ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

GRADUATE PROGRAM

ASSESSING MONITORING AND EVALUATION PRACTICES, CHALLENGES AND PROSPECTS IN THE CASE OF USAID-FUNDED LANDSCAPE RESTORATION PROJECTS IN ETHIOPIA

By Zemenu Mintesnot

A Project Work Submitted to Addis Ababa University College of Business and Economics, School of Commerce in Partial Fulfilment of the Requirements for the Degree of Master of Arts in Project Management

Advisor: Dereje Abi (PhD)

February 2025

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Declaration

I, Zemenu Mintesnot, have independently conducted a research study titled "**Assessing Monitoring and Evaluation Practices, Challenges, and Prospects in the Case of USAID-Funded Landscape Restoration Projects in Ethiopia**" in partial fulfillment of the requirements for the Master of Arts degree in Project Management. All sources of materials used in this research paper and referenced authorities have been duly acknowledged.

This study is my original work and has not been submitted for any degree or master's program at this or any other institution.

Zemenu Mintesnot

Signature_____

Date_____

Addis Ababa, Ethiopia

Certification

This is to certify that **Zemenu Mintesnot** has conducted a research study titled **"Assessing Monitoring and Evaluation Practices, Challenges, and Prospects in the Case of USAID-Funded Landscape Restoration Projects in Ethiopia"** under my advisement.

I confirm that this work is original in nature and meets the requirements for submission in partial fulfillment of the Master of Arts degree in Project Management.

Dereje Abi (PhD)

Signature_____

Date_____

ADDIS ABABA UNIVERSITY

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Project Work for Master of Arts in Project Management

By Zemenu Mintesnot

Approved by Board Examiners

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Acronyms

ADS	Automated Directive System
AI	Artificial Intelligence
BIOM	Biodiversity and Community Resilience in the Omo Valley Activity
BHA	Bureau of Humanitarian Assistance
CBD	Convention on Biodiversity
CDCS	Country Development Cooperation Strategy
CLA	Collaboration, Learning, and Adapting
CRS	Catholic Relief Service
CRGE	Climate Resilience Green Economy Strategy
CR WASH	Climate Resilient Water, Sanitation and Hygiene
FH	Food for the Hungry
FTF	Feed the Future
GGW	Great Green Wall
GIS	Geographic Information System
GPS	Global Positioning System
HRA	Highland Resilience Activity
KI	Key Informant
KII	Key Informant Interview
KPI	Key Performance Indicator
LGA	Land Governance Activity
LTLED	Long-Term Low Emission Development Strategy
M&E	Monitoring and Evaluation
MEL	Monitoring, Evaluation and Learning
NDC	Nationally Determined Contributions
NRM	Natural Resource Management
ODK	Open Data Kit
PM BOK	Project Management Body of Knowledge
PRMPs	Participatory Rangeland Management Plans
ReFSA	Resilience Food Security Activities

RiPA	Resilience in Pastoral Areas
SPIR	Strengthening PSNP Institutions and Resilience
UAV	Unmanned Aerial Vehicle
UN	United Nations
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United nations Convention to Combat Desertification ()
USAID	United States Agency for International Development
USD	United States Dollar
USG	United States Government
WVE	World Vision Ethiopia

Abstract

This study explores the monitoring and evaluation (M&E) practices, challenges, and prospects of United States Agency for International Development (USAID)-funded landscape restoration projects in Ethiopia. Landscape restoration projects aim to address critical environmental challenges, including land degradation, biodiversity loss, and climate resilience. The research employed a mixed-methods approach, combining quantitative surveys and qualitative interviews involving M&E, environmental, natural resource management, biodiversity, and geographic information system (GIS) experts from nine USAID-funded projects. Findings reveal that while M&E practices are well-established, the integration of findings into adaptive management remains underutilized. The study highlights the increasing adoption of digital technologies such as GIS but notes significant underutilization of advanced technologies like remote sensing, artificial intelligence/machine learning and unmanned aerial vehicles. Key challenges include external factors such as political instability, geographic inaccessibility of intervention areas, complex environmental indicators, and inadequate baseline data. Enhanced stakeholder collaboration, the adoption of advanced technologies and capacity building, are identified as opportunities to improve M&E frameworks. Recommendations include scaling up technology use, strengthening stakeholder coordination through a centralized database, and providing targeted training for M&E teams to ensure sustainable and impactful landscape restoration efforts.

***Key Words**: Monitoring and evaluation, landscape restoration, environment, advanced technologies*

Chapter 1: Introduction

1.1 Background

Environmental problems have become one of the main concerns across the globe. Countries are realizing the boundless negative impacts of environmental degradation on their economy, public health, infrastructure investment, politics, diplomacy, livelihood, etc. International organizations, such as the United Nations (UN), have made significant efforts to raise global environmental awareness, guide the development of international laws, mobilize resources, and provide technical support to mitigate environmental impacts and adapt to changing contexts. A significant global shift has been observed in the level of concern for environmental issues and the resources mobilized to address them. Public climate finance mobilized for developing countries alone was doubled over the 2013-2022 period, from 52 billion United States Dollar (USD) to USD 116 billion (OECD, 2022).

The 1972 United Nations Conference on the Human Environments (United Nations, 1972), and its successor conference on Environment and Sustainable Development (The Earth Summit) which was held in 1992 (United Nations, 1992) gave birth to milestone environmental declarations and conventions such as the Rio Declaration, Convention on Biodiversity (CBD), UN Framework Convention on Climate Change (UN FCCC) and UN Convention to Combat Desertification (UNCCD). These are the most important international instruments that have strongly emphasized the significance of environmental conservation. They signaled international consensus among nation states about the impact of development on the environment. Following the enforcement of these conventions, UN member states began strengthening their commitment by initiating and implementing various multi-million-dollar regional and national environmental projects.

Land restoration activities focus on rehabilitating degraded terrestrial ecosystems such as forest, grassland, wetland, riverbank, etc. with the objectives of arresting land degradation, ameliorating disrupted ecological functions and sustaining ecosystem services. The UNCCD was established in 1994 with the primary objective of protecting and restoring land to ensure a safer, more just, and sustainable future. In line with this objective, different regional and national-level environmental projects have been designed and implemented in various parts of the world. For instance, the Great Green Wall (GGW) initiative is one of the biggest regional projects being

implemented across 22 African countries including Ethiopia (UNCCD, 2023). The GGW initiative ambitiously aims to restore 100 million hectares of currently degraded land, capture 250 million tons of carbon, and generate 10 million sustainable jobs by 2030.

Ethiopia is a signatory to several international and regional environmental agreements, including the UNCCD, UNFCCC, and the CBD. In alignment with these commitments, the country has passed various national environmental policies and strategies to achieve the objectives set forth in these international frameworks (Government of Ethiopia, 2020). A key example is the Climate Resilient Green Economy (CRGE) Strategy, which envisions Ethiopia attaining middle-income status by 2025 while maintaining net-zero greenhouse gas emissions.

Additionally, the Ten-Year National Development Plan, the Nationally Determined Contributions (NDCs), and the Long-Term Low Emission Development Strategy (LTLEDs) reveals Ethiopia's commitment to transitioning towards a green economy. Notably, the Green Legacy Initiative and the Corridor Development Project, initiated by the Prime Minister, represent significant national environmental efforts. In line with these strategies and policies, Ethiopia is implementing a range of stand-alone and integrated initiatives in sustainable land management, renewable energy generation, and food security, all aimed at fostering a climate-resilient economy. Measured in terms of project numbers, fund, geographic coverage, and technical complexity, the scale of these interventions continues to expand.

Landscape restoration interventions are done to conserve and/or rehabilitate degraded terrestrial ecosystems, and they often target a wide geographic area which involves complex ecological interactions that cannot be easily understood. The impact of landscape restoration activities on the environment is also complex and diverse in terms of outcome. Due to this nature, it often takes longer time, sometimes more than decades to observe outcomes of landscape restoration interventions. Hence tracking and measuring outcomes of such projects is not an easy task for project implementers as well as donors.

The United States Agency for International Development (USAID) is the biggest donor in Ethiopia financing various environmental projects implemented in the country. One of the development objectives outlined in its current Country Development Cooperation Strategy (CDCS) result framework aspires to increase resilience of vulnerable populations to key shocks. Improving natural resources and water management is one area of result under this objective.

USAID/Ethiopia believes that degraded agricultural and pasture lands, and poorly utilized water resources have exacerbated poverty, food insecurity, and the loss of biodiversity in the country, as well as intensifying conflict. By incorporating environmental issues into its work in Ethiopia, USAID strives to promote sustainable development, livelihood, and disaster resilience.

Some of the current environmental projects of USAID include USAID's Resilience Food Security Activities[1] (ReFSA), The Feed the Future (FTF) Ethiopia Highland Resilience Activity (HRA), USAID/Ethiopia Biodiversity and Community Resilience in the Omo Valley (BIOM) Activity, Climate Resilient Water, Hygiene and Sanitation (CR WASH) Activity, Resilience in Pastoral Areas and FTF Land Governance Activity (LGA). These projects aim to address pressing challenges such as land degradation, biodiversity loss, and climate resilience along with social and economic changes.

Monitoring and evaluation (M&E) are critical tools for ensuring accountability, learning, and effectiveness in development projects. A robust M&E framework enhances the success of projects by ensuring contentious learning, adaptation, accountability and transparency.

One of the challenges in monitoring landscape interventions arises from the lack of robust methods or tools to collect and analyze monitoring data, as well as track changes across a broad geographic area and over time. Gathering monitoring data through the traditional field survey approach requires huge investment that sucks huge time, money and other resources of projects. It is also subject to bias and human generalization.

However, due to advancements in technology, new ways of monitoring and evaluating landscape interventions are emerging. One of the best examples is the application of high-resolution satellite images captured by low altitude satellites orbiting the earth. These satellites continuously scan a wide area of land and send high fidelity pictures at a regular interval. The pictures are archived and analyzed to map and quantify status of landscape restoration activities in real-time and discern changes by comparing historical pictures. The expanding application of geographic information systems (GIS) to systematically collect, store, analyze and visualize georeferenced environmental data is also another example.

[1] USAID uses the term 'activity' as a synonym for 'project.'

This study seeks to explore the current practices, challenges, and opportunities for improving M&E in USAID-funded landscape restoration projects in Ethiopia.

1.2 Problem Statement

As a crucial aspect of any project, M&E helps stakeholders track progress, measure impact, and maintain accountability. However, various challenges start to appear when implementing M&E. In landscape restoration projects, these challenges are particularly complex and go beyond those typically encountered in other types of projects (USAID, 2018). This is largely due to the intricate, long-term, and multi-dimensional nature of restoration efforts, which must balance ecological, social, and economic factors simultaneously.

To elaborate, one of the challenges emanates from lack of adequate and rigorous baseline data which has to be established at the onset of the projects. Baseline data is very important to measure and attribute changes and impacts due to specific interventions of a project.

In addition, the impact of landscape restoration interventions requires long timeframes to observe changes. For instance, water table rise in a watershed due to improved recharge rate follows a measurable change in biophysical conditions such as vegetation cover increase which takes significant time by itself. Often the long timeframes required for restoration impacts to manifest exceed the duration of typical funding cycles. This sometimes leads to discontinuities in M&E efforts.

On top of these, technical and financial limitation of projects further hinder the implementation of robust M&E systems. This will result in fragmented and inconsistent data collection and analysis which degrades the overall quality of information expected from M&E efforts.

The other M&E challenge relates to the complexity of measuring the diverse outcomes of landscape restoration-ranging from improved biodiversity and soil health to enhanced livelihoods. This can be seen from standardization and methodological viewpoints. Absence of standardized indicators for environmental outcomes refers to the standardization aspect. Whereas inconsistent methodologies among stakeholders exacerbate the problem, making it difficult to compare results and draw meaningful conclusions.

Political instability, climate variability and funding cuts are a few examples of external factors that add layers of unpredictability. This complicates the isolation of project outcomes from broader environmental and social influences. Furthermore, limited data accessibility and weak feedback loops prevent M&E findings from informing adaptive project management, reducing opportunities for learning and improvement.

Some of these challenges can be solved by adopting advanced technologies and better M&E methodologies. Others may require a closer examination and study to understand the root causes. Devising appropriate solution to the challenges is critical to enhancing the effectiveness of M&E systems in landscape restoration projects.

1.3 Objectives

This study aims to identify the main practical challenges that landscape restoration projects in Ethiopia are currently facing in terms of tracking and measuring progress towards project goals.

General Objective:

The main objective of this study is to explore the practice, challenges, and prospects of M&E in USAID-funded landscape restoration projects in Ethiopia.

Specific Objectives:

- Assess the current M&E practices employed in USAID-funded landscape restoration projects.
- Identify key challenges that limit the effectiveness of these M&E systems.
- Assess the prospects that technological and methodological advancements brought to the field and examine the level of utilization of such technologies by the projects.

1.4 Research Questions

The main research questions this study can answer include?

- What are the current practices of M&E in USAID-funded landscape restoration projects in Ethiopia?

- What challenges hinder the effective implementation of these M&E systems?
- What are the future opportunities to strengthen M&E frameworks and ensure better project outcomes?

1.5 Significance of the Study

This research seeks to explore the current practices, challenges, and prospects of M&E in landscape restoration, with a particular focus on identifying the practice and practical solutions to overcome the barriers. By examining the interplay of technical and contextual factors, the study aims to contribute to the development of more effective, inclusive, and sustainable M&E frameworks for landscape restoration initiatives.

It will provide actionable recommendations for improving M&E frameworks in landscape restoration projects. Its findings will benefit project managers, policymakers, and development partners by addressing current challenges and proposing forward-looking solutions, ultimately contributing to Ethiopia's environmental and development goals.

1.6 Limitations

One limitation of this study is its narrow scope, as it focused solely on USAID-funded projects, which are among the largest in the country in terms of funding, geographic coverage, human resources, and experience. As such, the findings may offer limited insight into the overall M&E practices in landscape projects beyond USAID, such as those funded by the Ethiopian government or other donors. Therefore, the results should be interpreted with caution, considering the relatively strong and well-established M&E framework at USAID. Another limitation arises from the research methodology. Although both quantitative and qualitative approaches were employed, the qualitative aspect was not as rigorous, as it did not include focus group discussions or a large number of key informant interviews (KIIs).

1.7 Structure of the Paper

This paper is organized into five chapters. The first chapter provides an overview of the global and national environmental endeavors, and the challenges of M&E in landscape restoration projects, and outlined statements of the problem, objectives, and the research questions of the

study. The second chapter reviews existing literature on project M&E, the challenges of M&E in landscape projects, the role of technology in improving M&E practices, and the M&E requirements of USAID. The third chapter outlines the methods used to collect and analyze data gathered from key informants and survey participants. The fourth chapter presents the analysis results, interprets them, and discusses the key findings. The last chapter provides conclusions of the major findings and outlines a few recommendations that will help to enhance M&E of landscape restoration projects.

Chapter 2: Literature Review

This chapter explores key topics essential for developing a comprehensive understanding of the theoretical, conceptual, and practical foundations of M&E. It begins by defining landscape restoration, highlighting its significance in environmental sustainability. The chapter then discusses the core principles and frameworks in M&E, providing a foundation for assessing and measuring project effectiveness.

Additionally, it examines USAID's definitions, guidelines, and specific requirements for M&E. The discussion further extends to the current M&E practices, common challenges encountered in monitoring and evaluating landscape restoration initiatives, and potential solutions to enhance efficiency. Finally, the chapter explores how advancements in technology and innovative methodologies contribute to improving data collection, analysis, and decision-making processes in M&E.

2.1 What is Landscape Restoration?

Human survival is highly dependent on natural processes such as the energy cycle, nutrient cycling, and climate regulation. However, harmful human activities and unsustainable practices are disrupting these essential ecological processes, placing immense pressure on the environment. This degradation has significantly reduced the benefits that ecosystems provide to humanity. A well-functioning ecosystem delivers a wide range of services, including provision of goods such as food, freshwater, timber and fiber; regulating environmental conditions by absorbing greenhouse gasses, cleaning water, and reducing air temperature; supporting fundamental processes such as photosynthesis and nutrient cycling; and providing cultural services such as recreation and scientific research.

However, environmental degradation has become an urgent global crisis, pushing millions of people into vulnerable situations. Recurring droughts, floods, extreme weather events, desertification, and human-wildlife conflicts are a few clear manifestations of this crisis. Scientists widely agree that the most effective solution is to adopt sustainable lifestyles that minimize environmental harm while promoting ecosystem restoration and resilience.

Landscape restoration is a critical approach to rehabilitating degraded ecosystems, allowing them to regain their ecological functions and productivity. This method has gained increasing support from international organizations and donors as a viable solution for environmental recovery.

Landscape restoration employs nature-based solutions to restore the structural and functional characteristics of a landscape using regenerative techniques. This process enables ecosystems to gradually heal and function normally, ensuring long-term environmental sustainability while delivering socioeconomic benefits to communities. For the purpose of this study, landscape restoration refers to the process of repairing and revitalizing degraded ecosystems and landscapes to restore their ecological functionality while improving the well-being of the people who depend on them. It involves key activities such as reforestation, soil restoration, water management, and biodiversity conservation.

Landscape restoration projects are designed to ensure the drivers of historical deforestation and degradation are addressed through comprehensive programming. They implement different techniques to restore life to the landscape. These include but not limited to:

Ecologically appropriate reforestation-this involves planting trees that are suitable to the ecology and can support the ecosystem to restore. It requires active participation of communities in the area to provide continues protection and ensure its sustainability.

Farmer-managed natural regeneration-this refers to a sustainable tree management which involves the systematic growing and management of trees and shrubs by farmers. The management practices include coppicing and pruning to initiate new growth and increase foliage density.

Agroforestry-refers to a practice where farmers integrate cropping and tree planting in their farming practice to obtain mutual benefits such as reducing soil erosion, fixing nitrogen in the soil, provides shade for plants that need it, absorbs carbon dioxide, and improves soil moisture and fertility by dropping leaves to the ground. These trees also provide benefits to a farm's livestock and the people working there.

Area closure-involves closing and protecting an ecologically important area to restrict human and livestock access to allow natural regeneration and ecological restoration.

Soil and water conservation-the use of physical structure and biological methods to reduce soil erosion and improve water retention. This helps to avoid soil and water degradation. The practice involves building terraces and check dams, planting trees, agroforestry and others.

Landscape restoration has multiple benefits such as restoration of biodiversity, carbon sequestration, reduce air and water pollution, increase soil fertility and agricultural productivity, make ecosystems more resilient and creates sustainable livelihood.

2.2 Results Framework

Projects are designed to achieve specific goals and objectives. These goals and objectives are realized through a cumulative process, where a sequence and combination of various activities contribute to achieving specific results. The integration of these results ultimately supports the attainment of the broader goal of the project.

A results framework is a graphical representation of the logical hierarchy of results. USAID defines results framework as a diagram of the cause-and-effect logic for achieving a development objective over a defined time period (USAID, 2023). This means if lower-level results are achieved then the next level results will also be achieved, given the underlying assumptions hold. Figure 1 below provides a good example how results are hierarchically and logically structured in results framework.

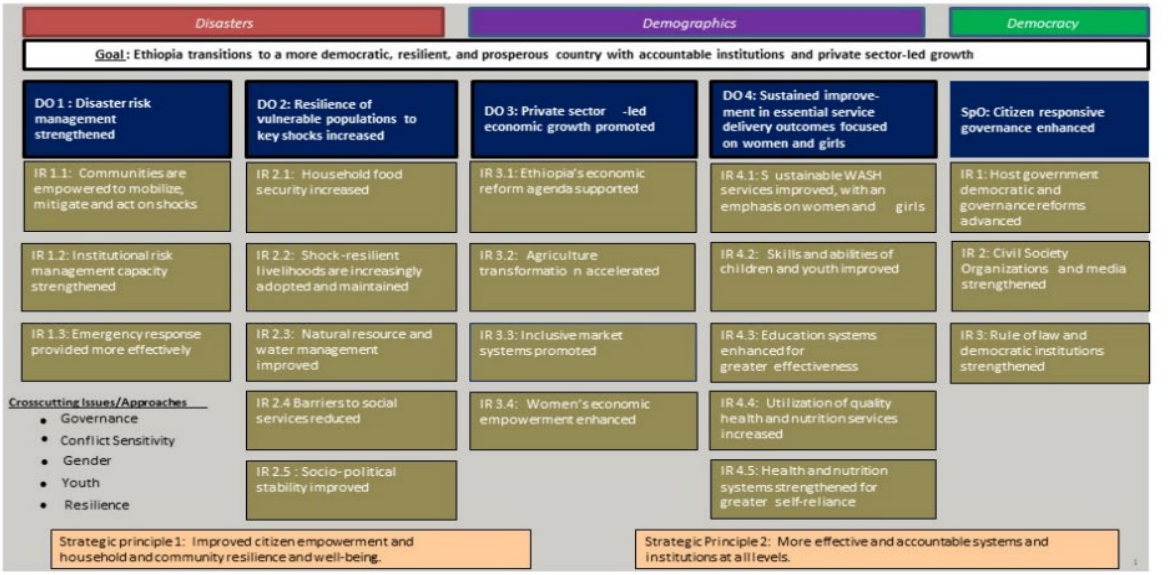

Figure 1: USAID/Ethiopia CDCS (2019-2024) Results Framework.

In development projects, the results framework often contains a hypothesis statement. This statement outlines the specific development problem addressed by the development objective. An 'if…then' statement is used to establishing a logical cause-and-effect connection between lower-level and higher-level results. For instance, in the results framework provided in Figure 1 above, if emergency response is provided more effectively, if institutional risk management capacity is strengthened and if communities are empowered to mobilize, mitigate and act on shocks, then disaster management in Ethiopia will be strengthened. A development hypothesis describes the theory of change, logic, and causal relationships among the building blocks required to achieve a long-term result.

Development agencies such as USAID, international organizations and NGOs utilize the results framework widely to improve project design, implementation, and performance measurement.

The other tool used in project design and M&E is the logical framework or a log frame. The purpose of a log frame is to provides a structured, tabular approach to project planning, design, and evaluation, with a detailed breakdown of activities, outputs, outcomes, and impacts. A visual representation of a log frame is provided in Table 1 below. Key components of a log framework include the following.

- Goal: The overarching, long-term result the project aims to achieve.
- Outcomes: The medium-term changes or benefits resulting from project outputs.
- Outputs: The tangible products or services delivered by the project.
- Activities: The specific tasks and actions undertaken to produce outputs.
- Indicators: Metrics used to measure progress at each level (goal, outcome, output).
- Assumptions: External factors that may influence the achievement of results.

Table 1: A typical Logical Framework (Project Management Institute, 2021).

Level	Description	Indicators	Measure of Verification	Assumptions
Impact (Goal)	The long-term, high-level change the project contributes to	Broad, measurable impacts (e.g., poverty reduction rate)	National reports, surveys, or evaluations	External factors necessary for achieving the goal
Outcome (Purpose)	The immediate effect of the project; achieved by outputs	Specific, measurable outcomes (e.g., improved literacy rates)	Project evaluation reports, focus groups	Assumptions about external conditions affecting outcomes
Outputs	Tangible products or services delivered by the project	Number or quality of deliverables (e.g., training sessions conducted)	Project monitoring reports, attendance sheets	Assumptions about resources, stakeholder engagement
Activities	Actions and tasks undertaken to produce outputs	Inputs required (e.g., training materials, trainers hired)	Activity reports, procurement records	Factors enabling completion of activities (e.g., funding, personnel availability)

2.3 What is M&E?

2.3.1 Project Monitoring

According to the Project Management Body of Knowledge (PM BOK), project monitoring and controlling is one of the phases in project management. This phase is a stage where performance information is gathered to ascertain the project stays on track. The definitions of monitoring used by organizations differ depending on the objectives they aspire to achieve through its implementation. Process oriented, performance-oriented and accountability-oriented definitions are a few to mention. We find a performance-oriented definition of monitoring in the USAID monitoring toolkit and Automated Directive System (ADS). It describes monitoring as a tool that plays a critical role throughout the program cycle and is used to determine whether USAID is

accomplishing what it sets out to achieve, what effects programming is having in a region, and how to adapt to changing environments.

One of the most commonly used definition of monitoring is found in the United Nations Development Program (UNDP) Handbook on Planning, Monitoring, and Evaluating for Development Results (2009) which describes monitoring as:

> "A continuous function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds."

The PM BOK uses the term controlling alongside with monitoring to emphasize corrective or preventive actions based on the information obtained from monitoring. This concept typically embraces the inclusion of risk mitigation and learning dimensions of monitoring activities.

Data collection and information generation form the backbone of monitoring activities. Key considerations include the frequency of data collection, how the data informs implementation, its role in triggering learning and adaptive management, and its use in ensuring accountability. USAID's ADS 201 outlines six principles to guide effective monitoring practices.

Early Planning: This principle emphasizes the importance of developing a monitoring plan during the design phase of activities, projects, and strategies.

Collaborate: The effectiveness of monitoring efforts depends on how collaborative and engaging it is. Involvement of local stakeholders including beneficiary communities, implementing partners, government partners, and donors plays a key role to build strong monitoring.

Adequate Resources: Monitoring activities should be supported by sufficient financial and human resources. USAID recommends allocating 3-10% of the project budget specifically for monitoring activities. This allocation does not include funding for evaluations or other related activities, such as learning initiatives.

Practical and Efficient: This emphasizes the efficient use of resources to collect the most relevant data useful for management decision making and reporting purposes. Monitoring data should be

used to validate and adapt the activity's theory of change during implementation. Collecting less useful data and recollecting existing data are considered as a wastage of resources.

Transparency: Information generated through monitoring efforts should be shared widely to ensure it is accessible to all relevant stakeholders.

Responsible and Ethical: This principle emphasizes the need to ensure that monitoring and data collection practices adhere to responsible and ethical standards. Safeguarding individuals' privacy and security, protecting sensitive information, and obtaining informed consent are a few examples.

2.3.2 Types of Monitoring

There exist different types of monitoring. USAID recognizes performance monitoring and context monitoring.

Performance Monitoring

Performance monitoring involves the continuous and systematic collection of data on performance indicators, as well as other quantitative and qualitative information, to track implementation and assess progress toward achieving results. This type of monitoring involves overseeing the quality, quantity and timeliness of project outputs and outcomes. Performance monitoring data is analyzed to generate useful insights on the progress of the project that can be used to improve effectiveness, inform about current and future programming, Performance monitoring compares actual results achieved against set targets and baselines to determine progress that have been made to achieve the results identified in the project's logic model. This helps to reassess assumptions, project theory of change and learning priorities of the project.

Context Monitoring

Context monitoring focuses on assessing external factors and conditions that have direct or indirect impact on the implementation, performance and outcomes of a project. Surrounding political, economic, social, environmental, cultural and technological contexts which are often outside the control of the project are systematically tracked to understand how they affect programming. By analyzing context monitoring data projects can update assumptions and risks

to avoid unintended results and consequences. Changes in governance, policies, and political priorities, economic inflations, funding availability, demography, natural calamities and digital revolutions are a few examples of externalities to projects. Context monitoring feeds management decisions and informs management actions about project implementation.

2.3.3 Performance Monitoring Indicators

USAID defines performance indicators as measures used to detect progress towards the results included in a results framework. Two indicator types are commonly used to measure performance.

Standard indicators are a set of predefined indicators used to measure and track project progress. They are developed as part of a broader framework established by organizations, global initiatives, government coordination bodies or consortiums to ensure consistency and comparability across projects, sectors, and regions. The key characteristics of standard indicators include consistency, measurability, universal applicability, alignment with project objectives and best practices.

A good example of standard indicators is available in the USAID Master Indicator List (USAID, 2024). These sets of indicators are jointly developed by the US Department of State and USAID to measure both what is being accomplished with the U.S. Government foreign assistance funds and the collective impact of foreign and host-government efforts to advance country development. Some of the standard environmental indicators are shown in Table 2 below.

Table 2: Examples of Standard Environmental Indicators Taken from the USAID Master Indicators List.

Standard Indicator	Type
Number of people receiving livelihood co-benefits (monetary or non-monetary) associated with the implementation of USG sustainable landscapes activities	Output
Number of hectares of biologically significant areas showing improved biophysical conditions as a result of USG assistance	Outcome
Amount of municipal solid waste (in Metric Tons) diverted from the environment supported by USG assistance.	Outcome
Number of hectares of biologically significant areas under improved natural resource management as a result of USG assistance	Outcome
Number of people with improved economic benefits derived from sustainable natural resource management and/or biodiversity conservation as a result of USG assistance	Outcome

Custom indicators are tailored metrics designed to measure the performance, progress, or impact of specific projects. They are customized to align with the unique goals, objectives, and context of the activities being implemented (USAID Learning Lab, 2021). This customization ensures that the indicators are contextually relevant, as they are flexible and directly aligned with the specific objectives of the projects. However, custom indicators can be challenging to aggregate and compare across different projects and initiatives due to their unique nature (USAID Learning Lab, 2021). Additionally, they often focus on short- and medium-term outcomes, making them less suitable for measuring long-term impacts (MDPI, 2023).

2.3.4 Project Evaluation

USAID defines evaluation as '*the systematic collection and analysis of data and information about the characteristics and outcomes of one or more organizations, policies, programs, strategies, projects, and/or activities as a basis for judgments to understand and improve effectiveness and efficiency, timed to inform decisions about current and future programming.'*

Evaluation can also be defined as the periodic and systematic assessment of project design, project implementation, and project results for ongoing or completed projects. Evaluations focus

on understanding what results a project achieved and how they are achieved. They test the validity of the theory of change by looking at the results, causal connections, processes, cost, and partner and stakeholder engagement, sustainability, etc. Evaluations focus on the most important and relevant questions about the project that cannot be answered alone through routine monitoring, assessment, studies, etc. In the context of USAID, evaluation is a key component of performance management across the USAID program cycle, and supports accountability, continuous learning, and adaptive management.

Based on their purpose and time of implementation, evaluations can be classified into various types. The USAID ADS recognizes two primary types of evaluations.

2.3.4.1 Impact Evaluation

Impact evaluation is conducted when a project aims to assess the attribution of changes in project outcomes to its interventions. This type of evaluation uses experimental and quasi-experimental methods to control other variables that potentially cause the changes in outcome. Through a rigorous selection of random treatment and control groups and generation of credible counterfactuals, impact evaluation establishes or forfeits the presence of a cause-and-effect relationship between project intervention and its outcomes. Impact evaluation is preferred by USAID to ascertain whether an intervention is achieving a specific outcome. Some of the recent impact evaluations of USAID-funded projects include Impact Evaluation of Feed the Future Ethiopia Livelihoods for Resilience Oromia (TANGO International, 2023) and Impact Evaluation of the Strengthen PSNP4 Institutions and Resilience Development Food Security Activity (Alderman, 2021).

2.3.4.2 Performance Evaluation

According to Bonghez & Grigoroiu (2013), a project success encompasses achieving different variables that go beyond the triple constraints: scope, time and budget. Performance evaluation involves measuring expected result achieved, examining how a project is implemented, level of acceptance by the client, alignment to the project strategy, etc. As per the USAID ADS, performance evaluation questions can include:

- Whether the theory of change of a project is valid or may need to be refined in light of new information;

- Whether the expected results of a particular project have been achieved;
- How a particular project is being implemented, in particular whether implementation is occurring according to the evidence-based theory of change;
- How the program is perceived and valued, including by program participants, local actors, and other stakeholders;
- The extent to which the project has enabled local leadership;
- Whether project contributed to the results achieved;
- Possible unintended outcomes from the project;
- Whether outcomes have been, or are likely to be, sustained; and
- Other questions pertinent to the design, management, and operational decision-making of projects.

2.4 M&E in Landscape Projects

System thinking and adaptive management are integrated elements in the M&E of landscape restoration projects. The former emphasizes understanding the interconnected and complex ecological, social, and economic aspects of landscape restoration. This approach helps to evaluate and understand how various components interact within an ecosystem, considering feedback loops and dynamic changes (Meadows, 2008). The later plays a complementary role to systems thinking by promoting a flexible, learning-oriented approach to project implementation. According to Holling (1978), adaptive management is a cycle of planning, monitoring, evaluating, and adjusting strategies to achieve desired outcomes while responding to uncertainties and contextual changes.

The integration of system thinking and adaptive management highlights the need for comprehensive, iterative M&E systems capable of capturing diverse outcomes, including environmental, social, and economic benefits. By applying systems thinking and adaptive management principles, project stakeholders can ensure alignment with broader development goals and ecological resilience.

The theoretical understanding of M&E in landscape restoration projects draw on program theory and the theory of change. Program theory outlines the mechanisms through which project activities lead to intended outcomes, offering a structured way to assess cause-effect

relationships (Weiss, 1998). In landscape restoration, this involves linking inputs, such as capacity building, funding and technical expertise, to outputs like hectare of land covered by physical soil and water conservation structures and outputs like rehabilitated ecosystems and improved biodiversity. The theory of change provides a narrative that details how and why specific interventions achieve desired results which build on the program theory. With the help of the theory of change, stakeholders identify key assumptions, risks, and contextual changes enabling the development of robust M&E framework (Vogel, 2012).

2.5 M&E Practices in Landscape Restoration Projects

Globally, M&E practices have advanced considerably due to technological and methodological innovations. The M&E of landscape restoration projects, in particular, has greatly benefited from these developments, incorporating cutting-edge technologies and participatory approaches. This transition marks a departure from traditional M&E methods, which primarily relied on field surveys and manual data collection-processes that were often labor-intensive and susceptible to human error.

The integration of geospatial technologies, such as remote sensing and GIS, has significantly transformed these practices by facilitating systematic data collection, analysis, and visualization (Turner *et al*., 2015). These tools are particularly critical in landscape restoration projects, as they enable real-time monitoring such as change in vegetation cover, land use dynamics, and other ecological indicators across extensive geographic areas. High-resolution satellite imagery, for instance, allows for the continuous assessment of environmental changes, thereby enhancing the efficiency and accuracy of M&E processes.

Furthermore, community participation at the planning, design, and implementation stages of landscape restoration projects has been recognized as a key factor in ensuring sustainable project outcomes. Contemporary M&E approaches increasingly prioritize participatory methodologies, which play an essential role in monitoring and evaluating restoration initiatives. By actively engaging local communities and stakeholders in data collection and analysis, participatory M&E not only improves the relevance and credibility of findings but also fosters local ownership, sustainability and accountability. These are crucial for long-term project success (Reed *et al*., 2016). Additionally, this approach facilitates the integration of scientific knowledge with local

insights, resulting in more context-sensitive and actionable M&E systems. Through such collaborative frameworks, M&E practices in landscape restoration projects become more adaptive, inclusive, and effective in supporting sustainable environmental management.

2.6 Challenges in M&E for Landscape Restoration Projects

Challenges of M&E of landscape restoration include resource constraints, methodological inconsistencies, external influences, and the inaccessibility of target areas. One of the fundamental challenges is the absence of standardized indicators and methodologies for assessing the multifaceted benefits of restoration activities, such as biodiversity enhancement, soil health improvement, and socio-economic development. This lack of harmonization complicates cross-project comparisons and limits the broader applicability of findings, making it difficult to establish best practices and draw generalizable conclusions (UNEP, 2021).

The effective implementation of M&E systems in landscape restoration projects is further constrained by financial and technical resource limitations. Monitoring environmental indicators, particularly in large-scale restoration projects, demands significant financial investment and advanced technical expertise. The vast arial extent of project sites and the complex influence of external factors, such as climate change, make environmental outcome measurements more challenging. Additionally, the intricate interactions between biotic and abiotic components of ecosystems add another layer of complexity, requiring a well-founded ecological understanding to interpret restoration impacts accurately. Traditional field-based monitoring approaches are particularly resource-intensive, necessitating substantial time, funding, and skilled personnel. Moreover, the extended timeframes required to observe the full impact of restoration efforts often surpass the duration of typical funding cycles, leading to fragmented or inconsistent monitoring processes (USAID, 2018).

External factors such as climate variability, competing land uses, and political instability further complicate M&E efforts by introducing elements of unpredictability. These factors make it difficult to attribute observed changes directly to specific restoration interventions. Additionally, limited access to reliable and up-to-date data presents another significant barrier, restricting opportunities for adaptive management and continuous learning. Without adequate data

accessibility, the ability to refine restoration strategies and improve long-term project outcomes remains limited (Reed *et al*., 2016).

2.7 Technological and Methodological Innovations

The advent of computer and communication technologies have positively affected the way and speed data is collected and analyzed. Emerging technologies and methodological advancements brought promising solutions to the challenges of M&E in landscape restoration. For instance, remote sensing and GIS technologies such as global positioning system (GPS), high resolution satellite imageries and aerial photographs were introduced after World War II basically to strengthen surveillance in the military. However, they are widely adopted for M&E despite their initially intended purpose. These technologies have been widely adopted to monitor landscape changes efficiently and cost-effectively. For example, near real-time vegetation change and restoration monitoring has become possible through the use of satellite imageries (Turner *et al*., 2015). Large data processing and analysis, process automation, modeling the interaction between economic, social and environmental variables in more accurate way using machine learning and artificial intelligence (AI) further enhances M&E practices.

Technology also improved data accessibility and real-time collaboration among stakeholders. The application of mobile-based data collection tools and cloud-based platforms are good examples. Integration of quantitative and qualitative data has become simple using these tools providing a more holistic understanding of project impacts (UNEP, 2021). Innovations in participatory mapping and citizen science are also empowering local communities to actively contribute to M&E efforts, fostering greater inclusivity and ownership.

Technology has enabled real-time monitoring which is a transformative approach that significantly enhances M&E practices. It allows the swift exchange and analysis of data. It also leverages technology to collect, process, and present data in real time, facilitating timely decision-making and adaptive management.

The used of mobile applications and live dashboards to monitor key performance indicators such as seedling survival rates are becoming common. Real-time dashboards allow live aggregation and disaggregation of output-level performance indicators, providing decision-makers with

immediate insights into project performance. These dashboards are designed to present information in intuitive, user-friendly formats, such as graphs, charts, and heatmaps, enabling stakeholders to quickly identify trends, anomalies, and areas requiring intervention (World Bank, 2021).

Data collection at the source using mobile applications also plays a crucial role in real-time monitoring. Field applications allow field staff to input data directly into digital platforms, reducing the time, human-induced error and effort. Additionally, mobile tools often come equipped with GPS and photo capabilities, enhancing the accuracy and richness of the data collected (USAID, 2020).

Real-time monitoring plays a crucial role in dynamic environments such as humanitarian response efforts and landscape restoration projects, where conditions evolve rapidly, and timely decision-making is essential. By providing up-to-date, reliable data, it enhances the ability of stakeholders to make informed and responsive decisions based on concrete evidence (UNICEF, 2021).

Furthermore, the adoption of real-time monitoring aligns with the growing global emphasis on transparency and accountability in development initiatives. These systems enable stakeholders at all levels—including donors, implementing agencies, and beneficiaries—to access and assess project performance data. This accessibility not only strengthens trust but also fosters collaboration and shared responsibility in achieving development goals (WFP, 2022).

However, while real-time monitoring offers significant advantages, its successful implementation requires overcoming several challenges. Key issues include ensuring data security, building the technical capacity of users, and maintaining the integrity and reliability of data inputs. Addressing these challenges is essential for maximizing the effectiveness of these systems. When properly designed and managed, real-time monitoring has the potential to transform monitoring and evaluation (M&E) practices, leading to more efficient, data-driven, and impactful interventions (FAO, 2020).

2.8 Implications for USAID-Funded Projects

Landscape restoration projects in Ethiopia aim to address critical challenges such as land degradation, biodiversity loss, and climate resilience. Effective M&E frameworks are essential for achieving these objectives and ensuring the accountability and learning necessary for adaptive management. However, the projects face significant barriers, including limited technical capacity, inadequate use of advanced technologies, and resource constraints (USAID, 2018).

Despite these challenges, USAID has been exploring innovative solutions to enhance M&E systems. The application of GIS and remote sensing technologies, for instance, has enabled more efficient data collection and analysis, improving the ability to track restoration activities and evaluate their impacts. By leveraging these advancements and fostering capacity-building efforts, USAID-funded projects can develop more effective, inclusive, and sustainable M&E frameworks.

Moreover, fostering stronger partnerships among stakeholders—including government agencies, local communities, and international donors—can address resource constraints and ensure the sustainability of M&E systems. Emphasizing transparency and data sharing can also enhance the credibility and impact of M&E findings, contributing to the broader goals of environmental sustainability and resilience.

Chapter 3. Research Methodology

Under this section, the research approach, design, sampling methods, data sources and data analysis methods used in this study have been described.

3.1 Research Approach and Design

A mixed-method approach, combining both quantitative and qualitative data collection and analysis was adopted in this study. Quantitative data was gathered to identify and understand key M&E trends, practices, challenges, and opportunities across USAID-funded landscape restoration projects. These projects represent some of the largest landscape initiatives implemented in Ethiopia. Qualitative data, on the other hand, was collected from key informants working on these projects to provide deeper insights into complex issues and subtleties that could not be captured through the survey alone. Due to the limited number of USAID landscape projects, the number of survey participants was relatively small. As a result, qualitative data was used to enrich the analysis and to triangulate the findings obtained from the quantitative data.

The findings from the quantitative data were elaborated and explained based on analysis of the qualitative information gathered from key informants.

3.2 Sampling Method

A purposive sampling method was employed to collect quantitative data from survey participants. Given the study's focus on USAID-funded landscape projects, participants were selected based on their roles within these projects. People who are either part of the M&E or CLA team of the project or landscape restoration thematic experts who know the M&E aspect were considered in the survey. Selection of participants was done in consultation with project or MEL managers. The USAID website was reviewed to identify the number and list of existing USAID projects working in the areas of environment, climate resilience, and natural resource management. At least one participant was chosen from each project to complete the survey. In total, 15 participants from the following nine projects listed in Table 3 below took part in the survey. In addition, five key informants from four projects were also interviewed.

Table 3: List of USAID Projects Included in the Study.

Activity Name	Implementing Partner
Biodiversity and Community Resilience in the Omo Valley (BIOM)	International Institute of Rural Reconstruction
Strengthen PSNP4 Institutions and Resilience (SPIR) Resilient Food Security Activity (ReFSA)-WV	World Vision
Strengthen PSNP4 Institutions and Resilience (SPIR) Resilient Food Security Activity (ReFSA)-CRS	Catholic Relief Service
Strengthen PSNP4 Institutions and Resilience (SPIR) Resilient Food Security Activity (ReFSA)-FH	Food for the Hungry
FTF Ethiopia Highland Resilience Activity	Mercy Corps
Feed the Future Ethiopia Resilience in Pastoral Areas: North	Mercy Corps
Feed the Future Ethiopia Resilience in Pastoral Areas: South	Global Communities
Climate Resilient Water, Sanitation and Hygiene Activity	Research Triangle Institute
Feed the Future Ethiopia Land Governance Activity	The Tetra Tech Company

3.3 Data Sources

This study utilized primary and secondary data.

3.3.1 Primary Data

The first and primary sources of data were the nine USAID-funded landscape restoration projects. These projects were selected from the entire list of USAID projects in Ethiopia by looking at their program areas, descriptions and result frameworks when available. Projects which have at least one environment, climate, or natural resource related outcome or output were selected. Two types of data were gathered from these projects.

Subject matter experts including M&E, NRM, GIS and environmental and climate change experts and project managers who routinely involved in M&E efforts as part of their role in the

projects served as key informants. They were interviewed to capture the context of their project including the challenges they encounter implementing M&E of their landscape restoration interventions. The key informants were probed to understand the gaps and future prospects. A semi-structured questionnaire or a checklist was used to guide the interviews. See Annex 1.

Quantitative data was also gathered from these sources using an electronic survey tool developed in the Kobo Toolbox environment. This tool was used to collect data such as type of the project, project period, project fund, the use of different technologies including GIS and remote sensing to collect and analyze M&E data, type of monitoring data, the use of standard and custom indicators, challenges of conducting evaluations, etc. See Annex II for more information.

3.3.2 Secondary Data

Secondary data sources included documents such as Monitoring, Evaluation, and Learning (MEL) plans, Performance Indicator Reference Sheets (PIRS), MEL reports, the ADS, and the USAID Master Indicators List. These sources were utilized to understand the M&E framework and context of USAID-funded projects. This information helped to conceptualize, frame, compare, and enrich the discussions and findings derived from the other data sources.

3.4 Data Collection

Data collection was carried out between December 15, 2024 and January 10, 2025. The structured questionnaire developed to collect quantitative data from the projects was distributed to participants via their email addresses. All participants completed and submitted the form, achieving a 100% response rate.

After an initial analysis of the quantitative survey data, the checklist for qualitative data collection was revised to focus on areas requiring further clarification, explanation, and triangulation. Key informant interviews, averaging 90 minutes each, were then conducted. Notes taken during these interviews were transcribed and stored in electronic format.

3.5 Data Analysis

Qualitative information gathered from key informants was analyzed using different approaches. The transcribed data was categorized into three thematic areas focusing on M&E practices in the

projects, current challenges and the use of technology or other techniques defining future paths of M&E. The data under these categories was coded and frequency counting was used to summarize it. This helped to identify common M&E practices and challenges across the projects. Narrative analysis was also used to analyze the structure, content and meaning of the stories captured from key informants to uncover insights into practices, challenges and prospects of M&E in the projects. Comparative analysis was also used to highlight variations in experiences and practices, technology use and faced challenges helping to understand diverse perspectives. The analysis results from qualitative data were also used to crosscheck descriptive findings based on themes and insights.

Descriptive statistics was used to analyze quantitative data. Frequencies, percentages, averages were used to summarize numeric data from the quantitative data. Cross tabulation was also used to organize responses into categories and identify patterns, such as which challenges are more commonly reported by certain respondents. Tables, bar charts, pie charts and graphs were used to display the frequency of themes or challenges.

3.6 Ethical Considerations

This research involved data collection from individual survey participants and key informants. Prior to data collection participants were informed about the purpose of the research and allowed to decide about their participation. Each person invited in this study was considered as an autonomous entity capable of making an informed decision regarding participation in the study. Participants who provided full consent only were participated.

Any personal information obtained while conducting the study will be kept confidential. Any information which can expose the identity of people who provided information during the study will not be disclosed to third parties in any form. The findings from this study will be used exclusively for academic purposes.

Theories, views, opinions, findings, or expressions borrowed from other people or sources and used in the study was recognized appropriately. This study complies to all guiding principles and precautions in the National Research Ethics Review Guideline (Ethiopia Ministry of Science and Technology, 2014).

Chapter 4: Results and Discussion

This section mainly presents the findings derived from the analysis of primary data collected from KIs and survey participants. It begins by outlining the key characteristics of the assessed projects and then explores findings on the M&E practices, challenges, and prospects. The last section discusses the major findings.

4.1 Characteristics of Assessed Projects

4.1.1 Primary Focus Area

Among the surveyed nine USAID-funded environment and climate projects, eight of them consider landscape restoration as their primary focus area. The other project, FTF LGA implemented by the US-based Tetra Tech company, focuses on strengthening land governance systems and expanding communal land tenure security in pastoral areas.

Landscape restoration encompasses interventions such as soil and water conservation, afforestation/reforestation/greening, wetland conservation, biodiversity conservation, etc. Majority of the USAID landscape restoration projects (75%, n=6) implement soil and water conservation, watershed management, livelihood improvement and climate resilience activities as the main landscape restoration interventions. Afforestation/reforestation/greening and biodiversity conservation are implemented by 50% of the projects. Two projects work in pollution control/reduction such as waste disposal, reuse and recycle, and green energy. Figure 2 below shows the number of projects implementing a specific landscape restoration intervention.

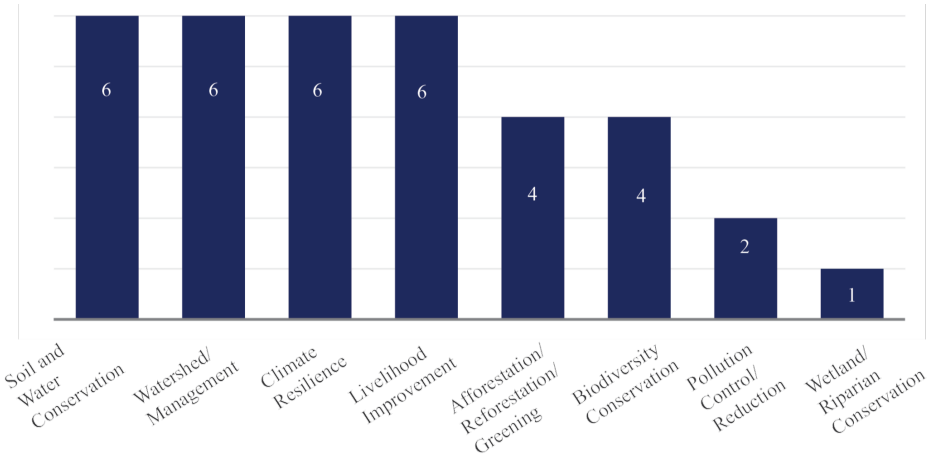

Figure 2: Number of Projects Implementing a Specific Landscape Restoration Intervention

4.1.2 Geographic Coverage

The geographic coverage of the assessed projects varies, spanning from a small number of communities or woredas to multiple woredas across different regions, and even extending to national-level support. Participants were asked to provide insights into the geographic coverage of their respective projects.

While a significant proportion (75%, n=6) of the projects cover multiple regions, two projects operate locally, focusing on specific woredas within a single zone. FTF LGA supports national level land governance endeavors while providing specific support to select cities and woredas in the country. Figure 3 below illustrates the percentage distribution of projects operating at the national, regional, and local levels.

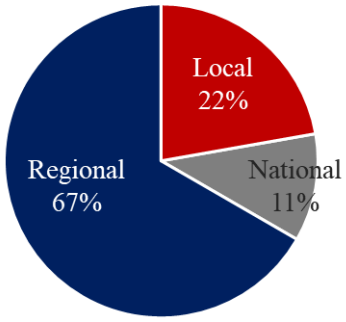

Figure 3: Percentage of Projects by Geographic Coverage.

4.1.3 Implementation Period Duration and Budget

Implementation period of landscape restoration projects in Ethiopia varies depending on scope, funding sources, etc. For instance, implementation of projects under the GGW initiative continues up to 2030.

According to survey responses, the shortest USAID landscape restoration projects have an implementation duration of 3 to 5 years, while the longest reported duration exceeds five years. The average budget of the projects is $80.3 million USD, with a minimum of $4.5 million and a maximum of $206 million. Table 4 below shows the implementation period and budget of each project.

Table 4: Implementation Period Duration and Budget of Projects.

Project Name	Project Duration	Budget
BIOM	3-5 Years	4.5M
CR-WASH	3-5 Years	37M
HRA	3-5 Years	60M
LGA	>5 Years	10M
ReFSA-CRS	3-5 Years	100M
ReFSA-FH	3-5 Years	143M
ReFSA-WVE	3-5 Years	206M
RiPA North	>5 Years	45M
RiPA South	3-5 Years	34M

4.1.4 Respondent's Role

Understanding the roles of respondents in their respective projects is crucial to assess their familiarity with M&E concepts and practices. As shown in Table 5 below, among the 15 participants, 8 held positions directly related to M&E, including M&E Managers/Leads, and M&E Specialists. Three participants served as Collaboration, Learning, and Adapting (CLA) Leads, while the other three were in the field of environment either as Environmental Lead, Environmental Advisor or Environmental Safeguard Officer. The last participant held a GIS Specialist position.

The five Key Informants (KIs) held the positions of Environmental Advisor, CLA Lead, Deputy Chief of Party, GIS Specialist, and Watershed & GIS Specialist in their respective projects. Each KI has over 15 years of experience in NRM, biodiversity, watershed management, M&E, and GIS.

Table 5: Positions Held by Survey Participants

Position Held	Frequency
M&E Specialist	3
Monitoring, Evaluation and Learning Manager	1
Monitoring, Evaluation and Learning Lead	1
Monitoring, Evaluation, Accountability and Learning Manager	1
Monitoring, Evaluation, Research and Learning Officer	1
Monitoring, Evaluation and Learning Lead	1
Collaboration, Learning and Adapting Lead	3
Senior Environmental Safeguarding officer	1
Environmental Lead	1
Environmental Advisor	1
GIS Specialist	1

4.2 Results

4.2.1 M&E Practices

4.2.1.1 Monitoring Frequency and Data Sources

Conducting performance and context monitoring is a requirement for all USAID-funded projects with the exception of humanitarian assistance, and transition assistance projects which target at preventing, mitigating, responding to, recovering from, and transitioning from crisis. These include projects funded and/or managed by USAID Bureau of Humanitarian Assistance (BHA), including emergency and non-emergency programs and projects with the Complex Crisis Fund (CCF).

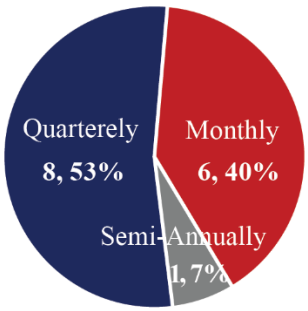

Figure 4: Monitoring Frequency

According to the respondents, M&E activities are conducted across all assessed projects, but the frequency varies as Figure 4 above shows. Fifty-three (n=8) percent of respondents reported that monitoring is carried out quarterly, while 40% (n=6) indicated it is conducted monthly. Only 7% of the respondents reported that monitoring is conducted on a semi-annual basis in their projects.

Monitoring involves continuous data collection, often relying on primary data gathered from project targets. In the USAID landscape restoration projects studied, 60% of respondents indicated that both primary and secondary data are used for monitoring. However, 33% reported that their projects rely solely on primary data, while 7% stated that only secondary data is used for monitoring.

The Key KIs also mentioned that random site visits and spot checks are conducted as part of the monitoring process. When asked about how projects utilize M&E findings from data analysis for adaptive management, the KIs acknowledged that M&E findings are used to some extent to inform program implementation. However, they also noted that M&E activities are primarily carried out to fulfill reporting requirements and for documentation purposes.

4.2.1.2 Types of Indicators Tracked

Respondents were asked to identify the types of environmental indicators tracked at the outcome and output levels. Sixty-seven percent indicated that their projects monitor outcome-level environmental indicators (e.g., vegetation cover, soil health, improved biophysical conditions). However, 93% reported tracking social indicators (e.g., community participation and livelihoods) in their projects. An equal proportion of respondents indicated that economic indicators (e.g., income generation and job creation) are also tracked at the outcome level.

Changes were observed in the proportion of respondents reporting the types of indicators tracked at the output level compared to those tracked at the outcome level. Eighty percent indicated that their projects monitor output-level environmental indicators. An equal proportion of respondents indicated that economic indicators are also tracked at the output level. However, 87% reported tracking social indicators in their projects. One respondent indicated that food assistance-related indicators are the other types of indicators tracked.

The following are a few examples of output or outcome-level environmental indicators monitored by the projects.

- Hectares of degraded communal land that has been rehabilitated.
- Hectares of land contributed for greenhouse gas emission reduction.
- Hectares of range land under improved rangeland management practice.
- Number of community-derived participatory rangeland management plans (PRMPs) formally implemented or institutionalized with USG assistance.
- Number of hectares under improved management practices or technologies that promote improved climate risk reduction and/or natural resources management with USG assistance.

USAID ADS strongly encourages the use of standard indicators to ensure consistent application, allowing for the aggregation and comparison of data across projects. According to survey participants, the use of both standard and custom indicators is widespread across projects. Ninety-two percent of respondents reported that their projects track standard environmental indicators, while all respondents confirmed the use of custom indicators to measure environmental outputs and outcomes.

According to insights obtained from the KIs, using standard indicators requires significant resources and time due to their complexity and the challenges associated with measurement. Additionally, standard indicators often fail to account for contextual differences, as they are designed for use across countries and projects to enable aggregation and consistent reporting. For example, one KI noted that the biophysical conditions in degraded, low-moisture areas such as Wagihmra are not comparable to those in moist area like Arsi and Bale. As a result, using the same biophysical indicators, such as seedling survival rates, without contextualizing them to the agroecological and other environmental conditions of each area may not accurately reflect the level of effort and resources invested.

Two KIs indicated that the M&E frameworks are imposed by donors following a top-down approach. In such cases, the role of projects becomes implementing the M&E framework without adequate contextualization.

All KIs also confirmed the widespread use of custom indicators. According to them, this is primarily because custom indicators offer flexibility, account for contextual differences, are easier to measure, require relatively fewer resources, and effectively inform implementation. However, custom indicators are challenging to aggregate and often lead to fragmented reporting.

4.2.1.3 Baselines and Mid-Term Evaluation

The USAID ADS encourages baseline surveys and mid-term or end-line evaluations. USAID projects are obliged to conduct evaluation at any time in the lifecycle of the project if the project's total estimated cost/amount is above 20 million USD, or if the project implements any new, untested approach that is anticipated to be expanded in scale or scope through USG foreign assistance or other funding sources. In addition, USAID missions which have a country development strategy are required to conduct evaluation at least for one of the projects or interventions under each intermediate result.

Survey participants were asked whether their projects conducted a baseline survey before implementation. A positive response was obtained from 92% of the respondents. Whereas, the remaining 8% indicated that the projects did not conduct baselines because it was not a donor requirement.

All KIs agree that most landscape projects do not conduct rigorous baseline. One of the reasons mentioned was the huge resource baseline survey required. One interviewee indicated that the cost of doing baselines in landscape restoration projects is sometimes comparable with the cost incurred to implement the project. Other reasons mentioned include lack of time, lack of technically capable experts at the initial stage of projects, and replacement of baselines with other similar but less rigorous assessments.

Respondents were also asked whether they have conducted a mid-term evaluation or plan to do so in the future. The results revealed that the majority (75%) have either conducted a mid-term evaluation or intend to do so. The remaining 25% provided two reasons for not conducting mid-term evaluations. Two respondents stated that conducting a mid-term evaluation is not a donor requirement, with one of them adding that it is the donor's responsibility to carry out the evaluation.

The KIs expressed divergent views regarding the practice of conducting evaluations. One KI noted that a rigorous impact evaluation had been conducted; however, they emphasized that these evaluations did not measure impacts on environmental outcomes. In contrast, two KIs indicated that evaluations are rarely conducted in most landscape restoration projects. The reasons cited for this include a lack of skilled professionals capable of addressing complex environmental outcomes, insufficient project durations to observe meaningful changes in

environmental outcomes, inadequate or non-existent baseline data, the substantial resources and time required, and a lack of interest from project leadership.

4.2.1.4 Level of Technology Use for M&E

Different projects employ various tools and methods to collect and analyze monitoring data. The selection of these tools and methods is influenced by several factors, including the project's objectives, available resources, and context. Other considerations include the demographics and culture of the target population, resource availability, technological feasibility, data quality requirements, stakeholder preferences, and the type of data needed. For landscape restoration projects, the nature and complexity of environmental indicators may necessitate the use of specialized tools, methods, and approaches.

The use of mobile and smartphone-based data collection methods and field surveys is widespread across the surveyed projects, with all respondents incorporating these tools in their monitoring approaches. One KII indicated that the use of digital survey tools is revolutionizing M&E data collection. The use of Open Data Kit (ODK) and Kobo ToolBox has become very useful by enabling collection of spatial data in addition to non-spatial ones.

Additionally, 80% of respondents reported utilizing GIS in their projects to collect and analyze monitoring data. While the majority of KIs agree that the use of GIS in M&E is steadily increasing, they emphasized that it is not yet fully leveraged to its potential to make M&E more evidence-based and real-time. Currently, its application is largely limited to collecting and visualizing georeferenced data, delineating boundaries (such as watersheds), and producing maps. However, there are a few instances where advanced GIS analyses have been employed to model environmental phenomena such as soil erosion, sediment load, and land use suitability.

GIS becomes significantly more powerful when integrated with remote sensing. Despite this, the application of remote sensing tools such as aerial photographs, satellite imagery, LiDAR, and UAV (drone) products remains limited, with only 27% of respondents indicating their use in M&E activities.

Three of the KIs highlighted the use of high-resolution satellite imagery to monitor biophysical changes, including increases in vegetation cover, water volume, and canopy cover. The use of drones for monitoring landscape restoration interventions has become common in other parts of

the world. However, most of the KIs noted that in Ethiopia, pilot-level attempts to utilize drones have not been scaled up due to security-related restrictions imposed by the government and procurement restrictions from USAID.

Additionally, agile management scrum events, ethnographic tools, and routine monitoring were cited by only 8% of respondents, with each method mentioned just once.

In addition to GIS and remote sensing, respondents were asked to indicate advanced technologies they use in their M&E activities to assess the adoption of state-of-the-art technologies such as cloud-based data management platforms/cloud computing, machine learning/AI, and participatory mapping.

Sixty-seven percent of respondents reported that cloud-based data management platforms are used in their projects followed by participatory mapping which is reported by 60% of the participants. The application of machine learning/AI is very rare, with only one respondent (8% of the total) reporting its use. Notably, none of the respondents indicated the use of UAVs/drones in their activities.

One key informant indicated the use of google earth engine and citizen science for M&E. Citizen science is a data collection and analysis practice that involves members of the public who are not necessarily professional in research and data collection. Participatory mapping can be one example of citizen science although people involved in participatory mapping are direct beneficiaries.

The frequency of use of these technologies was also assessed by asking participants how often they utilize these solutions. The results revealed that 60% of respondents reported using one or more of these technologies always or often. Additionally, 33% indicated that they use the technologies occasionally, depending on the need. One respondent, accounting for 7% of the total, stated that these tools are rarely used in their project.

4.2.2 M&E Challenges

Respondents were asked two distinct questions to identify the main challenges they face in their M&E efforts.

The first question focused on general M&E challenges encountered regularly. Geographic inaccessibility of intervention areas and external factors such as political instability were identified as major challenges by 75% of respondents. Absence or inadequate stakeholder coordination was highlighted as a challenge by 33%, while inadequate baseline data were mentioned by 27% of respondents. The detailed breakdown of challenges and corresponding percentage of respondents identifying a specific M&E challenge is presented in Figure 5 below.

Key informants (KIs) were asked to identify major M&E challenges in their projects. Most highlighted inadequate stakeholder coordination as a significant issue in the sector. A common example is uncoordinated geographic target selection, where multiple projects (e.g., USAID-funded, World Bank-funded, government-funded) with differing landscape restoration approaches were implemented within the same watershed. This often led to duplicated efforts, resource wastage, data quality and credibility issues, and confusion among beneficiary communities, ultimately weakening M&E effectiveness.

Another challenge raised by KIs is the geographic inaccessibility of implementation areas. This often results in M&E efforts focusing on the most accessible locations, with less emphasis on remote areas. One KI noted that this issue is largely tied to the project design phase, as implementation areas are typically selected during the design or early implementation stages. Therefore, addressing this challenge requires careful consideration during the project's initial planning.

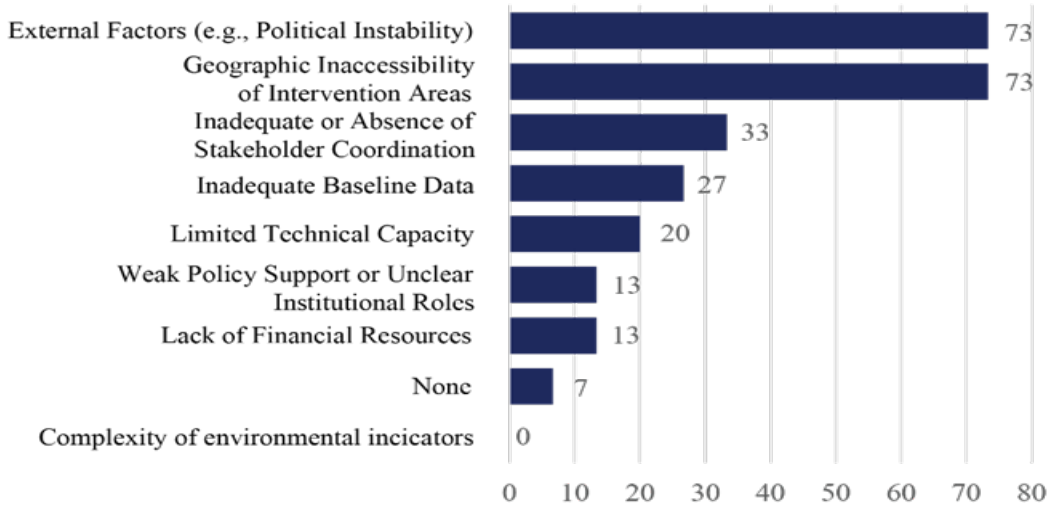

Figure 5: Percentage of Respondents Identifying a Specific M&E Challenge.

The second question addressed M&E challenges specific to tracking environmental outcomes. The complexity of environmental indicators and geographic extent of intervention areas emerged as the top challenges, both cited by 40% of respondents. This was followed by inadequate baseline data, which was mentioned by 20% of the respondents. A detailed summary of the challenges and their percentages is also shown in Figure 6 below.

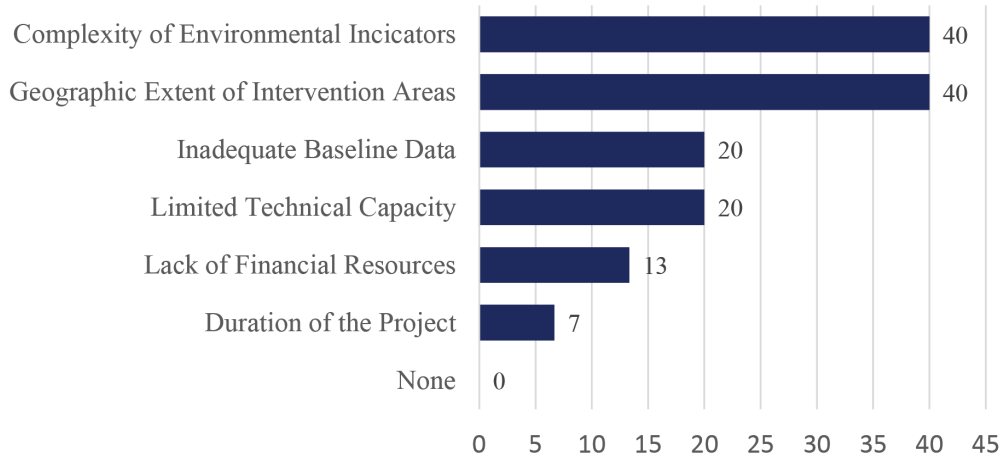

Figure 6: Percentage of Respondents Identifying a Specific Challenge to Tracking Environmental Outcomes.

All KIs agreed that the complexity of environmental indicators is a major challenge in tracking environmental outcomes. One KI noted that, instead of measuring outcome indicators directly, it is common practice to assess the decrease in practices that negatively affect the outcomes. For example, measuring an increase in vegetation cover can be a complex task. Therefore, reductions in activities such as tree logging, agricultural encroachment into forests, and grazing which are easy to measure are often used as indicators instead.

Another common practice reported by all KIs is the use of qualitative information gathered from local communities about observed changes in the area, which are likely attributed to improvements in environmental outcomes. For example, phenomena such as increased base flow of rivers, the return of previously disappeared plant and wildlife species, and the reappearance of springs suggest improvements in biophysical condition which is difficult to quantify without rigorous measurements.

Another challenge highlighted by the majority of key informants (KIs) is the professional composition of the M&E teams in projects. They noted that M&E experts often come from social science backgrounds, such as economics, and may lack sufficient understanding of environmental interventions and methods for measuring environmental outcomes. As a result, M&E activities often become the dual responsibility of environmental experts who are not officially part of the M&E team. Furthermore, in integrated projects that encompass economic, social, and landscape restoration components, there is a tendency to prioritize tracking economic and social indicators, while environmental indicators are frequently overlooked.

Availability of resources, standardized indicators, a technically capable team, and community participation are key enabling factors for effective M&E among others. To assess participants' perceptions of the effectiveness of the M&E environment within their projects, responses to the following statements were collected using a Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree):

1. Our M&E framework effectively tracks project outcomes.
2. Our M&E system has adequate resources for implementation.
3. The indicators we use are standardized and consistent.
4. External factors significantly impact our M&E activities.
5. Our M&E system effectively engages the community.

The level of agreement of the participants to these statements is summarized in Table 6 below.

Table 6: Number of Respondents by Agreement Category.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Our M&E framework effectively tracks project outcomes.	1	0	1	6	7
Our M&E system has adequate resources for implementation.	1	1	2	6	5
The indicators we use are standardized and consistent.	1	1	2	5	6
External factors significantly impact our M&E activities.	0	1	4	9	1
Our M&E system effectively engages the community.	0	1	1	9	4

The mean scores and standard deviations were also calculated to compare participants' perceptions across the five factors and identify overall strengths and weaknesses. Table 7 below provides the details on the mean, standard deviation and their possible interpretation.

Table 7: Analysis of M&E Framework Feedback: Mean Scores, Variability, and Key Insights.

Statement	Mean Value	Standard Deviation	Key Insight
Our M&E framework effectively tracks project Outcomes.	4.2	1.1	Positive feedback but with some disagreement among respondents.
Our M&E system has adequate resources for implementation.	3.9	1.2	Mixed feedback with significant disagreement among respondents.
The indicators we use are standardized and consistent.	3.9	1.2	Mixed feedback with significant disagreement among respondents.
External factors significantly impact our M&E activities.	3.7	0.7	Neutral to negative feedback; respondents largely agree.

Capacity building is essential for strengthening the M&E of projects. Enhancing knowledge, skill and ability of individuals is one way to ensure improved data collection, analysis and utilization

which leads to improved M&E practice. According to EvalCommunity (2023), capacity building in M&E empowers professionals to design robust frameworks, set realistic goals, and measure progress effectively. Additionally, regular assessment of capacity-building efforts ensures that programs remain effective and relevant.

On the basis of these, respondents were asked about the level of training and capacity-building support provided for M&E activities in their project. More than half of the respondents (53%) indicated that tailored M&E training opportunities were moderate. Additionally, 27% reported that extensive training was provided for M&E experts in their projects. However, a smaller portion of participants (20%) noted that capacity-building and training opportunities were limited.

Key informants' (KIs) views on this topic differ somewhat from the survey respondents' findings. Most agreed that the M&E team is among the sections that receive the most extensive training compared to other departments.

4.2.3 Improvement Opportunities

Two different questions were presented to participants to understand their views on the opportunities available to improve the effectiveness of M&E.

The first question focused on the opportunities available to enhance M&E practices in general. The options presented for this question included increased use of advanced technologies, standardization of indicators, enhanced stakeholder collaboration, greater resource allocation. Respondents also asked to suggest other options which they believed important in this regard.

The majority of respondents (83%) identified the increased use of advanced technologies as the top priority for improving M&E practices. The second most selected option, chosen by 58% of respondents, was the standardization of indicators. Enhanced stakeholder collaboration ranked third, with 50% of respondents highlighting its importance. Greater resource allocation was the least recommended option, with only 17% of respondents prioritizing it.

Additional suggestions offered by respondents included the increased use of M&E evidence for adaptive management (8%) and capacity building and knowledge transfer (8%).

KIs largely concur with the views of most survey participants. The use of advanced technologies such as geotagging, cloud computing, remote sensing, GIS, drones, digital data collection tools, and real-time monitoring dashboards can significantly enhance M&E practices. This was what KIs unanimously emphasized. KIs also noted that adopting these technologies would improve data quality, reduce the time and resources required for data collection and analysis, enable data gathering from remote areas, and increase accountability and transparency.

Most KIs expressed reservations about the use of standard indicators. They cited inability of standard indictors to account for contextual differences. While many acknowledged that standard indicators simplify reporting and promote consistency, they emphasized their limited usefulness in guiding implementation.

KIs also highlighted the need for stronger stakeholder collaboration to avoid duplication of efforts, foster synergy in implementation, enhance learning, and reduce resource wastage. Additionally, they noted that most M&E sections are well-resourced in terms of financing, staffing, and training opportunities, which supports their operational effectiveness.

The second question specifically invited participants to rate the opportunities for improving the effectiveness of M&E in projects with landscape restoration components. A four-point Likert scale was used (1 = Not Important, 2 = Least Important, 3 = Important, and 4 = Most Important) to determine which of the following aspects participants considered most important:

1. Improved funding and resources
2. Advanced technologies
3. Capacity building and training
4. Stronger policy and institutional support
5. Enhanced stakeholder engagement

The results are summarized in Table 8 below.

Table 8: Frequency of Responses Regarding Opportunities for Improvement.

	Not Important	Least Important	Important	Most Important
Improved funding and resources	1	1	8	5
Advanced technologies	0	0	5	10
Capacity building and training	1	0	7	7
Stronger policy and institutional support	2	3	5	5
Enhanced stakeholder engagement	0	0	5	10

The results indicate that advanced technology and enhanced stakeholder engagement are considered crucial by the majority for improving M&E in landscape restoration projects. Respondents also highlighted improved funding sources, capacity building and training, and strong policy and institutional support as important or very important. However, one-third of respondents viewed strong policy and institutional support as the least important or unimportant for improving M&E in landscape restoration projects.

Key informants (KIs) also emphasized the need for advanced technology to enhance M&E in landscape restoration projects, noting that such technologies would facilitate the measurement of complex environmental output indicators. However, their views on capacity building and training differ from those of survey participants. Most KIs asserted that adequate opportunities for training and capacity building already exist. Despite this, they unanimously agreed on the importance of enhanced stakeholder engagement to improve the effectiveness of M&E in landscape restoration efforts.

One KI specifically highlighted the need for a national database on landscape projects and their intervention locations to ensure better coordination among stakeholders.

4.3 Discussion

The findings of this study shed light on the varied dimensions of M&E of landscape restoration projects. The discussion herein focuses into three key areas: M&E practices, challenges encountered, and opportunities for improvement, contextualized within the broader implications for enhancing the effectiveness of landscape restoration projects.

4.3.1 M&E Practices

The study reveals that all USAID-funded projects assessed conduct M&E activities, though with varying frequencies and data collection methods. A notable majority perform quarterly monitoring, complemented by engaging in monthly assessments. This frequency underscores a commitment to maintaining oversight, yet the data suggests a potential gap in integrating findings into adaptive management strategies. The use of standardized and custom indicators indicates a balanced approach to tracking environmental, social, and economic outcomes. However, the complexity of standard environmental indicators poses challenges for contextual relevance and applicability.

The other interesting aspect is the use of technology in M&E practices. The integration of GIS and digital tools is becoming more common, enhancing the collection, analysis and presentation of spatial and non-spatial data. However, the use of advanced technologies such as drones and machine learning for M&E was very rare. This limited application reflects an underutilization of cutting-edge tools that could potentially revolutionize data accuracy and efficiency. For instance, only 27% of respondents reported using remote sensing tools, indicating a significant opportunity for scaling up these technologies to monitor environmental changes more effectively.

4.3.2 Challenges Encountered

Challenges in M&E are multifaceted and interdependent, ranging from geographic and logistical barriers to methodological and capacity-related issues. Geographic inaccessibility and political instability were highlighted by majority (75%) of respondents as significant barriers to effective monitoring. This has implications for equitable resource allocation and the inclusiveness of M&E efforts, as remote or less accessible areas being overlooked.

The complexity of tracking environmental indicators is also a critical challenge. Respondents and KIs alike underscored difficulties in measuring environmental outcomes. This complexity often leads projects to the use of proxy indicators or qualitative insights. This, while valuable, may lack the rigor required for robust outcome assessments. In addition, KIs noted that the predominance of M&E professionals from social science backgrounds suggests a gap in

technical expertise necessary for environmental monitoring. This compounded by the absence of rigorous baseline data worseness the situation.

Stakeholder coordination is another recurring issue. The fragmentation of efforts among multiple projects within the same geographic area often results in duplication, inefficiencies, and data inconsistencies. This underscores the need for enhanced collaboration and a unified approach to landscape restoration.

4.3.3 Opportunities for Improvement

Despite the complexity and multidimensionality of challenges, several opportunities for advancing M&E practices have been highlighted by participants. The increased adoption of advanced technologies such as cloud computing, geotagging, and real-time monitoring dashboards is identified as untapped opportunity and top priority. Gaps in data accuracy, timeliness, and geographic coverage, can be bridge with the use of these technologies addressing some of the core challenges outlined.

The other key area of opportunity is enhanced stakeholder collaboration. Strong, intentional and continuous coordination among donors, implementing partners, projects, and local stakeholders can reduce duplication, foster synergy, and optimize resource utilization. The suggestion to establish a national database on landscape projects and intervention locations is particularly noteworthy. It could serve as a centralized platform for tracking progress, and fuels information and best practice sharing and informing policies.

Furthermore, while capacity building is generally perceived as robust, with many respondents acknowledging tailored training opportunities, there remains scope for targeted skill development, particularly in the technical aspects of environmental monitoring. Training programs that integrate advanced tools and methodologies could empower M&E teams to address complex challenges more effectively.

4.3.4 Implications and Way Forward

The findings highlight the critical need for a well-structured yet flexible approach to M&E in landscape restoration initiatives. Striking a balance between standardized methodologies and context-specific adaptability is essential for meaningful impact. Addressing existing challenges

requires a concerted effort to integrate advanced technologies, foster stronger stakeholder collaboration, and enhance technical capacity within implementing institutions.

Equally important is the role of adaptive management in translating M&E insights into actionable improvements. Rather than viewing M&E solely as a means of fulfilling donor reporting obligations, projects must actively use the data to refine strategies and inform decision-making. This proactive approach not only enhances project effectiveness but also strengthens the long-term sustainability of landscape restoration efforts, ensuring they remain resilient in the face of evolving environmental and socio-economic complexities.

Chapter 5: Conclusion and Recommendation

5.1 Summary of Findings

The study found diverse M&E practice across USAID-funded landscape restoration interventions, in terms of monitoring frequency, level of technology use, type of indicators tracked, baseline data collection, conducting mid-term evaluations, and challenges. Although most of the projects conducted M&E on a quarterly and monthly basis, it is done predominantly for reporting than adaptive management purposes. The biggest M&E challenges reported are geographic inaccessibility, political instability, absence of relevant baseline data, and weak stakeholder coordination. Monitoring environmental indicators also remains complex, leading to the application of proxy indicators and qualitative assessment.

Limited use of cutting-edge technologies (e.g., GIS, remote sensing, UAVs, AI) and weak technical competences in environmental monitoring also compromise the effectiveness of M&E. There is, however, promise in expanding technology utilization, strengthening coordination among stakeholders, and mainstreaming M&E outputs in decision-making.

5.2 Conclusion

This study has conducted in-depth assessment of the M&E practice, challenges, and prospects of the USAID-funded landscape restoration projects in Ethiopia. These types of projects are key to addressing some of the critical environmental issues such as land degradation, loss of biodiversity, and climate resilience. Their success partly relies on the capability and effectiveness of M&E systems to track progress, identify challenges, and inform adaptive management decisions. The findings of this study reveal both the strengths and weaknesses of current M&E practices, calling for persistent improvement.

One of the key lessons of this study is the commitment of USAID-funded projects to conducting systematic M&E practices. Most projects implemented routine monitoring on a quarterly or monthly basis. They relied on both primary and secondary data. However, the level of utilization of M&E findings to inform project implementation and for adaptive management was very low.

There has been an integration of computerized technologies like GIS and mobile phone-based data gathering tools, boosting data collection and visualization. However, while the technologies

have been adopted to some extent, the utilization of advanced tools such as remote sensing, UAVs, and AI/machine learning remains low, limiting the ability of projects to conduct real-time, large-scale environmental monitoring.

The study further revealed that a mix of standard and custom indicators is used to track project outcomes. Standard indicators ensure uniformity and allow aggregation of data across projects, but their lack of contextual flexibility creates challenges in quantifying environmental changes in Ethiopia's diverse landscapes. Custom indicators, however, provide specific insights but typically result in fragmented reporting that hinders cross-project learning and benchmarking. This highlights the need for more coherent methodology balancing the power of standardization with contextual flexibility.

Geographic inaccessibility of intervention areas, weak stakeholder coordination, and issues like political instability were introduced as major challenges of successful implementation of M&E. Further, environmental indicators are by nature complex in the sense that it is challenging to directly quantify the outcomes of landscape restoration. Therefore, projects tend to opt proxy measures or qualitative assessment to indirectly infer impact. This tactic can be useful to substantiate outcomes but does not necessarily provide the rigorous evidence on which decisions are made. Moreover, the lack of robust baseline data makes it yet more challenging to assign observed changes to specific project interventions.

A striking issue brought forth by key informants was the professional composition of M&E teams. The majority of M&E practitioners possess social science backgrounds and lack technical expertise to monitor environmental outcomes effectively. This suggests a necessity for capacity-building programs that empower M&E professionals with skills to apply ecological and geospatial techniques in project assessment.

In the future, there are opportunities to enhance M&E practice on landscape restoration programs. More use of innovative technologies such as remote sensing cloud computing, real-time dashboards, and citizen participatory mapping can significantly improve data accuracy, access, and transparency. Additionally, more partnership and coordination among stakeholders, including government, donors, and implementing partners, can minimize duplication of efforts

and maximize effective use of resources. A nationally coordinated database for landscape restoration programs can also ease cross-project learning and data sharing.

In conclusion, while USAID-funded landscape restoration projects in Ethiopia have made great progress in developing and applying M&E systems, there is still room for improvement.

5.3 Recommendations

Based on the findings, the following recommendation which can enhance effectiveness of M&E in landscape restoration projects have been forwarded.

- **Adopt Advanced Technologies**
  Scale up the use of advanced tools such as AI, remote sensing, and machine learning and drone technologies to enhance M&E efficiency and accuracy. These technologies can significantly improve the measurement of complex environmental indicators and extend monitoring coverage to remote areas.

- **Strengthen Stakeholder Coordination**
  Establish a centralized national database to map landscape restoration projects and intervention sites. This would enable better coordination, reduce duplication, and foster synergy among stakeholders, enhancing overall project effectiveness.

- **Enhance Technical Capacity in M&E Teams**
  Conduct targeted capacity-building initiatives focusing on environmental monitoring skills and advanced technologies. This should include tailored training on the integration of GIS, remote sensing, and advanced analytical tools into M&E practices to address gaps in technical expertise.

5.4 Suggestion for Further Study

This research has certain limitations both in scope and depth. Expanding the study to encompass all landscape restoration projects, including those funded by other donors and the government, would provide a more comprehensive understanding of M&E practices, challenges, and opportunities. Additionally, comparing these projects with non-landscape restoration initiatives

could offer valuable insights into the unique aspects of M&E in this field—an area that this study has only briefly explored.

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Annex 1: Semi-Structured Questionnaire for Key Informants

Section 1: General Information

1. **Role and Background**:
    - Can you tell us about your role in the project and your experience with M&E activities?
    - How long have you been involved in landscape restoration projects?
2. **Project Context**:
    - Could you briefly describe the USAID-funded project(s) you are involved in?
    - What are the main objectives of these projects?

Section 2: Current M&E Practices

3. **M&E Framework**:
    - Do you have M&E department?
    - What M&E frameworks or methodologies are used in your project(s)?
    - How do these frameworks capture environmental, social, and economic outcomes?
4. **Indicators and Metrics**:
    - What types of indicators are tracked in your project (e.g., biodiversity, soil health, livelihoods)?
    - Are these indicators standardized across projects, or do they vary? Why?
5. **Tools and Technologies**:
    - What tools (e.g., GIS, remote sensing, mobile data collection) are used for M&E activities?
    - How effective are these tools in capturing and analyzing data?
6. **Stakeholder Engagement**:
    - To what extent are local communities involved in the M&E process?
    - How do you incorporate their feedback into project evaluation?

Section 3: Challenges in M&E

7. **Resource Constraints**:
    - What financial, technical, or human resource challenges do you face in implementing M&E activities?
8. **Data Collection and Analysis**:
    - What challenges do you encounter in collecting, managing, and analyzing data?
    - How do issues like lack of baseline data or fragmented datasets impact your work?
9. **External Factors**:
    - How do external factors, such as climate variability or political instability, affect your M&E efforts?

Section 4: Opportunities and Prospects

10. **Technological Advancements**:
    - Are there emerging technologies or methodologies that you believe could improve M&E practices in landscape restoration?
    - To what extent are these technologies currently being utilized?
11. **Capacity Building**:
    - What capacity-building initiatives (training, tools, etc.) would enhance M&E practices in your project(s)?
12. **Policy and Institutional Support**:
    - How supportive are existing policies and institutions in enabling effective M&E?
    - What changes would you recommend to improve this support?

Section 5: Recommendations

13. **Improving M&E Frameworks**:
    - What specific strategies would you recommend for overcoming the challenges you've described?
    - How can USAID and other stakeholders support more effective M&E systems?
14. **Future Directions**:

- From your perspective, what does the future of M&E in landscape restoration look like?
- How can M&E be made more inclusive, sustainable, and impactful?

Annex 2: Survey Questions for Quantitative Data Collection

Section 1: General Information

1. Is landscape restoration one of the primary focuses of your project?

   For the purpose of this survey, **landscape restoration** refers to the process of repairing and revitalizing degraded ecosystems and landscapes to regain their ecological functionality and enhance the well-being of the people who depend on them. It involves activities such as reforestation, soil restoration, water management, and biodiversity conservation. The goal is to create resilient ecosystems that provide ecosystem services, such as clean water, fertile soil, and carbon sequestration. Landscape restoration emphasizes a holistic approach, integrating ecological, social, and economic considerations. It often aligns with sustainable development and climate change mitigation strategies.

   Yes No

2. If 'Yes', please select landscape restoration focus areas of your project.

   ☐ Soil and water conservation,

   ☐ Afforestation/reforestation

   ☐ Watershed management

   ☐ Wetland conservation and restoration

   ☐ Riparian conservation

   ☐ Biodiversity conservation

   ☐ Climate resilience

   ☐ Livelihood improvement

   ☐ Pollution control (waste disposal, reuse, recyle, energy conservation, etc.)

   ☐ Other (please specify): _____

3. If 'No', does your project implement any landscape restoration intervention as a sub-component?

Yes No

4. What is the geographic coverage of your project?

   ☐ Local (only specific community/ies or woreda/s in one zone a region)

   ☐ Regional (multiple regions in Ethiopia)

   ☐ National

5. What is the duration of your project?

   ☐ Less than 1 year
   ☐ 1–3 years
   ☐ 3–5 years
   ☐ More than 5 years

6. What is the total budget of your project in USD?

Section 2: Current M&E Practices

4. How often do you conduct monitoring activities in your project?

   ☐ Monthly

   ☐ Quarterly

   ☐ Semi-annually

   ☐ Annually

   ☐ Other (please specify): _____

5. What types of outcome indicators are tracked in your project? (Select all that apply)

   ☐ Environmental (e.g., vegetation cover, soil health, rehabilitated area)

   ☐ Social (e.g., community participation, livelihoods)

   ☐ Economic (e.g., income generation, job creation)

   ☐ Other (please specify): _____

6. What types of output indicators are tracked in your project? (Select all that apply)

☐ Environmental (e.g., vegetation cover, soil health, rehabilitated area)

☐ Social (e.g., community participation, livelihoods)

☐ Economic (e.g., income generation, job creation)

☐ Other (please specify): _____

7. Have you gathered baseline data for environmental indicators tracked by your project?

   Yes No No environmental indicators

8. What is the primary source of data for your M&E activities? (Select one)

   ☐ Primary data (e.g., field observations, community surveys)

   ☐ Secondary data (e.g., government reports, historical data)

   ☐ Both primary and secondary data

9. Which of the following monitoring tools or methodologies are used in your project? (Select all that apply)

   ☐ GIS

   ☐ Remote sensing

   ☐ Field surveys

   ☐ Mobile-based data collection

   ☐ Other (please specify): _____

Have you conducted or do you have a plan to conduct mid-term evaluation?

Yes No

If no what are the reasons not to conduct mid-term evalution?

Section 3: Challenges in M&E

8. What are the main challenges you face in implementing M&E activities in the context of your project? (Select all that apply)

   ☐ Lack of financial resources

☐ Limited technical capacity

☐ Inadequate baseline data

☐ External factors (e.g., climate variability, political instability)

Geographic

☐ Other (please specify): _____

9. What are the main challenges you face in tracking environmental outcome indicators in the context of your project? (Select all that apply)

☐ Lack of financial resources

☐ Limited technical capacity

☐ Duration of the project

☐ Inadequate baseline data

☐ External factors (e.g., climate variability, political instability)

☐ Geographic extent of

☐ Other (please specify): _____

10. To what extent do you agree with the following statements? (1 = Strongly Disagree, 5 = Strongly Agree)

a. Our M&E framework effectively tracks project outcomes.

b. Our M&E system has adequate resources for implementation.

c. The indicators we use are standardized and consistent.

d. External factors significantly impact our M&E activities.

Section 4: Opportunities and Prospects

10. How often do you use advanced technologies (e.g., GIS, remote sensing) in your M&E activities?

☐ Never

☐ Rarely

☐ Sometimes

☐ Often

☐ Always

11. What is the level of training and capacity-building support provided for M&E activities in your project?

☐ None

☐ Minimal

☐ Moderate

☐ Extensive

12. Which of the following advancements have been utilized in your project? (Select all that apply)

☐ High-resolution satellite imagery

☐ Machine learning/artificial intelligence

☐ Participatory mapping

☐ Cloud-based data management platforms

☐ Other (please specify): _____

13. What opportunities do you see for improving M&E in your project? (Select all that apply)

☐ Increased use of advanced technologies

☐ Standardization of indicators

☐ Enhanced stakeholder collaboration

☐ Greater resource allocation

☐ Other (please specify): _____

Section 5: Recommendations

14. In your opinion, which of the following would most improve M&E effectiveness in landscape restoration projects? (Rank in order of importance: 1 = Most Important, 5 = Least Important)

☐ Improved funding and resources

☐ Advanced technologies

☐ Capacity building and training

☐ Stronger policy and institutional support

☐ Enhanced stakeholder engagement