Participatory Ecological Monitoring Programme for Miombo Woodlands under Productive, Community-Based Forest Management

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Outlines

- Introduction
  - Background Information
  - What is Monitoring and Why is it Important?
- Objectives
- Methodology
- Findings

Introduction

- Forest resources is a key for livelihoods and economic development of many developing countries including Tanzania

- Currently, the country is facing annual wood deficit of about 19 million m^3. Meaning that the forest is overutilized over the sustainable level/thresholds

- This imply the available forest resources need to be utilized with caution to ensure its integrity

- This will be ensured by keeping track on what happens in our forest. That is where Ecological Monitoring Programme comes in!

What is Ecological Monitoring, and Why is it Important?

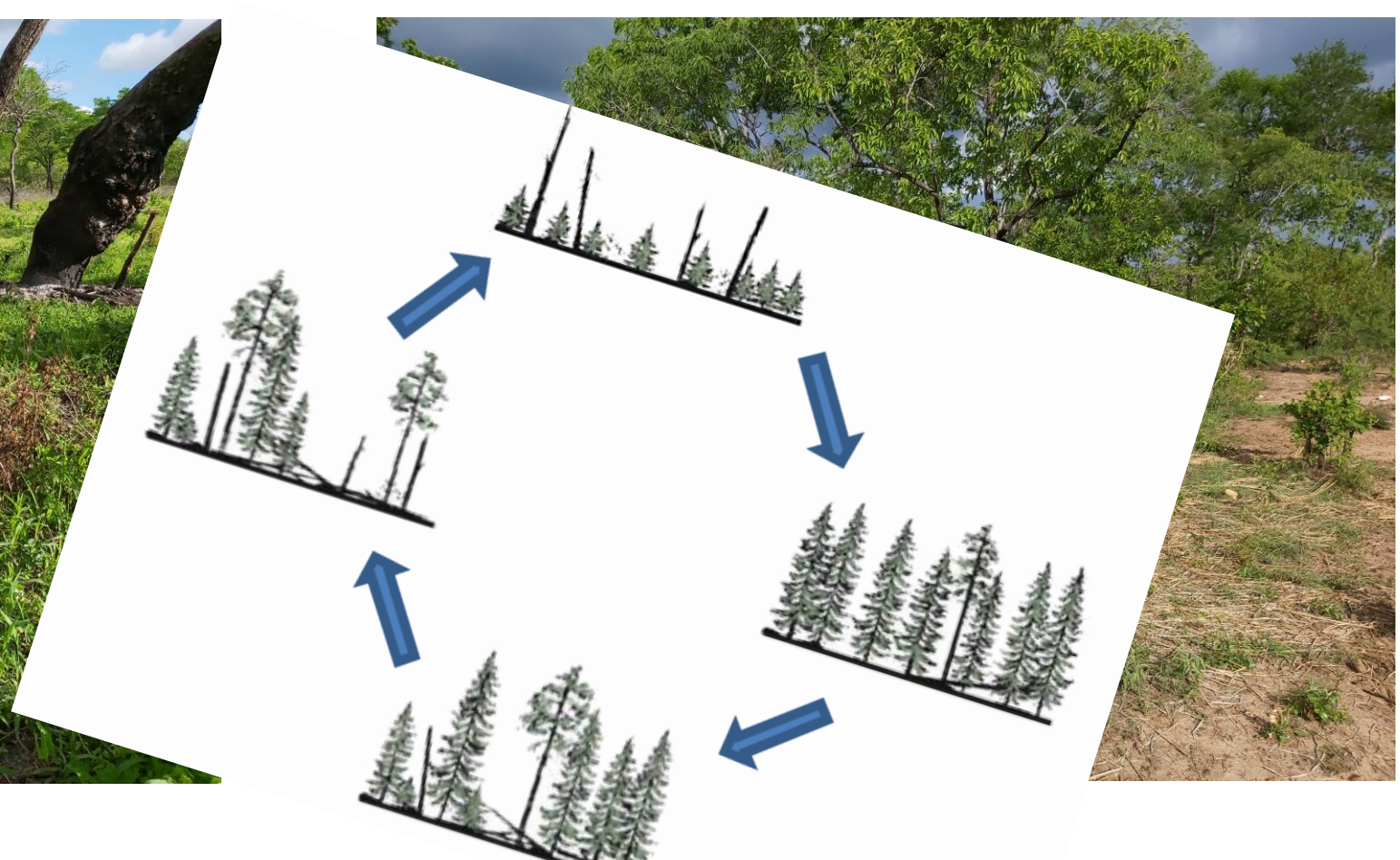
Ecological Monitoring is the systematic and routine collection of reliable information on changes in the Quality and Quantity of NATURE and the ENVIRONMENT, and on the CAUSE of those CHANGES.

Main purposes of ecological monitoring include:

- Informing management decisions on ecological management; &
- Accounting on use of the resources and expected impact.

Ecological forest monitoring system must be able to fulfill two basic conditions:

- Act as an early warning system by providing early results on ecological responses at local level; and
- Generating continuous empirical monitoring data on ecological effectiveness of different forest management regimes or interventions.



Objectives

- To develop an ecological monitoring programme for woodland under productive, community-based forest management

Specific objectives

- To capture and integrate information needs and priorities of different stakeholders with respect to ecological forest monitoring;

- To develop participatory ecological forest monitoring programme based on results from stakeholder’s consultation and literature review; and

METHODS

- To formulate monitoring purpose & objectives,
- To develop indicators/variables for each monitoring objective, and
- To develop methodology for ecological monitoring, i.e. data collection including roles and responsibilities of different stakeholders.

Study sites

- The developed ecological monitoring programme was piloted in three districts, Kilosa, Mvomero and Morogoro DC
    - Kilosa: Ulaya Mbuyuni and Kitunduweta villages;
    - Mvomero: Maharaka, Sewe kipera villages;
    - Morogoro DC: Mlilingwa and Diguzi villages

Study design

- Purposive sampling of key stakeholders with current experience in community-based forest management:
    - Local communities consisting of VNRC members, village leaders and other village members
    - District Land and Natural Resource Officers and District Forest Officers
    - MNRT: Forest and beekeeping Division (FBD) and Tanzania Forest Service agency (TFS)
    - Selected Senior Researchers and Academicians (TAFORI, SUA, and FTI)
    - Key personnel from selected NGOs (WWF and MCDI)

FINDINGS

Findings

Purpose of Ecological Moitoring Programme

- To assess the sustainability of forest utilization
- To ensure forest recovery in VLFRs after all kinds of harvesting
- To assess threats likely to impair sustainability of forest utilization
- To evaluate and communicate effectiveness of CBFM

Condition for effective Participatory Ecological Monitoring Programme

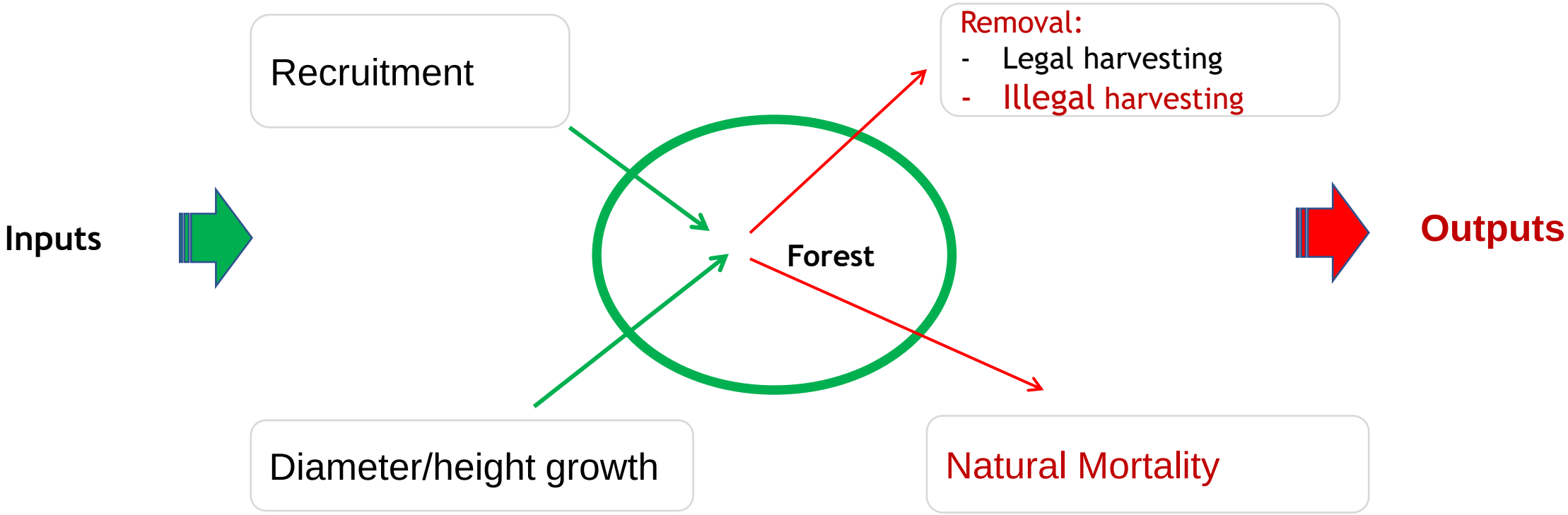
- Integrating inherent data quality assurance mechanisms within the monitoring programme;
- Ensuring compatibility with the current national level forest monitoring programme managed by the FBD; and
- Enhancing accountability in participatory forest management

Methods for Objective II

- To develop participatory ecological forest monitoring programme based on results from stakeholder's consultation and literature review; and

  - To assess the sustainability of forest utilization
  - To ensure forest recovery in VLFRs after all kinds of harvesting

→ **Forest Biomass Change**

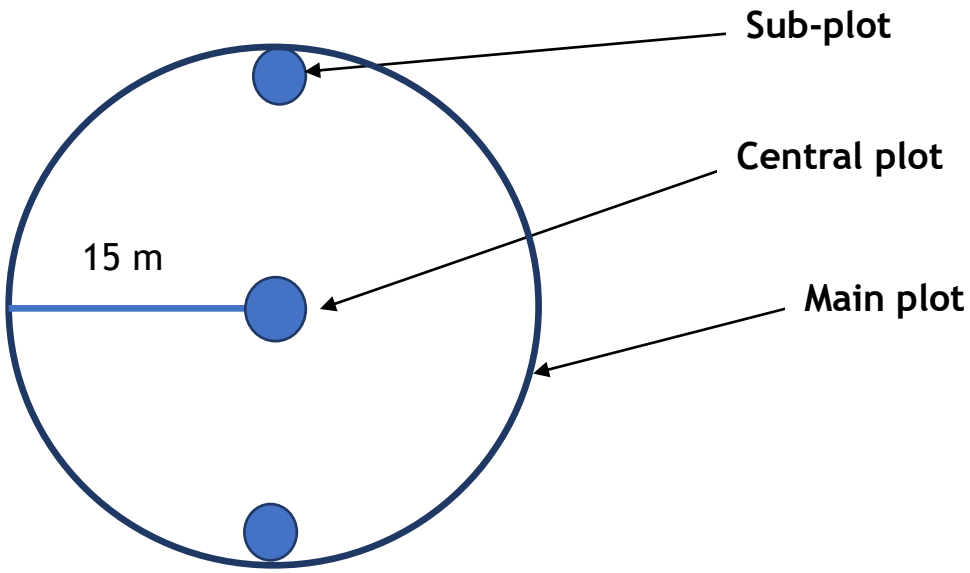


Site

Selected Village land Forest Reserves in Kilosa, Morogoro and Mvomero districts.

Design

- A total of 153 **Permanent Sample** plots of 15 m radius were randomly laid out in selected village forests.
- 90 plots were laid out in Forest Management Units (FMU) and the remaining 63 plots were laid out outside FMU
- In each plot there was 1 central plots (1m radius (assess small trees; and two satellite plots with diameter of 1 m (assess regenerants)



Measurements

- Tree parameter of interest are tree local and scientific name and diameter at breast height (dbh) of all trees with dbh>=5 cm. Smaller trees dbh<5 cm were measured in the central plot with radius of 1 m

- Two satellite sub-plot with diameter of 1 m for recording species names and counts of regenerants

Status

Using participatory approach, tree level data have been collected from 158 PSPs: Phase I field work campagn stablished **44 PSPs in September 2019**; Phase II established the remaining **114 PSPs in September 2020.**

Training

- Training involved how to measure a tree, which trees should be measured based on the established methodology and how to record data into mobile devices
- A team of consultants was able to train at least two village members in each of the villages which had PSPs
- A total of 68 villagers were trained and participated in the data collection exercise
- In addition, District Forest Officers from Morogoro, Mvomero and Kilosa district councils

Data Storage and Output

- The collected data are recorded into ODK designed forms

- The filled forms are submitted to ODK central database

Challenges

Different villages have different tree local names

Confusion/conflicts of forest boundaries between villages which led to either some plot IDs relocation

Encroachment of some monitoring points in FMUs and VFRs for agriculture and settlements as witnessed in villages such as Matuli

The VNRC members are not permanent

WAY FORWAD

The sustainability of the developed monitoring programme is imperative. Given the **prominent interest** and considerable experiences of TAFORI in monitoring forest PSPs; it is recommended that the PSPs are handed over to TAFORI. In long run, the PSPs will provide vital information on forest development dynamics that will guide the forest management interventions.

TAFORI could be mandated to lead the following key roles:

- Supervising and providing training/technical support to local communities and district staff.
- Data quality assurance, analysis and online sharing of real-time data and results through user-friendly online dashboards.

The **trained VNRC members** should be retained for at least 3 years to ensure some permanence of imparted monitoring knowledge as a short-term strategy. In the long run, a technical team of several permanent VNRCs co-opted members should be identified, trained and retained over a long period of time under locally agreed and practical terms and conditions.