![Regreening Africa logo]

KENYA

Country Information Brief

Best practices, opportunities and bottlenecks for scaling-up regreening practices

Funded by European Union

World Agroforestry

World Vision

ELD
THE ECONOMICS OF
LAND DEGRADATION

Contents

Image: Project teams from Ghana and Rwanda engaging farmers from Homa Bay in discussions on water-harvesting techniques that also serve as income generating avenues. **Photo:** Irene Ojuok.

Regreening Africa

Introduction

This document aims at providing a brief synthesis of best practices and opportunities for scaling-up regreening /land restoration and sustainable land management (SLM) in Kenya, that were learned from the implementation of the Regreening Africa program and the experience of implementing partners. This will be useful for informing future European Union (EU) programming at the country level.

The EU Kenya delegation's next program emphasises on three key broad areas (that align with the Team Europe Initiative (TEI)):

- Green transition - environmental sustainability and resilience;

- Governance, peace, and stability; and

- Leave no one behind - human development and inclusive growth.

It envisages that a fair green transition will serve Kenya's people and economy by supporting sustainable and inclusive growth and recovery. This includes opportunities for private and public investment, enhanced food security and improved livelihoods, while addressing climate and environmental impacts, to build resilience, protect natural capital and promote nature-based solutions, including in the blue economy. It also includes transformation of the agri-food systems through climate-smart agriculture, sustainable value chains, building resilience and minimising negative environmental impacts such as greenhouse gas emissions, pollution, ecosystem degradation and inefficient use of natural resources.

The brief shares crucial lessons from implementation of the project in Kenya as the delegation aims to "target the deteriorating landscapes and the degradation and depletion of natural resources and ecosystem services, sustainable use and management of natural resources, including arid and semi-arid lands (ASALs) and carbon rich ecosystems."

"Target the deteriorating landscapes and the degradation and depletion of natural resources and ecosystem services, sustainable use and management of natural resources, including arid and semi-arid lands (ASALs) and carbon rich ecosystems."

Image: Livestock grazing on a communally-owned FMNR plot in Homa-Bay county.
Photo: May Muthuri.

[1]Regreening refers to an increase in tree/vegetation cover as a step towards full landscape restoration, through the promotion of planting/growing a diversity of tree species and farmer-managed natural regeneration (FMNR) in agricultural and pastoral systems, including associated sustainable land management/soil and water conservation measures, livestock management and other related policy engagement processes.

Regreening Africa

What have been the main restoration successes, best practices and scalable models for Kenya?

The ultimate aim of the EU-funded Regreening Project in Kenya is to foster a massive, sustained land restoration movement. Mindset change is a fundamental aspect of building a restoration movement with nationwide uptake. The project has built on the successes of existing restoration programs in a number of countries, thereby providing a solid basis for nationwide scale-up. Restoration efforts have been established in several counties including Baringo, Elgeyo Marakwet, Homabay, Isiolo, Laikipia, Marsabit, Migori, Nakuru and Samburu. The program expansion was achieved by building a coalition of local, national and international non-governmental organisations (NGOs) and civil society organisations, collaborating with government at all levels, and with the technical support and overall coordination by World Agroforestry.

Matching restoration practices to different agro-ecological contexts and the needs of farmers. Farmer-managed natural regeneration (FMNR) is promoted in the country's ASAL areas, inclusive of grazing lands, where the economic benefits outweigh those of tree planting (costs and labour), tree survival rates and the ability to regenerate indigenous species and conserve local biodiversity. Planting of high value trees such as mango, avocado, citrus, pawpaw, among others, is promoted around homesteads and protected gardens where livestock destruction is unlikely to occur. Other practices include the reseeding of grasslands, soil and water conservation practices and grazing area management.

Mindset change is a fundamental aspect of building a restoration movement. Thus, the project has focused on shifting the attitudes of all stakeholders by improving their understanding of the many benefits received from investing time and effort in landscape restoration.

A much stronger technical capacity is imperative for the successful restoration of agricultural land, forested areas, grazing land and watersheds. The project has focused on building technical capacity among government experts, development agents and beneficiaries, organised in various community-based organisations. Capacity building has been conducted through continuous awareness creation, training, experience-sharing visits, and peer-to-peer learning opportunities. Further, the project trained community members to film restoration activities in their respective areas to provide an additional learning experience.

Image: Pupils of Ochieng' Odiere Pri. School, Homa Bay, use empty milk packets to grow seedlings for land restoration efforts in the aarea. **Photo:** World Vision.

Regreening Africa

What have been the main restoration successes, best practices and scalable models for Kenya? cont.

Image: Nyatike-Mirema (CFA Chair (in green T-shirt)) leads restoration efforts for Nyatike-Mirema hill, Migori.
Photo: Jared Ong'alo.

Bottom-up regreening uptake in Kenya has mainly been catalysed through community forest associations (CFAs), school environment clubs, lead farmer models in FMNR, fruit tree farming and tree nursery operations.

Project support was critical to the formation of the National Forest Landscape Restoration Implementation and Action Plan (FOLARAP) and the National Agroforestry Strategy. These inter-ministerial initiatives will provide leadership and coordination for landscape restoration in the coming years. They aim to achieve the country's target of restoring 5.1 million hectares of degraded land. The project is currently working to assist government in cascading this target downwards to enable each county to establish and implement its own unique landscape restoration target. To this end, the project has supported the counties in developing specific policies that will spearhead land restoration and climate action.

During the past three years, the Regreening Africa Project partners' scaling-up action. The establishment of Rural Resource Centers (RRCs) has put a total of 18,949 ha under restoration throughout Kenya (14,350 ha directly facilitated, and 4,599 ha leveraged through affiliated organisations). The program has reached 17,868 households (8,550 directly facilitated and 9,318 leveraged adoption). This rapid success will allow for an accelerated rate of adoption in the coming years.

In 2021 the project will host a national landscape restoration conference where a national restoration monitoring task force will be formed through a multi-stakeholder and multi-government agency collaboration. The conference will assess progress, highlight the most effective scaling successes, and formulate plans for accelerating the national restoration movement in the coming years.

Use of community videos, vernacular radio and TV stations to reach a wide audience of local communities. The various media options are used to create awareness on the urgency of restoring degraded lands and to communicate the options available to communities for restoring their lands and to share other forms of knowledge.

Regreening Africa

What are the social, cultural, and technological issues that may hinder the adoption of regreening activities?

Land tenure rights in Kenya do not favour the utilisation of land by youth (under 18). Title holders are usually adult men and the sub-division of land is a lengthy process.

Youth tend to be impatient and look for opportunities for making money quickly. As such, they are disincentivised from investing in enterprises such as growing trees that take time to yield income. This barrier creates a mindset that tends to focus their view on opportunities for early gains, and away from opportunities created by land restoration efforts. Youth therefore seek opportunities further down the value chain, which are usually not well developed.

There is gender discrimination in decision-making regarding land use and resource utilisation. Land ownership is still largely vested in men in many communities. Women are not able to make decisions on tree planting, and where they are, they are hindered from investing in the more lucrative value chains.

Lack of basic processing technology hinders value addition at the community level. This prevents farmers from making value-chain gains. The prices of many commodities are therefore not rewarding, and any losses incurred during peak seasons further disincentivise investment.

Image: A family from Nyatike sub-county in Kenya showcasing their bountiful harvest since incorporating trees on farm. **Photo:** World Vision Kenya, Brian Wambua.

Regreening Africa

What are the main policy, regulatory and governance barriers to regreening activities and how can they be addressed?

Agroforestry (which encompasses both tree planting and FMNR) lacks a firm anchor ministry. Tree planting usually falls under the Ministry of Environment, while other aspects involving integration of trees with crops and livestock are domiciled in the Ministry of Agriculture. A policy document to guide inter-sectoral activities and accelerate restoration activities is lacking. The agroforestry strategy being developed under the Ministry of Agriculture seeks to bridge this gap.

Free grazing of animals, especially after harvesting of main season crops. This reverses gains by destroying seedlings that have been established on parcels for restoration. Strengthening grassroot community institutions is a necessary investment to address this issue, especially in the ASAL areas. There is a need to reinforce by-laws that seek to protect land under SLM practices. Counties need support in linking the policies that are currently being developed with the by-laws drafted at the community level, as well as assistance with their enforcement.

Sub-division of ancestral land for inheritance by children. The country has been aspiring to enact policies that regulate minimal land size that could be economically viable, but this has yet to take effect. Whole village participatory approaches to land restoration can however address this issue by mobilising community members towards appropriate community visioning for land management. This interconnected activity will minimise 'leakages' in gains from SLM that can be attributed to farm sub-division. Mindset change and capacity building towards this objective is necessary.

Weak investment in ASAL value chains such as honey, medicinal plants, gums, and resins. There is little gain by community members from these value chains, despite the huge market potential at both national and international levels. This remains a disincentive to land restoration, which drives community members to engage in destructive activities, such as charcoal making. Policies at the national and county levels geared towards these value chains will be a great gain. The supportive value chains can be buttressed by investment in research and innovation on indigenous tree species in general, ranging from quality seedling production to value addition along the value chains.

Tree seed and supply systems are not well established for quality germplasm. While there have been attempts to regulate fruit tree nurseries through the fruit and nuts directorate at the Ministry of Agriculture, this has largely been unsuccessful, and it has barely been extended to other tree species. This disincentivises industrial offtake of tree products, hindering farmers from value gains. The Regreening Africa project has started supporting tree nursery associations across the project counties, and it is aiming at national level organisation to support peer germplasm quality control, and linkages with regulators for quality-declared germplasm certification systems. This investment needs to be scaled-up at the national level.

Absent, large landowners in the ASALs who do not invest in SLM. The policy aiming towards private land capital, while great for investment in SLM, has contributed to 'land banks' that are not managed. These tracts of land break up the SLM corridors that community groups aim to achieve. This is particularly problematic when the landowners are powerful individuals who do not cooperate with the community vision. There is a need for adequate policies and enforcement at the county level.

Image: A family from Nyatike sub-county in Kenya showcasing their bountiful harvest since incorporating trees on farm. **Photo:** World Vision Kenya, Brian Wambua.

Regreening Africa

What are the most promising value chains and investment opportunities that could incentivise regreening activities, and how could they be supported?

Fruit trees (avocado and mango)

Market: the avocado market is mainly international (Hass variety), although the local market is picking up. The mango market is mainly local (both as ripe fruits and juice). The number of processing facilities are increasing.

Key constraints for sustainable commercialisation

- Sustainable access to quality planting materials, especially scions for grafting;
- Quality control for sustaining international market demands;
- Seasonality in production leading to market gluts for some species such as mangos;
- Prevalence of pests and diseases; and
- Weak diversity of species fails to cushion against climate and market shocks.

Potential methods for overcoming key constraints

- Creating linkages between producers and private market players (e.g., Habex Agro Limited);
- Capacity-building on quality control;
- Linkages with reputable sources of tree scions (e.g., ICRAF, KEFRI, and KVDA) and establishment of community level mother-blocks owned by tree nursery associations;
- Smallholder irrigation systems to boost off-season productivity;
- Widening the species base to target both international and local markets; and
- Integrated pest management, especially through agroecological approaches.

Photo: ©C.Schubert

Regreening Africa

Honey

Market: predominantly local.

Key constraints for sustainable commercialisation

- Land degradation destroys bee forage resources, resulting in weak hive colonisation;
- Use of chemicals in agricultural systems;
- Low production volumes and poor processing quality (especially adulteration);
- Weak farmer organisation leading to high transaction costs for market actors; and
- Poor access to production technology and protection gear by resource poor producers, especially women.

Potential methods for overcoming key constraints

- Rural finance linkages to support access to production and processing technology;
- Diversification of farming systems to improve nectar availability and reduce the need for agrochemicals; and
- Building the capacity of community groups on production methods and market linkages.

Gums and resins

Market: Both local and international.

Key constraints for sustainable commercialisation

- Low production volumes amidst a dwindling resource base associated with land degradation;
- Lack of clear policies, strategies, and incentives on the development of gums and resins;
- Weak farmer organisation leading to high transaction costs for market actors; and
- Poor marketing infrastructure and inadequate information on prices, product flow, processing, and marketing options.

Potential methods for overcoming key constraints

- Building the capacity of farmers on production and sustainable harvesting techniques;
- Strengthening farmer organisations;
- Regenerating the resource base through FMNR; and
- Counties addressing policy gaps at sub-government level.

Summary of sustainable land management investment opportunities

- **Invasive species management.** Vast areas of Kenya's ASALs are invaded by *Prosopis juliflora, Acacia reficiens, Lantana camara* among others. *Prosopis* in particular, has ravaged grazing lands, rendering them economically barren and exposing communities to vulnerability. Various attempts at managing the species, such as fuelwood production, have not been effective. More holistic management approaches and significant levels of investment are required.

- **Water harvesting both on and off-farm.** Building the capacity of farmers in low-cost small-scale irrigation remains a great necessity for climate-smart production, both in dry and sub-humid areas. Community capacity-building for land management at the sub-catchment level is also a big win conferring benefits of improved hydrology and vegetation cover. The current pilot project on hill rehabilitation will go a long way to achieving this aim when practiced at scale.

- **Soil fertility management.** Key cereal yields in Kenya fall far below their potential and improvement attempts have been largely unsuccessful. Poor soil fertility exacerbated by soil acidity remains a key constraint. Various agroforestry practices have been trialed for soil fertility improvement with mixed success. Promising options, such as the incorporation of *Gliricidia sepium*, are available and ought to be promoted in the scaling-up platforms tested by the project. However, barriers to scaling-up at the local level need to be considered.

Regreening Africa

What are the best practices for gender and youth inclusion in the regreening movement?

Inter-generational involvement in FMNR whereby the youth, both in and out of school, are involved in land restoration efforts alongside women and men. This is important in ensuring the continuity of the practice and for inspiring youth participation in land restoration. Soccer tournaments are used for fostering youth involvement in land restoration. Dubbed "score to regreen", seedlings are given as awards for the number of goals scored. Several build up events, including awareness creation, tree planting ceremonies in public and private land, and capacity building on practices such as grafting occur prior to the soccer tournaments. Several stakeholders are involved, with some donating the seedlings for planting. Winning teams adopt a section of degraded land and are supported to undertake restoration efforts.

Encourage women groups to use savings for investment in land restoration. This approach capitalises on women's social capital by bringing different minds together and infusing a land restoration and business agenda. This is important in encouraging the use of savings, for example, for purchasing fruit tree seedlings to set up an orchard or value addition machinery, as opposed to household goods and items. Whichever the choice, the idea is to save with a business target linked to land restoration in mind. This approach has helped to increase women's involvement, participation, and empowerment in land restoration efforts in the typically male-dominated communities.

Image: Healthy pawpaws growing on Raphael Odwaro's farm in Homa Bay County. **Photo:** May Muthuri.

Regreening Africa

What are some key tools and methods for monitoring regreening activities?

Regreening Africa App

The Regreening Africa App is a mobile-based android application that allows users to collect data at farm level on a range of land restoration practices that allows for robust landscape level monitoring.
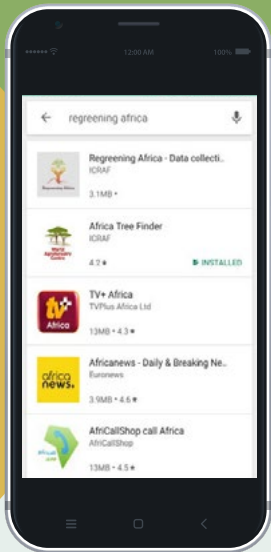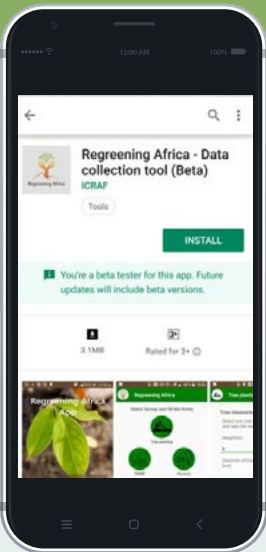
Locate App   **Install App**   **Start up App**   **Open survey forms**

Why do we need it?

The Regreening Africa App links land restoration activities implemented by farmers farmers and pastoralists to large global initiatives, providing evidence that can positively inform these efforts, whilst simultaneously assessing their effectiveness on the ground.
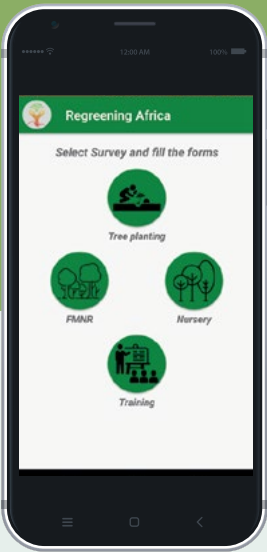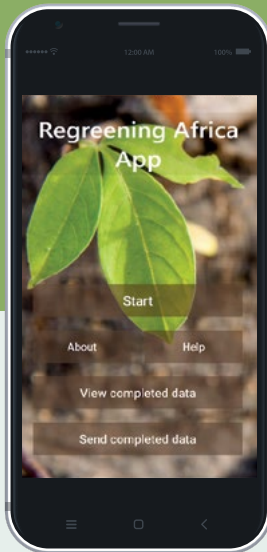

Google Play

What is unique about the Regreening Africa app?

The App is a data collection and monitoring tool. The information collected can be integrated into various types of analytics and combined with information on land health and other thematic data.

The App enables stakeholders including farmers to record and track their land restoration practices. The locations of their activities are geo-referenced and species diversity and growth are recorded in real-time.

Data collected through the App is freely and instantly available to the users and various outputs from the synthesis of the data, such as

critical land health indicators, are then shared with the public through the Regreening Africa Dashboard.

The App is continually updated and the design and interface amended, based on farmers, extension agents and project implementing teams to add requested data and ensure the design and functionality match the user needs.

The Regreening App was developed in close consultation with stakeholders, with continual interaction between the World Agroforestry development team and users.

Project implementors are able to use the data for real-time decision support in project implementation and monitoring.

Data collected using the App is combined with spatial assessment of land health and can be applied in soil carbon monitoring, relating directly to climate neutrality goals or restoration targets.

"The beauty about this App is its simplicity. I have used it to record trees on many farms and have been fascinated to see what the data looks like once it is processed".

Mohamed Dicko, project officer, Oxfam Mali.

Photo: Joseph Bidiar/ World Vision Senegal.

Regreening Africa

TREE PLANTING MODULE
Tree planting

- Record details of farmers and regreened plot
- Chatacterise species composition and assess tree planting practices

- Track tree growth
- Field boundary recorded
- Number of trees planted

- Date(s) planted
- Location of trees planted
- Survival of trees

Field boundary

Individual trees

FARMER MANAGED NATURAL REGENERATION (FMNR) MODULE
FMNR

- Record details of farmers and regreened plots
- Characterise dominant species composition

- Assess FMNR practices

Photo: ©Kelvin Trautman

NURSERY MODULE
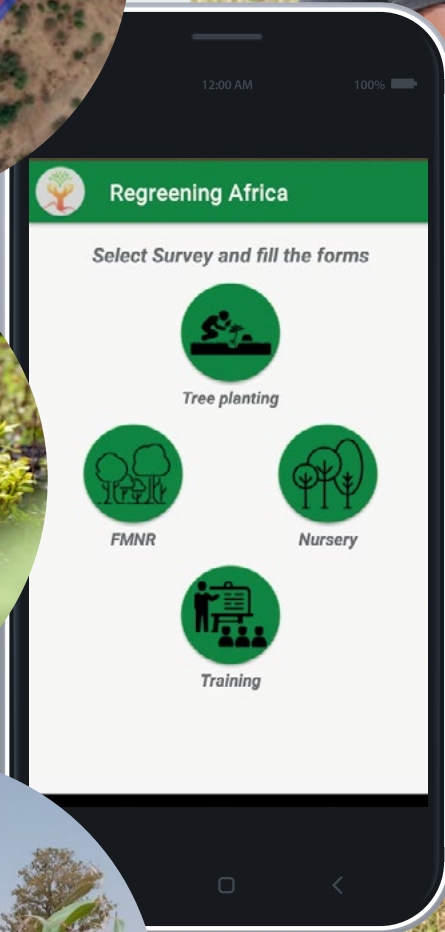*Nursery*

- Ensuring that farmers have access to quality planting materials and a wide range of species for tree planting
- Record nursery information and location

- Record nursery practices
- Record nursery production

Regreening Africa

Select Survey and fill the forms

Tree planting

FMNR   *Nursery*

Training

TRAINING MODULE
Training

- Record training details
- Record gender participation in training sessions

Assisted crowd sourcing, through data collection across multiple countries and contexts is giving critical insights into drivers of land degradation. This will allow for more effective restoration efforts to be designed and implemented on the ground.

Photo: Felix Mulindagabo/ World Vision Rwanda.

Regreening Africa

Geo-spatial mapping of real-time land restoration efforts using tools that capture landscape change, such as 'before and after' photographs taken in the same season.
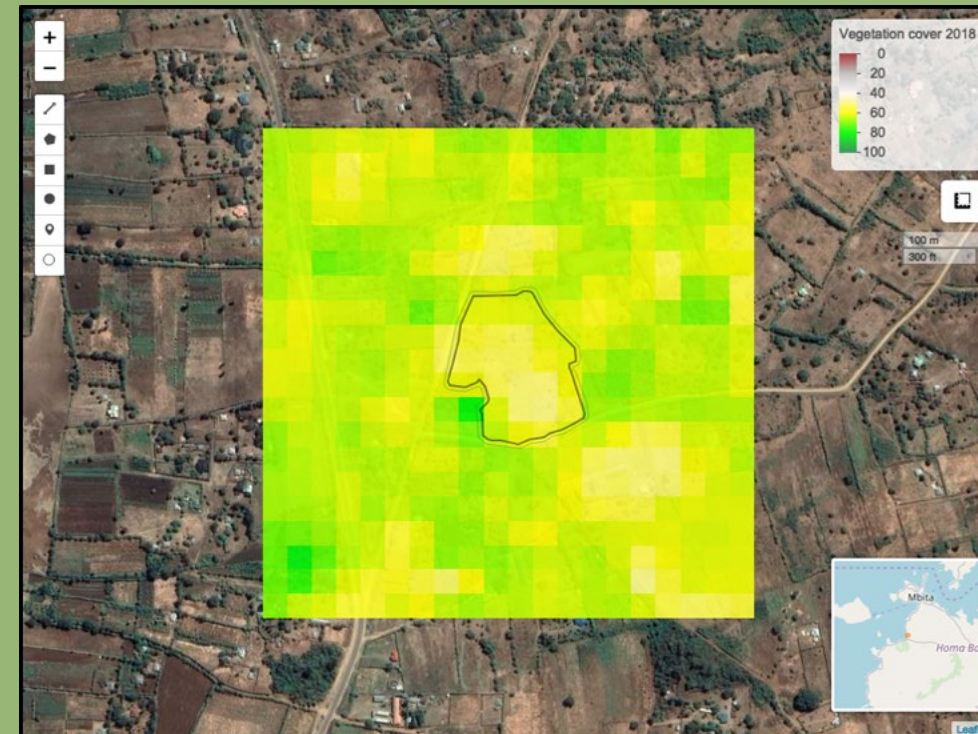
Surveys including baseline, endline, uptake etc. The use of IT/web-based tools to undertake surveys reduces human errors and administration time. Further, the surveys help to capture socio-economic aspects of land restoration and can be used for ground truthing in geo-spatial approaches.

Image: Robert Oroiyo taking Mr. Olimo and 2 youths through the Regreening Africa App in Homa Bay county, Kenya. **Photo:** Susan Chomba.

Dashboards at national and sub-national level are important for reporting on the restoration achievements of various actors.

WELCOME TO THE
Regreening Kenya Decision Dashboard

Using this decision dashboard

The Kenya Decision Dashboard brings data and information into a dynamic central location and can be used to monitor and track land health status and agroforestry systems, to allow for evidence-based planning and decision-making.

What is a dashboard?

Dashboards allow information and data to be **quickly and easily communicated** to key users and decision makers
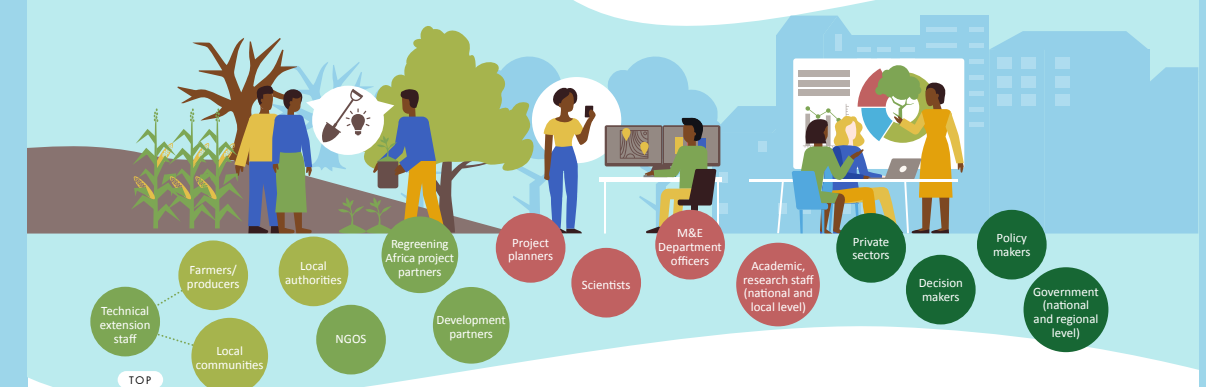
Decision dashboards are **customized to the Kenyan context** and key technical officers, departments and key stakeholders engaged in land use and conservation

The Kenya Decision Dashboard can include quantitative and qualitative **information shown in a range of visualizations** that work best for the target audience, such as graphs, charts, photographs, videos, documents, and maps

A dashboard can be built to **automatically update and visualize data** and information, saving time and allowing for effective presentation of data

Dashboards enable accurate data in a specific location to be viewed **interactively** and in real-time as they typically have a **dynamic interface**, using programming and information that is regularly updated

Who are the intended users of the Kenya Decision Dashboard?

Technical extension staff

Farmers/ producers

Local authorities

Local communities

NGOS

Regreening Africa project partners

Development partners

Project planners

Scientists

M&E Department officers

Academic, research staff (national and local level)

Private sectors

Decision makers

Policy makers

Government (national and regional level)

TOP

Valuable resources that can be consulted for further information:

- Regreening Africa baseline survey report

- National Climate Change Action Plan, Kenya (2018-2022)

- Draft Kenya National Agroforestry Strategy (2021 - 2030)

- National Strategy for Achieving and Maintaining 10% tree cover

- ELD reports, including scoping mission report (2018)

- Technical Report on the National Assessment of Forest and Landscape Restoration Opportunities in Kenya (2016)

- National Forest Reference Level submitted to UNFCCC

Image: A lead farmer, Sabina Otieno, tending to her tree seedlings. **Photo:** May Muthuri.

Regreening Africa

Annex 1.

Cost/benefit analysis of Sustainable Land Management (SLM) practices in Kenya

Image: Farmers from Homa Bay and Migori counties visiting a tree nursery in Elgeyo Marakwet during a farmer field day. **Photo:** Maxwell Ochoo.

Table 1: Perceived benefits of implementing an SLM practice on a hectare of maize for (a) manuring, (b) intercropping, (c) physical terraces, and (d) agroforestry within each individual county and for the data from the three counties combined. The approach used to calculate the additional benefits from fodder and wood production from agroforestry is described in Methods S1. SLM = sustainable land management. (DALLIMER ET AL.)

SLM practice		Bungoma	Kakamega	Siaya	Three counties
Manuring	Time lag between implementation and accrual of benefits assumed for this study	Full benefits accrued in Year 3 and each year subsequently, 25% in Year 1, 75% in Year 2			
	Cost of construction (labour US$/ha)	-	-	-	-
	Annual cost of implementing the SLM (labour US$/ha)	99	42	69	61
	Perceived benefit (increase in yield kg/ha)	2,195	1,560	1,213	1,565
	Perceived benefit (decrease in labour hr/ha required to cultivate maize)[a]	88	129	19	73
	Gross profit from second crop (US$/ha)	-	-	-	-
	Perceived benefit (US$/ha)[b]	747	533	359	516
Intercropping	Time lag between implementation and accrual of benefits assumed for this study	Full benefits accrued in Year 2 and each year subsequently. Additional gross profit from the intercrop of beans is accrued immediately			
	Cost of construction (labour US$/ha)	-	-	-	-
	Annual cost of implementing the SLM (labour US$/ha)	40	58	56	54
	Perceived benefit (increase in yield kg/ha)	-213	168	218	115
	Perceived benefit (decrease in labour hr/ha required to cultivate maize)[a]	128	-7.25	1.5	22
	Gross profit from second crop (US$/ha)	245	124	171	165
	Perceived benefit (US$/ha)[b]	226	178	293	231
Physical terraces	Time lag between implementation and accrual of benefits assumed for this study	Full benefits accrued after 5 years; 75% in Year 4; 50% Year 3; 25% Year 2; 10% Year 1			
	Cost of construction (labour US$/ha)	113	50	60	56
	Annual cost of implementing the SLM (labour US$/ha)	19	27	33	29
	Perceived benefit (increase in yield kg/ha)	2,700	783	230	623
	Perceived benefit (decrease in labour hr/ha required to cultivate maize)[a]	77	55	55	56
	Gross profit from second crop (US$/ha)	-	-	-	-
	Perceived benefit (US$/ha)[b]	1,035	305	98	246
Physical terraces	Time lag between implementation and accrual of benefits assumed for this study	Full benefits accrued after 10 years; 75% Years 8 and 9; 50% Years 6 and 7, 25% Years 4 and 5; 10% Years 2 and 3			
	Cost of construction (labour US$/ha)	13	20	20	19
	Annual cost of implementing the SLM (labour US$/ha)	4	7	0	4
	Perceived benefit (increase in yield kg/ha)	405	125	50	153
	Perceived benefit (decrease in labour hr/ha required to cultivate maize)[a]	0.0	213	-125	67
	Gross profit from second crop (US$/ha)	-	-	-	-
	Perceived benefit (US$/ha)[b]	121	38	14	45

[a]Positive values indicate a decrease in labour, and negative values indicate an increase (i.e., the benefit is negative and is therefore an additional cost). [b]Perceived benefits are the net result of labour costs/savings and additional yields.

Regreening Africa

Regreening Africa

www.regreeningafrica.org

twitter.com/RegreenAfrica

facebook.com/RegreenAfrica

RegreeningAfrica@cgiar.org

M.Bourne@cgiar.org