



DEPARTMENT OF FORESTRY

THAMBANI FOREST RESERVE MANAGEMENT PLAN (2022-2026)



MWANZA DISTRICT COUNCIL

December, 2021

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Acronyms and Abbreviations

ADC	Area Development Committee
ADFO	Assistant District Forestry Officer
DC	District Commissioner
DDP	District Development Plan
DEC	District Executive Committee
DESC	District Environmental Sub-Committee
DFO	District Forestry Officer
DoF	Department of Forestry
EPA	Extension Planning Area
FMP	Forest Management Plan
FRIM	Forestry Research Institute of Malawi
GoM	Government of Malawi
GVH	Group Village Headman
IEC	Information, Education and Communication
IGA	Income Generating Activity
LGA	Local Government Act
METT	Management Effectiveness Tracking Tool
MOMS	Management Oriented Monitoring System
PAME	Protected Area Management Effectiveness
PFRA	Participatory Forest Resource Assessment
SVTP	Shire Valley Transformation Programme
SWOT	Strengths, Weaknesses, Opportunities and Threats
TA	Traditional Authority
TWG	Technical Working Group
VFA	Village Forest Area
	Village Natural Resources
VNRMC	Management Committee
WUA	Water User's Association

Preface

A Forest Management Plan (FMP) such as this one is important for many reasons. For instance, it can help forest owners and managers to:

- identify what they want from the forest and provide an efficient course of action to meet those objectives;
- provide a means by which stakeholders can participate in forest management and ensure clarity on the roles and responsibilities of the various stakeholders;
- ensure the existence and functionality of the resource while also increasing its value, for example, specifying where, how and under what conditions and constraints the resource, may be used;
- project future harvesting volumes;
- reduce risks and their impacts on forestry resources;
- and avoid costly forest management mistakes

Malawi has a total land area of 94,080km² out of which 25% (23,677km²) is under forest cover, with Miombo woodlands covering 22,857km². *Brachystegia* is the most prevalent tree genus. The majority of Malawi's forest cover is found in Government of Malawi protected areas. There are 87 Forest Reserves, 5 National Parks, 4 Wildlife Reserves, and 3 Nature Sanctuaries. Other major forest cover is found in customary land.

Of Malawi's 17.6 million people, more than 96% use wood fuels (charcoal and firewood) for household cooking and heating, 93% of rural households use firewood and 62% of urban households use charcoal. Malawi's growing demand for energy and agricultural land is driving forest cover loss. But at the same time, Malawi's forests are being cut and degraded much faster than they are regenerating. This also applies to Thambani Forest Reserve.

This plan is intended to provide guidance in the management of Thambani Forest Reserve resources in recognition of other existing policies including environment, agriculture, wildlife, water, land and land use. The plan also recognises the interconnectivity among ecological, socio-ecological, socio-economic, cultural, and institutional arrangements. It aims to translate national forest policies into a well-thought-out road map that leads to effective and efficient management of Thambani Forest Reserve.

The FMP will regulate forestry activities for a duration of 5 years commencing the date of approval by the Department of Forestry (DoF). It will be implemented through the applications of prescriptions that specify targets, actions and control measures. Besides, this management plan aims to provide sustainability in managerial operations over time to formalise administrative arrangements and provide a basis for monitoring forestry activities. It will be implemented jointly by the District Forestry Office (DFO), District Council (DC), NGOs, private sector, Communities and other interested parties.

This forest management plan has the purpose of not merely setting out approved management objectives and specified actions, but also important is, communicating these to the resource users, and other stakeholders who are concerned with the implementation of the plan.

I believe that implementation of this management plan will be a game changer towards management of Thambani Forest Reserve for both ecological and social benefits to people surrounding the reserve.

Dr. Clement Chilima, Director, Department of Forestry

Executive Summary

Thambani Forest Reserve is found in Southern Malawi, Mwanza District, Traditional Authorities Nthache and Govati. The reserve lies within the Kirk Range in Mwanza West Constituency. The reserve covers 10,670 hectares. Its geographical position is Latitude 15°51' 19.8" (15.8555°) South and Longitude: 34° 18' 43.9" (34.3122°) East.

Thambani Forest Reserve is an important catchment area for perennial rivers such as Namitembe, Tsupe, Mngona, Muwale and Mkuntche. These rivers provide water which is used for domestic consumption and irrigation. There are three gravity-fed schemes (Thambani, Kalanga and Kunkhoma) supplying water from the reserve for home use to seventeen villages in Traditional Authorities (TAs) Govati and Nthache. A total of 2,221 households benefit from the schemes. In addition, there are three irrigation schemes (Chimulango, Namitembe and Chikoleka) whose water is sourced from the reserve and benefits a total of 113 farm families covering a total area of 31 hectares. Farm produce from these schemes is sold locally thereby contributing to household/local income and improved nutritional status of the beneficiaries. Thambani Forest Reserve is also known for other resource values including unique areas of interest such as the Akafula Cave.

Despite its value as a major catchment area, the reserve faces several challenges including rampant forest degradation; weak fire management systems; unregulated access to the reserve; small staff compliment for extension workers; low capacity of village natural resources management committees to manage forest resources; increasing livestock numbers, thus exerting grazing pressure in the reserve; transboundary threats from neighboring Mozambique

In line with these challenges, the strategic objective of this management plan is to '*Promote sustainable management of Thambani Forest Reserve for the protection of the environment, conservation of biodiversity and improved livelihoods*'. There are three specific objectives as follows:

- a) To improve forest cover by 20% by 2026;
- b) To reduce risks of deforestation and forest degradation by 30% by 2026;
- c) To enhance livelihoods of 1,500 forest dependent households by 10% by 2026.

To address the aforementioned challenges, strategies were suggested for each objective and these are presented in Table 1 below:

Table 1: Strategies to address management challenges facing Thambani Forest Reserve

Objective	Strategies
To improve forest cover by 20% by 2026	Rehabilitate degraded areas, habitats, and ecosystems.
	Increase the range, distribution, and population of threatened, rare and near extinct species.
	Institute and implement robust fire management mechanisms to prevent and mitigate the adverse effects of forest fires on biodiversity.
	Enhance human and institutional capacity on conservation and sustainable use of the forest.

To reduce risks of deforestation and forest degradation by 30% by 2026	Raise awareness of surrounding communities on the importance of promoting conservation and sustainable use of biological resources.
	Promote indigenous knowledge systems (IKS) for sustainable management and use of biodiversity.
To enhance livelihoods of 1,500 forest dependent households by 10% by 2026	Identify lucrative markets for the agricultural and natural resource products.

The purpose of this management plan is to guide stakeholders, particularly the District Forestry Office for Mwanza District, in the conservation, management, allocation and utilization of forest resources within Thambani Forest reserve. This management plan is also prepared to ensure commitment of the communities and any other stakeholders to properly manage Thambani Forest Reserve since it is an important catchment area for perennial rivers such as Namitembe, Tsupe, Mngona, Muwale and Mkuntche as already pointed out above.

This management plan is divided into 6 main chapters namely:

- Chapter 1: Introduction and background. This chapter introduces the plan, including its scope, purpose, history and contexts within which the plan has been prepared.
- Chapter 2: Description of Thambani Forest Reserve. This chapter gives the general description, location, physiography, vegetation types, zonation and stratification.
- Chapter 3: Strengths, Weaknesses, Opportunities and Threats (SWOT). Chapter 3 provides a list of strengths, weaknesses, opportunism and threats as they relate to management of the reserve. The chapter goes on to describe each of the identified elements of SWOT
- Chapter 4: Strategic goals and objectives. This chapter outlines strategic and specific objectives of the management plan. Key actions to address each strategy have been indicated. Towards the end of the chapter, zonation of the reserve has also been described.
- Chapter 5: Existing Management programmes. This chapter highlights programmes that have been going on in managing the reserve.
- Chapter 6: Implementation Plan. This chapter outlines activities to be done between 2022 and 2026 with budgets and responsibilities assigned.
- Chapter 7: Monitoring and Evaluation Framework: This chapter describes two monitoring and evaluation approaches namely Management Oriented monitoring System (MOMS) and Management Effectiveness Tracking Tool (METT). MOMS is a community-based monitoring tool for and by communities themselves. MOMS differ from traditional monitoring systems where parameters to monitor are decided by experts, resulting in rejection of results by community members because they don't own the process. METT tracks changes in performance of a management system—whether it is improving or getting worse.

1.0 Chapter 1: Introduction and background

1.1 Introduction to the Management Plan

This Forest Management Plan (FMP) for Thambani Forest Reserve covers the period 2022 to 2026. It is a product of stakeholder consultations, workshops and the participatory forest resource of the reserve. Development of this plan has also gained insights from Mwanza District Development Plan (DDP, 2017-2022) and Socio-Economic Profile (SEP, 2017-2022). The plan identifies challenges associated with the conservation, management and utilization of the forest reserve, sets management objectives/programmes for addressing these challenges, and provides a list of interventions and stakeholders.

This FMP was produced following the recommended DDP process where such important district council structures namely District Environmental Sub-Committee (DESC), District Executive Committee (DEC), Area Development Committee (ADC) and Village Action Committee were consulted for confirmation of the need for the management plan and for their input on important issues to be included.

1.2 Scope and Purpose of the Plan

This plan focuses on conservation, management and utilization of natural resources throughout the management zones (see section 4.4). The plan provides a framework for planning, implementation, monitoring and evaluation efforts to conserve Thambani Forest Reserve. The plan also gives an opportunity for support from well-wishing partners to finance various aspects of the conservation activities including tourism.

The purpose of the plan is to guide stakeholders, particularly the District Forestry Office for Mwanza District, in the conservation, management, allocation and utilization of forest resources within Thambani Forest reserve. This management plan is also prepared to ensure commitment of the communities and any other stakeholders to properly manage Thambani forest reserve since it is an important catchment area for perennial rivers such as Namitembe, Tsupe, Mngona, Muwale and Mkuntche.

The scope of this management plan is broad and seeks to:

- Conserve biodiversity and self-sustain populations of native species and communities and to allow for the recovery of biodiversity from disturbance;
- Maintain ecosystem health and vitality;
- Protect soil and water resources;
- Adapt to climate change and sustain the contribution of the areas covered by the plan to global carbon cycles consistent with relevant legislation;
- Sustain the production capacity of native forestry ecosystems and plantations as they progressively adapt to changing climatic conditions;
- Sustain social and economic benefits, through the provision of goods and services valued by the community;
- Ensure that management is undertaken in a systematic manner in accordance with the plan and is continually improved so as to achieve desired outcomes

1.3 History of Plan Preparation

By December 2021, the Department of Forestry had not yet developed a management plan for Thambani Forest Reserve. Consequently, forest reserve conservation, protection and utilization activities occurred haphazardly. The Department of Forestry (DoF) was unable to make strategic

decisions and informed management of resources in the reserve. The need for Thambani Forest Reserve Management was identified by the Department of Forestry, District Council, the Forestry Research Institute of Malawi as well as technical experts in the District Council Technical Working Groups (TWGs).

Development of this management plan followed the following key steps (*Table 2*).

Table 2: Key steps followed in developing this management plan

Timeline	Activity	Output
1 st – 3 rd May 2020	Scoping exercise for Thambani Forest Reserve management planning	Scoping report
4 th March 2021	District Environmental Sub-Committee (DESC) and District Executive Committee (DEC) Meetings	Provisional approval to develop the management plan
5 th March 2021	Full council Meeting	Provisional approval to develop the management plan
April 2021	Meeting with Area Development Committees (ADCs)	2Area Development Committees (ADCs) (Govati and Nthache) sensitized on the project
10 th – 11 th May 2021	Stakeholders Meeting and Orientation	List of stakeholders and their roles and responsibilities for the management of the reserve Participatory Forest Resource Assessment (PFRA) schedule produced
12 th – 14 th May 2021	Boundary tracing and participatory Forest Resource Assessment	Boundary verified List of resources in Thambani forest reserve compiled
31 st May – 4 th June 2021	First Write-up of the Management Plan for the reserve	First Draft Management Plan for the reserve
28 th November – 1 st December 2021	Second write-up of the management plan	Final draft of the Management Plan

1.4 Planning Contexts

This plan aligns with a series of local, national and international planning contexts as presented below.

At local level, this plan aligns with the District Development Plan (DDP, 2017-2022). The DDP is a medium-term blue print for local development planning for all development partners in Mwanza district. This document has visions for the people of Mwanza. DDP operationalizes the development agenda of the constitution of Malawi 1996, the Local Government Act (LGA, 1998), and the National Decentralization Policy (1998) as planned and executed by local councils. Within the DDP, this plan is particularly aligned with development issue 9, 'high deforestation and forestry degradation rate.'

At national level, the plan resonates with several instruments including:

- The Constitution of Malawi, 1995. Section 13 (d) provides the principles of national policy and states the environmental principles as follows; "To manage the environment responsibly in order to: - i. prevent the degradation of the environment; ii. provide a healthy living and working environment for the people of Malawi; iii. accord full recognition to the rights of future generations by means of environmental protection; iv. conserve and enhance the biological diversity of Malawi."
- National Forestry Policy (2016): The goal of the National Forest Policy is for the conservation, establishment, protection and management of trees and forests for the sustainable development of Malawi. The policy seeks to reduce and eliminate deforestation and forest degradation. The policy contains several strategies aimed at increasing forest cover by 2% from the current 28% to 30% by 2021. Thambani Forestry Reserve Management Plan is in line with nine of the 10 priority areas of the National Forestry Policy. These areas are Community Based Forest Management; Indigenous Forests, Forest reserves and ecosystem management; Industrial Forest Plantations and Estates Management; Forest Regulation and Quality Control; Forestry Knowledge Acquisition and Management; Capacity Development for the forest sector; Biomass Energy Development; Development of Forest Based Industries; Regional and International Cooperation
- The Forestry Act 1997: This is an "An Act to provide for participatory forestry, forest management, forestry research, forestry education, forest industries, protection and rehabilitation of environmentally fragile areas and international co-operation in forestry and for matters incidental thereto or connected therewith." Part IV of the Act "Forest Reserves and Protected Forest Areas" is particularly relevant for this management plan. Within Part IV, Articles 21, 24 and 25 have a direct resonance with this plan. The purpose of article 21 is "to provide for the declaration, conservation and management of forest reserves, protected forest areas and the biodiversity." Article 24 states that 'in assuring the protection and management of forest reserves, the Director of Forestry shall prepare management plans" Article 25 states that 'the Director of Forestry may enter into agreement with local communities for implementation of the management plan that is mutually acceptable to both parties."
- Malawi 2063 Vision: The Malawi 2063 (MW2063) aims to transform Malawi into a wealthy and self-reliant industrialized 'upper-middle-income country' by the year 2063. The MW2063 outlines collective aspirations and goals of our people towards the year 2063. Malawi shall restructure land tenure systems and enforce fit for purpose use of environmental resources. This management plan sits well with Enabler 7 of Vision 2063, 'Environmental Sustainability' which in part states that 'We shall consistently rejuvenate and maintain environmentally sound land, water and forestry resources.' Enabler 7 targets 'Malawi to be a developed country with more than 50% forest cover and a deforestation rate below 0.22% per year.'

- National Biodiversity Strategy and Action Plan II. This is a framework for action to guide Malawi to sustainably manage its biodiversity. The Strategy outlines the status of the biological resources in Malawi and provides strategies, targets and actions to be taken to ensure their sustainable management. This FMP follows theme 8 that calls for community participation and awareness in the conservation, sustainable use and equitable sharing of benefits of biodiversity. This theme states that:
 - communities participate in planning, management and implementation of biodiversity programmes and law enforcement through natural resources community associations.
 - local stakeholders including researchers, professionals and private resources managers have adequate information about biodiversity in their areas and that indigenous knowledge is incorporated into biodiversity management programmes

At international level, the plan responds to IUCN Guidelines for mountain protected areas (Duncan, 1992). Thambani is a 'mountain forest reserve', therefore this plan aligns with these IUCN guidelines.

2.0 Chapter 2: Description of Thambani Forest Reserve

2.1 General Description

Thambani Forest Reserve is found in Mwanza District in Traditional Authorities Nthache and Govati and lies within the Kirk Range in Mwanza West Constituency. The reserve covers 10,670 hectares. Its geographical position is Latitude 15°51' 19.8" (15.8555°) South and Longitude: 34° 18' 43.9" (34.3122°) East (Figure 1). It lies on an elevation of 600m to 1450m above sea level (Mwanza District SOER, ,2012).

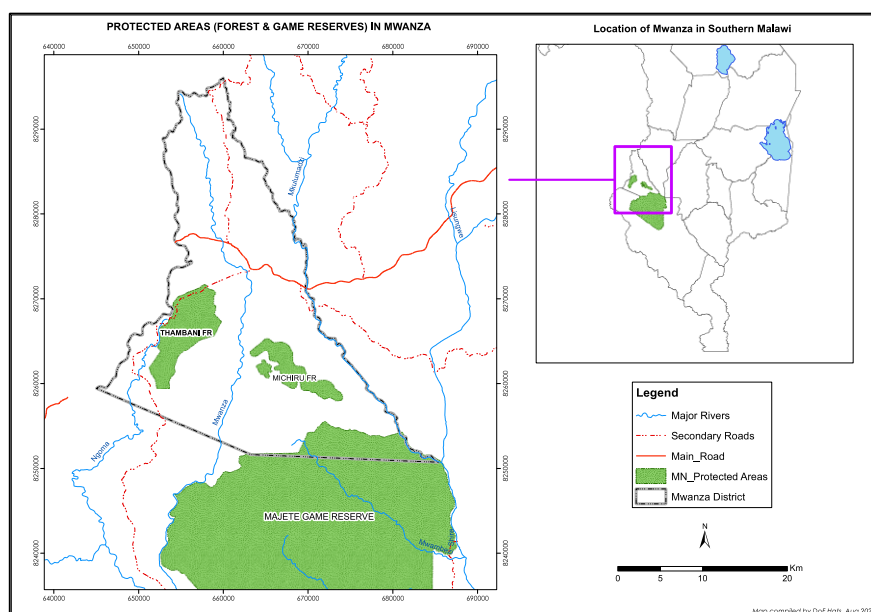


Figure 1: Location of Thambani in relation to other environmental hotspots in Mwanza District

2.2 History of establishment

The reserve was gazetted in 1927 with the purpose of protecting the various river catchment areas such as Namitembe, Tsupe, Mpandadzi, Madzimayera, Makhuthu, Mngona and Chete; and to conserve flora and fauna present in the area.

During the civil war in Mozambique in the late 1980s, 60 ha was excised at Nkulira for a refugee camp to accommodate Mozambican refugees (Thambani Forest Reserve Register). After the war, the refugee camp was closed and the land was rehabilitated with a Eucalyptus stand. The trees have been growing for years with limited tending operations.

Table 3 below is a summary of key historical events of Thambani Forest Reserve.

Table 3: Historical events of Thambani Forest Reserve

1925	Reserve proposed and boundary described
1927	Proclaimed a forest Reserve G.N of 157 to 1927 and boundary beacons erected. Some villagers moved out, eight labourers were allowed to maintain to their gardens within the reserve
1932	Land between boundary and Nkuti stream stopped
1936	Some part reported as being in Portuguese territory since international boundary went between the summits of Ngowa, Thambani and Dzombwe hills
1937	Excision of villager's land from reserve approved
1943-1947	Corundum mining within the F.R. Minor roads built
1952	Request for land in the reserve by local people (Nthatche) – Department was unable to approve
1957	A possibility for opening a mine by the new Consolidated Gold Fields Limited
1962	About 80 ha of forest damaged by villages cutting trees for collection of Nkunguni beetles
1964	Minor encroachment. Ministry of Works opened a road through the reserve at the side of the Mpandadzi stream
1965	Prospecting rights issued but no record of any samples taken. Numerous reports of encroachment, several court cases
1966	Report of the rest house collapsing
1967	Assistant DC Mwanza Requested to review the international boundary due to influx of people. Further reports of illegal cutting. A request for 160 ha to be excised was rejected
1968-1972	Continuous report of illegal firewood cutting
1972	A report that mine contractors have established a road without a licence
1973	Mining Company declared bankrupt. Several requests for leasing were rejected
1977	Application for prospecting rights
1978	Mining lease over 35.58km at the reserve for twenty years was approved by His Excellency Dr. Hastings Kamuzu Banda
1981	Re-routing D281 road entirely within Malawi passing through the reserve
1982	Request to collect stones from the reserve permission granted
1983	Illegal tree felling by the people while collecting Nkhunguni
1985	Agreement given for corundum mining; further enquiries over the position of the international boundary
1987	Permission given for bee hives to be placed. Licence given to Marayi Estate to cut 1000m ³ of firewood. Patrolman's house damaged by arson

Source: Department of Forestry-List of Forest Reserves

In early 2000s, 225m² (approximately 0.023 ha) was allocated to Airtel Malawi for construction of a tower (Figure 2). For easy access to the tower, Airtel constructed a 3 metre wide road over a distance of 90m.



Figure 2: Airtel Tower in Thambani Forest Reserve

2.3 Physiography

The reserve has an elevation of 600 to 1450 meters and a series of rocky hills running in a roughly N to S direction with more gentle slopes to the foot of the hills. The climate is tropical and falls into two main seasons which are wet and dry. The wet season starts in November and ends in March, while the dry season occurs from April to October. Mean annual temperature also varies from 15°C to 30°C.

The soils are of poor type of red clay with a richer loam occurring under the evergreen forest, with numerous perennial streams arising within the hill complex, the main one being Tsupe.

2.4 Resource Values

Thambani Forest Reserve provides a wide range of resources with various local and national values. These include:

- Catchment conservation for water quantity and quality enhancement;
- Providing for various human needs (timber and non-timber forest products)
- Promoting income generation through small scale businesses in various timber and non-timber forest products and general natural capital;
- Providing habitat for various fauna and flora thereby stabilizing natural systems which contributes to biological diversity.

Described below are key resources in Thambani Forest Reserve.

2.4.1 Water

The reserve is an important catchment area for perennial rivers such as Namitembe, Tsupe, Mngona, Muwale and Mkuntche. These rivers provide water which is used for domestic consumption and irrigation. There are three gravity-fed schemes (Thambani, Kalanga and

Kunkhoma) supplying water from the reserve for home use to seventeen villages in Traditional Authorities (TAs) Govati and Nthache. A total of 2,221 households benefits from the schemes. In addition, there are three irrigation schemes (Chimulango, Namitembe and Chikoleka) whose water is sourced from the reserve and benefits a total of 113 farm families covering a total area of 31 hectares. Farm produce from these schemes is sold locally thereby contributing to household/local income and improved nutritional status of the beneficiaries.

2.4.2 Biodiversity

Thambani is endowed with various types of flora and fauna. Explained below are key biodiversity components of Thambani.

2.4.2.1 Vegetation

In Thambani Forest reserve, the vegetation ranges from moist Miombo woodlands to prominent thickets along the stream banks within. There is also diverse vegetation in the customary land but mainly dominated by the Miombo woodlands.

The common tree species in the forest reserves are *Pericopsis angolensis* (Muwanga), *Pterocarpus angolensis* (Mlombwa), *Uapaca kirkiana* (Masuku), *Burkea africana* (Mkalati) and *Khaya anthotheca* (M'bawa) and a diversity of *Brachystegia* species (miombo). The trees are interspersed with grassland. Apart from tree species, there are also some bamboos and the main species is sympodial bamboo.

2.4.2.2 Fauna

The reserve is a habitat to number of wild animals which include snakes (such as rock python), monkeys, baboons, common hare, butterflies, birds, hyenas, common duikers, bush pigs and edible insects notably 'mphalabungu' and 'nkhunguni.' Regarding birds, there are 202 species (Wilson, 2002).

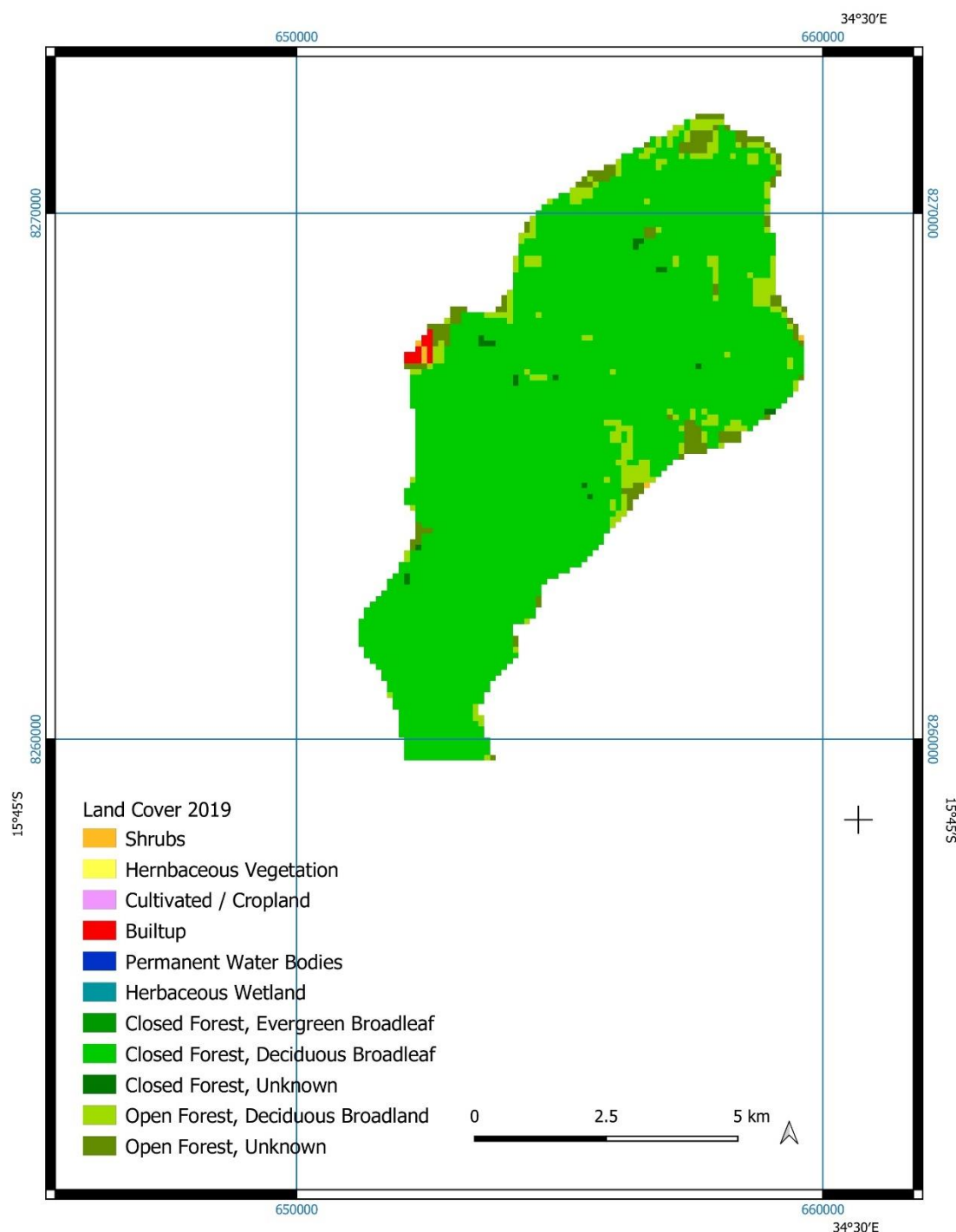


Figure 3: Landuse map of Thambani FR

2.4.3 Contribution to the local and national economy

There is limited information pointing to the direct contribution of Thambani forest reserve to the national economy. However, a few elements of such contributions exist in the reserve. Royalties paid by private mobile companies to the government for erecting transmission towers in the reserve is one such element that directly contributes to the national economic pool. Indirectly, the reserve has one of the most important roads that connects Mwanza and Chikwawa and is used by business people from the two districts whose tax remissions are pooled towards the national economy. In addition, the power line owned by the Electricity Supply Commission of Malawi (ESCOM) that passes through the reserve benefits business entities in T/A Govati area.

Local communities derive numerous benefits from the reserve. Collection of edible beetles provides an extra business opportunity for communities through the sale of the collected insects in local markets for food and income. Establishment of Water Users Associations (WUA) to manage the gravity-fed water schemes has created job opportunities for surrounding community members. Additionally, the gravity fed water schemes enable households to grow various vegetables with high nutritional value in kitchen gardens thereby improving the households' health. Local communities also get both timber and other non-timber forest products such as honey, firewood, thatch grass, poles, fruits, bush meat, livestock fodder, fibre, pharmaceuticals and charcoal, although this is mostly done illegally. Charcoal and firewood support about 90% of communities surrounding the reserve. According to results of Participatory Forest Resource Assessment, approximately 150 m³ of firewood is collected per day. The other proportion of the communities use firewood collected from communal or household sources. On a commercial scale, communities are illegally engaged in charcoal production for sale to urban and peri-urban dwellers (including the district's central area). Extraction of firewood and production for charcoal takes place in and around accessible areas of the reserve.

2.4.4 Mining and Minerals

Historically, there have been attempts to explore minerals with little evidence of the mineral deposits in Thambani forest reserve. However, in recent years with improved mineral prospecting technologies, evidence is emerging of some mineral deposits such as uranium, tantalum, niobium and corundum in specific sites of the reserve. For example, studies by Mkango Company in 2017 showed evidence of mineral deposits of uranium tantalum and niobium around Ngona, Chikoleka and Tsupe river sites within the reserve. It is evident that the economic value of these minerals is yet to be established as their exploration licence is yet to be commissioned.

2.4.5 Tourism and cultural heritage

Thambani provides exceptional scenery ideal for sight-seeing experience. Once such site is Thambani Forest Reserve Cave (locally called Akafula cave). There are significant ancient Akafula paintings/writings inside the cave (*Figure 4*). The cave is within the famous Chikhatho Rock (

Chikhatho Rock is situated to the left of Mazimboko stream which flows to Gunde village, Group Village Headman (GVH) Njanjama in Traditional Authority (T.A.) Nthache. It is called *Chikhatho* (meaning human palm and fingers) because of the palm and finger prints that were discovered by people long time ago before the reserve was gazetted. People around the area believe that the finger prints could be of the old *Akafula/Amwandionerapati* tribe whom they believe used to reside in the cave that is below the rock. Currently, hunters use the cave for roasting of poached bush meat.



Figure 4: Rock paintings within the Akafula Cave

Currently the reserve does not have any tourism activities taking place but the forest has some potential.

2.5 Tree stratification within the reserve

Stratification refers to the arrangement of the forest in terms of density, composition and height. Thambani forest reserve has been stratified into three categories according to tree species density namely high, moderate and sparse (Figure 5)). These strata are described below:

2.5.1 High dense strata

The trees in this stratum are very close to each other with a thick canopy. Most of the trees in this stratum are mature and they also provide habitat to fauna like birds, snakes, antelopes and butterflies. This area is far from the communities and cannot easily be reached due to long distance and difficult terrain.

2.5.2 Moderate strata

The mature trees in this stratum are sparsely located patches of smaller trees and shrubs. The canopy is more open than the high-density strata. Consequently, adequate sunlight reaches the forest floor, thus providing an opportunity for more regenerates and grass.

2.5.3 Sparse strata

In this stratum the trees are more sparsely located than the moderate strata, allowing for much more grass and shrubs. Due to its proximity to surrounding villages, the stratum is very vulnerable to local communities who extract forest products like firewood, making charcoal, poles and grasses. This stratum is also highly prone to uncontrolled cattle and goat grazing and browsing, respectively.

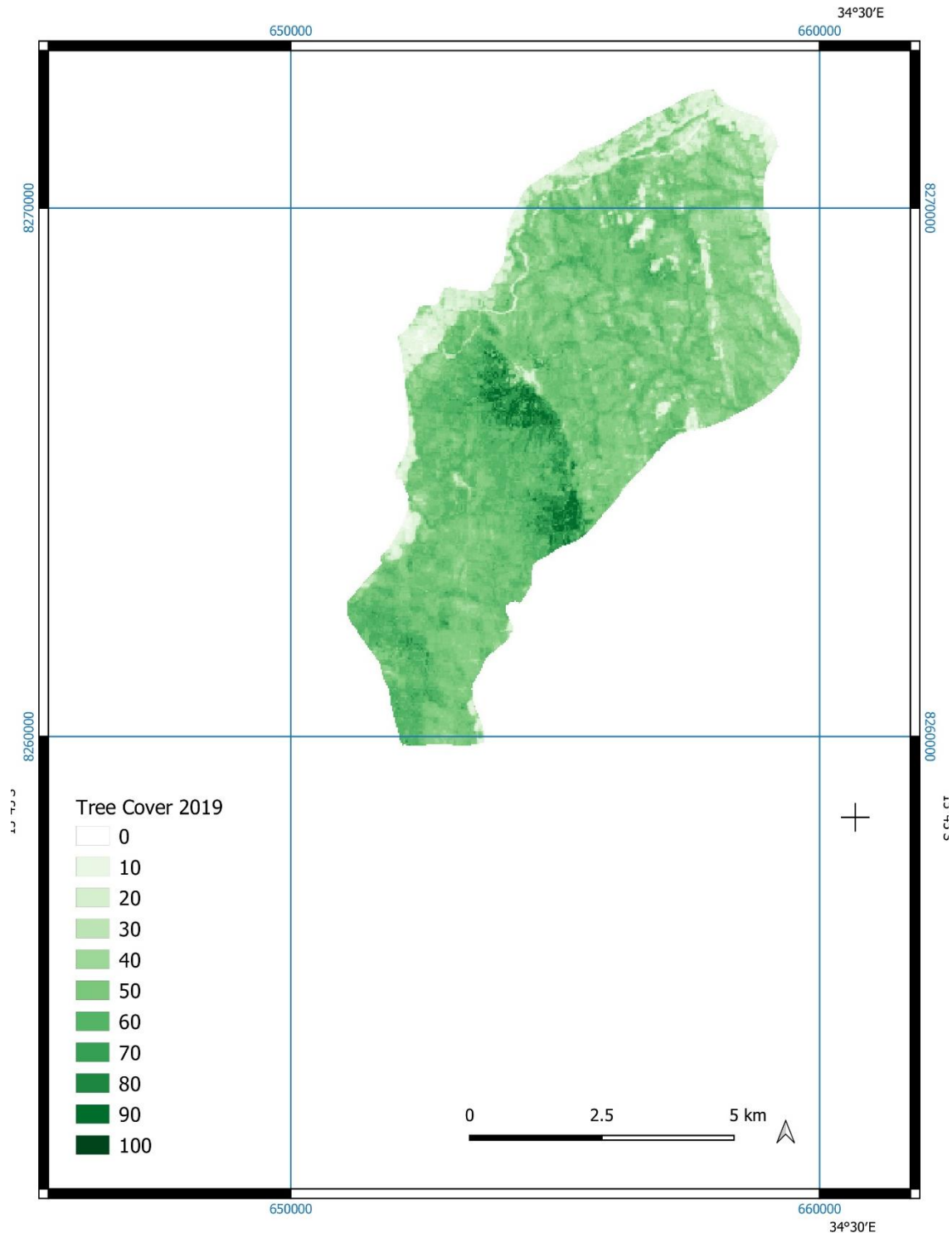


Figure 5: Map of Thambani FR depicting Tree cover

2.6 Access

Thambani Forest Reserve has controlled access, open access and illegal access to forest resources. In controlled access, surrounding communities are officially allowed to collect approved forest products such as firewood which attracts an official permit in a form of a fixed fee receipt which is (MK 150 per head load).

In open access communities are also permitted to collect non-timber forest products but there is no fee attached. The products collected include fruits, mushrooms, medicine, thatching grass and edible beetles (Mphalabungu and Nkhunguni).

The accessibility to Thambani Forest Reserve is facilitated by the presence of good road networks such as Mwanza District to Thambani, Chamwalira to Kunkhoma and Nkulira I to Ching'ombe (*Figure 6*)



Figure 6: Mwanza-Thambani Road

2.7 Livelihoods of Surrounding Communities

Surrounding communities grow fruits like citrus fruits (tangerines, oranges and lemons), mangoes, avocado pears, Mexican apples and custard apples etc. The district also grows vegetables such as tomatoes, mustard, rape seed, onions, Chinese cabbage and cabbages. These horticultural crops bring a lot of money into the district. The numbers of farming households are also increasing (Table 4) and this is one of the major threats.

Table 4: Number of Farming households, Thambani Extension Planning Area (EPA)

2012/13	2013/14	2014/15	2015/16	2016/17
4,482	4,498	4,506	4,521	4,521

Source: GoM, 2017

Surrounding communities also keep livestock, major ones being cattle (both beef and dairy breeds), goats, chickens (local, black austrolope, broilers and layers), guinea fowls and pigs. Other species of livestock raised are rabbits, sheep, turkeys, ducks, doves and guinea pigs. There have been fluctuations in the population figures for all cattle, goats and sheep. Overall, there is an increasing trend from 2012 to 2017. Such increments pose grazing threats to the reserve.

Table 5: Population trends of cattle, goats and sheep around Thambani

Year	Cattle	Goats	Sheep
2012-13	4,391	64,415	458
2013-14	4,514	72,489	539
2014-15	5,131	86,096	633
2015-16	5,576	95,975	748
2016-17	6,566	115,864	912

Source: GoM, 2017

3.0 Chapter 3: Strengths, Weaknesses, Opportunities and Threats (SWOT)

Thambani Forest Reserve has all the four elements of SWOT as presented in Table 6.

Table 6: SWOT Analysis, Thambani Forest Reserve

Strengths	Weaknesses
1. Vast forest area with regeneration potential 2. Protected area under the laws of Malawi 3. Unique and rich biodiversity e.g. rosewood, edible beetles 4. Existence of perennial rivers e.g. Namitembe, Mngona, Tsupe 5. Strong traditional leadership systems	1. Rampart forest degradation de 2. Low capacity of structures (VNRMCS) to manage forest resources 3. Unregulated access to the reserve 4. Small staff compliment for extension workers. 5. Weak fire management systems
Opportunities	Threats
1. Existence of well-organized council structures (DEC, DESC, ADC, VDC) 2. Existence of regulated markets for forest-based enterprises (Which are these markets) 3. Well qualified forestry staff (is it staff at all levels) 4. Existence of cultural sites	1. Insufficient funding ORT and Development and Management Fund (FDMF) 2. Inadequate institutional support and advisory services 3. Inadequate commitment from traditional leaders 4. Increasing demand for construction materials 5. Mining of precious stones 6. High unemployment rate 7. Low prices of farm produce 8. High population growth rate 9. Climate change 10. Brick burning 11. Bush Fires 12. Transboundary nature of the reserve 13. Increasing livestock numbers around the reserve

3.1 Description of the weaknesses and threats

3.1.1 Rampart forest deforestation and degradation

Deforestation mainly for charcoal making, cultivation, timber and brick making is increasing in the forest reserve and this may be attributed to unclear reserve boundaries, increasing human populations and poverty. The reserve borders Mozambique and this exposes it to cross-border illegal activities particularly timber sawing and charcoal making. Figures *Figure 7* and *Figure 8* below show incidences of tree cutting and charcoal kiln in the reserve respectively.



Figure 7: Tree cutting, Thambani Forest Reserve

Source: GoM, Participatory Forest Resource Assessment (PFRA), 2021

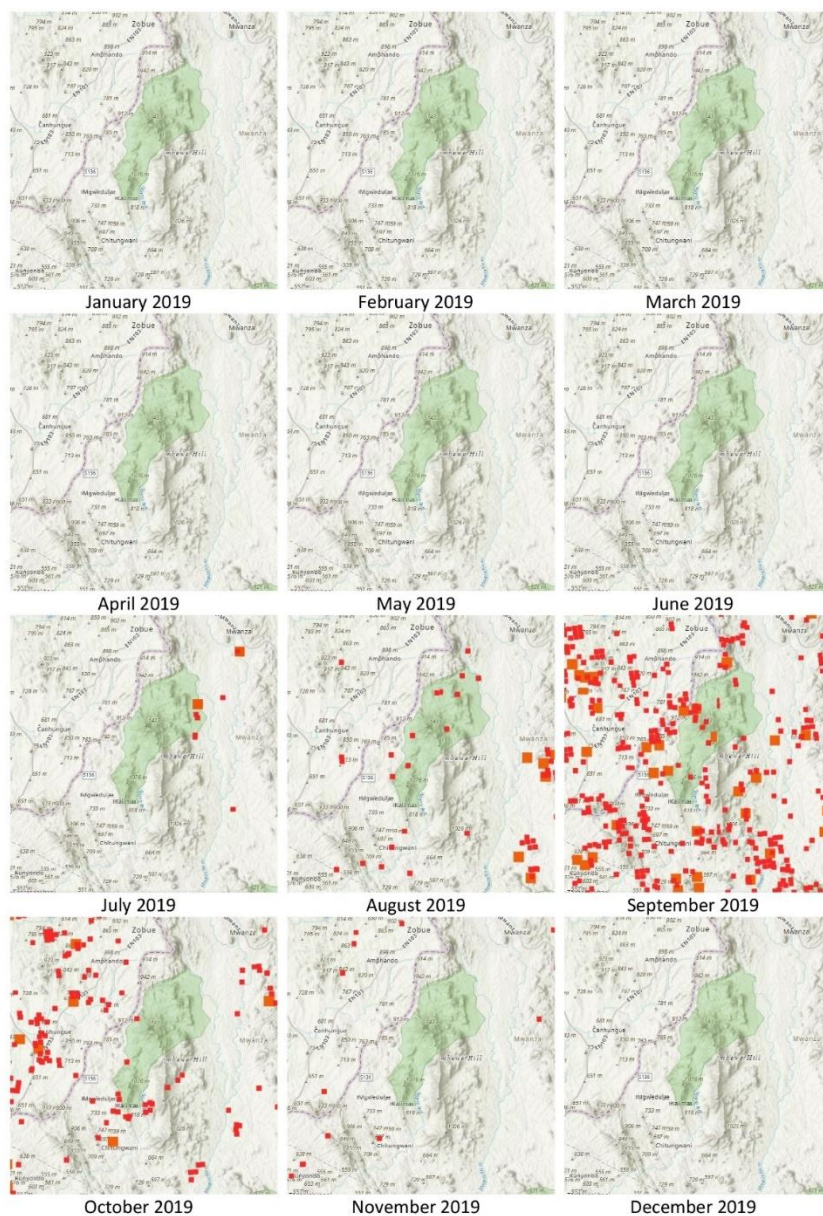


Figure 8: Charcoal Kiln, Thambani Forest Reserve

Source: GoM, Participatory Forest Resource Assessment (PFRA), 2021

3.1.2 Bush Fires

Fires in Thambani Forest Reserve occur yearly and are either intentional or accidental. Intentional fires include those set during charcoal making, rodent hunting and those set merely to frustrate conservation efforts. Some people simply feel happy and entertained when they see a forest burning. Unintentional fires are mainly those set outside the reserve but spread inside due to overgrown reserve boundaries. The challenge of fires in Thambani is compounded by weak fire management systems at district level. For example, a fire management plan does not exist, early burning and fire campaigns are rarely done. Figure 9 below clearly shows that the majority of fires are occurring between July to October each year (the dry season), and that they are occurring in the central area of the FR (see September 2019 fire image)



Source: Fire Information management System (FIRMS) - NASA

Figure 9: Fire map distribution from 2019 showing the location of annual fires in and around Thambani Forest Reserve.

3.1.3 Low capacity of structures (VNRMCs) to manage forest resources

Due to limited funds, the existing Village Natural Resources Management Committees (VNRMC) are not well supported by the DoF. The committees are not well trained in key aspects of forestry management including monitoring, evaluation, resource assessment, record keeping, leadership and group dynamics.

3.1.4 Unregulated access to the reserve

Due to weak law enforcement, access to the forest reserve is not effectively regulated by both Department of Forestry and VNRMCs. People access the reserve illegally for several reasons including firewood collection, charcoal making and timber sawing as already explained in section 3.1.1.

3.1.5 Small staff compliment for extension workers)

Staff compliment for extension workers is small for the reserve and this leads to weak management and supervision of the activities. From table Table 7, it is clear that there are staff capacity gaps that need to be filled for effective management of the reserve.

Table 7: Number and Distribution of field extension workers in Thambani EPA

T/A	No. of Forest Assistants required	No. of Forest Assistants available	Vacancies
Kanduku	2	1	1
Govati	2	0	2
Nthache	2	1	1
Total	6	2	4

Source: GoM, 2018

Table 8 below shows that the number of extension workers relative to the population of surrounding communities is small and is getting worse. Each extension worker serves too many people. Consequently, contacts between individual households and the extension worker is also correspondingly small. This results into weak performance of people engaged in afforestation and other livelihood enhancement initiatives.

Table 8: Ration of forestry extension to population of people serviced

Year	Forestry Extension workers to Population Ratio
2013	1:30,000
2014	1:30,000
2015	1:31,000
2016	1:32,000
2017	1:35,000

Source: Government of Malawi (GoM), 2018

3.1.6 Insufficient funding

The district forestry sector is the least funded sector at council level. The office receives approximately \$153 per month from Other Recurrent Transactions (ORT) which covers for utility bills like water and electricity including fuel costs, maintenance of vehicles and forestry activities in which Thambani is part of. The funding is often erratic as it does not conform to the cash-flow. The office also receives Forest development and Management Funds which are heavily used for indigenous forest management and law enforcement. However, of late, the funds have been dwindling. For example, in the 2019/2020 fiscal year the office received around \$21,164.00 while in the 2020/2021 the office accessed \$7,936.00.

3.1.7 Inadequate support and advisory services

As already pointed, the focus for Thambani is to propel service delivery in matters of forestry and harness resources for enhanced performance. However, the number of Non-Governmental Organizations are limited in the district, hence limited support in terms of monetary and extension services. The few NGOs in the district mostly focus on agriculture, education and health

3.1.8 Lack of interest and commitment from some traditional leaders

Some traditional leaders do not fully support conservation efforts towards the reserve. They would rather want the reserve to be converted to cultivation land since landholding sizes are dwindling in the surrounding communities. Furthermore, some leaders do not see tangible benefits of the reserve. There are also claims by some leaders that some forestry staff are involved in corrupt practices and this demotivates some traditional leaders. Some traditional leaders see it as only a responsibility of government to manage and save the reserve from degradation.

3.1.9 Increasing demand for construction materials

Most of the infrastructure around Thambani Forest including houses, livestock pens, hawker shops are not permanent but made of construction materials like poles, fibre, rafters, purlins, doors etc. sourcing from Thambani. With the growing human population, this poses as a threat in that Thambani will remain the only viable source of these materials. Furthermore, development of telecommunication masts, towers are almost always erected on high ground including in Thambani. The erection poses a threat in terms of land clearing for access road. Also, power lines do pass through the reserve as a shortest possible line to the other side of the forest reserve.

3.1.10 High unemployment rate

While most people are informally employed, only a few are employed in the formal sector such as clerical work, professional jobs such as teaching and medicine, security and other public service jobs, sales and hospitality industry. According to the District Development Plan (2017-2022), the dominant informal sectors include tin making, bicycle repairing, brick laying works, carpentry and joinery, vehicle and motorbike maintenance, welding, wholesale shops, retail shops, sand mining and subsistence farming.

High unemployment rate in the district is caused by several factors including inadequate vocational skills among the youth, inadequate business entrepreneurial skills, inadequate business start-up

capital, inadequate safety nets and inadequate capacity in value addition and processing (Mwanza District Council, 2017).

3.1.11 Mining of precious stones

Mining in forest reserve is a threat in the sense that once precious mineral resources are discovered in the reserve, the forest policy will give precedence to the prospecting and mining of the minerals. This has a potential to lead to forest degradation and deforestation.

3.1.12 Low income and prices for farm produce

According to the District Socio-Economic Profile (2017), most of the agricultural produce is sold unprocessed, leading to low prices, hence perpetual poverty to the farmers at house hold level. Furthermore, most of the subsistence farmers have not yet been exposed to lucrative markets for their farm produce. Consequently, middle men (vendors) take advantage of this to cheat farmers with low process. The Mwanza district is renowned for its farm produce including oranges, tangerines and pigeon pea. All these are perishable commodities that are seasonal, with low farm gate price. The low prices for the farm produce discourage many farmers and they easily go into the forest to collect forest produce especially charcoal which is relatively valuable for its volume. The charcoal is mostly sold neighbouring towns including Blantyre.

3.1.13 Climate change

Direct impacts of climate change to the reserve are not well known. The indirect ones can be inferred as follows: extremes of drought, dry spells and flooding negatively impact on livelihoods of surrounding communities. For example, dry spells reduce crop and livestock productivity, reducing people's livelihood options and heightening poverty levels. The cascading effects are that surrounding communities look to the reserve as an alternative source of livelihood.

3.1.14 Increasing livestock numbers around the reserve

As already indicated in Table 5, the population of key livestock types is increasing around the reserve. However, grazing land is shrinking. This forces livestock owners to drive their livestock (especially cattle and goats) in the reserve. This has the potential of escalating soil erosion.

Mwanza is the third smallest district in Malawi after Likoma and Chiradzulu with a total land area of 826km² (82600ha). The landholding size for smallholder farmers is small, leaving Thambani Forest reserve as the only reliable livestock grazing and browsing site. It is not uncommon to see cattle grazing in Thambani forest thereby continuing to degrade the land.

3.1.15 Transboundary nature of the reserve

Thambani Forest Reserve is less than 5 kilometres away from Mozambique. This distance exposes the reserve to transboundary related threats including tree cutting and charcoal making by Mozambicans.

3.2 Description of Strengths and Opportunities

3.2.1 Strengths

3.2.1.1 Vast forest areas with regeneration potential

Thambani forest reserve has a total area of 10,670 hectares which is 13% of the district's total area. From the PFRA conducted in 2021, it is clear that regeneration potential is high. Nonetheless, the forest's regeneration capacity is often hindered by anthropogenic activities such as bush fires, livestock grazing and charcoal making.

3.2.1.2 Protected area under the laws of Malawi

The reserve is a gazetted forest under the laws of Malawi and is recognised as such at all levels. This limits free access and utilization of its resources hence it's continued existence unlike other forest areas in the district.

3.2.1.3 Unique and rich biodiversity

The reserve is home to some rare plant and animal species such as rosewood and edible beetles (as explained in section 2.4.2 above). It is this richness in biodiversity that makes the forest unique and – at the same time – prone to access by local communities. It is, therefore, necessary that the biodiversity richness of the reserve is safeguarded and strengthened.

3.2.1.4 Existence of perennial rivers

The existence of perennial rivers makes the forest reserve a reliable source of water for both drinking and irrigation activities as explained in section 2.4.1 above. These rivers also support biodiversity through growth of various plant and animal species.

3.2.1.5 Strong traditional leadership systems

As indicated in 2.1, Thambani Forest Reserve is surrounded by two Traditional Authorities. These have strong influence on their subjects. The two, take interest in advocating for conservation, protection and sustainable utilization of the forest resources.

3.2.2 Opportunities

3.2.2.1 Existence of well-organized council structures

Mwanza District has the administrative structures that govern the operations in which Forestry as a sector is part of. At district level, there are two influential structures namely District Executive Committee (DEC) and District Environmental Sub-Committee. DEC is composed of heads of various sectors, parastatals, and non-governmental organizations. District Environmental Sub-Committee is composed of the technical stakeholders in the environmental sphere. At Traditional Authority level, there is Area Development Committee while at village level, development endeavours are led by the Village Development Committee (VDC). These structures provide the advisory services to ensure holistic forest management which include Thambani Forest Reserve. While ADC and VDC play generic development roles, Village Natural Resources Management Committee (VNRMC) play custodians of forestry management at a local level. Table 9 presents names of ADC and the associated number of VDSs.

Table 9: Local level governance structures around Thambani Forest Reserve

Traditional Authority/ADC	GVH	Number of VDCs	Number of Villages
Kanduku	8	21	87
Nthache	7	16	49
Govati	7	7	40
Total	22	44	176

Source: Social Economic Profile-2017-22

3.2.2.2 Existence of regulated markets for forest-based enterprises

Thambani Forest Reserve as a resource is near the 6 major council markets namely Mwanza District Mwanza District Hospital , Mwanza Border Kunenekude , Ngadziwe and Thambani. Communities around Thambani Forest can therefore easily sell their forest and agriculture based enterprises. Proximity of these markets ensures that communities save transport costs to market their produce.

3.2.2.3 Well qualified forestry staff

Mwanza District Forestry Office as an overseer of forestry matters has well qualified and trained staff to undertake administrative and technical services. However, despite their capability to deliver outputs, the staff is inadequate compared to establishment. Furthermore, staffing levels have dwindled since 2004 and this is due to transfers without replacement, laying off, retirement, and death.

3.2.2.4 Existence of cultural sites

Thambani Forest Reserve is rich in cultural sites such as the Akafula Rock Paintings around Chikoleka which can potentially be turned into a tourism attraction centre thereby promoting social-economic well-being of the surrounding communities.

3.2.2.5 High population growth rate

The population growth rate of Mwanza is 1.3% per annum, 1.5% lower than the national average of 2,8% (GoM, 2018). However, this population growth rate is still a source of tremendous pressure on the Thambani forest, as it is the only source of forest produce in the district after the demise of Michiru forest.

4.0 Chapter 4: Strategic goals and objectives

4.1 Strategic goals

The strategic goal is to ‘Promote sustainable management of Thambani Forest Reserve for the protection of the environment, conservation of biodiversity and improved livelihoods.’

4.2 Specific Objectives

This management plan has 3 specific objectives as follows:

- d) To improve forest cover by 20% by 2026;

- e) To reduce risks of deforestation and forest degradation by 30% by 2026;
- f) To enhance livelihoods of 1,500 forest dependent households by 10% by 2026.

4.3 Strategies and actions to address weaknesses and threats

There are a number of weaknesses and threats that have been highlighted through the SWOT analysis that are negatively impacting on the management of the reserve. Table 10 below presents strategies and key actions to address these challenges.

Table 10: Strategies and key actions to address management challenges

Objective	Strategies	Key Actions
To improve forest cover by 20% by 2026	Rehabilitate degraded areas, habitats, and ecosystems.	• Enrichment planting • Natural regeneration • Adapt national guidelines for ecosystems approach • Vegetative propagation-Truncheons
	Increase the range, distribution, and population of threatened, rare and near extinct species.	• Enhance forest law enforcement, governance, and trade.
	Institute and implement robust fire management mechanisms to prevent and mitigate the adverse effects of forest fires on biodiversity.	• Develop and implement fire management plans.
To reduce risks of deforestation and forest degradation by 30% by 2026	Enhance human and institutional capacity on conservation and sustainable use of the forest.	• Enhance the knowledge base of surrounding communities on the extent of biodiversity loss. • Promote proactive community participation in biodiversity conservation. • Promote capacity building of communities on participatory resource assessment/mapping and monitoring. • Build capacity of local communities and staff in natural resources management, biodiversity assessment and ethnobotany

		Promote co-management practices.
	Raise awareness of surrounding communities on the importance of promoting conservation and sustainable use of biological resources.	- Adapt and implement an effective public awareness strategy. - Improve access and use of forestry related information to people through effective information exchange and sharing. - Develop a public awareness programme about Thambani's unique sites and species that are of biodiversity conservation importance.
	Promote indigenous knowledge systems (IKS) for sustainable management and use of biodiversity.	- Identification of indigenous knowledge systems in and out of Thambani Forest. - Integration of IKS and conventional systems
To enhance livelihoods of 1,500 forest dependent households by 10% by 2026	Identify markets for the agricultural and natural resource products.	- Conduct socio-economic surveys to establish potential products and facilitate linkage to lucrative markets. - Promote community cooperatives for agricultural and natural resource products. - Promote Village Savings and Loan Schemes to support community cooperatives and other low-income groups. - Promote carbon marketing and performance-based grants.

4.4 Management Strategies by Zoning Approach (We need a map—get coordinates)

Zoning is the process of dividing land areas for different management purposes. Forest Zoning provides insight into future forest management and clearly identifies those areas of State forests specifically set aside for conservation and those available for other activities such as public recreation, research, grazing and timber production, etc. In Thambani Forest Reserve there are three zones which are described below.

4.4.1 Core Zone

This zone encompasses the highest value and most threatened biodiversity sites, comprised of different vegetation types ranging from *Brachystegia* to grasslands; bare rocks, mid-altitude evergreen forest, and natural habitats. The intention for these sites is to sustain their relatively undisturbed and ecologically unique endemic lifeforms and contribute to the reserve's high biodiversity importance such as rare habitats, species (rare and endemic) and fragile ecosystems. Apart from being a zero-option area, this zone is mainly for basic research, source of rivers and tourism (e.g., artifacts, cave appreciation, photography). The Thambani scenario core zones include rivers like Tsupe, Ngona and Mpandadzi.

The management objective for the core zone is to strictly protect all biodiversity in this zone for purposes of conservation. No exploitation will be allowed and there will be intensive supervision and protection. To this end, it is suggested that separate teams which are well resourced are formed with responsibility for a specific section of the forest.

Currently, there are few ground forest personnel employed for forest protection. This problem is compounded by the fact that there are so many entry and exit points throughout the forest that frustrate protection efforts. Under such daunting conditions, the current force has been ill-equipped and poorly resourced to conduct protection operations. Under these situations, active guarding even under the most intensive regime cannot be expected to yield satisfactory results to a magnitude commensurate with the present problems of rampant theft and pilferage of resources. Non-destructive research and other activities that have minimum impact to the area will be permitted.

4.4.2 Buffer Zone

Descriptively, this is an area created to enhance the protection of a specific area or feature which is always peripheral to it, e.g. a river. This area consists of the remaining natural vegetation, remaining indigenous forest, grasslands not included in the Core zone. While serving to enhance the protection of the Core zone, resource use in this zone will be legally or customarily restricted, often to a lesser degree than in the adjacent Core zone. This zone is therefore an important part of the conservation strategies of plant diversity or biodiversity in general for the Thambani forest reserve. The management objective will be sustainable utilization, consistent with protection of the water catchment and soils under direct management, and it is in this zone that any pilot co-management areas will be located.

The Buffer zone holds potential for intense management with compatible research, and limited and controlled extraction of some natural resources hence also serving as a resource use zone. Rare and fragile habitats need special attention to restore the zone to its natural appeal, biodiversity, and productivity.

The Buffer zone includes all forest areas outside the Core zone up to the Transition zone boundary. In the context of Thambani Forest Reserve this zone will include all areas within 100 meters from

the boundary in TA Govati and all areas within 15 meters along Mpandadzi stream which acts as a boundary in TA Nthache and the other rivers. The buffer zone along the rivers cannot be used as a resource use zone to ensure total protection of the rivers.

In TA Nthache the buffer zone is characterized by patches of plantations of regenerating *Eucalyptus Camaldulensis* and *Tereticornis* stands that run adjacent to the lower part of Mpandadzi river. Nkulira and Mpandadzi plantations are 60 hectares in total.

The main management activity in the Buffer zone is to enhance awareness on the importance of protection of the zone so as to sustainably produce wood resources at significant levels enough to partly meet the increasing demands of surrounding communities.

All-natural habitats in this zone will be restored in order to enhance ecosystem sustainability through sound water and soil conservation management. All degraded areas and river banks will be planted with *Adina microcephala*, *Syzigium cordatum*, *Pterocarpus angolensis* and many more water retaining species. Specific enrichment planting interventions will be selected according to identified hot spots and priorities e.g. in illegal charcoal production patches.

4.4.3 Transition Zone

Transition zone areas are those under controlled access to management and harvesting of specified resources together with adjacent communities and of tourism and research interest under sustainable commercial exploitation. These mainly include Villages surrounding and living around the reserve.

The management objective in the Transition zone is to create a platform for community engagement which helps to reduce pressure on threatened species of indigenous trees, while at the same time create the potential for community co-management.

The Transition zone covers the area along Mpandazi river in TA Nthache and villages along the boundary of the reserve in TA Govati and adjoins the Buffer zone boundary. All stakeholders implementing this Plan and the local communities will work together to develop ways of sustainably managing natural resources. Most of the activities will be owned and carried out by individuals and organizations. This zone is largely comprised of deforested village forest areas, farms and cultivated fields. This is where a variety of land and forestry management systems and practices, that combine trees with agricultural production in pursuit of sustained or increased productivity, enhanced ecosystem services supply, and to a greater extent, a stronger adaptive capacity for land managers will be promoted.

1.0 Chapter 5: Existing Management Programmes

1.1 *Introduction to the Existing Programmes.*

Thambani Forest Reserve has one major programme namely law enforcement and protection currently in operation. Law enforcement is the action taken to determine noncompliance with rules and norms and to prosecute violators of those rules and norms. It may involve patrols or surveillance to deter or detect criminal activity, the investigation of crimes, and the apprehension and prosecution of offenders. Law enforcement is therefore one of the main tools for reducing illegal practices in the forest sector.

Forest illegality occurs when forest products are harvested, transported, processed, bought or sold, or when forest are cleared or otherwise degraded, in violation of the laws. Patrols are and will always be facilitated and conducted by a team of knowledgeable staff/stakeholders with support from Malawi Government as well as Non-Governmental Organizations (NGOs) within and outside the district.

Supporting organizations and partners have the responsibility to provide financial, material as well as human resource support needed to smoothly and effectively implement the patrols under this programme. Further details about law enforcement in Thambani Forest Reserve are presented below:

1.1.1 Forest Patrols

This management plan allows for the development of a comprehensive law enforcement plan by all stakeholders in and outside the district.

Patrolling will prioritize high value biodiversity sites (Core Zone), however not leaving aside the other zones. Responsibility for patrolling will fall under the District Forestry Officers (DFOs) with support from partners. Patrolling is aimed at protecting biodiversity in and outside the reserve. The frequency of patrols to a particular location within the reserve will depend on levels of illegal activities. For example, if area x has more illegal activities than y, then more patrols will be conducted in x than y.

The patrolling team shall make reports on a weekly basis and these will later be incorporated in the DFOs' monthly reports.

To achieve effective and efficient patrols, the department of forestry and all stakeholders need to do the following:

- i. **Plan and organize patrols:** A formal patrolling plan should be developed by the DFOs to consider:
 - zoning as set out in this Plan
 - patrolling team.
 - Planning also makes provision for:
 - frequency, duration and location of patrols
 - team lead for command and control as well as reporting

- ii. **Procure law enforcement equipment:** Effective patrolling will require that those patrolling are provided with adequate clothing and equipment. These include firearms, protective gear, tents, torches etc.
- iii. **Train law patrol team:** Train the patrolling team as well as communities around the reserve in law enforcement.
- iv. **Conduct intensive and focused patrolling:** This activity will include joint long- and short-term patrols of stakeholders (thus including community members). Where necessary, Forestry Department will be requested to provide additional support from Malawi Police as well as Malawi Defense Force, Parks and Wildlife.
- v. **Survey existing boundaries:** Formal description of the boundary needs be done for proper law enforcement and protection. Clear demarcation is also important to be fair to communities adjacent to the forest reserve. A full survey of the existing boundary will be undertaken.

1.1.2 Forest Crime Investigations

Under this, the department of forestry through district forestry office shall make sure that there is enhanced forest crime investigation throughout. DFO shall always make sure that there is good coordination between the office and all crime investigation agencies (including Malawi Police). There shall be follow-ups of all forest related crimes, making sure that all forest related cases are being prosecuted and that proper charges are being made as prescribed in the recent amended Forest Act. Materials/equipment (these include vehicles) used to facilitate these illegal forest activities shall be confiscated and where applicable be forfeited to Malawi Government.

The state advocate shall where necessary be contacted for proper advice as well as assistance in dealing with forest related cases or crimes.

1.1.3 Community Outreach

Community engagement is one of the paramount factors in enforcing forestry laws. Illegal logging jeopardizes the livelihood of rural communities engaged in small-scale legal logging by exposing them to unfair competition.

As already widely acknowledged, to enhance the participation of local communities in the forest law enforcement it is important to prepare the legal instruments that will define the functions of the community level institutions. These institutions could have a role in organizing and supporting local forest law enforcement. They could be in charge of training and monitoring the work, monitoring payment of fines and ensuring that there is transparency and accountability in management of forest resource activities.

Effective community engagement depends on meeting people where they are, talking with them about what they care about, and making connections to how their efforts contribute to the national developments.

To achieve maximum protection of forest resources both in and outside the reserve, community members need to be made aware of and sensitized on the Forestry Act 1997 and by-laws governing the management of natural resources.

Under this section, community awareness meetings, sensitization meetings as well as training events are and will always be promoted reaching out to all communities living around the reserve.

Filling of the knowledge gap in communities should in the long run ease patrols both in the reserve and transition land.

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2.0 Chapter 6: Implementation Plan

Strategy	Activities	Monitoring Indicator	Target	Implementer	Budget (MK'000)	Timeframe (2022-2026)				
Objective 1: Improve forest cover by 20% by 2016										
Rehabilitate degraded areas, habitats, and ecosystems.	Nursery establishment	No. of tree nurseries established and seedlings	11 nurseries, 165000 seedlings	Dept of Forestry, District Council, Communities	6,900					
	Land preparation	Area of land prepared (ha)	100 ha	Dept of Forestry, District	3,600					
	Planting seedlings out	Area planted to tree seedlings	100 ha	Dept of Forestry, District	3,600					
	Fire breaks maintenance	Length of the firebreaks	500 km	Dept of Forestry, District	3,250					
	By-laws enforcement	%ge reduction in the number	75%	Dept of Forestry, District	3,250					
	Training of staff in ecosystems approach	No. of staff trained in ecosystems approach	30 members of stfff	Dept of Forestry, District Council, Communities	3,200					
	Collection, distribution and planting out of truncheons of endangered species	Area planted to truncheons	30 ha	Dept of Forestry, District Council, Communities	3,000					
Increase the range, distribution, and population of threatened, rare and near extinct species	Conduct patrols	Number of patrols conducted	180 patrols	Dept of Forestry, District Council, Communities	50,000					
	Training in law enforcement	Number of staff trained in law enforcement	30 staff	Dept of Forestry, Police	9,000					
	Orientation of community members on forest policy and law	Number of community members oriented on forest policy and law	825 members of the community	Dept of Forestry	8,000					
	Procure equipment for law enforcement	Type and sets of law enforcement equipment procured	60 units of ammunition, 48 protective gear, 24 torches, 24 burton sticks, 24 panpa knives, 5 GPs, 2 drones, 3 cyber trackers, 12 walkie	Donor, Dept of Forestry	100,000					
	Orientation of judiciary and police on forestry Act	Number of judiciary and police officers oriented on Forestry Act	4 judiciary officers, 4 prosecutors, 4 CID, 1 OC, 1 SO	Dept of Forestry	3,640					
	Conduct periodic stakeholder review meetings	Number of periodic stakeholder review meetings on law enforcement conducted	20 quarterly review meetings	Dept of Forestry, District Council, Communities	8,000					
Institute and implement robust fire management mechanisms to prevent and mitigate the adverse effects of forest fires on biodiversity	Conduct consultative meeting to collect data	No. of consultative meetings conducted	13 consultative meetings	Dept of Forestry, District Council, Communities	3,900					
	Produce a fire management plan	No. plans produced	1 fire management plan produced	Dept of Forestry	7,500					
	Implement fire management plan	No. of plans implemented	1 fire management plan implemented	Dept of Forestry, District Council, Communities	9,000					

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Objective 2: To reduce risks of deforestation and forest degradation by 30% by 2026										
Strategy	Activities	Monitoring Indicator	Target	Implementer	Budget (MK'000)	Timeframe (2022-2026)				
Enhance human and institutional capacity on conservation and sustainable use of the forest	Sensitize communities on the extent of biodiversity loss	No. of communities sensitized	11 GVHs sensitised	Dept of Forestry, District Council	3,900					
	Train communities on biodiversity conservation	No. of community members trained on biodiversity conservation	165 members of the communities	Dept of Forestry	4,800					
	Conduct participatory biodiversity management meetings	No. of meetings of participatory biodiversity management	10 bi-annual participatory biodiversity management meetings	Dept of Forestry, District Council	18,000					
	Train staff and community in participatory resource assessment	No. of staff and community members trained in biodiversity assessment	30 staff and 165 members trained on biodiversity conservation	Dept of Forestry	3,000					
	Build capacity of local communities and staff in natural resources management, biodiversity assessment and ethnobotany	No. of staff and community members trained in natural resources management	30 members of staff and 165 memmebrs of the community in natural resources management	Dept of Forestry, District Council, Communities	4,000					
	Conduct participatory resource assessment	No. of participatory resource assessments conducted	10 assessments	Dept of Forestry, District Council, Communities	4,000					
	Procure participatory assessment equipment	Type and sets of participatory resource assessment equipment	8 Ranging rods, 2 vertex and transponder, 3 diameter tapes, 6 linear tapes, 3 directional compass, 4 calipers, 6 pangas, 3 densiometers, 3 Suunto clinometers procured	Donor, Dept of Forestry	60,000					
	Produce and distribute resource assessment tools	No. of assessment tools produced and distributed	11 cartographic maps, write in the rain paper, tree species forms, assessment equipment	Dept of Forestry, District Council	7,500					
	Institute co-management structures (LFMB, BMC)	No. of co-management structures instituted	1 LFMB, 11 co-management structures instituted	Dept of Forestry, District Council	6,000					
	Train co-management structures	No. of co-management structures trained	1 LFMB, 11 co-management structures trained in biodiversity conservation	Dept of Forestry, District Council	6,000					

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Objective 2 (Continued)										
Strategy	Activities	Monitoring Indicator	Target	Implementer	Budget (MK'000)	Timeframe (2022-2026)				
Enhance human and institutional capacity on conservation and sustainable use of the forest (continued)	Develop co-management plans and agreements	No. of co-management plans and agreements developed and approved	11 block co-management plans and agreements produced and approved	Dept of Forestry, District Council, Communities	10,000					
	Implement co-management plans and agreements	No. of co-management plans and agreements implemented	11 co-management plans and agreements	Dept of Forestry, District Council, Communities	18,000					
	Monitor implementation of co-management plans	Number of review meetings for monitoring implementation conducted	20 review meetings for monitoring conducted	Dept of Forestry, District Council, Communities	5,000					
Raise awareness of surrounding communities on the importance of promoting conservation and sustainable use of biological resources	Adapt the public awareness strategy	No. of workshops to adapt public awareness strategy conducted	1 workshop	Dept of Forestry, District Council, Information	2,900					
	Facilitate implementation of the adapted awareness strategy	No. of adapted strategies implemented	1 adapted strategy implemented	Dept of Forestry, District Council, Information	3,200					
	Facilitate development of IEC materials	No. of IEC materials developed	8 types of IEC materials	Dept of Forestry, District Council, Information	4,000					
	Establish radio listening clubs	No. of radio listening clubs established	11 radio listening clubs	Dept of Forestry, District Council, Communitires	3,900					
	Facilitate drama, jingles etc performances	No. of drama, jingle etc performances	5 performances	Dept of Forestry, District Council, Communitires	3,500					
Promote indigenous knowledge systems (IKS) for sustainable management and use of biodiversity	Conduct a survey for identification of indigenous knowledge and conventional systems	No. of surveys conducted	1 survey	Dept of Forestry, District Council, Tourism & Culture, Communities	3,900					
	Documentation of IKS and conventional systems	No. of systems documented	4 systems documented	Dept of Forestry, District Council, Tourism & Culture	3,000					
	Integrating IKS with conventional	No. of workshops conducted on integration of the systems	5 workshops conducted	Dept of Forestry, District Council, Tourism & Cultrre	2,000					

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Objective 3: To enhance livelihoods of 1,500 forest dependent households by 10% by 2026									
Strategy	Activities	Monitoring Indicator	Target	Implementer	Budget (MK'000)	Timeframe (2022-2026)			
Identify markets for the agricultural and natural resource products	Conduct value chain analysis study	No. of value chain studies conducted	2 studies	Dept of Forestry, District Council, Trade, Community Development	5,000				
	Establish the monetary value of Natural Resource Products	No. of natural resource products whose monetary values are established	8 products	Dept of Forestry, District Council, Trade, Community Development	4,000				
	Improve existing products and their marketability	No. of products improved	8 products	Dept of Forestry, District Council, Trade, Community Development	7,000				
	Facilitate establishment of agricultural and natural resources cooperatives	No. of agricultural and natural resources cooperatives established	4 cooperatives	Dept of Forestry, District Council, Trade, Community Development	3,400				
	Revamp VSLs to support community cooperatives	No. of VSL groups revamped	20 VSLs revamped	Dept of Forestry, District Council, Trade, Community Development	6,600				
	Monitor and support the performance of VSLs	No. of VSLs monitored and supported	20 VSLs monitored and supported	Dept of Forestry, District Council, Trade, Community Development	3,200				
	Sensitize tree growers on the importance of tree growing as a business	No. of communities sensitized on importance of tree growing as a business	11 GVHs sensitized	Dept of Forestry, District Council, Trade, Community Development	2,000				
	Identify and organize tree growers for carbon marketing	No. of tree growers and organized for carbon marketing	20 tree growers organized for carbon marketing	Dept of Forestry, District Council, Trade	2,500				
	Link tree growers to carbon markets	No. of tree growers linked to the carbon markets	20 tree growers linked	Dept of Forestry, District Council, Trade	3,000				
Total Budget					321,940				

3.0 Chapter 7: Monitoring and evaluation framework

There is a wide range of monitoring and evaluation approaches. Among this diversity of monitoring tools Management Oriented Monitoring System (MOMS) and Management Effectiveness Tracking Tool (METT) are relevant to Thambani Forest Reserve.

MOMS is a universal planning tool for and by the communities. Communities decide on what parameters to monitor and become actively involved in data collection and reporting. This is different from the traditional monitoring and evaluation approach which used to impose modules to monitor at community level, resulting in rejection of monitoring results and unsustainability of the whole system.

The Management Effectiveness Tracking Tool (METT) is a simple, questionnaire-based approach for assessing protected area management effectiveness (PAME) (Stolton et. al., 2019). METT was developed in 1999, and it has since it become the most widely applied PAME tool. By 2019, at least 127 countries worldwide were using METT. METT has a number of advantages, major ones being:

- a. It is a quick and simple way of collecting information about the status and trends of management in protected areas.
- b. It is a cost-effective option that does not make unreasonable demands on people (e.g. protected area staff, community and other stakeholders) and resources, although costs can rise if more stakeholders are involved and verification processes are instituted.

The METT consists of two sections: datasheets with key information on the protected area (e.g. basic facts about the area, who completed the assessment, and a threat assessment) and an assessment form containing a questionnaire with 30 questions, each with four alternative responses ranging from inadequate to adequate, with an associated score, and data fields for notes, justification of answers and steps to improve management if necessary. Although designed to track effectiveness in the wildlife sector, because of its versatility, METT has a wider application including the forestry sector.

For Thambani Forest Reserve, MOMS will be used by community members involved in cultivation of tree crops, afforestation and other livelihood interventions. METT will be used to track effectiveness of management in promoting conservation of the forest reserve with respect to several parameters including effectiveness law enforcement operations.

To track progress of all key actions in the reserve, a comprehensive monitoring and evaluation framework has been prepared and presented below:

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Goal/Strategic Objective/Result	Monitoring indicator	Baseline	2022-2026 Target	Data collection methods	Data collection frequency	Means of verification	Responsible	Budget for data collection (MK)
Goal: Promote sustainable management of Thambani Forest Reserve for the protection of the environment, conservation of biodiversity and improved livelihoods	Number of hectares managed	To be assessed	10,670	Survey	5 years	Reports	Department of Forestry, District Council	439,140,000.00
Strategic Objective 1: Improve forest cover by 20% by 2016	Percentage of forest area increased/improved	60%	80%	Field assessment	Annually	Reports	Department of Forestry, District Council	225,840,000.00
Strategic Objective 2: To reduce risks of deforestation and forest degradation by 30% by 2026	Percentage of illegal activities reduced	50%	20%	Survey	Annually	Survey reports	Department of Forestry, District Council, Department of Information, Communities	176,600,000.00
Strategic Objective 3: To enhance livelihoods of 1,500 forest dependent households by 10% by 2026	Proportion of households whose livelihood is improved	20%	30%	Livelihood survey, Secondary data review	Annually	Survey Reports	District Council	36,700,000.00
Result 1: Degraded areas rehabilitated	No. of tree nurseries established and seedlings raised	0	165,000	Field assessment	Annually	Assessment Reports	Department of Forestry, District Council	26,800,000.00

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	Area of land prepared (ha)	0	100	Field assessment	Annually	Assessment Reports	Department of Forestry, District Council	
	Area planted to tree seedlings (ha)	0	100	Field assessment	Annually	Assessment Reports	Department of Forestry, District Council	
	Length of the firebreaks screened (km)	0	500	Field assessment	Annually	Assessment Reports	Department of Forestry	
	% reduction in the number of livestock entering the forest	0	75	Survey	Annually	Survey report	Department of Forestry	
	No. of staff trained in ecosystems approach	0	30	Meetings	Annually	Report	District Council	
	Area planted to truncheons	0	30	Meetings	Annually	Minutes of the meetings	Department of Forestry	
Result 2: Range, distribution and population of rare, threatened and near-extinct species increased	Number of patrols conducted	To be assessed	180	Survey	Monthly	Survey reports	Department of Forestry, District Council	78,640,000.00
	Number of staff trained in law enforcement	0	30	Assessment	Twice	Reports	Department of Forestry	
	Number of community members oriented on forest policy and law	To be assessed	825	Survey	Twice	Survey reports	Department of Forestry, District Council	
	Number of judiciary and police officers oriented on Forestry Act	To be assessed	14	Survey	Twice	Survey reports	Department of Forestry, Ministry of Justice (State Advocate)	

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	Number of periodic stakeholder review meetings on law enforcement conducted	To be assessed	20	Survey	Quarterly	Survey reports	Department of Forestry, District Council	
Result 3: Robust fire management plan instituted and implemented	No. of consultative meetings conducted	To be assessed	13	Field assessment	Once	Field report	Department of Forestry	20,400,000.00
	No. plans produced	To be assessed	1	Field assessment	Annually	Field report	Department of Forestry, District Council	
	No. of plans implemented	To be assessed	1	Field assessment	Annually	Field report	Department of Forestry, District Council, Communities	
Result 4: Human and institutional capacity on conservation and sustainable use of forest resources enhanced	No. of communities sensitized	3	15	Review of vacancy establishment	Annually	Staff return	Department of Forestry	90,200,000.00
	No. of community members trained on biodiversity conservation	0	18	Capacity need assessment	Quarterly	Training reports	Department of Forestry, Environmental Affairs Department	
	No. of meetings of participatory biodiversity management	0	3	Proposal development	Annually	Proposal developed	Department of Forestry, Environmental Affairs Department	
	No. of staff and community members trained in biodiversity assessment	0	195	Training sessions	Annually	Training reports	Department of Forestry, Environmental Affairs Department	

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	No. of staff and community members trained in natural resources management	0	195	Training sessions	Annually	Training reports	Department of Forestry, Environmental Affairs Department
	No. of participatory resource assessments conducted	0	10	Field assessment	Annually	Field report	Department of Forestry
	No. of assessment tools produced and distributed	0	11	Field assessment	Quarterly	Training reports	Department of Forestry
	No. of co-management structures instituted	0	12	Field assessment	Annually	Field report	Department of Forestry, District Council
	No. of co-management structures trained	0	12	Training	Annually	Training reports	Department of Forestry, District Council
	No. of co-management plans and agreements developed and approved	0	11	Field assessment	Annually	Field report	Department of Forestry, District Council
	No. of co-management plans and agreements implemented	0	11	Field assessment	Annually	Field report	Department of Forestry, District Council, NGOs
	Number of review meetings for monitoring implementation conducted	0	20	Field assessment	Annually	Field report	Department of Forestry, District Council

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Result 5: Awareness of surrounding communities on the importance of promoting conservation and sustainable use of biological resources raised	No. of workshops to adapt public awareness strategy conducted	0	1	Workshop	Annually	Works reports	Department of Forestry, District Council, Ministry of Information	17,500,000.00
	No. of adapted strategies implemented	0	1	monitoring and supervision visits	Annually	Works reports	Department of Forestry, District Council, Ministry of Information	
	No. of IEC materials developed	0	8	Office reviews	Annually	Reports	Department of Forestry, District Council, Ministry of Information	
	No. of radio listening clubs established	0	11	Field assessment	Annually	Field report	Department of Forestry, District Council, Ministry of Information, Media houses	
	No. of drama, jingle etc performances	0	5	Field monitoring	Annually	Radio plays, reports	Department of Forestry, District Council, Ministry of Information, Media houses	
Result 6: Indigenous knowledge systems (IKS) for sustainable	No. of surveys conducted	0	1	Survey	Annually	Survey report	Dept of Forestry, District Council,	8,900,000.00

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management and use of biodiversity promoted							Tourism & Culture, Communities	
	No. of systems documented	0	4	Office reviews	Annually	Report	Dept of Forestry, District Council, Tourism & Culture	
	No. of workshops conducted on integration of the systems	0	5	Workshop	Annually	Workshop report	Dept of Forestry, District Council, Tourism & Culture	
Result 7: Markets for agricultural and natural resource products identified and secured	No. of value chain studies conducted	0	2	Studies	Annually	Study report	Dept of Forestry, District Council, Trade, Community Development	36,700,000.00
	No. of natural resource products whose monetary values are established	0	8	Studies	Annually	Study report	Dept of Forestry, District Council, Trade, Community Development	
	No. of products improved	0	8	Field assessment	Annually	Field report	Dept of Forestry, District Council, Trade,	

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							Community Development
	No. of agricultural and natural resources cooperatives established	To be assessed	4	Field assessment	Annually	Field report	Dept of Forestry, District Council, Trade, Community Development
	No. of VSL groups revamped	To be assessed	20	Field assessment	Annually	Field report	Dept of Forestry, District Council, Trade, Community Development
	No. of VSLs monitored and supported	To be assessed	20	Field assessment	Annually	Field report	Dept of Forestry, District Council, Trade, Community Development
	No. of communities sensitized on importance of tree growing as a business	To be assessed	11	Field assessment	Annually	Field report	Dept of Forestry, District Council, Trade, Community Development
	No. of tree growers and organized for carbon marketing	To be assessed	20	Field assessment	Annually	Field report	Dept of Forestry, District Council, Trade

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	No. of tree growers linked to the carbon markets	To be assessed	20	Field assessment	Annually	Field report	Dept of Forestry, District Council, Trade	
Result 8: Equipment procured	Type and sets of law enforcement equipment procured	0	1 ***	PPDA Procedure	Once	Minutes of the meetings, proof of procurement	Donor, Dept of Forestry	160,000,000.00
	Type and sets of participatory resource assessment equipment	0	1 **	PPDA Procedure	Once	Minutes of the meetings, proof of procurement	Donor, Dept of Forestry	

412,340,000.00

Note: *** means

** means

60 units of ammunition, 48 protective gear, 24 torches, 24 burton sticks, 24 panpa knives, 5 GPs, 2 drones, 3 cyber trackers, 12 walkie talkie, 1 patrol vehicle (cruiser), 5 motorbikes, 3 binoculars, 3 sets of first aid equipment, 3 tents
8 Ranging rods, 2 vertex and transponder, 3 diameter tapes, 6 linear tapes, 3 directional compass, 4 calipers, 6 pangas, 3 densiometers, 3 Suunto clinometers procured

4.0 Chapter 8: References

Duncan, P. (1992). Guidelines for mountain protected areas. IUCN Publications.

GoM (2021). Participatory Forest Resource Assessment.

GoM (2020). Malawi's Vision. An inclusively wealthy and self-reliant nation. Malawi 2063. National Planning Commission.

GoM (2018). Mwanza District Forestry Office.

GoM (2018). Malawi Population and Housing Census. Main Report. National Statistical Office.

GoM (2017). Local Government Act.

GoM, (2017). Mwanza District Development Plan (2017-2022).

GoM, (2017), Mwanza District Socio-Economic Profile (2017-2022).

GoM (2016). National Forestry Policy.

GoM (2015). National Biodiversity Strategy and Action Plan (2015-2021).

Gom (1998). National Decentralization Policy.

GoM (1997). Forestry Act.

GoM (1995). Constitution of Malawi.

Kenneth, Newman (1999). New Man's Birds of Southern Africa. Southern Book Pub of South Africa

Sinclair, Ian and Peter Ryan (2009). Birds of Africa South of Sahara. Amazon Publications.

Stolton, Sue, Nigel Dudley, Alexander Belokurov, Marine Deguignet, Neil D, Burgess Marc, Hockings, Fiona Leverington, Kathy MacKinnon and Llewellyn Young (2019). Lessons learned from 18 years of implementing the management effectiveness tracking tool (METT): a perspective from the METT developers and implementers.

Wilson, J (2002). Birds of Thambani Forest Reserve. Unpublished.

5.0 Chapter 9: List of Appendices

5.1 List of birds

English Name	Scientific names	Source
African Broadbill	<i>Smithornis capensis</i>	Sinclair and Ryan (2009)
African Firefinch	<i>Lagonosticta senegala</i>	Sinclair and Ryan (2009)
African Golden Oriole	<i>Oriolus auratus</i>	Sinclair and Ryan (2009)
African Goshawk	<i>Accipiter tachiro</i>	Sinclair and Ryan (2009)
African Green Pigeon	<i>Treron calvus</i>	Sinclair and Ryan (2009)
African Hawk Eagle	<i>Aquila spilogaster</i>	Sinclair and Ryan (2009)
African Paradise Flycatcher	<i>Terpsiphone viridis</i>	Sinclair and Ryan (2009)
African Rock Martin	<i>Hirundo fuligula</i>	Sinclair and Ryan (2009)
African Yellow White-eye	<i>Zosterops senegalensis</i>	Sinclair and Ryan (2009)
Amethyst Sunbird	<i>Chalcomitra amethystina</i>	Sinclair and Ryan (2009)
Amur Falcon	<i>Falco amurensis</i>	Sinclair and Ryan (2009)
Arrow-marked Babbler	<i>Turdoides jardineii</i>	Sinclair and Ryan (2009)
Ashy Flycatcher	<i>Muscicapa cassini</i>	Sinclair and Ryan (2009)
Augur Buzzard	<i>Buteo augur</i>	Sinclair and Ryan (2009)
Bar-throated Apalis	<i>Apalis thoracica</i>	Sinclair and Ryan (2009)
Burchell's Coucal	<i>Centropus burchelli</i>	Sinclair and Ryan (2009)
Bearded Woodpecker	<i>Dendropicos namaquus</i>	Sinclair and Ryan (2009)
Bertram's Weaver	<i>Ploceus bertrandi</i>	Sinclair and Ryan (2009)
Black Cuckooshrike	<i>Cuculus clamosus</i>	Sinclair and Ryan (2009)
Black Flycatcher	<i>Bias musicus</i>	Sinclair and Ryan (2009)

Black-backed Puffback	<i>Dryoscopus cubia</i>	Sinclair and Ryan (2009)
Blackcrowned Tchagra	<i>Tchagra senegala</i>	Sinclair and Ryan (2009)
Black-eared Canary	<i>Serinus capistratus</i>	Sinclair and Ryan (2009)
Blackheaded Oriole	<i>Oriolus larvatus</i>	Ian Sinclair and Peter Ryan (2009), Birds of Africa South of the Sahara
Black-throated Wattle-eye	<i>Platysteira laticincta</i>	Sinclair and Ryan (2009)
Blue-spotted Wood-Dove	<i>Turtur afer</i>	Sinclair and Ryan (2009)
Bronze Mannikin	<i>Spermestes cucullatus</i>	Newman (1999)
Brubru	<i>Nilaus afer</i>	Newman (1999)
Cape Turtle Dove	<i>Streptopelia capicola</i>	Newman (1999)
Cabanis' Bunting	<i>Emberiza cabanisi</i>	Sinclair and Ryan (2009)
Cardinal Woodpecker	<i>Dendropicos fuscescens</i>	Newman (1999)
Chinspot Batis	<i>Batis molitor</i>	Newman (1999)
Collared Flycatcher	<i>Ficedula albicollis</i>	Sinclair and Ryan (2009)
Collared Sunbird	<i>Anthreptes collaris</i>	Ian Sinclair and Peter Ryan (2009), Birds of Africa South of the Sahara
Common Scimitarbill	<i>Rhinopomastus cyanomelas</i>	Sinclair and Ryan (2009)
Common Square-tailed Drongo	<i>Dicrurus ludwigii</i>	Sinclair and Ryan (2009)
Common Waxbill	<i>Estrilda astrild</i>	Newman (1999)
Croaking Cisticola	<i>Cisticola natalensis</i>	Sinclair and Ryan (2009)
Crowned Eagle	<i>Strephanoaetus coronatus</i>	Newman (1999)
Crowned Hornbill	<i>Tockus alboterminatus</i>	Newman (1999)
Dark-backed Weaver	<i>Ploceus bicolor</i>	Sinclair and Ryan (2009)

Dusky Flycatcher	<i>Muscicapa adusta</i>	Newman (1999)
Eastern Saw-wing	<i>Psolidoprosne albisepe</i>	Wilson, 2002
Emerald Cuckoo	<i>Chrysococcyx cupreus</i>	Birds of Africa South of the Sahara
European Bee-eater	<i>Merops pusillus</i>	Wilson, 2002
Evergreen Forest Warbler	<i>Bradypterus lopezi</i>	Wilson, 2002
Familiar Chat	<i>Oenanthe familiaris</i>	Wilson, 2002
Fork-tailed Drongo	<i>Dicrurus adsimilis</i>	Newman, (1999)
Freckled Nightjar	<i>Caprimulgus tristigma</i>	Wilson, 2002
Garden Warbler	<i>Sylvia borin</i>	Wilson, 2002
Golden Weaver	<i>Ploceus subaureus</i>	Wilson, 2002
Golden-tailed Woodpecker	<i>Campethera abingoni</i>	Wilson, 2002
Green Malcoha	<i>Ceuthmochares australis</i>	Wilson, 2002
Green Twinspot	<i>Mandingoa nitidula</i>	Wilson, 2002
Green Wood-Hoopoe	<i>Phoeniculus purpureus</i>	Wilson, 2002
Green-backed Camaroptera	<i>Camaloptera brachyura</i>	Wilson, 2002
Green-backed Honeybird	<i>Prodotiscue zambesiae</i>	Wilson, 2002
Green-capped Eremomela	<i>Eremomela scoto</i>	Wilson, 2002
African Penduline Tit	<i>Anthoscopus caroli</i>	Wilson, 2002
Grey-olive Greenbul	<i>Phyllastrephus cerviniventris</i>	Wilson, 2002
Grey-rumped Swallow	<i>Pseudhirundo griseopyga</i>	Wilson, 2002
Icterine Warbler	<i>Hippolais icterina</i>	Wilson, 2002
Kurrichane Thrush	<i>Turdus libonyana</i>	Wilson, 2002
Lanner Falcon	<i>Falco bialmicus</i>	Wilson, 2002
Lazy Cisticola (Rock-loving Cisticola)	<i>Cisticola aberrans</i>	Sinclair and Ryan (2009)
Lemon Dove	<i>Columba larvata</i>	Wilson, 2002
Lesser Honeyguide	<i>Indicator minor</i>	Wilson, 2002
Lesser Striped Swallow	<i>Ceclopis abyssinica</i>	Wilson, 2002
Little-spotted Woodpecker	<i>Campethera cailliautii</i>	Wilson, 2002

Martial Eagle	<i>Polemaetus bellicosus</i>	Newman, (1999)
Mashona Hyliota	<i>Hyliota australis</i>	Sinclair and Ryan (2009)
Miombo Grey Tit	<i>Melaniparus griseiventris</i>	Wilson, 2002
Miombo Rock-Thrush	<i>Monticola angolensis</i>	Wilson, 2002
Narina Trogon	<i>Apaloderma narina</i>	Wilson, 2002
Neddicky	<i>Cisticola fulvicapilla</i>	Sinclair and Ryan (2009)
Northern Grey Tit	<i>Parus afer</i>	Sinclair and Ryan (2009)
Olive Sunbird	<i>Cyanomitra olivacea</i>	Wilson, 2002
Olive-headed Weaver	<i>Ploceus olivaceiceps</i>	Wilson, 2002
Orange-winged Pytilia	<i>Pytilia afra</i>	Wilson, 2002
Pale-billed Hornbill	<i>Lophoceros pallidirostris</i>	Wilson, 2002
Pied Crow	<i>Corvus albus</i>	Wilson, 2002
Placid Greenbul	<i>Phyllastrephus placidus</i>	Sinclair and Ryan (2009)
Purple-crested Turaco	<i>Tauraco porphyreolophus</i>	Wilson, 2002
Red-capped Robin-Chat	<i>Cossypha natalensis</i>	Wilson, 2002
Red-chested Cuckoo	<i>Cuculus solitarius</i>	Wilson, 2002
Red-eyed Dove	<i>Streptopelia semitorquata</i>	Wilson, 2002
Red-faced Crombec	<i>Sylvietta whytii</i>	Wilson, 2002
Redheaded Weaver	<i>Naplectes rubriceps</i>	Wilson, 2002
Red-throated Twinspot	<i>Hypargos niveoguttatus</i>	Sinclair and Ryan (2009)
Red-winged Warbler	<i>Heliolais erythropterus</i>	Sinclair and Ryan (2009)
Retz's Helmet-Shrike	<i>Prionops retzii</i>	Wilson, 2002
Schalow's Turaco	<i>Tauraco schalowi</i>	Wilson, 2002
Silvery cheeked Hornbill	<i>Bycanistes brevis</i>	Wilson, 2002
Southern Boubou	<i>Laniarius ferrugineus</i>	Sinclair and Ryan (2009)
Southern Citril	<i>Crithagra hyposticta</i>	Wilson, 2002
Spectacled Weaver	<i>Ploceus ocularis</i>	Wilson, 2002
Spotted Creeper	<i>Salpornis salvadori</i>	Wilson, 2002

Spotted Flycatcher	<i>Muscicapa striata</i>	Wilson, 2002
Stierling's Woodpecker	<i>Chlopicus stierlingi</i>	Wilson, 2002
Tambourine Dove	<i>Turtur tympanistria</i>	Wilson, 2002
Tawny-flanked Prinia	<i>Prinia subflava</i>	Wilson, 2002
Trumpeter Hornbill	<i>Bycanistes bucinator</i>	Newman, (1999)
Variable Sunbird	<i>Cinnyris venustus</i>	Wilson, 2002
Violet-backed Starling	<i>Cinnyricinclus leucogaster</i>	Wilson, 2002
White Helmet-Shrike	<i>Prionops plumatus</i>	Wilson, 2002
White-breasted Cuckooshrike	<i>Coracina pectoralis</i>	Wilson, 2002
White-browed Robin-Chat	<i>Cossypha heuglini</i>	Wilson, 2002
White-eared Barbet	<i>Stactolaema leucotis</i>	Wilson, 2002
White-necked Raven	<i>Corvus albicollis</i>	Wilson, 2002
Willow Warbler	<i>Phylloscopus trochilus</i>	Wilson, 2002
Wood Owl	<i>Strix wodfordii</i>	Wilson, 2002
Woodland Kingfisher	<i>Halcyon senegalensis</i>	Wilson, 2002
Woodland Pipit	<i>Anthus nyassae</i>	Wilson, 2002
Yellow Bishop	<i>Euplectes capensis</i>	Wilson, 2002
Yellow-bellied Waxbill (East African Swee)	<i>Coccopygia quartinia</i>	Wilson, 2002
Yellow-breasted Apalis	<i>Apalis flavida</i>	Wilson, 2002
Yellow-fronted Canary	<i>Crithagra mozambica</i>	Wilson, 2002
Yellow-fronted Tinkerbird	<i>Pogoniulus shrysoconus</i>	Wilson, 2002

5.2 List of common trees (GoM, 2021)

SCIENTIFIC NAME	LOCAL NAME
<i>Acacia nigrescens</i>	Mkunkhu
<i>Acacia nilotica</i>	Nganganga
<i>Acacia polyacantha</i>	Mthethe
<i>Afzelia quanzensis</i>	Ngongomwa
<i>Albizia versicolor</i>	Mtangatanga
<i>Anona senegalensis</i>	Mpodza

<i>Bauhinia</i>	Mpando
<i>Bauhinia thonniigii</i>	Chitimbe
<i>Bauhinia thonniigii</i>	Chitimbe
<i>Brachystegia floribunda</i>	Tsamba
<i>Brachystegia longifolia</i>	Mombo
<i>Bridelia macrantha</i>	Mpasa
<i>Burkea africana</i>	Mkalati
<i>Burkea africana</i>	Mkarate
<i>Catunaregam spinosa</i>	Chipembere
<i>Combretum imberbe</i>	Msimbiti
<i>Cussonia arborea</i>	m'bwabwa
<i>Cypress cupressis</i>	Nkungudza
<i>Dalbergia melanoxylon</i>	Phingo
<i>Dalbergia nitidula</i>	Mkulasinga
<i>Dalbergia nitidula</i>	Nkulasinga
<i>Dichrostachys cinerea</i>	Mphangala
<i>Diplorhynchus condylocarpon</i>	Mtombodzi
<i>Diplorhynchus condylocarpon</i>	Mtombozi
<i>Erythrina abyssinica</i>	Muwale
<i>Ficus capensis</i>	Mkuyu
<i>Ficus natalensis</i>	Kachele
<i>Flacourtia indica</i>	Mthudza
<i>Garcinia huillensis</i>	Phimbi
<i>Khaya anthotheca</i>	M'bawa
<i>Kigelia africana</i>	Mvunguti
<i>Lannea discolor</i>	Chiumbu
<i>Lonchocarpus capassa</i>	Chipakasa
<i>Mundei whytei</i>	Mkwapukwapu
<i>Parinari curatellifolia</i>	Maula
<i>Pericopsis angolensis</i>	Muwanga
<i>Protea angolensis</i>	Chisese
<i>Pseudolachynostylis mapprouneifolia</i>	Msolo
<i>Pterocarpus angolensis</i>	Mlombwa
<i>Sclerocarya birrea</i>	Mfula
<i>Senna singueana</i>	Mtanthanyelele
<i>Stecqulia quinquiloba</i>	Msetanyani
<i>Strychnos spinosa</i>	Mateme
<i>Syzygium cordatum</i>	Mchisu
<i>Tamarindus Indica</i>	Bwemba
<i>Terminalia stenostachya</i>	Gonondo
<i>Trichilia emetica</i>	Msikidzi
<i>Uapaca kirkiana</i>	Masuku
<i>Vitex doniyana</i>	Mbilima
<i>Vitex payos</i>	Mphimphy
<i>Xeroderis stulhmanii</i>	Mulonde

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<i>Ximenia caffra</i>	Mpinjipinji
<i>Zizimphus mucronata</i>	Kankhande