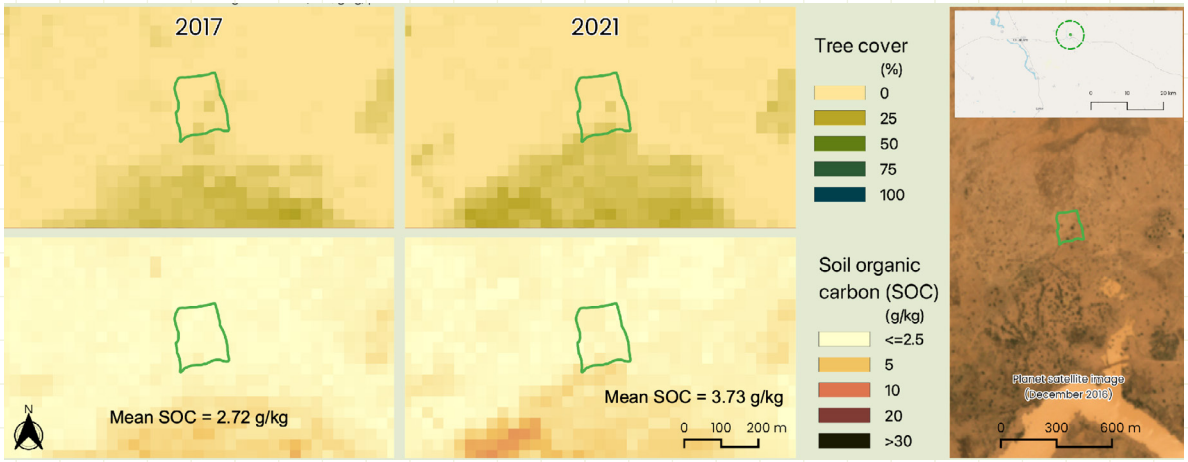
Assessments of land health and degradation are made across all the project intervention sites using the LDSF data and earth observation. These spatially explicit and accurate maps can be used to:

1. inform the monitoring of project interventions, complementing the assessments made through household surveys under the project;
2. assess changes in not only land cover, but also soil health and land degradation status;
3. combine rigorous science-based assessments with citizen science data collection, such as data collected using the Regreening App;
4. inform, better target and contextualise planned land restoration efforts, hence enhancing the likelihood of their success and impact.

Using the LDSF-based models, it is possible to **map and monitor changes in vegetation and soil organic carbon** even in very marginal areas, such as the map below which can detect a gram of difference – a very small measurement but one that can impact productivity significantly. A unique approach of the programme monitoring was to combine these detailed bio-physical data with the household surveys so that livelihood benefits can be mapped to the carbon content of the soil, for example.

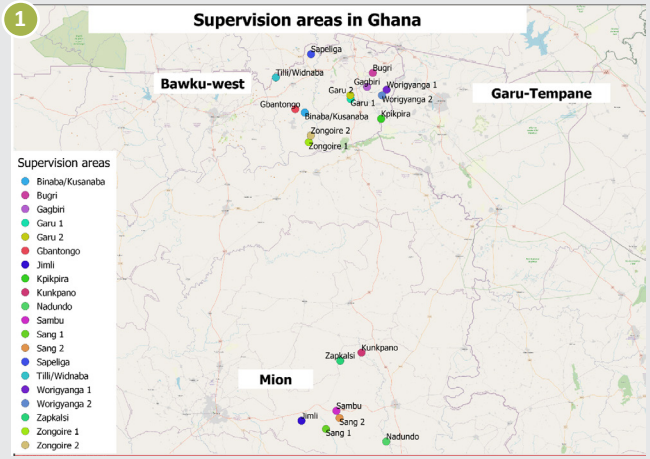
The map example from 2021 in Ghana (right) showing soil organic carbon, was produced using data from the LDSF to train a predictive model based on remote sensing data (Landsat and Sentinel 1). Maps are generated for each country at 30 m spatial resolution to assess spatial variations and changes over time. It is clear in the map that overall the area targeted by the programme in the north of Ghana has less carbon than in the southern parts of the country but that there is also significant variation in the northern regions.

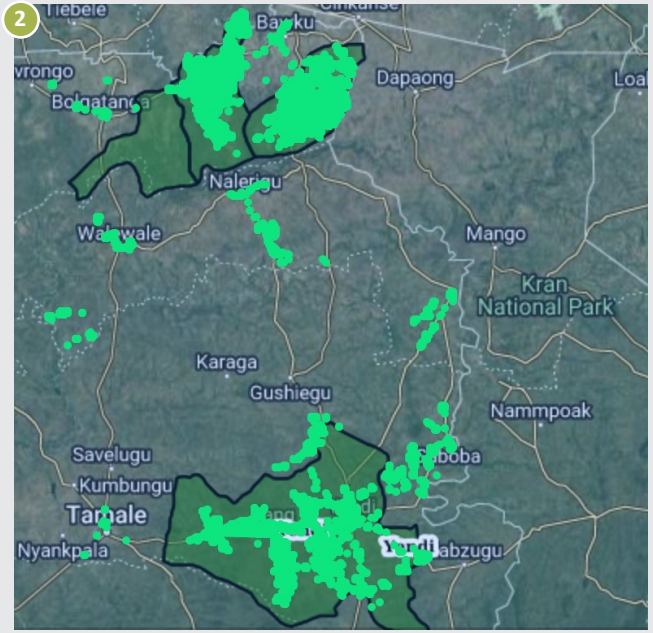




With spatially explicit information on multiple indicators of land health, the effects of interventions can be assessed across multiple scales and used to inform the household and landscape level shifts and assess impact of the programme targets.

(1) Households for the uptake surveys; (2) The same area as viewed from the Regreening App.





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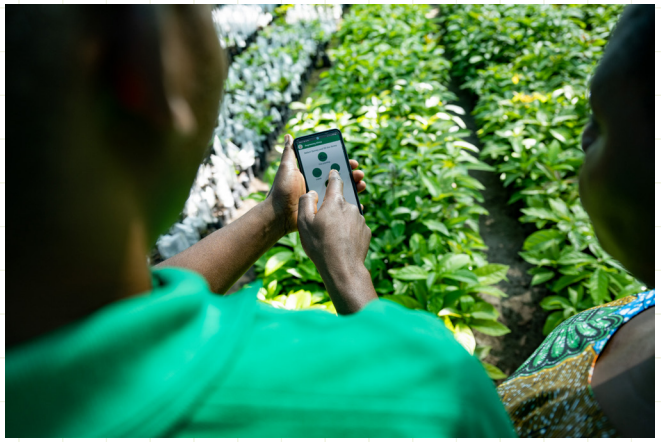
CITIZEN SCIENCE TO SCALE UP RESTORATION MONITORING

An effective citizen-science tool created through the programme has been the **Regreening App**, which has been used in addition to the household survey polygons to link to land health and spatial data. Citizen science data collection using the Regreening Africa App has allowed us to scale data collection to over 200,000 farmers.

Project stakeholders in all project countries have been trained in the use of the Regreening App, with continuous support through WhatsApp groups, virtual meetings and training workshops. The result has been a highly successful implementation of the App across the programme countries.

The Regreening App evolved within the programme on a need for broader data collection on the types of intervention on the ground. It leverages on citizen science, with the skills of the ICRAF SPACIAL team to clean this 'messy' data to allow a unique and granular farm to landscape level understanding of restoration. This is a global monitoring innovation to understand and more effectively support restoration activities at farm level, connecting these to soil and land health assessments and maps, satellite image time series data, and household surveys. This combination has provided powerful evidence on the impacts of the programme at farm to regional scales, as well as guiding interventions, supporting adaptive management, and influencing policy. In the future, such information can be linked to mobile advisory advice to farmers.



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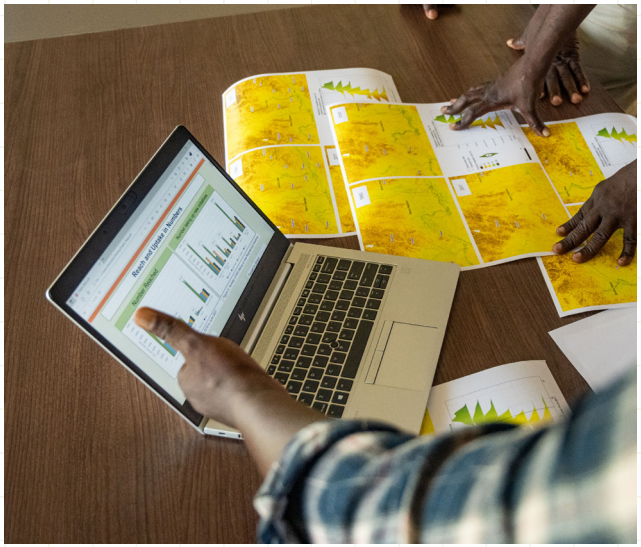
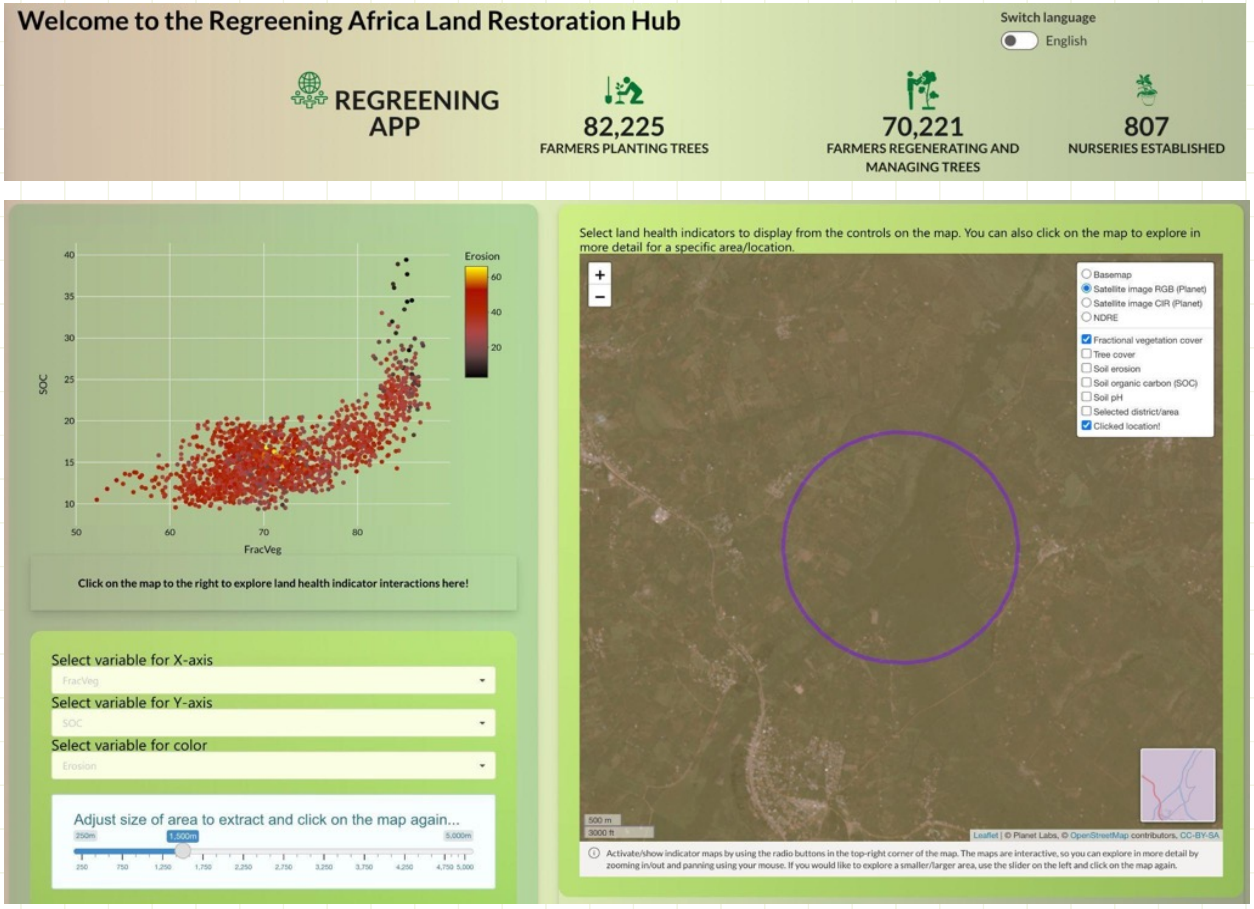
ACTIONABLE ACCESS TO MONITORING DATA

To review and interrogate the data produced during the programme, **Regreening Dashboards** were developed. These act as online platforms to unify and bring together data, evidence and learning from the different project components and provide tools to interactively explore soil and land health data and maps.

One of the main objectives for the development of the Regreening dashboard has been to **provide project stakeholders with an integrated platform to access project outputs, including summary data from the Regreening Africa App and surveys, and user-friendly and interactive tools** that allow users to explore indicator maps and interactions between land health indicators. The Regreening Africa Dashboard can also be used to target future interventions by exploring multiple indicators and providing spatially explicit information that can be used in concrete planning of land restoration activities on the ground.





(TOP) A section of the Regreening Africa Dashboard showing high-level summaries of data coming in from the Regreening Africa App. These data are uploaded in near-realtime. (BOTTOM) Screenshot from the Regreening Africa Dashboard showing the interactive land health module. Here, users can explore the maps produced as part of the LDD component, including interactions between them. On the left the relationship between soil organic carbon (SOC) and vegetation cover is shown for an area selected in Rwanda.

UNDERSTANDING RELATION OF HOUSEHOLD-LEVEL DYNAMICS TO RESTORATION PRACTICES

An **impact evaluation strategy** was designed and expected to experimentally assess impact of the programme by comparing households that had been engaged intensively in the programme throughout the implementation period (treatment group) with those that were engaged at the end of the project and after the final survey (control group). In general, assessing impact involves more than tracking changes in the status of a project's impact indicators over time. This is because there are likely to be other non-project-related factors, e.g. seasonal rainfall patterns, government policies, or other development projects, that will simultaneously influence their evolution. To assess the impact of interventions that target large numbers of communities, groups, households, and/or individuals, it is good practice to use a suitable control or non-intervention group.

The households in the two groups were expected to be similar in all aspects except that the treatment group would be engaged in the programme from the first year while the control group would be placed on the waiting list until the last year of the programme, therefore making it possible to compare outcomes at the end of the programme period. This similarity (balance) was checked and ascertained for each country after baseline surveys were completed in 2018.

However, in the course of implementing the programme in most countries, the evaluation plan was not fully adhered to, resulting in the control groups being reached and engaged earlier than anticipated. Consequently, direct comparison between outcomes of households in treatment and control groups would not give accurate results of the programme. Because of this, for most of the indicators, impact has been assessed using the **before and after approach** which compares outcomes before and after programme intervention but cannot necessarily attribute the changes to the intervention by the programme. Non-compliance with the phase-in design was the result of many factors including insecurity, shifting project sites due to conflict ad general excitement to reach the targets early in the programme.

Many of the project's expected impacts – for example, on smallholder income or soil organic carbon – are unlikely to fully manifest within Regreening Africa's implementation window. Trees, for example, take time to grow. Regreening Africa's impact assessment strategy, therefore, also includes a component to model what these impacts are likely to be on farm income based on the extent of regreening that transpires at the household and community levels by the end of the project.

The cornerstone of this monitoring approach – which started from the project design phase – was the **development of a clear Theory of Change (ToC) for the project**. The development of this ToC was carried out by the country NGO teams with the assistance of ICRAF, and underlined the value of the partnership between research and implementation specialists. An overall ToC was developed for the programme and then individual countries developed their own that was unique but linked to that of the overall programme.

Having a robust theory of change for the project at design stage is important to the development of a robust monitoring, evaluation and learning approach, particularly given the massive project targets. The ToC

KEY TERMS IN MONITORING APPROACH

REACH – households that are reached with programme information, seedlings, trainings, etc.

UPTAKE – households that are taking up the practices they were reached with on part of their land.

DIRECT INTERVENTION – programme areas where households were trained or reached by the programme.

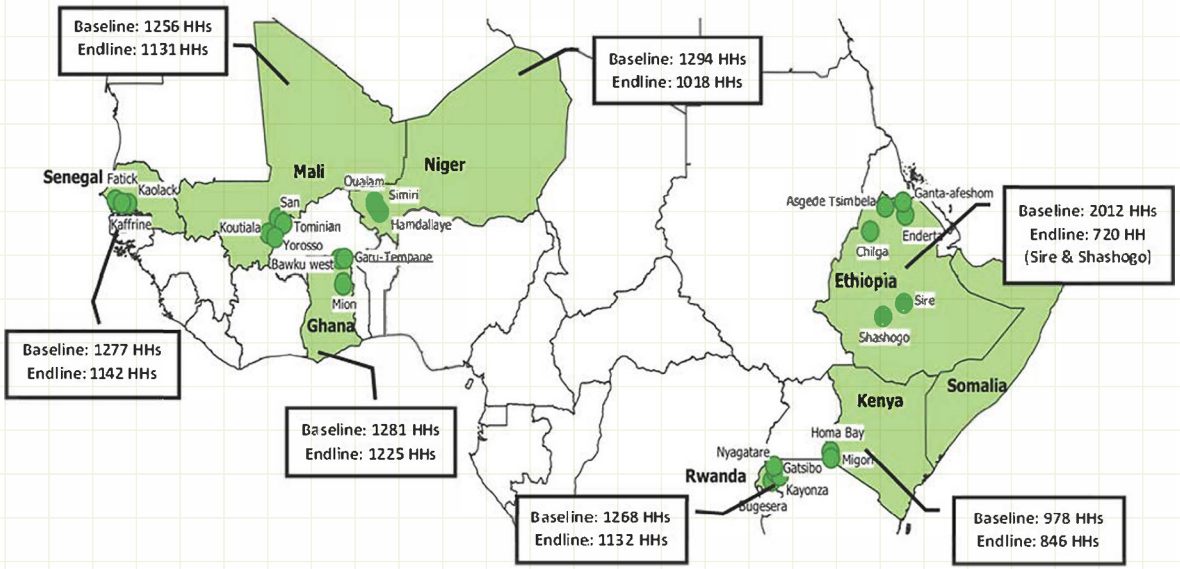
LEVERAGING INTERVENTION – areas where non-project related initiatives and investments promote regreening following the implementation of Regreening Africa's proven regreening scaling approaches. 'Leveraged adoption' could be as a result of an NGO participating in the country consortium implementing a 'sister project' using Regreening Africa's same scaling approaches, or less directly by another organization or government institution pursuing the same scaling approaches.

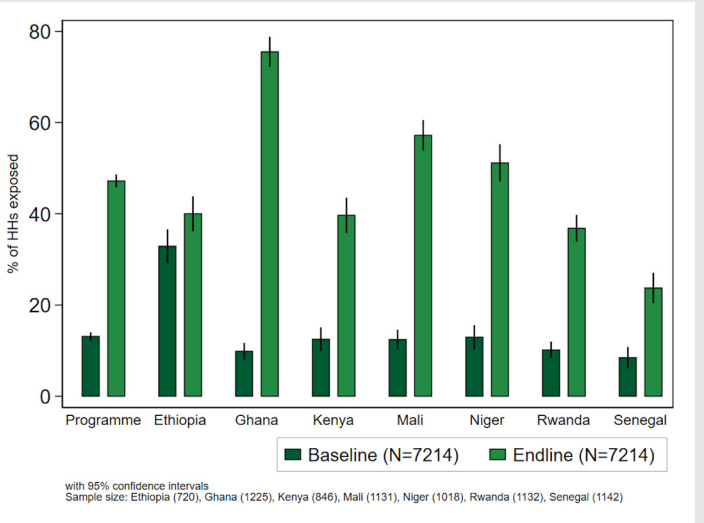
helped to establish the routes and mechanisms to achieving the scaling of 1 million ha of land under restoration practices and to reach 500, 000 households with training, capacity development and advice on restoration practices. The ToC also helped to introduce the concept of 'leveraging' to the NGO teams, guiding them to think strategically about ways to integrate restoration into other projects/activities to support the uptake and adoption of restoration practices. Successfully reaching 500,000 households required this adaptive and strategic approach.

To enable comparison of various outcomes at baseline and endline, two sets of key surveys were undertaken. The main evaluation tool was the quantitative household survey; however, qualitative data was also collected through village level surveys and key informant interviews. The purpose for undertaking the baseline survey was threefold:

1. To generate baseline data required to later assess the programme's local-level socio-economic and biophysical impacts, as well as the extent of household and community-level engagement in land restoration.
2. To identify critical factors in the policy and institutional environment (including those relevant to targeted tree-based value chains) that need to be addressed to unlock the scaling-up of cost-effective and impactful land restoration practices.
3. To generate evidence to inform the design and scaling up of land restoration efforts.

The baseline data collection effort was complemented by qualitative data of **192 gender disaggregated Focus Group Discussions (FGDs)** with a total of 974 men and 975 women participants to prioritize tree-based value chains that the project later sought to strengthen.





To assess mid- and longer-term indicators of the overall logframe, as well as report on attainment of targets, **endline surveys were undertaken in seven countries** in 2022 with a close out survey completed for Somalia in 2020, using an updated version of the the baseline survey tool. Although the structure remained the same, the baseline tool was modified to make it simpler to administer and enable automatic checking of data quality during endline. It was also translated into French, Kinyarwanda, Afan Oromo and Amharic.

The endline survey was carried out in the households that were sampled for the baseline survey in 2018. The same generic questionnaire used in the 2018 baseline was used in the 2022 endline surveys but was modified slightly to make it easier to administer.

Data collected in both surveys covered aspects such as household demographic and socio-economic characteristics, food consumption and food insufficiency, land, livestock and asset ownership, farming practices, tree ownership, management practices, use and access to products, decision making about trees, and participation in restoration activities at the community level. To triangulate household data, village level surveys and key informant interviews were also conducted during the endline study in all countries.

***(ABOVE)** Exposure to agroforestry-related training, extension or advice at baseline and endline, by programme and country*

Regreening Africa

On an annual or semi-annual basis, **uptake surveys** (to collect data on the breadth and depth of regreening practice adoption) were undertaken in all countries. A key aim was to assess progress made by the programme towards encouraging the adoption of regreening practices and achieving country targets in terms of households and hectares.

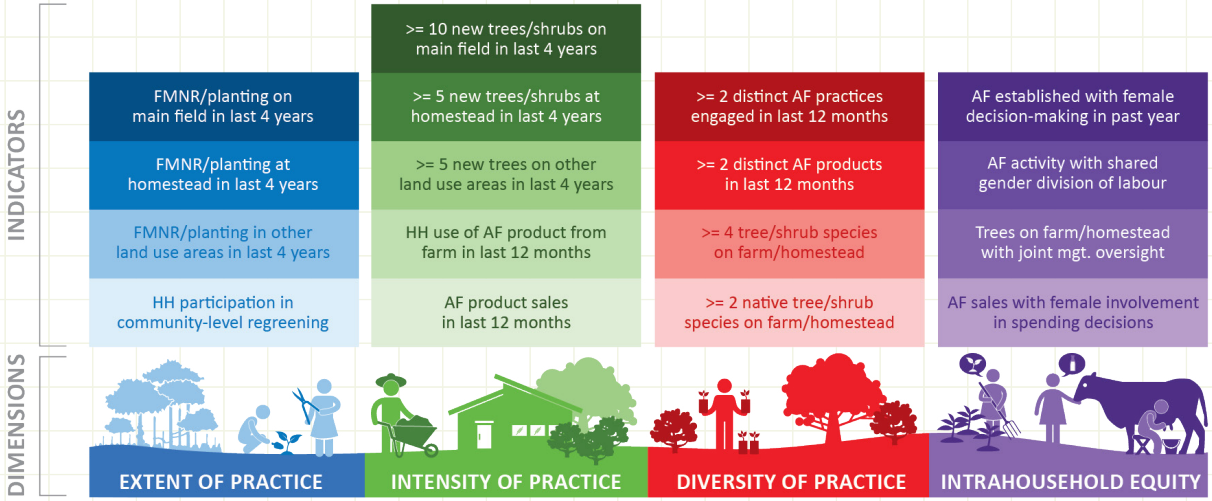
Uptake surveys were carried out using a structured household questionnaire which was modified to each country's context. The questionnaire was developed to capture data on exposure and uptake of specific agroforestry technologies and practices promoted by Regreening Africa. It was administered only to households living in village clusters that were reached early in the program implementation. Respondent households were selected using the lot quality assurance sampling (LQAS) technique to ensure correct representation of the intervention areas; and were sampled randomly whether they had been directly exposed to the project or not. The decision to randomly sample the households was based on the premise that all the households living in the intervention village clusters had an equal chance of participating in the programme and hence were considered treated by virtue of residing in those village clusters.

Uptake surveys and baseline/endline surveys reported on the Regreening Action Index, which was an important innovation emerging from the programme baseline. The index considers the extent, intensity, and diversity of practice as well as intrahousehold equity, recognizing that no one dimension of action can capture the full extent and quality of practice.

The uptake surveys revealed various areas that needed more attention during the final years of the project. For example, intra-household gender equality vis-a-vis regreening could be improved in all countries except for Rwanda. Specifically, an imbalance in the involvement of both men and women in regreening related activities and decision making at the household level was observed. A recommendation was made to the country teams to identify activities in which both men and women have comparative advantages and strategize accordingly.

The endline survey followed a predesigned impact evaluation strategy that was developed. Results from the endline surveys are now being used to confirm adoption of regreening practices as a result of the project and the area of land under restoration processes.

(BELOW) *Regreening Action Index to measure the breadth and depth of household-level regreening efforts.*



A KEY FINDING OF THE UPTAKE SURVEYS: WHERE PROGRAMME REACH WAS HIGH, UPTAKE OF THE PRACTICES WAS ALSO HIGH; WHERE REACH AND UPTAKE WERE LOW, PROMOTED SCALING MODELS AND PRACTICES WERE ADAPTED TO TRY ADDRESS THE CHALLENGES.

LESSONS AND REFLECTIONS

ICRAF had initially designed a complex but robust impact assessment methodology that required a 'control'. This design, however, was amended during the project and altered as the NGO implementation teams were not able to structure the field activities in this way. **This is a reflection for future project design and monitoring, to have much closer collaboration and resourcing for an impact assessment design.** For phase in strategies there needs to be closer collaboration between monitoring teams and the implementing partners.

The grounding of Regreening Africa in science, ranging from the most up-to-date technical knowledge through innovative research protocols, to the most sophisticated scaling up and monitoring systems makes it rare amongst restoration intervention projects.

Continual evidence-based dialogue between scientists and practitioners stimulated methodological innovations, such as the deployment of simple citizen science tools like the Regreening Africa App, to generate real-time evidence across scales.

Integrated into online dashboards, **evidence is accessible in an actionable form** by multiple stakeholders.

The **Regreening App**, pioneered under the programme has shown restoration monitoring at scale is possible, it has delivered evidence at low cost with a high numbers of data collection points.

TO LEARN MORE ABOUT THE LDSF:

http://landscapeportal.org/blog/2015/03/25/the-land-degradation-surveillance-framework-ldsf/

https://dashboards.icraf.org

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TO LEARN MORE ABOUT THE REGREENING APP:

https://regreeningafrica.org/in-the-news/the-regreening-africa-app/

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ABOUT REGREEENING AFRICA

Regreening Africa is an ambitious five-year project that seeks to reverse land degradation among 500,000 households, and across 1 million hectares in eight countries in Sub-Saharan Africa. By incorporating trees into croplands, communal lands and pastoral areas, regreening efforts make it possible to reclaim Africa's degraded landscapes.

As part of a larger global and regional effort to halt and reverse land degradation, the European Union-funded project, Regreening Africa, aims to improve smallholder livelihoods, food security and resilience to climate change in eight African countries. More specifically, it seeks to reverse land degradation over at least one million hectares and benefit 500,000 households, while also catalyzing an even larger scaling effort to restore tens of millions of hectares of degraded land across Africa.

With an initial phase over 2017-2022, this unique research in development is led by World Agroforestry (ICRAF) and implemented by consortium of international non-governmental. The consortium includes World Vision, Catholic Relief Services, Cooperative for Assistance and Relief Everywhere and Oxfam, as well as national NGO Sahel Eco. The eight countries that it is active in are Ethiopia, Kenya, Rwanda, Somalia, Ghana, Mali, Niger and Senegal, with a light touch in Burkina Faso.

Regreening Africa focuses on the incorporation of trees into many land-use types, including croplands, communal lands and pastoral areas, with complementary soil and water conservation and soil improvement practices. It leverages science and research to track the impact of implementation and enhance concurrent social inclusion and livelihood-enhancing efforts as well as creating a sustainable enabling policy environment for land restoration at national and sub-national levels.

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