Restoration Monitoring Readiness in Kenya: A rapid Assessment (DRAFT REPORT)

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1. Highlights

- Land use and land cover change is the second largest contributor (38%) to Kenya's greenhouse gas (GHG) emissions following agriculture.[1]

- Restoration is prioritized by the Kenyan government as demonstrated by various policies and has committed to restoring 5.1 million hectares of land by 2030 under the African Forest Landscape Restoration Initiative (AFR100) and Bonn Challenge, as well as a national target of attaining 10% tree cover. Restoration is also critical for the country to meet its economic development and environmental goals.

- Most restoration projects or initiatives have been focused in the arid and semi-arid areas where land degradation is rampant through soil erosion and excessive runoff.[2]

- The highest number of implementing partners from the survey were from the private sector, especially the energy sector.

- Restoration activities and practices reported focused on reforestation, agroforestry, conservation as capacity building, policies, and institutions.

- Restoration indicators monitored by the projects were largely around the area of restoration, tree growth and diversity, population benefitting, alternative energy/carbon, policy and enabling environment and institutions, investment, and yield. Many of the indicators were for activities and outcomes with fewer considering impact of the restoration.

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[1] MENR, 2016
[2] Gachenje et al 2019

2. Introduction

Land degradation caused by deforestation and loss of vegetation cover is one of the most serious impediments to Kenya achieving its development goals under Vision 2030 (MENR, 2016). Furthermore, land is a pillar for the country's development blueprint which is structured around the big 4 agenda that prioritizes: (i) Food and nutrition security (ii) Affordable housing, (iii) Increased manufacturing and, (iv) Affordable healthcare. Furthermore, the state of the environment and food security are interlinked in tropical landscapes, the ever-increasing demand for productive land, land for settlement and for development among other uses is a threat to long term sustainability (Vågen et al 2018).

Human activities that pose the greatest threat include unsustainable land management practices like destruction of natural vegetation, over-cultivation, overgrazing, poor land husbandry and excessive forest conversion (Gachenje et al 2019). This puts Kenya at a high risk of the negative effects of climate change as it is already susceptible to climate related events; especially if nothing is done to reverse the degradation trends. Land in Kenya is continuously degraded, threatening the livelihood of most of the population who rely on agricultural activities for food and income.

Land degradation is a huge global environmental and development challenge (Gachenje et al 2019). Spatial analysis of the land use cover changes in 2015 showed an overall deterioration of vegetation cover. According to the Land Degradation Assessment in Kenya Report of 2016, high land degradation is likely to occur on about 61.4% of the total area of Kenya, while very high degradation affects 27.2% of the land (MENR, 2016). Furthermore, according to the same report, the national land use challenges include deforestation, habitat degradation, fragmentation and loss of biodiversity, soil infertility, overstocking and overgrazing, soil erosion and/or siltation of water bodies, flooding, landslides, water scarcity, and climate change.

Kenya's greenhouse gas (GHG) emissions keep increasing, although the 2015 emissions contributed to less than 0.1% of the global emissions, Kenya's increasing emissions cannot be ignored (MEF, 2020). Land use and land cover change is the second largest contributor (38%) of Kenya's emissions, because of deforestation and energy. This is close to the first contributor which is agriculture at 40% (MEF, 2020).

Landscape restoration is thus a vital process that will reverse the degradation by increasing soil fertility and productivity, reversing biodiversity loss, and contributing to climate change mitigation and adaptation. Furthermore, according to the Food and Agriculture Organization of the United Nations (FAO) and World Resources Institute (WRI), restoration activities improve social, ecological, economic benefits as forests and vegetation are continuously increased (Buckingham et al 2019). Restoration is prioritized by the Kenyan government and is denoted by the various policies and legislations. For example, the Kenya Vision 2030 states

the need for sustainable land use as part of the proposed land reforms where the government of Kenya is committed to restoring 5.1 million hectares of land by 2030 under the AFR100 (African Forest Landscape Restoration Initiative) and Bonn Challenge, as well as a national target of attaining 10% tree (MOPND, 2011). Additionally, the potential of landscape restoration can be unlocked to achieve environmentally and socially sound outcomes if support, cooperation, and contribution is from different stakeholders at all levels.

Counties most affected by degradation include Samburu, Kitui, Garissa, Tana River, Mandera, Turkana, Marsabit, Baringo, West Pokot, Kajiado, Kilifi, Wajir and Makueni. Even some relatively wetter zones also have high propensity for soil erosion, especially on steep slopes of Mt. Kenya and the Aberdares, including parts of Muranga, Nyeri, Meru and Tharaka-Nithi (MENR, 2016). The 2016 national assessment of the potential restoration opportunities identified seven priority restoration options: afforestation activities, reforestation efforts, agroforestry practices, commercial tree and bamboo plantations, tree-based buffer zones along water bodies and wetlands, tree-based buffer zones along roads and rangeland restoration (MENR, 2016).

For several decades now, there have been different restoration initiatives from the government, non-governmental organizations (NGOs), community-based organizations (CBOs), the private sector among other key players. However, the extent and effectiveness of these initiatives needs to be monitored accurately, especially to report on international commitments and local restoration ambitions. Importantly, the United Nations Decade for Ecosystem Restoration was launched in June 2021, likely catalyzing more restoration projects in the country.

The need to monitor and learn from landscape restoration initiatives prompted this rapid assessment of Restoration Monitoring Readiness in Kenya, whose aim is to take stock of the extent of landscape restoration practices and monitoring in Kenya and to draw some key lessons. This rapid assessment will contribute to the establishment of an aligned and coordinated monitoring, reporting, and learning framework for landscape restoration in Kenya. This report was prepared as part of the Regreening Africa Programme support to restoration in Kenya.

3. Methods

The results in this report come from three main data collection processes:

(i) Online survey targeting a wide range of restoration stakeholders and actors in Kenya: government agencies, NGOS to CBOs and youth groups. The online survey was launched mid-April 2021 and kept open for six weeks.

(ii) Qualitative data from a webinar on Forest and Landscape Restoration Monitoring with stakeholders in 2021.

(iii) Desk review of restoration work in Kenya.

The initial results were presented during the Forest Landscape Restoration Monitoring Webinar held on the 23rd of April 2021. The survey was officially closed on 2nd June 2021 for the development of the final report.

4. Restoration projects/initiatives

(i) Counties and number of projects

The number of projects/initiatives that filled the survey were 32 and are spread across the country. Turkana had the highest number of projects (10) from the survey, followed by Laikipia (8) and Isiolo (7). Majority of these restoration projects that filled the surveyed are in the Arid and Semi-Arid Lands (ASALs), where most land degradation is prevalent (MENR, 2016).

There was no feedback from initiatives in 15 counties (Bungoma, Kakamega, Kilifi, Kirinyaga, Kisii, Kisumu, Mombasa, Murang'a, Nyamira, Nyandarua, Nyeri, Samburu, Vihiga, Wajir and West Pokot), as shown in the graph below (Figure 1). However, this does not mean that there are no land restoration projects/activities in these counties.

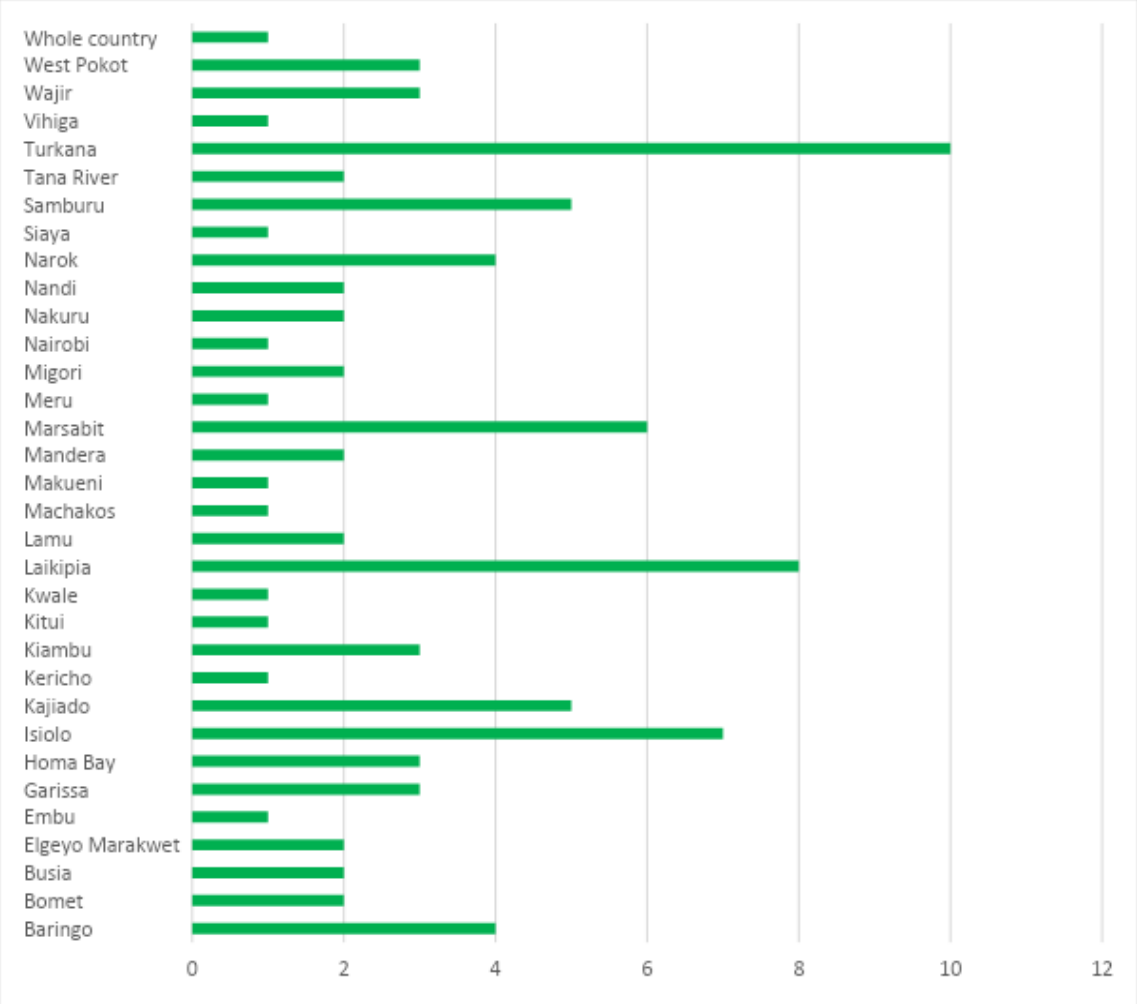

Figure 1: Counties in which Landscape Restoration Projects or initiatives were reported

(ii) Project timelines

For the projects that filled the surveyed, their timelines were from 2019 towards 2021, which is in tandem to the UN Decade on Ecosystem Restoration that runs from 2021 through 2030. The year 2021 has the most number (25) of restoration projects running. Out of the 32 restoration projects/initiatives, 27 declared their project dates of operation[3], that averaged at 6.7 years. These included projects with timelines of less than a year, others long-term (between 5 to 15 years) and two with an infinite timeline.

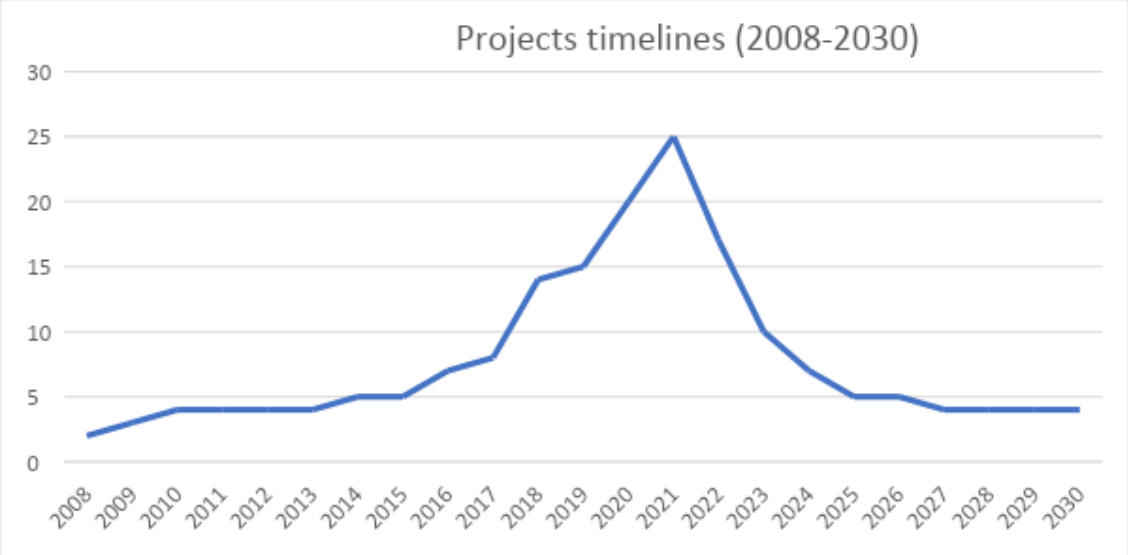

Figure 2: Project dates of operation.

(iii) Targeted vs covered hectares

Out of the 32 surveyed projects, 14[4] declared a total of 1,859,343 hectares as targeted for restoration. Out of this, 839,057 hectares were reported to have been successfully under restoration activities (Figure 3). We cannot conclude that the declared areas are fully restored unless an assessment of the full dimensions of restoration is completed. An assessment that includes and not limited to the soil and vegetation health and other livelihood dynamics in the areas reported as restored.

[3]For purposes of this report, we have reported dates of operation up to 2030 as there are 2** projects that are infinite

[4] 18 projects did not differentiate between targeted area vs successfully covered area.

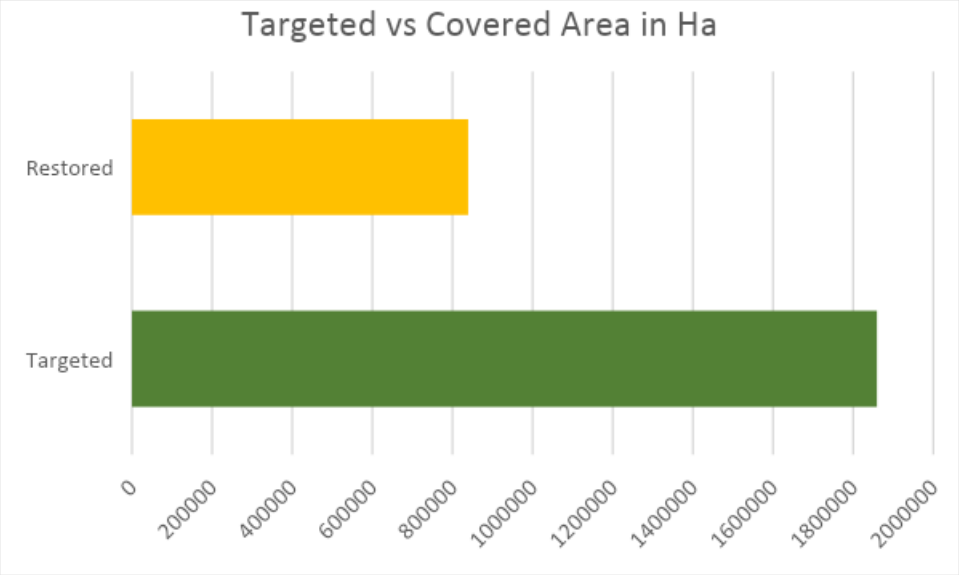

Figure 3: Targeted vs Restored hectares of 14 projects

4.2. Landscape restoration activities/ practices

Various ongoing land restoration activities/practices were reported (see below and Figure 4):

i. Reforestation practices: these include, tree planting, the use of bamboo, greenbelt establishment, reseeding, catchment restoration.

ii. Agroforestry practices: where trees are planted together with crops and include seedlings establishment, planting of fruit trees and indigenous trees, improved land management, Farmer Managed Natural Regeneration (FMNR).

iii. Conservation practices: that include soil and water conservation, pasture development, alternative energy approaches, invasive species management, organic farming, patrolling.

iv. Other practices: that support the implementation include capacity building, policy and regulatory support, climate proofing, intervention bylaws and conservation agreements, institutional support, advocacy.

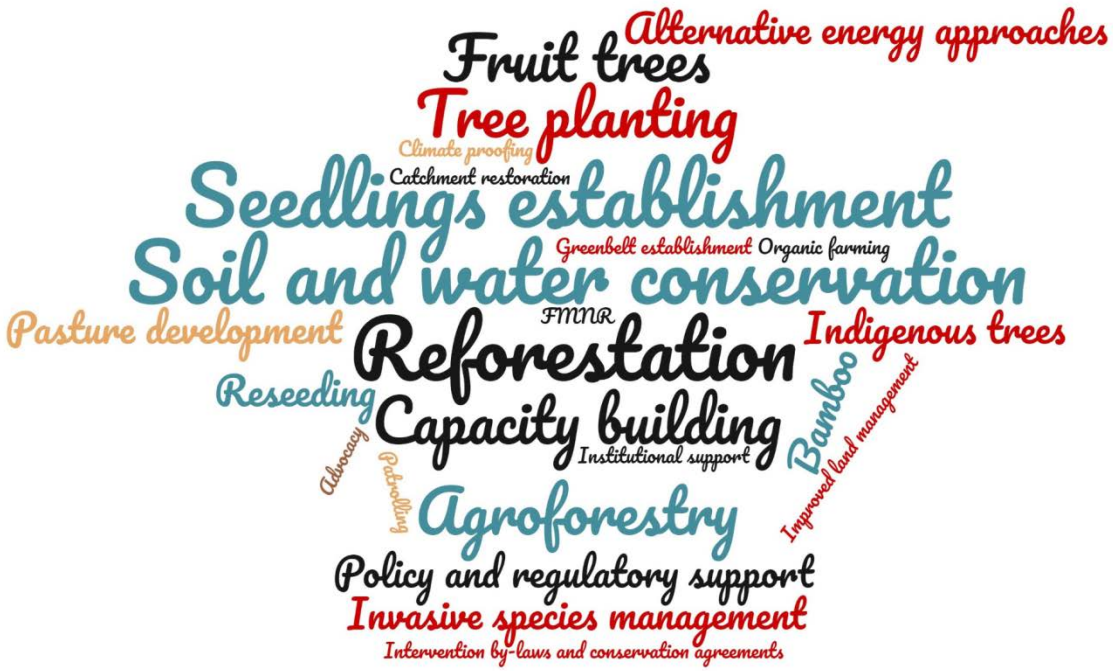

Figure 4: Restoration indicators being monitored (most reported are shown larger)

This largely agrees with the suggestions documented within Kenya's policies and plans. Gachenje et al (2019) analysis of these policies and plans summarizes specific measures to reduce/reverse degradation that are closely aligned with the findings of this monitoring survey.

Although the survey results only captured projects/initiatives that responded to the online survey, literature shows that there are other notable forest landscape restoration efforts whose impacts need to be captured. For example, in Mau Forest Complex which is continuously affected by extensive illegal settlement and deforestation. Through KFS efforts, more than 4000 hectares of Likia and Sururu blocks have been rehabilitated through bare soil-mixed species planting, natural regeneration, and enrichment planting (Munyasya 2018).

All county governments support different landscape restoration projects and activities like reforestation, and this is evident from their County Integrated Developmental Plans (CIDPs). The counties are required by the national government to have mechanisms of reversing land degradation and reducing the negative effects of climate change.

5. Restoration indicators being monitored

Below are the restoration indicators being monitored by the projects that completed the survey:

1. **Area of restoration**: Ha of land reclaimed/Ha under improved land management/ Ha under direct restoration/Ha reseeded with pasture/hay produced/ Number and area of orchard established/ Naturally regenerating pastures propelled by effective enclosure of grasslands/ Number of ha directly contributing to biodiversity conservation and sustainable use/ Increased household farms on bamboo/ stabilized riverbanks and dykes/ soil health.

2. **Tree growth/diversity**: Number of trees managed/ Germination, growth and maturity to reseeding of selection sites/ Regreening action index (extent of restoration practices, intensity of restoration practices, diversity of restoration practices, intra-household equity/ Effective substitution of monoculture tree plantations with polyculture tree species/ Number of seed banks established or supported/ tree nursery establishment.

3. **Population benefitting**: Number of people trained/ benefiting from FLR interventions/ farmers integrating FMNR/ Increased individual farmers/ number of community ranch members trained and skilled on group ranch organization organizational capacity and natural resource management/ Number of people directly benefiting from project activities (including capacity building events and trainings)/ number of capacity building events and numbers of farmers attending/ number of grazing scouts trained and enforcing grazing agreements/ Bamboo farmers' cooperative formed/ Number of local community restoration crews employed and trained for restoration/ number of herders recruited trained and applying alternative sustainable grazing plans/ participation in training/extension on restoration approaches.

4. **Alternative energy/carbon:** Number of households adopting alternative and clean efficient technologies/ Number of tons of CO_2 directly mitigated through project activities/ recovering, reusing, recycling, and reducing ecosystem by-products/ reduction in cutting of trees for charcoal production.

5. **Policy and enabling environment/institutions**: Number and type of relevant FLR -related action plans and policies developed and adopted/ cross-sectoral coordination mechanisms in place at the national level/ Implementation of enforcement of developed by-laws/agreements and restoration plans/ progressive alignment of the needs of dryland communities into the action plan vis-à -vis the nature of dryland ecosystems/ policy influencing/ Seamless integration of indigenous and scientific knowledge.

6. **Investment:** Number of investment tools developed/improved to support FLR initiatives/ systems, values, and practices/ Impactful gender-responsive climate finance and decision-making strategy/ / increased gum arabic production.

7. **Yield**: Volume of yield increase, capacity and volume of water harvested/ end-point water use optimization for humans, animals, plants, and soils/ frequent stable rains.

Most of the reported indicators were for activities and outcomes and fewer considering the impact of the restoration projects/initiatives.

6. Tools and methods that are used to monitor the indicators

The key tools and methods used to monitor the indicators of landscape restoration activities in Kenya reported by the surveyed projects/initiatives include surveys, observation and field visits, community feedback, photography, smart gadget (phones and tablets) apps, reports, monitoring and evaluation, satellite images, assessments, measurements, production, surveillance, Collect Earth; Open Foris, Inbar bamboo mapping tool, vegetation monitoring, policy and legal tools (see Figure 5).

Figure 5: Monitoring methods and tools (most used are shown larger)

7. Challenges in developing indicators and deploying monitoring tools

The challenges identified through the survey in developing indicators and deploying monitoring tools included financial, human capacity, technological, and data challenges.

Table 1: Challenges in developing indicators and deploying monitoring tools

Challenge	Responses from the survey
Technological	• weak technological base • not comprehensive; does not capture feedback
Financial	• inadequate financial resources for projects • sometimes leads to abandonment of projects
Human capacity	• inadequate human capacity
Data challenges	• knowledge gaps • no previous programs and/or images for comparison • data available is unreliable
Engagement	• low reporting • insincerity from beneficiaries • lack of good will and poor coordination between stakeholders • change in gender norms • encroachment
Bio-physical	• poor terrain making project sites inaccessible • drought hinders establishment of vegetation • measures the status (current) of activities but not progressively
Policy and legal framework challenges	• weak policy and legal support of restoration activities • unfavorable land tenure system

8. Implementing partners

The largest number of implementing partners reported in Kenya are interestingly from the private sector (15) and mostly from the energy sector like Cookswell Jikos Ltd and Chardust Ltd among others. The second largest implementer category are the national government (13). Other implementing partners include community-based organizations (9), non-governmental organizations (NGO)s (8), United Nations and Intergovernmental Organizations (5), County governments (4) and research institutions (2), see Figure 7 below.

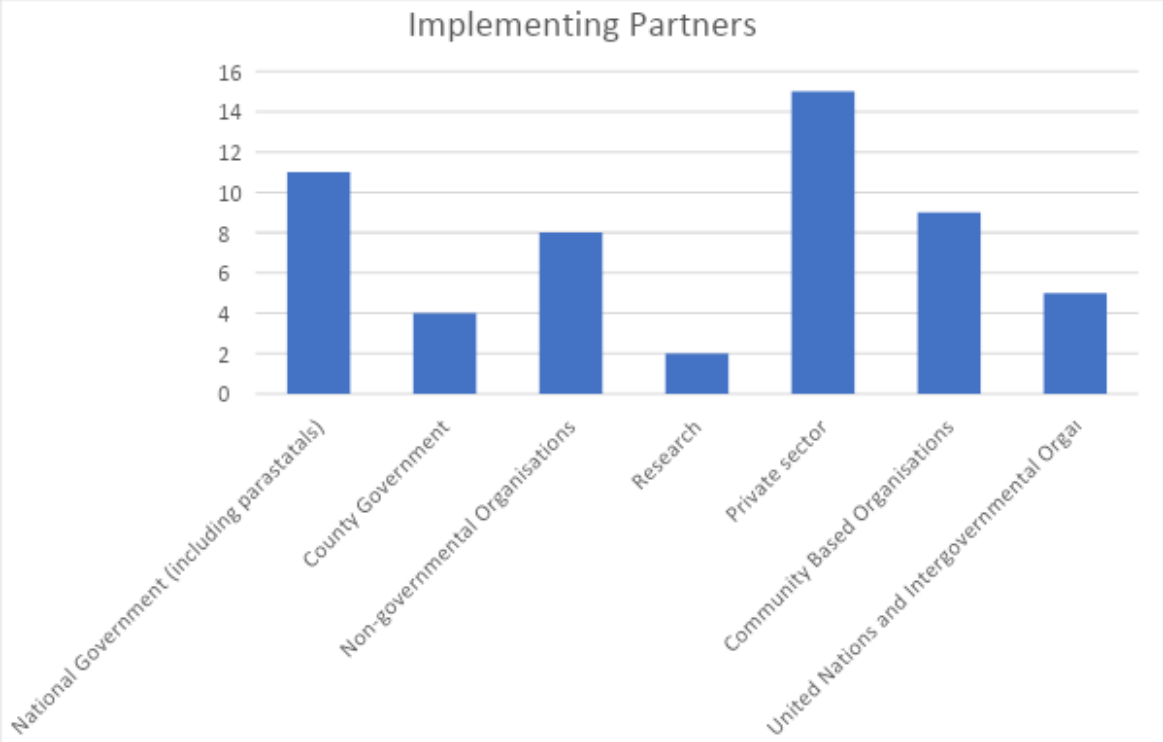

Figure 7: Implementation partners

During the 23rd of April 2021 webinar, it was evident that a lot is already going on in terms of monitoring landscape restoration activities. For example, Kenya is implementing an Integrated MRV System that will help in tracking mitigation and adaptation actions ready to report to the United Nations Framework Convention on Climate Change (UNFCCC), National Communications (NCs) and Biennial Update Reports (BURs). It will also track progress on implementation of the Nationally Determined Contribution. Additionally, the system will demonstrate the country's climate finance readiness and provide a strong platform for attracting international climate finance flows from multilateral and bilateral development partners.

The Kenya Forest Service has the National Forestry Monitoring System: The Forest Information Platform For NFMS, REDD+ and SFM, a relational Database Management System for sharing information and data on forestry and related issues and consequently developing

sustainable forest management plans. Specifically, the system monitors forest degradation and deforestation, and will also be used to monitor forest and landscape restoration initiatives.

The National Forest Landscape Restoration (FLR) Knowledge Management (KM) System is a portal under development by the Kenya Forestry Research Institute (KEFRI) whose aim is to centralize management of FLR knowledge in Kenya. The portal will be one-stop shop online platform for FLR resources for restoration initiatives in Kenya.

The County Integrated Monitoring and Evaluation System (CIMES) was presented by the Council of Governors. CIMES is used to track implementation progress of projects and programmes outlined in the MTP and CIDP and other projects and programmes financed by devolved funds, development partners and CSOs.

One of FAO restoration tools, the Open Foris Collect Earth is a tool that enables data collection through Google Earth in conjunction with Bing Maps and Google Earth Engine, to analyze high and very high-resolution satellite imagery. The objective of the tool is to assist governments, communities, and others to make well informed decisions on sustainable forestry and land management.

There is also the Regreening Africa Kenya Dashboard and Regreening Africa App by World Agroforestry (CIFOR-ICRAF) through the Regreening Africa Programme, for proper monitoring of interventions and impacts of land restoration. Regreening Africa App captures information on tree planting, FMNR, trainings and tree nurseries and the results can be combined with satellite imagery and the Land Degradation Surveillance Framework database to determine vegetation cover and land health indicators such as erosion and soil organic carbon.

The Global Restoration Monitor by the Global Evergreening Alliance (GEA) whose main objective is to track global land restoration projects, spanning from large multi-country programs to local grassroots initiatives. It utilizes ground level data with a significant focus on smallholder farmers across 18 countries including Kenya. It monitors indicators like total land under restoration, number of women and men trained in restorative methods, number of households practicing those methods, number of trees under management and tons of carbon sequestered.

Many other tools and approaches to monitoring landscape restoration exist in Kenya that were not captured by the survey or the webinar.

9. Policy and enabling environment

Land restoration is an intensive process that involves a variety of intertwined economic, environmental, and social issues, which cut across the mandates of various government and non-governmental agencies. Thus, to achieve landscape restoration, there must be coordination, collaboration and cooperation across institutions, sectors, actors, and policy domains.

There are several laws that prescribe measures to reduce degradation and/or restore degraded land: The Constitution of Kenya, National Strategy for Achieving and Maintaining over 10% Tree Cover by 2022, draft Agroforestry Strategy and the Environment Management and Coordination Act (EMCA) of 1999, which promotes afforestation and reforestation activities in eroded areas and areas prone to erosion.

There are various policies and plans that prescribe specific measures to reduce and reverse land degradation. For example, the National Climate Change Action Plan (NCCAP), National Climate Change Action Plan 2018-2022 and Climate Change Act not only mainstreams climate change mitigation and adaptation into sector functions but also identifies and supports implementation of targeted land restoration activities. Obligations across legal and policy documents are well-aligned with land restoration efforts across different areas. For example, the Community Land Act, Land Act and the National Policy for the Sustainable Development of Northern Kenya and other Arid Lands caters for the ASALs, the Forest Conservation and Management Act and the Forest Policy caters for forests, while the Climate Smart Agriculture Strategy (CSAS) and other documents cater for agricultural areas.

Additionally, Kenya is preparing the Forest and Landscape Restoration Action Plan (FOLAREP) 2021-2025, which is at the final stages. The plan is meant to address challenges like inadequate implementation of legal and policy frameworks, low application of modern technology, poor coordination among stakeholders, inadequate investments in FLR value chains, inadequate market infrastructure, research, and knowledge gaps among other challenges.

Counties have a task to adopt national laws and policies at the county level to a point where they have specific policies and/or action plans that address their county level issues. For example, in Turkana, the County Government through the Climate-Change Steering Committee chaired by the County Executive Committee (CEC) Water, Environment and Mineral Resources came up with the Turkana County Climate-Change Policy 2020. This further enabled the development of Turkana County Climate-Change Bill 2020 which is at the final stages of becoming an Act. There is also a Turkana County Action Plan in place. This legislation has been established to address the poor coordination and the conflicting/duplicating roles within the climate-change sector. It is through this legislation that it has been proposed that after the bill is passed, 2% of the county budget will be allocated to climate-change mitigation

and adaptation efforts. Such milestones are promising to landscape restoration efforts. Other counties that are domesticating national policies and/ or action plans include Nandi, Embu, Marsabit, Vihiga and Kilifi amongst others.

To inform policy implementation and review, a robust monitoring framework at local, sub-national and national levels is needed to report on the restoration progress, understand the impacts of restoration initiatives on the environment and people's livelihoods and to create space for reflection and improvements moving forward.

10. Concluding remarks and way forward

Landscape restoration has been identified as a critical area in Kenya and many projects and initiatives are underway across the country, with an emphasis in the ASALs, to promote restoration. A range of monitoring tools and approaches are being deployed but a coordinated and integrated framework for monitoring, reporting and reflection has not yet been established. A technical working group for monitoring landscape restoration has been called for in several strategies and action plans to allow for reliable reporting of restoration at the sub-national and national levels. This rapid assessment has highlighted the range of tools and approaches that are being used and some of the challenges in their deployment. Results from this report can be used by the working group, once established, to support the monitoring framework establishment and operationalization.

11. References

Buckingham K, Ray S, Granizo CG, Toh L, Stolle F, Zovedo F, Reytar K, Cristale RZ, Ndunda P, Landsberg F, Matsumoto M, and Brandt J. 2019. The Road to Restoration: A Guide to Identifying Priorities and Indicators for Monitoring Forest and Landscape Restoration. Washington, DC: World Resource Institute.

Gichenje, H, Muñoz-Rojas J. and Pinto-Correia, T. 2019. Opportunities and Limitations for Achieving Land Degradation-Neutrality through the Current Land-Use Policy Framework in Kenya. *Land* 2019, 8, 115.

(GOK) Government of Kenya. 2013. Agriculture and Food Authority Act. Nairobi: Government of Kenya.

(GOK) Government of Kenya. 2014. Forest Policy. Nairobi: Government of Kenya.

(GOK) Government of Kenya. 2017. Climate Smart Agriculture Strategy. Nairobi: Government of Kenya.

(GOK) Government of Kenya. 2012. National Policy for the Sustainable Development of Northern Kenya and other Arid Lands 'Releasing Our Full Potential'. Sessional Paper No. 8 of 2012. Nairobi: Government of Kenya.

(GOK) Government of Kenya. (draft). Draft Forest and Landscape Restoration Action Plan 2021-2025. Nairobi: Government of Kenya.

(GOK) Government of Kenya. 2016. Climate Change Act. Nairobi: Government of Kenya.

(GOK) Government of Kenya. 2016. Community Land Act. Nairobi: Government of Kenya.

(GOK) Government of Kenya. 2010. Constitution of Kenya. Nairobi: Government of Kenya.
GOK) Government of Kenya. (draft). Kenya National Agroforestry Strategy 2021-2030. Nairobi: Government of Kenya.
(GOK) Government of Kenya 2018. National Climate Change Action Plan 2018-2022. Nairobi: Government of Kenya.
(GOK) Government of Kenya 2019. National Strategy for Achieving and Maintaining over 10% Tree Cover by 2022. Nairobi: Government of Kenya. (GOK) Government of Kenya. 1999. Environmental Management and Co-ordination Act (EMCA). Nairobi: Government of Kenya.
(GOK) Government of Kenya. 2018. Kenya Climate Smart Agriculture Implementation Framework-2018–2027. Nairobi: Government of Kenya.
(GOK) Government of Kenya. 2012. Land Act. Nairobi: Government of Kenya.
(MENR) Ministry of Environment and Forestry, 2020. Kenya's Updated Nationally Determined Contribution. Nairobi: Ministry of Environment and Forestry.
(MEMR) Ministry of Environment and Mineral Resources, 2016. Land Degradation Assessment for Sustainable Land Management in Kenya. Nairobi: Ministry of Environment and Mineral Resources.
(MEMR) Ministry of Environment and Mineral Resources, 2017. Technical Report on the National Assessment of FLR Opportunities in Kenya. Nairobi: Ministry of Environment and Mineral Resources.
(MoALF) Ministry of Agriculture, Livestock and Fisheries, 2017. Kenya Climate Smart Agriculture Strategy 2017-2025. Nairobi: Ministry of Agriculture, Livestock and Fisheries.
(MOPND) Ministry of Planning and National Development. 2011. Vision 2030 Development Strategy for Northern Kenya and other Arid Lands. Nairobi: Government of Kenya.
Munyasya, C. 2018. Reshaping the terrain: Forest and landscape restoration in Kenya. Center for International Forestry Research (CIFOR)
(NEMA) National Environment Management Authority, 2009. National Environment Action Plan Framework 2009-2013. Nairobi: National Environment Management Authority.
Vågen, T, Winowiecki LA, Neely C, Chesterman S and Bourne M. 2018. Assessments of soil organic carbon for stakeholder decision making. A case study from Kenya. *SOIL Discuss* 2017-37