

# REPORT ON POTENTIAL OF COMMERCIAL FORESTRY IN MALAWI



## **EXECUTIVE SUMMARY**

Malawi has a long history of forestry, with over 53 million hectares of exotic woodland spanning over the Viphya Plateau in the Northern Region. The Government of Malawi through the Department of Forestry monopolised the forestry industry from the 1950s until late 1980s when privately owned companies such as Wood Industries Cooperation and RAIPLY were issued concessional rights to operate on a commercial basis. However, the attainment of harvestable age for most of trees planted in the 1950s, and the high levels of deforestation and forest degradation (38,937 ha yr<sup>-1</sup> and 71,878 ha yr<sup>-1</sup>, respectively) have led to the drastic diminishing of the forest resource. This has created a quandary whereby the current demand for wood biomass products exceeds the available stock, on the one hand, and an escalation of bare lands, on the other. These compounded by the relative low-cost that Malawi's wood products fetch on the international market (due to the depreciation of Malawi Kwacha) and the thriving of the global carbon off-setting market have primarily, though not exclusively, rendered an urge to the development of commercial forestry.

Prior to venturing into profit-making forestry in Malawi, thus against the aforementioned background, it remains obligatory to better-understand the risks and prospects associated. This involves critical examination of the endogenous and exogenous factors dictating the running of the enterprise. It is therefore, against such a backdrop, that this work explored the socio-economic benefits and key factors affecting commercial forestry that are not only environmentally and climate-friendly, but prominently conform to the policies and cultural ethics of Malawi.

The findings reveal that the Malawi's diverse Silvicultural Zones favour establishment of Pine, Eucalyptus and Cypress plantations. Their commercial management provides employment, income, revenue, and forex achieved through the sale of wood products (i.e., timber, poles, and firewood), carbon offsetting and ecotourism. While these paybacks improve the livelihoods standards, they in turn contribute to the country's economic stabilisation within the bracket of 33% GDP. The enterprise also offers ecosystems services through carbon sequestration, maintenance of the hydrological cycle, control of soil erosion and land degradation; simultaneously contributing to environmental management and mitigation of climate change effects.

This write-up has further uncovered a plethora of intertwined constraints affecting the success of commercial forestry in Malawi and the fundamental ones include; forest fire, land ownership and policy matters, cash flow and capital, theft, pests and

diseases, certification and export procedures and costs, and more significantly, the interest of the surrounding communities. Despite these, literature and the consultations reveal that these challenges are manageable, and that commercial forestry has a record of yielding more 100% financial profits in Malawi.

To circumvent these afore-said bottlenecks, the findings reveal that it demands of the forest investors, not only effective Silvicultural management and stewardship practices, but indispensably creation of good rapport with the neighbourhood. To this effect, research has shown that surrounding communities play a significant role in management of forest fire and theft, factors that are pivotal to the sustainability commercial forests. Hence, this report encourages offering of incentives in form of employment and civic education to the communities as key solutions to mitigate forest fire and theft in Malawi.

Cash flow and investment capital highly impinge development of small-scale forest producers in the country. Nevertheless, upscaling accesses to loans and flexibility on forest certification and exportation etiquette, especially on the locals would irreplaceably go a long way in promoting the enterprise. Besides, harmonisation of landownership and forestry policies lives to bolster collaboration between government, private sector, and local communities within the forestry industry.

Despite the global carbon trade providing an impetus for the growth of commercial forestry in Malawi, penetration of the market remains a huge challenge. Besides, the initial costs involved in the forestry investments are deemed unbearable for average local operators. In this regard, this report suggests that the Scotland Malawi Partnership in collaboration with the Malawi Scotland Partnership organisation could make a difference in looking for carbon-offset markets and brokering such deals for the Malawi local operators, subject to organisations' capacity and scope of work.

Given the country's *status-quo* on environment and socio-economy, commercial forestry remains a viable enterprise; capable of generating over 100% monetary gains while supporting the country in the aspects of environmental sustainability and climate change mitigation. However, to unlock its full potential, there is a need to level the playground to enable the local and international operators benefit without hassles.

These findings feed into the development of the recommendations and guidelines to any alternative commercial forest model or aspect of such a project, which is likely to improve its success in achieving commercial forestry in Malawi.

## **1.0 INTRODUCTION AND BACKGROUND**

Tree planting has for long been promoted to primarily provide wood products and ecosystem services, *inter alia*, however, in recent years this ideology has renewed its impetus from the mitigation of the global climate change initiative since the 1992 Kyoto Protocol was ratified. The Bonn Challenge global effort to restore 350 million hectares of trees by 2030 under the forest and landscape restoration (FLR) framework boosted the climate change's abatement roadmap (Ministry of Natural Resources, Energy and Mining, 2017; World Resources Institute (WRI), 2015a). This has led to Malawi committing to contribute 4.5 million trees to the African Forest Landscape Restoration Initiative (AFR100) (Ministry of Natural Resources, 2017). This strategic effort has provided the stimulus for the commercialisation of plantation forest in Malawi, seeking to the attainment of such a target.

Malawi broke the record of establishing the largest man-made forest plantation in Africa, with over 53 million hectares (ha) of *Pinus species* dominating the Viphya Plantations of the country's Northern Region around 1950's and 1964 (Kafakoma and Mataya, 2009). Forests and trees in the country are heavily relied for energy in form of fuelwood and charcoal ( $\geq 90\%$  of rural and urban dwellers), building materials (timber and poles) furniture, canoes, paddles, not to mention of the ecosystem's services and non-woody products such as fruits and honey (Drigo, 2019; Government of Malawi, 2017). However, the current demand for the wood biomass in Malawi exceeds the available stock and such a trend has been projected to perpetuate for the next couple of years (Drigo, 2019). This predicament has also triggered significant escalation of private investors turning to commercial forestry, an enterprise initially dominated by the GoM and a few private owned companies such as RAIPLY and Wood Industries Cooperation (WICO) since around 1980s. Studies have indicated that commercial forestry contributes to the country's 33% Gross Domestic Product (GDP) while also addressing environmental and climate change impacts (Government of Malawi, 2017; Kambewa et al., 2007). This report examines the potential of commercial forestry in Malawi and its prospects for sustainable development.

### **1.1 Rationale**

Depletion of the stated-owned forest plantations, particularly the Viphya (popularly known as Chikangawa), and the increase of the demand of timber and related wood products such as poles, and firewood from Malawi, compounded by their comparatively low price (as a result of the inflation of the Malawi Kwacha) have been

some of the driving factors for the development of commercial forestry in Malawi (Kafakoma and Mataya, 2009; Kambewa et al., 2007; Mauambeta et al., 2010).



**Figure 1. Pine timber (harvested and sawn) in the government owned Viphya Forest Plantation (Chikangawa) ready for sale, creating room for commercial afforestation to potential investors.**



**Figure 2. Comparatively cheap Malawi timber being exported to neighbouring countries, i.e., Tanzania, Zambia and Mozambique.**



The Zambia National Association for Saw Millers says cheap timber from Malawi and Tanzania has continued to flood the Zambian market due to lack of regulatory policies.

**Figure 3. Relatively Cheap Timber from Malawi Flooding the Zambian Market. Source:** <https://zambianbusinesstimes.com/tanzanian-and-malawian-timber-continues-to-flood-local-market-as-govt-fails-to-regulate-imports/> -visited on 08/03/2023.

Management of government-controlled forest reserves (natural woodlands) and plantations has been heavily affected by inadequate funding, at least for the past decades (Kafakoma and Mataya, 2009a). This has resulted to the failure of the government to replant some of the harvested areas, thereby giving opportunity to potential commercial forest operators to manage such lands.

Besides, the concept of commercial forestry has proven to be a well-travelled path globally for institutional investors requiring offsetting carbon (Van Kooten and Johnston, 2016). In Malawi, carbon offsetting is envisaged as a 'win-win' or 'no regrets' venture in terms of the environmental and financial returns (Alegria and Matthews, 2014). This is viewed in the sense that apart from the economic gains that the carbon trade provides, as well from the sales of the woody products, the trees also provide ecological services such as maintenance of the carbon stocks, soil and water conservation, which are quite beneficial to the human well-being.

## **1.2 Objectives**

Against the given background of the forestry industry in Malawi, it is therefore, essential to better-understand the potential of venturing into profitable forestry by

being well informed about the local forces, strengths and limitations that dictate the operations of such an enterprise. Therefore, to examine the potential of profit-making forestry enterprise in Malawi, this study asks the following key questions,

- i. What is the current state of Malawi's forest industry, including the extent of forest cover and preferred trees species?
- ii. Do the current legal and regulatory policy frameworks support commercial forestry in Malawi, and to what extent?
- iii. What are the current socio-economic/cultural and environmental benefits and considerations associated with the management of commercial forestry in Malawi?
- iv. What would be the prospects, forces/risks/impacts of running commercial forestry in Malawi?

In this regard, this report examined the potential of investing in commercial forestry in Malawi, which does no harm to, but rather supports the country, by focusing on the following key elements; (i) climate-friendliness, (ii) ethical soundness, (iii) cultural acceptability, (iv) fitness into a Malawian setting, (v) environmental and commercial sustainability, and (vi) provision of return on investment.

## 2.0 METHODS

The study involved a scoping literature review and consultations conducted from mid-February to March-end 2023, to understand the potential of commercial forestry in Malawi. To be informed about the nature of the feasibility of profit-making forestry in Malawi, key individuals and officials from various local and international organisations, academia, societies and government departments, particularly the Malawi's Department of Forestry were engaged (Table 1).

These shared invaluable experiences, lessons, insights, and visions born when either working in Malawi or interacting with their relevant forestry-based organisations. Table 1 below depicts a list of key individuals consulted.

**Table 1. Key Individuals Consulted on the Potential of Commercial Forestry in Malawi.**

No.	Name	Organisation and Contact	Designation	Method	Date
1	Mick James	Tafika Youth Organisation-Malawi	Chairperson	In person	16/02/2023
2	Bakaya Mtsitsi	Department of Forestry-Malawi, +265999258282	Assistant District Forestry Officer	WhatsApp	26/02/2023
3	Samuel Goneta	Department of Forestry-Malawi, +265881927482	Chongoni Forest Plantations Manager	WhatsApp	27/02/2023
4	Iain Woodhouse (Prof.,)	University of Edinburgh, +447887551724	Senior Lecturer and Personal Chair in Applied Earth Observation	In person & Microsoft Teams	28/02/2023
5	Tione Kaonga	Umodzi Consulting-Malawi tione.kaonga@umodziconsulting.com	Managing Director	Zoom	08/03/2023
6	Mike Chirwa	Forestry Research Institute of Malawi +265999345928	Senior Forestry Research Officer	Zoom	14/03/2023
7	Moses Njiwawo	Department of Forestry Headquarters- Malawi; +265998 951997	Forestry Officer (Licences and Certifications)	WhatsApp	28/03/2023
8	Enock Kadeka	Department of Forestry Headquarters- Malawi; enockkadeka@gmail.com	Forestry Officer (Planning)	Email and WhatsApp	18/03/2023
9	Andrew Heald	Forestry and Sustainable Plantations -United Kingdom andrew@andrewheald.com	Consultant	In person & Email	21/03/2023
10	Dalitso Njera (Dr)	Mzuzu University-Malawi; +265999266612	Senior Lecturer	WhatsApp	23/03/2023
11	Edward Missanjo (Dr)	Malawi Assemblies of God University (MAGU), +265883403134	Research Coordinator	Zoom, Email & WhatsApp	24/03/2023

The literature review included qualitative, quantitative and mixed methods from office reports, peer and non-peer reviewed papers focusing on both commercial and non-

commercial forestry in Malawi. Both the review and the consultations singled out key socio-economic benefits, in addition, to the fundamental factors affecting the implementation of commercial enterprise in Malawi. These were reviewed under the following captions;

- i. Species and site selection (matching),
- ii. Availability of state-owned land and concessions for afforestation,
- iii. Political will and vision for commercial forestry,
- iv. Land ownership and current land and forest policies,
- v. Carbon market within the Malawian context,
- vi. Lack of awareness by communities,
- vii. Fire,
- viii. Theft,
- ix. Pests and diseases,
- x. Cash flow level and investment capital, and
- xi. Climate Related Disasters (Cyclones/storms, drought etc.).

By reviewing the above, this study simultaneously conducted a critical analysis on the following issues affecting the establishment and management of forest plantations in Malawi;

- i. Forestry seasonal calendar of events,
- ii. Quality of germplasm (seed/seedlings/planting material) for commercial plantation,
- iii. Market for forest products, and
- iv. Forest assessment/inventory methods applicable in Malawi with a bias towards above ground biomass (AGB) and carbon estimations.

### **3.0 FINDINGS AND RECOMMENDATIONS**

This section presents investigations on each of the key factors affecting commercial forestry in Malawi. It provides the merits and demerits, and a summary of the same.

#### **3.1 Species Selection and Site-matching**

Understanding the niche of tree species in forest management is vital to determine those that can perform optimally within a given site. Hence, this study identified pine and blue gum (*Pinus* and *Eucalyptus* species) plantations as the main exotics dominating the forest industry in Malawi (Government of Malawi, 2017; Kafakoma and Mataya, 2009)

Though Cypress (*Cupressus species*) and Malay beech wood/white teak, (*Gmelina arborea*) established quite well in the late 1970s, their growth has been associated with several challenges. Cypress was heavily infested by aphids (Chilima, 2004), a challenge that does not seem to have been completely eradicated, to date.

On the other hand, the raising of *G. arborea* plantations is discouraged due to its allelopathy effect on the habitat (Tauro, 2000). Research showed that the species secret acidic chemicals which change the biochemical interaction (pH) of the habitat/soil resulting to inhibition of other plants (Tauro, 2000). Worse-still, it affects the soil fertility and consequently, the existence of other macro-and microorganisms (Tauro, 2000). These predicaments have currently resulted to the two species not being preferred for commercial purposes any more in Malawi.

Generally, successful tree plantations in Malawi have been established through seedlings raised from nurseries. A tree nursery can be established either by (i) raising seedlings through seed sowing/managing vegetative cuttings, or (ii) outsourcing of the already grown seedlings/planting material from various sources such as local vendors or private nursery owners (see Table 2 for cost prices). Establishment of a commercial forest plantation using the latter option is regarded as a faster option for operators not wanting to spend time on seed sowing, germination and tending operations (Table 3).

However, establishment of a tree nursery using the first option is indispensable to raising the planting material in the same location (nursery) where a plantation will be established. It is regarded as a low-cost option as it minimises costs that would have been spent on seedling purchase and transportation (Table 3). Silviculturally, the first option is also highly recommendable because it significantly serves to naturalise the

seedlings to their plantation site conditions which eventually enhances their survival (Ingram and Chipompha, 1987).

A tree/pine nurseery requires basic tools and equipment to be established and these include; pine seeds, culture medium/mycorrhizae fungi/soil, watering cane, slasher, hoe, panga/machete, shovel, crowbar, rake, folk, pick, axe, spade, trowel, level, linear tape, rope, sickle and wheelbarrow.



**Figure 4. A well-established pine nurseery, a fundamental stage in establishing successful commercial forestry in Malawi.**

### **3.2 Availability of State-owned Land and Concessions for Afforestation**

Malawi has a total of 3,336,000ha classified as forestland, representing 36% of the country's total surface area, out of which 365,000ha (11%) constitutes planted forest, in comparison to the natural woodlands (Mauambeta et al., 2010; Mongabay.com, 2023). Most of the exotics (pine trees) planted in 1950s in the Viphya and other government plantations matured in the 1980-90s (Kafakoma and Mataya, 2009; Mauambeta et al., 2010). However, efforts to rehabilitate them were hampered by insufficient capacity in terms of funding and labour (*ibid*). This resulted to massive harvesting to the extent that more than half of the state-owned plantations were almost bare in around 2010. Besides, the country experienced high deforestation and forest degradation rates (38,937 ha yr<sup>-1</sup> and 71,878 ha yr<sup>-1</sup>, respectively) (Skole et al., 2021).

These predicaments paradoxically render huge incentive to commercial forestry, especially presently, when the government calls for potential investors to rehabilitate the various forest landscapes ((Ministry of Natural Resources, 2017; World Resources Institute (WRI), 2015a).

**14** **ADVERTISING** **WEEKEND NATURAL RESOURCES**

THE GOVERNMENT OF MALAWI  
**MINISTRY OF NATURAL RESOURCES AND CLIMATE CHANGE,  
 DEPARTMENT OF FORESTRY**

**REQUEST FOR EXPRESSION OF INTEREST TO ESTABLISH FOREST PLANTATIONS IN SELECTED FOREST RESERVES AND CUSTOMARY ESTATES OF THE DELINEATED CATCHMENTS OF MWASIP UNDER PERFORMANCE BASED GRANTS**

**1. BACKGROUND**

The Government of Malawi has established a credit and grant from the International Development Association (IDA) to support efforts on landscape rehabilitation and sustainable management in the Mwasip River Basin through the implementation of the Malawi National Forestry Management Project (MNFMP). The project is designed to be implemented over a period of seven years to cover the upper and middle reaches of the basin which include parts of Mangochi, Mwanza, Mankhanga, Zomba, Shire, Mwanze and Mwaambika through performance-based grants. The project intends to promote the adoption of sustainable landscape management practices and improve watershed services to targeted sub-basins.

The performance-based grants are for private sector individuals, small to medium forest enterprises, community groups or novel producer associations to establish and maintain the target catchments or to complement the activities of Landscape Management Committees (LMCs) and Village Natural Resource Management Committees (VNRMCs).

The project will provide grants to rehabilitate, maintain and protect water and will be set at a fixed rate of US\$200 per hectare. The grants are provided to support one and only when certain specified agreed forestry activities have been done. Non-eligible grants are submitted to cover approximately 50% of establishment costs for the first 2 years which will be provided by the project to beneficiaries. Applicants under Performance Based Grants for Forest Plantation will be required to have their own land parcels.

Land eligible for planting will include private land, devoted forest areas on customary estates, and within forest reserves, community areas or delimited land within forest reserves in the three basins will be made available for planting under contracts with private sector firms approved by the Department of Forestry. The land generally will be planted in terms of the system to be planted based on planting objectives and the species mix. The activities will include soil clearing, marking for planting, setting up MAs, clearing, weeding, tending, soil planting, tending, fire management among others.

The Ministry of Natural Resources and Climate Change through the Department of Forestry desires to solicit Expressions of Interest (EOI) from private sector individuals, small to medium forest enterprises, community groups or novel producer associations to engage in a three year performance-based grant agreement to plant and manage in:

**2. OBJECTIVES OF THE PERFORMANCE CONTRACT**

- To implement forest management activities according to the approved management plan and forestry code of practice.
- To carry out all silvicultural activities operations for the managed area.
- To plant and manage the plantation under the grant.
- To use planting stock from certified seed and accredited institutions like Forestry Research Institute of Malawi (FRIM) and Local Resource Centre.
- To establish the plantation in accordance with local and environmental standards laid out in the SPM and Forestry Code of Practice.

**3. SCOPE OF THE PERFORMANCE CONTRACT**

The successful applicant will among other things, be expected to:

- Rehabilitate and manage all base areas within the allocated areas, using suitable forest species for a period of three (3) years.
- Develop and implement a management plan which will be reviewed and endorsed by the Director of Forestry.
- Meet all the statutory requirements including payment of fees and royalties.

**4. SELECTION CRITERIA**

- Financial capacity to restore and manage a forest plantation within the allocated area, fees will be required to see their own rights;
- For category A, the application should be of not less than 20ha in any of the sub;
- For category B, should have a minimum of 3 ha available in one continuous parcel and maximum of 30ha to be identified by applicant on customary estates within the delineated sub-basins of projects. Preference will be given to large areas to promote commercial forestry operations;
- At least two years' experience in forest plantation management;
- Clear record of interaction with the Department of Forestry;
- The applicant is required to submit alongside the EOI:

proof of land ownership, evidence of financial capacity to start up and evidence of experience in Forest Management.

The area submitted for the contract will be subject to verification. And any area with high potential the regulator will not be considered.

Further information can be obtained at the address below during office hours from 0800 to 1800 hours from Monday to Friday:

The Director,  
 Ministry of Natural Resources and Climate Change,  
 Department of Forestry,  
 P.O. Box 10042,  
 Lilongwe 3  
 Malawi

Tel: +265 (0) 1 771 900  
 Fax: +265 (0) 1 774 268  
 E-mail: info@malawi.gov.mw, kassonkhem@malawi.gov.mw, wagner@malawi.gov.mw

Expressions of interest in a sealed envelope clearly marked "Expressions of interest to establish forest plantations in selected forest reserves under MNFMP performance based grants" should be delivered to the address below on or before 31 May, 2024, at 16:00 hours. Late submissions will not be opened.

The Chairperson,  
 Internal Procurement and Disposal of Assets Committee (IPDAC)  
 Ministry of Natural Resources and Climate Change,  
 Private Bag 250  
 Capital Hill  
 Lilongwe  
 Malawi

Expressions of interest in a sealed envelope clearly marked "Expressions of interest to establish forest plantations in customary estates" should be delivered to the address below on or before 31 May, 2024, at 16:00 hours. Late submissions will not be opened.

Any District Council implementing MNFMP project  
 Or  
 The Director,  
 Ministry of Natural Resources and Climate Change,  
 Department of Forestry,  
 P.O. Box 10042,  
 Lilongwe 3  
 Malawi

Tel: +265 (0) 1 771 900  
 Fax: +265 (0) 1 774 268  
 E-mail: info@malawi.gov.mw, kassonkhem@malawi.gov.mw, wagner@malawi.gov.mw

Sub-Ma	Catchment (Sub)	Area (ha)
1	Upper Mangochi Catchment	10000
2	Upper Mwanza Catchment	10000

Figure 5. A Malawi Government Call for Interest of Expression to Rehabilitate Forests.

The state-owned forest plantations (under the public land tenure) in Malawi covers (71%) (Mauambeta et al., 2010). The Government of Malawi (GoM) through the Department of Forestry (DoF) issues concessionary agreements to both local and international operators to practice commercial forestry in state-owned plantations (Kafakoma and Mataya, 2009; Mauambeta et al., 2010). This is an overarching incentive for profitable forest enterprise. The notable firms that have benefitted from such arrangements include; Mulli-Brothers Limited, Leopard Matches, International Timbers Limited, RAIPLY, WICO, Timber Millers Union and Citrefine Plantations limited, trading as Kawandama Hills Plantation. These operators were given the rights to export wood products over the past decades, not to mention other small-scale operators that benefitted from the same trade.

The operation of these firms is preceded by the issuance of forest concessions by the government. However, these are branded as '*clean land tenure*' arrangement because the operators are assured of almost no land-ownership wrangles since it is the government/state that controls proprietorship of such pieces of land. This guarantees land security, which is key in the forestry enterprise. Under this arrangement, commercial forest concession have been offered encompassing forestland leases ranging from 10 to 50, and even 60 years, thereby providing an enabling environment for forest business operators.

Management of the concession area is monitored by the DoF, which ensures that the agreed roles and responsibilities are adhered to, thereby promoting sustainable forestry practices. This, more than anything else, emboldens adoption of certification schemes that require compliance to sustainability standards. The arrangement supports the long-term sustainability of the industry and ensures that operations do not harm the environment or local communities. The intervention simultaneously mitigates carbon emissions through the additional/enhancement of carbon stock approach.

### **3.3 Socio-Economic Benefits**

Commercial forestry provides direct economic benefits in Malawi through revenue generation, job creation, forex earnings, infrastructure growth, and development of value-added wood products (Government of Malawi, 2017; Kafakoma and Mataya, 2009). Commercial timber plantation enterprises generate considerable revenue through sales of forest products, such as timber and fuelwood. This helps to diversify the country's economy and provides a reliable source of economic base. To this effect, forestry products are part of the key priority area 'Agriculture, Water Development and Climate Change Management' which contributes 33% of Malawi's GDP (Government of Malawi, 2017).

Table 2 below shows the average market price of basic forest products that can be processed on a plantation site/do not require sophisticated processing.

**Table 2. Forest Products' Local Market Prices in Malawi as of March 2023.**

No.	Forest Product	Quantity/Dimension	Current Price		Remarks
			MK	£	
					<b>Local prices in Malawi</b>
1	Timber	18ft	8,500	10	Pine
2	Firewood	1m <sup>3</sup>	1,000	1	Any wood
3	Poles	≥15cm	1,000	1	Blue gum
4	Handle	1	1,000	1	Hardwoods preferred
5	Toy	1 hand size	5,000	5	Hardwoods preferred
6	Charcoal	25kg	7,500	6	(Softwood) certified by DoF
7	Christmas tree	1	5,000	5	Pine
8	Canoe paddles	2m	5,000	5	Hardwoods preferred
9	Tobacco stakes	1m <sup>3</sup>	2,000	2	Any wood
10	offcuts	1m <sup>3</sup>	1,5000	15	Softwood
11	Tree seedling	1	500 to1000	0.5 to1	Pine, Eucalyptus, Cypress

**Source: (i) Samuel Goneta-Assistant Plantations Manager, Chongoni Government Plantation-Dedza- and (ii) Bakaya Mtsisi- Assistant District Forestry Officer, Dowa- DoF –MALAWI.**

The currency calculations in Tables 2, 3 and 4 were converted to British Sterling Pound (£) based on the current rate of £1=K1, 400 and rounded-off to the nearest 5.

Commercial forestry also creates employment opportunities in various stages of the forest value chain, including plantation establishment, harvesting, processing, and marketing of forest products. This helps to reduce unemployment and stimulates economic growth, particularly in rural areas.

The tables below detail key Silvicultural operations (nursery/tending practices) followed by field operations and their respective costs, as approved and applied in forest plantations by the DoF, as of March 2023.

**Table 3. Basic Nursery Operations and Current Costs in Malawi, March-2023.**

No.	Field Task	Quantity/Dimension	Current Cost		Remarks
			MK	£	
1	Nursery site/Land clearing	20m x 20m (400m <sup>2</sup> ) per person per day	44,000 per ha	30	Dependent on edaphic factors
2	Bed preparation	20m x 20m (400m <sup>2</sup> ) per person per day	44,000 per bed of 1000 tubes	5	-
3	Identification of suitable soil and preparation	Dependent on preference, otherwise follow the Silvicultural Guidebook of Malawi	-	-	Mycorrhizal fungi and sand for Pines, sand and for Eucalyptus
4	Pot filling	750-1000 pots per person per day	44,000 per day	5	Dependent on tube size
5	Pricking out	1000 seedlings per person per day	44,000 per day	5	Dependent on tube size
6	Watering	150 seedlings per person per day	44, 000 per day	5	-

7	Root pruning and nursery/pot weeding	150 planting stations per person per day	44,000 per day	5	-
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**Table 4. Key Silvicultural Operations and Current Costs in Malawi, March-2023.**

No.	Field Task	Quantity/Dimension (Per person per day)	Rate/Price		Remarks
			£ per ha	MK per ha	
1	Land clearing	20m x 20m (400m <sup>2</sup> )	30	44,000	DoF
2	Marking for pitting	300 stations	15	21,000	DoF
3	Pitting	100 pits	20	27,000	DoF
4	Pit filling	200 pits	15	21,000	DoF
5	Planting	150 seedlings	40	57,000	DoF
6	Grass cutting/slashing	200 planting stations	30	45,000	DoF
7	Spot cultivation	150 planting stations	40	51,000	Estimated
8	Line/complete cultivation	50 planting stations	40	56,000	DoF
9	Fire-break maintenance	25mx4m (100m <sup>2</sup> )	45	61,000	DoF
10	1 <sup>st</sup> Pruning	200 trees	60	80,000	Estimated
11	2 <sup>nd</sup> Pruning	100 trees	45	60,000	Estimated
12	3 <sup>rd</sup> Pruning	60 trees	30	40,000	Estimated
13	1 <sup>st</sup> Thinning	60 trees	60	80,000	Estimated
14	2 <sup>nd</sup> Thinning	40 trees	45	60,000	Estimated
15	3 <sup>rd</sup> Thinning	20 trees	30	40,000	Estimated

**Source: Department of Forestry (DoF) Headquarters–Internal Communication dated 1<sup>st</sup> June 2022 (Ref. No.14/9/0).**

The estimated prices indicated in Table 4 above were determined by averaging the local prices charged in all the 3 regions covering Malawi.

Commercial forestry also earns considerable foreign exchange earnings for the country i.e., the from forest products ranging from sawn timber, poles and plywood. This equally helps to stabilise the country's economy while reducing its dependence on imports. The forestry provides raw materials for the development of value-added wood products, such as furniture enterprise, flooring, and construction materials. Value addition of such products country improves their competitiveness on the international market.

Briefly, commercial forestry in Malawi has the potential to generate various economic benefits including; job creation, export opportunities and their development of value-added wood products.

### **3.4 Political Will and Vision for Commercial Forestry**

The Government of Malawi through the Department of Forestry launches the National Tree Planting Season Programme every year and it runs from December 15 to April 15. The State President normally launches it thereby demonstrating the government's commitment to promoting reforestation and sustainable forestry practices. Such an initiative encourages individuals, communities and organizations to participate actively

in tree planting and management, which can help restore degraded landscapes and enhance the overall biodiversity of the country.



**Figure 6. His Excellency Dr Lazarus Chakwera, the State President of Malawi leading by example in planting a tree during the launch of the 2022/23 National Forestry Season Programme. Source: Dept. of Forestry NFSP Archive-2023 & <https://malawigazette.com/chakwera-inaugurates-2022-23-national-forestry-season/>**

### **3.4.1 Supporting legal, regulatory and policy framework**

Malawi's incumbent National Forest Policy (2016) promotes development of commercial forestry by recognising the economic potential of forests through advocating for the establishment of forest plantations. It also promotes sustainable harvesting of timber and non-timber forest products. The policy further recognises the importance of commercial forestry in generating revenue, creating employment opportunities, and contributing to the country's economic growth. On the other hand, the Forestry Act of Malawi provides the legal framework for forest management and conservation by promoting sustainable management, encouraging community participation, and facilitating its development.

The current National Climate Change Management Policy of Malawi (2016) directly supports forestry (industrial forest plantations and natural woodlands) as mitigation and adaptation interventions for the effects of climate change. The policy clearly provides for sustainable land management practices and reforestation efforts as viable mediations for mitigating greenhouse gas emissions.

The Malawi Government has an enabling policy/strategy that favours commercial forestry through the National Forest Landscape Restoration Programme (Ministry of Natural Resources, 2017). As aforementioned, under this initiative the country has committed to contribute 4.5 million trees to the African Forest Landscape Restoration Initiative (AFR100) by 2030 (Ministry of Natural Resources, 2017). This is an incentive under the Bonn Challenge global effort guided by the forest and landscape restoration (FLR) framework to restore 150 million hectares of degraded and deforested landscapes into restoration by 2020 and 350 million hectares by 2030 (World Resources Institute (WRI), 2015a).

The country's target is a huge incentive to commercial forestry since the government through the Department of Forestry has on several occasions called out interested investors to venture into commercial forestry by establishing forest plantations in selected forest reserves and customary estates of some catchments (Figure 5).

In addition, an on-going Malawi Youth Forest Restoration Program targets to restore 125,000 hectares of different landscapes. There are several programmes that have been designed to support forestry as a viable enterprise in Malawi, but the key ones include; (i) Malawi Reducing Emissions from Deforestation and Degradation (REDD)+ Programme, (ii) Protecting Ecosystems & Restoring Forests in Malawi (PERFORM).

### **3.5 Land Ownership and Current Land and Forest Policies**

Land ownership is essential for the growth of the forestry sector as it provides the basis for investors to establish and operate commercial forestry plantations. In Malawi, land can be owned by individuals (private land), communities (customary land), and the government (state-owned land). However, there are land-ownership challenges that can jeopardise the potential of realising commercial forestry to its full potential.

First is the limitation on transfer of landownership that the incumbent Malawi's Land Act (2016), renders particularly for customary land, which can make it difficult for investors to access land for commercial forestry purposes. While the current arrangement serves to protect land in the interest of its citizens, it paradoxically puts

the locals on the disadvantage of venturing into feasible enterprises as most of them cannot compete with foreign investors (on commercial forestry, inclusive) due to their relatively limited initial capital base. Although this is deemed as a disincentive to the potential local investors, the same predicament provides some sort of land tenure insecurity on the part of the international financiers (unless it is the government-owned land). This discourages long-term investment in forestry, ultimately affecting the growth potential of the sector.

In addition, pursuance of the Malawi Government Privatisation Act (1996) is arguable perceived as a hindrance to the development of small-scale business entrepreneurs (Kampanje, 2015), especially in the forestry sector. For instance, under this policy, the concept of commercial forestry has always been envisaged to work for firms that have adequate initial capital/well-funded such as RAIPLY, WICO and other timber associations or companies, as opposed to local small-scale or individual operators from local communities.

For the land and forestry policies to register remarkable impact on commercial forestry in Malawi, they must facilitate efficient transfer of land ownership, especially from customary to private tenure. This is envisaged to enhance an enabling environment for investors, an attribute that leads to economic growth, sustainable forest management and environmental sustainability. However, the increase of bare lands due to escalated deforestation and forest degradation (Skole et al., 2021), currently, renders the advantage to establishment of commercial plantations in Malawi.

In conclusion, land ownership, forest policy, and land policy play a critical role in shaping the potential of commercial forestry while the existence of bare lands provide an opportunity for commercial forest enterprise in Malawi. For commercial forestry to thrive, the land-ownership transfer regulation must favour the local and private operators as well.

### **3.6 Carbon Market within the Malawian Context**

Carbon marketing entails a process of buying and selling of carbon permits and credits that authorise a holder to emit carbon dioxide. Basically, it is a pivotal mechanism of abating climate change, and the biggest carbon global trading system is the European Union Emissions Trading System (EU ETS).

On June 23, 2023, the state President of Malawi Dr L. Chakwera launched the Malawi Carbon Market Initiative which is an opportunity for the country that can be use

leverage the carbon credits and climate change financing to foster sustainable socio-economic development that is climate and environmentally friendly. The carbon initiative was branded as MK6bn (£4,000,000) fortune that needs to be tapped.

This follows the launch of the Africa Carbon Markets Initiative (ACMI) launched at the Conference of Parties number 27. The carbon market schemes that have been applied in Malawi include; (i) the 'Reducing Deforestation and forest Degradation plus the conservation and sustainable management of forests and enhancement of forest carbon stocks (REDD+), and the (ii) Voluntary Carbon Markets, both under the United Nations Framework Convention on Climate Change (UNFCCC) (Bellassen and Leguet, 2007; Berry et al., 2009; Skole et al., 2021).

### **3.6.1 REDD+ Approach**

The REDD+ mechanism serves to incentivise developing countries pursue the reduction of emissions from the Forestry and Other Land Uses (FOLU) domain as categorised by the UNFCCC. The basic idea is to provide financial compensation to the UNFCCC parties which can be traded in carbon markets or sold to countries that need to offset their carbon emissions (Angelsen, 2008). Malawi through the Environmental Affairs Department steers the scheme whose assessments are conducted by the Department of Forestry. Under this initiative, the country has so far administered the Malawi REDD+, Protecting Ecosystems and Restoring Forests in Malawi (PERFORM) and the Morden Cooking for Healthy Forests projects, among others (Tetra Tec and Winrock International, 2022). The subsequent section examines the approaches used in Malawi plus the pros and cons associated.

### **3.6.2 Voluntary Carbon Market Approach**

The carbon offsetting approach follows a process of compensating for greenhouse gas (GHG) emissions by supporting projects that reduce or remove an equivalent amount of emissions from the atmosphere. Some voluntary carbon markets (VCM) that provide a platform for individuals while others render to businesses to purchase carbon credits, representing a reduction or removal of the GHG emissions. They operate by connecting buyers and sellers of carbon credits. The credits are created when a project reduces or removes greenhouse gas emissions beyond what would have occurred without the project's intervention. The carbon credits can then be sold to buyers who want to offset their emissions.

A renowned firm based in the United Kingdom known as Plan Vivo-UK has plied the carbon trade in Malawi (Berry et al., 2008). The other companies well-known in this enterprise include; (i) Manoa-Verra REDD+, (ii) Ripple Africa, (iii) Emitwise, (iv) ClimatePartner and (v) Greenly. Their details can be accessed on-line.

### ***3.6.3 Enabling Policy Framework for Carbon Trade in Malawi.***

The recent efforts to provide an enabling framework and build capacity on carbon trade in Malawi include; the establishment of a National Climate Change Fund and the development of a National Climate Change Policy and the REDD+ Strategy.

Again, the availability of bare lands/areas caused by deforestation and degradation coupled by the relatively low carbon footprint of the country, provides the opportunities for the country to participate in the global carbon market via commercial forestry projects. Implementation of these projects not only contribute to the reduction of the GHG emissions or enhance forest carbon and stocks through afforestation/reforestation, but more importantly adds to the conservation and sustainable management of the environment, in general (Ministry of Natural Resources, Energy and Mining, 2016).

### ***3.6.4 Prospects Carbon Markets***

Once the commercial forestry is fully fledged in Malawi, it is envisaged that the legislature, the national assembly and civil society will lobby for the exemption of the inheritance taxes for the forest plantation land acquired for at least the initial 5 years. This is premised on the idea that commercial forestry enterprise requires high initial investment and capital during this teething period. During such an establishment time, there are almost no returns from the young plantation, yet expenses are incurred, and the exemption is meant to offset the costs.

In summary, the existence of the REDD+ and voluntary carbon markets provides fundamental impetus for investing in commercial forestry in Malawi. This is achieved through reduction or removal of carbon emissions from the atmosphere, thereby mitigating climate change. The operationalisation of the regulations ranging from the National Climate Change Policy and Fund, and the REDD+ Strategy lives to support the existence of the commercial forestry, thus rendering this enterprise feasible in the country.

### **3.6.5 Infrastructure Development**

The development of commercial forestry in Malawi can stimulate the growth of infrastructure, such as roads, bridges, market shelters, processing facilities, and other supporting structures. This happens in the way that where forest plantations are established, supporting infrastructure such as the one mentioned are usually put in place. These help improve connectivity and access to markets, ultimately providing a foundation for further economic development.

### **3.7 Certification and Export of Forest Produce**

Certification of forest produce has a pivotal role on commercial of forestry in Malawi since it provides assurance to consumers about quality and source of the forest products. This helps to curb illegal trade. It also facilitates the profitability of forestry operations and products, thus besides incentivising sustainable forest management practices. The Malawi Government through the DoF provides licenses to different stakeholders interested in trafficking timber/fuelwood/poles and wood related products to different stakeholders plying in this trade (<https://www.dof.gov.mw/services>).

The DoF also issues export permits to clients wanting to export forest-based products that predominantly, include; timber, firewood, curios, and poles. To acquire an export permit, the following documents are processed as a pre-requisite; (i) Application/Cover Letter, (ii) Registration Certificate, (iii) Malawi Revenue Authority Certificate/Trading Partner Identification Number (TPIN), (iv) Contract Agreements, (v) Bank Account Details, and (vi) Proof of Timber Source.

In addition, the Timber and Wood Export/Import Permits require the following documentation that is acquired through application, (i) Export/Import Licence, (ii) Phytosanitary Certificates, and (iii) Exchange Control form popularly abbreviated as CD1 Form. The Form is an exchange control documentation, which must be completed for all shipment whose value exceeds US\$1,000 (<https://edf.mw/index.php/media-centre/publications>).

Even though certification can help to increase the demand for Malawian forest products in international markets, it is the acquisition of the afore-mentioned documents that renders certification tedious and complicated, thereby obscuring its relevance. In addition, the cost of certification in Malawi can be deemed high, particularly for small-scale forest producers, which have limited access to certification schemes and international markets.

To crown it all, certification and export of forest produce in Malawi have a key role on the potential of forestry in Malawi. Despite being considered involving and costly on the part of small-scale forest traders, forest certification benefits outweigh its demerits in commercial forestry and renders support for economic growth and development.

### **3.8 Threats and their Mitigation**

#### **3.8.1 Lack of awareness by communities**

It is apparent, though unfortunate that in Malawi forest resource use and control seem to be differentiated by wealth and gender, and conflicts of interest over development, at least according to the consultations made. These are seemingly prominent (i) within households and communities, and (ii) between the gender groups and traditional authorities (*ibid*). Though quite encompassing, the Forest Policy (2016) is somehow overtaken by the recent events as it does not seem to directly address the broader challenges raised by the changing face of poverty and livelihoods, HIV/AIDS, and of late COVID-19 and Cholera (between November 2022 and March 2023) in Malawi.

In addition, the consultations made revealed that there is a perceived credibility gap between traditional leaders, individuals/communities and government officers and operators regarding commercial forestry management (characterised by being positive and optimistic), on the one hand, and the individuals/community members (confused or indifferent), on the other hand. Narrowing this gap would imply greater efforts in involving individuals in this commercial forestry enterprise.

#### **3.8.2 Fire (Forest/Wildfires)**

Forest fires wreak havoc to forests, especially the exotics, as they do not have the capability to regenerate after being burnt, in contrast to the indigenous woodlands. Fire damage causes disruption of tree growth, reduces productivity of forested areas and increases the risk of soil erosion and water pollution, thereby damaging the ecosystem. Interestingly, humans through habitual hunting, traditional honey harvesting, and incendiarism cause most fires in Malawi; hence, they can be avoided or at least managed before they cause a lot of destruction.



**Figure 7. Fire in the state-owned Viphya Pine Plantation, a key threat to forestry, though avoidable or manageable.**

Effective mitigation of forest fire and their impact, thus within the Malawian context, demands understanding of their causal factors, which are mostly associated with the environmental and cultural set-up. Personal communication and forest plantation experience reveals that habitual hunters cause most of fires due to malicious reasons though some are due to carelessness, while others are accidental. These reasons include rivalries and conflicts of interest between local communities surrounding the forests and the forest operators. These arise if the communities do not seem to be benefiting from the forestry enterprise or due to vandalism or disagreements. In some cases, forest fire used as a management tool to reduce fire hazards can get out of control and burn the forest.

With respect to the dimensions of the causes, this report segregates fire prevention and mitigation strategies into two categories. The first involves a psychological approach whereby the potential forest investor should have a buy-in from the communities surrounding forest plantations and enhance their interest in protecting the resource. This can be achieved by directly involving the communities in the enterprise through employment, i.e., security guards, nursery workers or any other forestry related piecework that can be offered as incentives. Agroforestry enterprise such as beekeeping or vegetable growing or drilling of boreholes/wells for the use of the surrounding communities have all worked for some commercial forestry enterprises such as Tafika and Umodzi in Malawi.

Culturally, these incentives stir good rapport between the management of the forest enterprise and the communities. It further instils some sense of benefit sharing and works to reduce conflict of interest. Experience has shown that the more the communities envisage to gain benefits and/or feel to be part of the strides to be registered by the forest investment, the less the chances of setting the forest on fire and the *vice-versa*.

The second involves administering of the Silvicultural practices, particularly the prescribed (early) burning, weeding, slashing/boundary clearing, firebreak maintenance, pruning and thinning (Table 4). These help reduce the risk of forest fires and promote growth of healthy forests. In addition, management of early warning systems, fire suppression techniques and civic/community education programmes addressing the dangers of fire in relation to environment damage and climate change can assist in alleviating this problem.

Overall, forest fires can have a significant impact on the potential of commercial forestry management in Malawi, hence, it is crucial to take proactive measures to prevent and manage them. Community support and incentives that instil the sense of belonging and/or benefit sharing live to mitigate incendiary fires, which form most of the causes.

### **3.8.3 Theft**

Considerable theft of trees, timber, firewood, and related forest products has been recorded by different operators in Malawi. This has several negative economic and environment effects on forestry investment in Malawi. Among others, theft can lead to loss of forest resources, revenue, and potentially to reduced investments, thereby posing a huge setback to the realisation of the full potential of commercial forestry.

Environmentally, theft leads to forest degradation through loss of wood products i.e., charcoal or timber which can reduce forest cover and disrupt the ecosystem. This potentially may lead to soil erosion, loss of biodiversity and reduced water availability. Theft of forest resources can indirectly limit the availability of non-timber forest products such as medicinal plants and fruits, thereby lowering the livelihood standards while limiting the potential for sustainable forest management.

However, just like forest fire, theft is quite manageable and can easily be curtailed through a psychological approach whereby the potential forest investor should have a buy-in from the communities surrounding the forest plantations. As aforementioned;

offering of employment (with the assistance of the local leaders) in form security guards or nursery workers has worked to enhance security while also reducing conflict of interest as the communities seem to benefit from the investment.

In this regard, the introduction of some agroforestry enterprise such as apiculture, coffee or vegetable growing such as tomatoes, onions or cabbage etc. has worked for some key commercial forestry enterprises such as Tafika and Umodzi. This in addition to good rapport created between the management of the enterprise and the communities. The involvement of the local leaders serves to instil some sense transparency and accountability in the selection and involvement of the communities in the commercial forestry to avoid bringing divisions.

In conclusion, theft can have significant negative impacts on the potential of forestry in Malawi. However, to realise the full potential of profit-making forestry, it is essential to address the underlying causes of theft and provide incentives such as offering employment to the surrounding communities.

#### ***3.8.4 Cash flow level and investment capital***

Cash flow level and investment capital are essential factors that affect the potential of forestry in Malawi considerably. This report adopts the definition of cash flow level as an amount of money available for investment in forestry activities context that include planting, managing and harvesting of trees. On the other hand, investment capital has been contextualised to mean the funds available for long-term investments in forestry such as planting and managing new forests or rehabilitating degraded forests.

The two pose colossal constraints in running successful forestry enterprise in Malawi, at least from the majority of the consultations made. This is because they are limited in nature due to the forest operators' lack of access to finances, inadequate technical knowledge and skills, and insufficient funds for managing commercial forestry. This is a challenge mostly faced by the local operators.

Integration of agroforestry practices in forest plantations can alleviate the cash flow and investment capital challenges. For example, investing in growing of crops like tomatoes, onions and vegetables among others, can accrue some revenue through their sale. Bee keeping and poultry has also been suggested as other practicable environmentally friendly options to solve this income challenge. The growing of coffee, bananas and macadamia nuts while establishing forest plantations looks to be another sustainable option for enhancing cash flow level in Malawi.

### **3.8.5 Pests and diseases**

Forest resources of Malawi, especially the exotics have not been spared from pests and diseases attack. The impact of pests and diseases outbreaks has over the past years exerted pressure on commercial forestry by causing damage to trees. This has eventually reduced the productivity of forest enterprise right from the nursery up to plantation stage. The significant forest pests and diseases in Malawi include; (i) pine woolly aphid, (ii) pine shoot beetle, (iii) pine *Amelia merea* disease, (iv) cypress canker disease, and (vi) Eucalyptus gall wasp (Chilima, 2004; Jere et al., 2020).

#### ***Aphids and Grasshopper Infestations in Pine and Cypress***

Malawi experienced grasshopper infestation around the early 1970s followed by exotic aphid pests that invaded pine and cypress plantations throughout, thus since 1979 (Chilima, 2004). The grasshoppers fed on pine needles, but it was a success story thereafter as spraying over the plantations brought their infestation under control (*ibid*).

Other attacks recorded include the pine needle aphids (1980s), followed by the woolly and the cypress aphids (1990s). To control these, natural enemies fed on the aphids were introduced and the pests' numbers were successfully controlled. Though spontaneous cases of these pests may be spotted in some government plantations, there has been no serious aphid cases reported in Malawi, of late.



**Figure 8. Aphid (*Cinara pinivora*) infestation on Pine (left) and *Glycaspis brimblecombei* infestation on *Eucalyptus* in Namitete, Malawi (right).**

### ***Eucalyptus pest***

*Eucalyptus* species have been attacked by an infestation of *Glycaspis brimblecombei* (Hemiptera: Psyllidae) in Malawi since 2014 (Jere et al., 2020). The *Eucalyptus camaldulensis* and *E. tereticornis* showed high susceptibility compared to *E. grandis*. The infestation recorded the lowest incidence, severity, and damage in the cooler ecological zone of the country. Therefore, if commercial forestry investment's focus is on the *Eucalyptus* species, it would be ideal to;

- (i) Establish the forest plantation using *E. grandis* or any other species deemed resistant (Jere et al., 2020),
- (ii) Consider establishing the forest plantation in cooler ecological zone of the country (Jere et al., 2020) such as Dedza, Mulanje, Zomba, Mzuzu and Chitipa, just to mention, but a few.

Otherwise, due to the uniform distribution of the *G. brimblecombei* pest on different tree crown parts recorded during their case study, the reliance on the use of contact insecticides on a large scale would be tedious and costly (Jere et al., 2020).

Importantly, though the pests and diseases can cause considerable damage to trees, affecting their growth and reducing their commercial value, they always have been effectively controlled in Malawi. The Forestry Research Institute of Malawi continues to monitor pests and disease infestation throughout. Besides there are several

measures taken to prevent and control the spread of such infestations by the Department of Forestry in Malawi and these include; early detection, forest/wood phytosanitary and quarantine protocols for imported plant material.

Overall, pests and diseases can have a significant impact on the potential of commercial forestry in Malawi, however, implementing effective forest management practices that promote the health and resilience of forests can help to mitigate their impact and ensure sustainability of the sector. Hence; it is highly recommendable to raise *Pinus* and *Eucalyptus species* for commercial plantations in Malawi, with respect to the Silvicultural Zone Guidelines thus under the guidance of Department of Forestry (DoF) (Ingram and Chipompha, 1987). The DoF has an outreach structure that extends its services through regional/zonal centres, district and village level structures.

### **3.8.6 Challenges and Associated with REDD+ and VCM in Malawi**

To participate in the global REDD+ mechanism, countries must develop their national strategies and action plans, outlining their goals and objectives (Alegria and Matthews, 2014; Goetz and Dubayah, 2011). More importantly, they must establish a national forest monitoring systems (NFMS) that can measure, report, and verify (MRV) their REDD+ progress towards attainment of these goals (*ibid*). While the rest have been easy for Malawi, the NFMS and the MRV have been tedious, expensive, and currently, not yet fully accredited by the UNFCCC (UNFCCC, 2021). This is a setback because despite investing in the REDD+ since 2008, the country is yet to be compensated with the financial rewards from World Bank's Forest Carbon Partnership Facility.

Similarly, the process of creating carbon credits involves verification and certification processes to ensure that the project meets specific criteria and achieves the agenda. It is the process of evaluating the standards that also poses an obstacle to the market, as most of the forest operators have not qualified in Malawi. Besides, the process alone is expensive.

The voluntary carbon-offsetting trade allows companies to operate as intermediate buyers to assist in projects, most of which target small-scale operators who cannot afford due to limited funds (Goetz and Dubayah, 2011; O'Connor and Gaertner, 2018). While this is a feasible option, the price of carbon credits on the global Voluntary Carbon Market (VCM) platform varies according to project type, location, besides other factors. Indirectly, this favours projects that generate high-quality carbon credits as

they command higher prices, thereby working to the disadvantage of the small-scale enterprises.

Again, there is a requirement of carbon buffer, which is another disincentive. It simply denotes the amount of carbon credits determined by risk analysis or rules of a particular standard set aside and not commercialised to ensure validity of carbon credits from a project in the event of leakage or impermanence. Most firms charge 20% as carbon buffer to compensate for losses incurred by fire, deforestation etc. (O'Connor and Gaertner, 2018; Van Kooten and Johnston, 2016). This is also another expense often considered as a discouragement for those intending to venture into carbon-offsetting trade.

Furthermore, there are limited voluntary buyers who can purchase carbon credits to offset their own emissions. While this is often regarded as part of a broader sustainability strategy to meet voluntary commitments in reducing their environmental impact, the market is not particularly easy for small-scale forest operators due to fund limitations.

In order to mitigate these challenges, this report proposes that the Scotland Malawi Partnership (SMP) and the Malawi Scotland Partnership (MasP) organisations could make a difference in acting as bridge to look for carbon markets in the UK and globally) and negotiate their terms on behalf of the Malawi local operators. The two sister organisations would also help in facilitating the process of carbon credits creation, verification and certification to ensure that commercial forestry in Malawi benefits from this global trade. However, these suggestions remain critically subject to the capacity and scope of work that the organisations operate.

### **3.8.7 Cyclones/Storms and Drought**

Cyclones, storms, and droughts have not had significant impact on commercial forestry in Malawi due to their rare occurrence, until the past decade when they started posing critical threat not only to people, but also to the growth of trees forests. Since 2013, cyclones and storms, attributed to climate change, have caused severe damage to trees, especially young or newly planted, resulting to reduction of the productivity of the forestland. Some of the damages caused include; breaking branches, wounds, and debarking, uprooting of trees or wind throw. They damage or block infrastructure, such as roads and buildings. Additionally, heavy rainfall associated with these winds has caused floods, leading to soil erosion and waterlogging conditions.



**Figure 9. Cyclone Freddy (Blantyre-12<sup>th</sup> March 2023) claimed lives, caused damage to trees and infrastructure, posed a huge risk to forest operations and travellers.**

Cyclones have caused tremendous damage in Malawi and the notable ones include; Freddy:12-14 March, 2023; Jasmine: April 24-28, 2022; Gombe: March 8-14, 2022; Ana: January 23-25, 2022; Chalane: December 25-30, 2020; Kenneth: April 21-28, 2019; and Idai: March 4-16, 2019 (Malawi: Tropical Cyclone Freddy-Department of Disaster Management Affairs (DoDMA) Situation Report No 1 As of 12 March 2023 and <https://www.worlddata.info/africa/malawi/cyclones.php>).

On the other hand, dry spells attributed to climate change have been prevalent in Malawi for the past decade. The prolonged dry spells or lack of rainfall has caused water stress in trees, leading to stunted growth and reduced productivity. The impact has also been quite significant to tree seedlings in the nurseries and young trees planted out, especially those that have not been established, i.e., less than 4 years (Pauw et al., 2010). Dry spells have also increased the risk of forest fires in Malawi. Consequently, these have led to loss of revenue due to damages trees and property, delayed operations and repairing or replacement of infrastructure.

Recently, the impact caused by the Cyclone Freddy is quite devastating and pathetic as not only trees and the environment have been damaged, but painfully it has claimed more than 500 lives (Department of Disaster Management Affairs of Malawi, 2023).

Nevertheless, the viable post-disaster (Cyclone Freddy) interventions suggested pose a direct incentive to commercial forestry in Malawi. Precisely, the afforestation/reforestation proposal to be conducted after relocation of households from the present fragile settlement presents a huge opportunity for forestry enterprise. The priority sites include mountains of Blantyre, a key city affected by the cyclone, and

these include; Chilobwe, Ndirande and Soche Mountains. These were previously gazetted forests, reserved for their landscape fragility, but were encroached for settlement (Department of Disaster Management Affairs of Malawi, 2023). This is in addition to the rehabilitation of catchment the Upper Shire River Basin to control run-off and soil erosion i.e., covering Mwanza, Mulanje, Phalombe, Zomba and Neno, districts that highly affected by the cyclone as well (Department of Disaster Management Affairs of Malawi, 2023).

To mitigate the impact of cyclones, storms and droughts on commercial forestry in Malawi, it is essential to apply effective forest management practices. For example, planting tree species' that match the sites conditions as indicated by the Silvicultural Zones guidebook of Malawi (Ingram and Chipompha, 1987). Planting of drought resistant and wind tolerant species can reduce the impact of extreme weather events on tree plantations (Missanjo and Kadzuwa, 2021). Sustaining a healthy and diverse forest ecosystem by strictly following Silvicultural practices can help to increase the resilience of forests to extreme weather events.

In summary, cyclones, storms, and droughts have had a significant impact on commercial forestry in Malawi, but implementation of effective forest management practices increases the resilience of forests to extreme weather events. Paradoxically, the impact caused by the recent Cyclone Freddy in Malawi provides a huge opportunity for practising commercial forestry through afforestation/reforestation as a workable option to mitigate the loss of vegetation cover and contribute to control of soil erosion and land degradation.

The table below presents some forest assessment methods in relation to carbon offsetting under the REDD+ and VCM mechanisms applicable in Malawi. It depicts the relative merits and demerits of each method and significantly, the estimated costs.

**Table 5. Forest Assessment Systems in Relation to Above Ground Biomass and Carbon Estimations for REDD+ and Voluntary Carbon Market**

No.	System	Information Details/Quality	Meets REDD+/ CVM Standards	Relative Cost	Cost Considerations	Merits	Demerits
1	<b>Ground-based measurements</b>	Extremely low	Low-medium	£30 per ha per person <sup>1</sup>	Excluding equipment hiring costs <sup>2</sup>	Requires moderate expertise/training, affordable/ideal for small expanse	High capital & operational costs (time, labour, etc.), Difficult for inaccessible areas, Costly for large expanse
2	<b>Optical Satellite Imagery</b>	Low-very high	High- remarkably high (dependent on resolution)	£10 per ha (≥ £20/month (2000GB on internet bundle@£20/month for DoF) <sup>3</sup> during forest resource assessments	Excluding equipment hiring, office space & training costs	Cost-effective for unrestricted access, i.e., Sentinel-2 and Landsat)  Effective for inaccessible areas (spatially explicit),  Better temporal & spatial resolution	Costly for commercial satellites.  Requires high expertise to time optimal data acquisition window, process & analyse data  Weather limitations
3	<b>Small-drone Surveys (Optical)</b>	High-very high	High-very high	£7 per ha <sup>4</sup> (excluding; training costs)	Fair since it does not require top-notch expertise	Cost-effective (saves labour & time)  Covers large expanse & cheap in the long run) <sup>5</sup>  Requires less technical expertise  Effective for AGB with less dense canopy	Costly for large expanse  Saturates in dense canopies  Relies on accurate slope  Affected by weather limitations

<sup>1</sup> (Mueller, 2012)

<sup>2</sup> (Government of Malawi, 2019; Neeff et al., 2015)

<sup>3</sup> <https://www.airtel.mw/Consumer-Newsletter>

<sup>4</sup> <http://www.precision.mw> and author's field survey experience-2019

<sup>5</sup> (Phillips et al., 2016)

4	<b>RADAR (Active)</b>	High	High-very high	£25 per square km <sup>6</sup> for commercial data  (£5 per ha) <sup>7</sup> for unrestricted data	Costly for commercial satellites & cost-effective for unrestricted datasets	Better at detecting 3D forest structures/detects even lower canopy  Not affected by weather i.e., clouds etc.  Continuous coverage (day & night)	Lack of signal penetration over dense vegetation  Requires high level expertise to acquire and process data/requires corrections and more space for the vehicle/shuttle)
5	<b>LiDAR/ALS/</b>	High-very high	High-very high	£300 per square km for LiDAR <sup>8</sup> .  £96, per square km <sup>9</sup> for ALS  (~£1 per ha)		Does not suffer signal saturation over dense vegetation  Captures ground elevation  High precision over hard targets (quality 3D data)  Continuous coverage (day & night)  Allows direct retrieval of high-resolution vegetation structure (height)	High initial /capital costs and per unit area cost  Requires high level expertise to acquire and process data

<sup>6</sup> <https://www.statista.com/statistics/1293877/commercial-satellite-imagery-cost-worldwide/>; (Patenaude et al., 2005)

<sup>7</sup> (Government of Malawi, 2019)

<sup>8</sup> (Hummel et al., 2011; Panjvani et al., 2019; Patenaude et al., 2005)

<sup>9</sup> (Hancock et al., 2021; Hummel et al., 2011, p. 2011; Næsset, 2015)

#### **4.0 CONCLUSION**

This report has entailed the potential of managing commercial forestry in Malawi with insights on environment and climate change sustainability, culture and profitability within the context of the country. This study was conducted using; (i) scoping literature review, (ii) online and face-to-face discussions, and (iii) workshops consultation. Results reveal that commercial forestry is a viable enterprise in Malawi, capable of generating income, forex while creating employment. The enterprise is also capable of making more than 100% financial returns. The outcomes further indicate that the trade significantly contributes to 33% GDP bracket under the Agriculture and Environment Key Priority Area of the Malawi Growth and Development Strategy. Commercial forestry also provides the ecosystems services through carbon sequestration and maintenance of water and control of soil erosion and land degradation. Holistically, these contribute to sustainable environmental management and mitigation of climate change effects.

Pine and Eucalyptus have emerged key tree species for establishing commercial forestry in Malawi. Paradoxically, the Forest Landscape Restoration initiative (to mitigate deforestation and forest degradation that has caused enormous bare lands) compounded by the global carbon market initiative have provided the impetus for the existence of commercial forestry enterprise in Malawi. This is in addition to the limited availability of the wood resources outbalanced by the national demand and the political will demonstrated by offering commercial forestry's concessional agreements, which are offered to any potential investor, local or international.

However, there are several challenges associated with commercial forestry in Malawi. The key ones include; forest fire, land ownership and policy matters, theft, pests and diseases infestations, certification and export concerns. More significantly, the conflict of interests between the communities surrounding forest plantation enterprises and the forest operators also renders another challenge. Nevertheless, these have all proven quite manageable. To address this, a comprehensive approach has been providing incentives such as employment and creation of a good relationship with the surrounding communities.

Therefore, to realise the full potential of commercial forestry, the Malawi Government needs to provide the necessary support, particularly by addressing the challenges facing smallholders and large-scale foreign investors. Critically, improvements on the policy and regulation framework pertaining to operationalisation of profitable plantation forestry, enhancement of access to finance through low-interest loans and grants, promotion of dissemination of technical knowledge and skills on forestry through training and extension services can go a long way in supporting commercial forestry in Malawi.

This report feeds into the development of the recommendations and guidelines to any alternative commercial forest model or aspect of such a project, which is likely to improve its success in achieving the criteria for viable forestry in Malawi.

## Limitations

It is important also to recognize the limitations of this work. Literature reviewed shows that not much has been documented on commercial forestry in Malawi, let alone on carbon offset market, which is a relatively new concept. As a result, despite both the consultations and literature review revealing that commercial forestry is a profitable business in Malawi; there is unfortunately, scant information regarding expenditure and profits accrued by those commercial operators. Hence, this report relied on the experiences of most operators interviewed, most of which were through virtual communication. In this regard, this review might not be as exhaustive enough as the author might have wished, *ceteris paribus*.

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