

A Comparative Assessment of Plantation Fees, Prices and Options Analysis to Improve Revenue Generation in Malawi

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Executive Summary

Forest plantations in Malawi continue to play a critical role in meeting Malawi's socio-economic, biodiversity, ecological, and climate needs. However, the development and growth of the plantation forestry sector are still lagging. Some of the reasons for this sluggishness include lack of adequate resources to develop the plantations, forest fires, weak law enforcement, weak governance, lack of monitoring framework, unregulated or informal markets for forest plantation products, corruption, and unfavourable taxation policies.

The attainment of sustainable management of the forest plantations also depends on the country's forest pricing policy, which involves forest taxation, royalties, and charges. Low forest fees and prices that undervalue forests provide little incentive for sustainable management and efficient utilization of forest resources in the country, at the same time, fees and prices that are too high will also scare buyers. The current structure of the Malawi forest plantation fees and prices compared to those from the Sub-Saharan Africa (SSA) region are relatively low and underestimate the forests' value and contribution to GDP. Against this background, the present study provides empirical evidence to decision-makers on how the current structure of forest plantation fees and prices compares with those within the SSA region.

Results from our study show that the plantation fees and pricing structure across Malawi, Kenya, Tanzania, Zambia, and Rwanda have some differences in the concession

fees and licenses, with Malawi having the lowest rates. The study has established that Malawi's forest plantation fees and prices on forest products are 5 to 10 times lower than those within the SSA region. Based on our findings, we propose policy interventions aimed at enhancing forestry sector revenue to foster the growth and ultimately support the development of plantation forestry in Malawi. The proposed interventions are outlined as follows:

- (i). Revise forest plantation fees and prices to accurately reflect the current economic and market value
- (ii). Provide adequate funding and the necessary equipment to support effective and sustainable forest plantation management
- (iii). Provide a conducive policy and regulatory environment to encourage private-sector investments in plantation forestry
- (iv). Enhance collaborations between the government, concessionaires, and the communities for successful forest plantation management.
- (v). Develop and implement forest investment plans to attract domestic and international investments supporting forest conservation and enhancing governance.
- (vi). Develop a national integrated forest fire management strategy
- (vii). Enhance the revenue collection system by developing an integrated revenue collection system to reduce corruption and revenue leakages.
- (viii). Develop a forestry information management repository for data accessibility
- (ix). Improve research and development in plantation forestry to address emerging challenges
- (x). Strengthen management and governance of forest plantations
- (xi). Facilitate financing to small-scale concessionaires

1. Introduction

Forest plantations are defined as forest or other wooded land of introduced species and, in some cases, native species established through planting or seeding and are divided into two sub-groups: productive plantations¹ and protective plantations² (Bauhus et al., 2010; FAO, 2006). They play a vital role in most countries' socio-economic development by supporting the livelihoods of an estimated 33% of the global population by providing employment and income (FAO, 2014, 2022). Forest plantations are also a means for climate change mitigation and adaptation (Pawson et al., 2013; Scheidel & Work, 2018), as such, they are vital in attaining global sustainable development goals (SDGs)(Koutika et al., 2022).

Sustainable Forest Management (SFM) has recently gained strong support and unprecedented attention from scientists and policymakers worldwide as a strategy for using and managing forest resources while maintaining forest ecosystem services(Brang et al., 2002; Faggin & Behagel, 2017; Nasi & Frost, 2009; Prabhu et al., 2001; Quine et al., 2013). In Malawi, SFM has been adopted as a holistic approach to achieving the primary goal of the National Forestry Policy of 2016 (Government of Malawi, 2016). The SFM encompasses the administrative, legal, technical, economic, social and environmental aspects of forest conservation and utilization (Siry et al., 2018). The recent Global forest resources assessment report by FAO has shown substantial progress toward SFM, although the progress varies over time and between countries (FAO, 2020; Shono & Jonsson, 2022). MacDicken et al. (2015) argue that SFM can be enhanced by effectively implementing legal, policy and institutional frameworks that support SFM and also encourage economic returns from forests. Whiteman (2004) and Grut et al. (1991) posit that well-designed forest fees and

¹ Forest plantations predominantly intended for the provision of wood, fibre and non-wood products

² Forest plantations predominantly for the provision of services such as the protection of soil and water, rehabilitation of degraded lands, combating desertification etc.

pricing policies can promote efficient utilization of forests, thereby contributing to and financing SFM (Grut et al., 1991).

Malawi's long-term vision, known as Malawi2063, has identified environmental sustainability as one of the enablers for achieving Malawi country's desires by 2063 (Government of Malawi, 2020a). However, similar to other developing countries, forest plantations in Malawi are under threat due to population growth, land use and land cover changes, high poverty levels, expensive and low access to alternative energy sources and forest fires (Coutts et al., 2019; Munthali et al., 2019).

Malawi's forest development has primarily relied on both international funding and domestic forest revenue generation. The international sources encompass but are not limited to, the Green Climate Fund (GCF), Global Environment Facility (GEF-7), and Overseas Development Assistance (e.g., from USAID, World Bank, JICA, European Union, Global Forest Fund, International Climate Fund, etc.). At the local level, critical domestic funding sources for managing forest resources include the Forest Development and Management Fund (FDMF), Other Recurrent Transactions (ORT), and the private sector. Sparff (2021) reports that funding to the Department has roughly been MK1.5 billion (approx. US\$18,000,000) annually from FDMF and MK12m (approx. US\$15,000) from ORT. Cognizant of the fact that government forest plantations are predominantly managed through concession contracts in Malawi, forest concessions³, licensing fees and other fees on forestry products are integral in providing funding to support forest management and development. Furthermore, the private sector has significantly funded forest development and management in Malawi through initiatives and investments such as the Tobacco Levy, RAIPLY, and

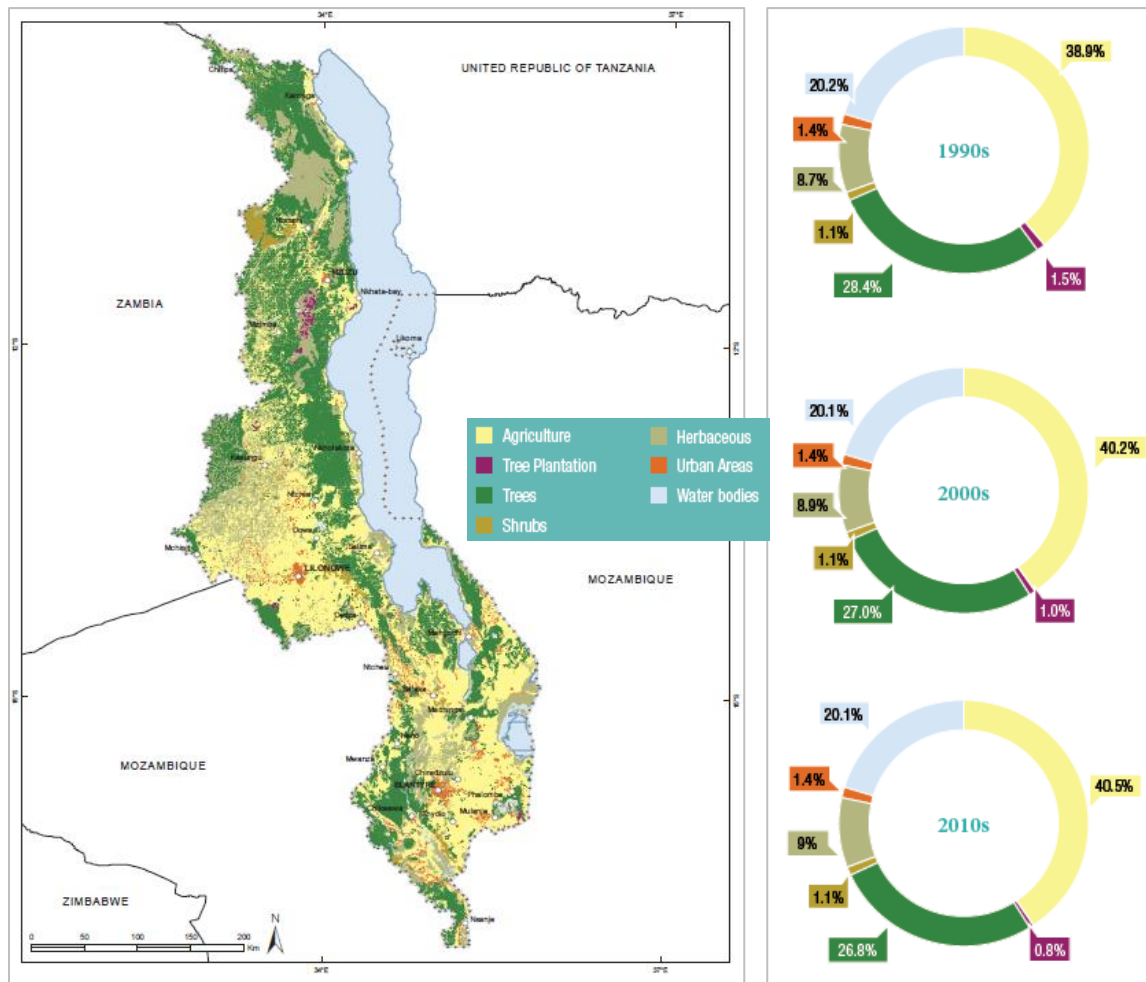
³ A forest concession is a lease or contract between a forest owner and another party permitting the harvesting (forest utilization contracts) and managing (forest management services contracts) of specified resources from a given forest area within a specified time

Pyxus Agriculture Malawi Ltd, to mention a few. RAPLY, Total Land Care (TLC) and Pyxus Agriculture Malawi Ltd have concession areas, while the Tobacco Control Commission (TCC) remits tobacco levies annually to the Department of Forestry for forest conservation and afforestation initiatives in the country.

Plantation forestry in Malawi dates way back to the early post-independence period (1964-1985) when the Department of Forestry shifted its attention to establishing industrial plantations for national timber self-sufficiency, aligning with international trends (Mauambeta, 2010). Forest plantations have played a vital role in generating revenue for the GoM, which has been re-directed into forest management and development through FDMF and ORT. According to the Department of Forestry, forest plantations cover around three percent (110,000ha) of the total forest area in Malawi. Forests under the customary land category take about 50% (1,988,255ha), while forests under national parks and game reserves and forest reserve categories occupy 25% and 22% of the total forest land, respectively. Approximately 46% of the total plantation area is under the concession (Table A1). More than 86% of that plantation area under concession is in a single plantation: Viphya in the Northern Region.

Current information on the status of this resource needs to be updated. Several efforts have been undertaken to map out the distribution of forests, including forest plantations, dating back around a decade (FAO, 2013). As shown in Figure 1, in 2012, Malawi possessed a forest cover of 27.8%, encompassing woodlands covering 26.8%, while tree plantations, predominantly Pine and Eucalyptus plantations, accounted for 0.8%. The study indicated that plantations dwindled by nearly half, dropping from 1.5% (176,768ha) in 1990 to 0.8% (89,890ha) in 2012. Breaking down the plantation forest cover by region in 2012, it was observed that the North is the most forested region (60,214.6 ha), followed by the Centre (16,186.4 ha), whereas the South had 13,489.4 ha, culminating in an overall total of 89,890.4 ha.

Figure 1: Distribution and Percent Cover for Forests in Malawi in 2012



Source: (FAO, 2012)

Forest pricing policy, which involves forest taxation, royalties and charges, has tremendous implications for the sustainable management of forest plantations in developing countries and its effects go beyond revenue-generation (Ghani & Othman, 2003; Gray, 2002). Evidence exists showing the need for well-designed forest pricing policies that promote the sustainable management and utilization of forest resources, thus improving the performance of forest concessions and the financial viability of SFM. Gray (2002) proposed four strategies for how developing countries can improve forest pricing and charges: (a) structuring fees to provide incentives for improved use and forest management; (b) raising fees to reflect the value of the forest; (c)

generating the revenue to make forest management a worthwhile investment for governments, and (d) providing the revenue to finance improved forest management and conservation.

Malawi's policy instruments, such as the National Forest Policy of 2016, strive for improved and sustained financing for the forestry sector. The plantation fee structures are, therefore, critical instruments for effective management, not only of the forest plantations but also for forest development in Malawi at large. However, it is not clear if the current structure of the Malawi forest plantation fees and prices are competitive when compared to those from the SSA region. Low forest fees and prices that undervalue forests provide little incentive for sustainable management and efficient utilization of forest resources in the country. An improved, evidence-backed fee structure setting has the potential to provide additional funding for other activities beyond forest plantations that are critical for forest development in Malawi.

Against this background, the present study seeks to undertake a comparative assessment of how the current structure of forest plantation fees and prices compares with those within the SSA region. It seeks to guide the establishment of a competitive plantation fee structure for Malawi's forestry sector that promotes the sustainable management of the country's plantation forests and increases revenue generation for the Government of Malawi (GoM). Specifically, the study will address the following research questions;

- i. How do the costs of plantation establishment and management compare between plantations that are managed by the GoM versus plantations that are managed by concessionaires?
- ii. How does the GoM plantation-related fee structure compare with that of other countries in the region?
- iii. Is the GoM plantation-related fee structure adequate to support sustainable plantation establishment and management to maturity?

- iv. What are the challenges affecting the performance of plantation forestry in Malawi?
- v. What policy recommendations can improve the performance of plantation forestry in Malawi?

2. Data Sources and Methods

The study collected various costs for plantation establishment and management per unit area (ha) from the government and from both small- and large-scale concessionaires⁴. These costs included – but were not limited to – costs for planting as well as silvicultural operations such as screefing, spot cultivation, firebreak construction, pest and disease control, pruning, and thinning. This data was categorized by tree species planted. The study also gathered data from Tanzania, Zambia, Rwanda and Kenya to assess the feasibility of Malawi's fees in sustaining the plantation industry. Forest fees and price data from Tanzania and Rwanda were provided by the Tanzania Forest Services (TFS) Agency and Rwanda Forestry Authority, respectively. Data from Kenya and Zambia were sourced from their legal documents gathered from internet research.

Data and reports on GoM's plantation fee structure and other forest fees and prices were collected from relevant authorities (Table 1). Factors behind the determination of the new fee structure were also documented during the data collection process.

⁴ Small-scale concessionaires operate on less than 1,000 ha while large-scale concessionaires is > 1,000 ha. However, this definition is not included in the legal instrument

Table 1: List of Data Collected on The Plantation Fee Structure for Malawi and Other Comparable Countries

<i>Data collected</i>	<i>Description</i>
Plantation establishment and management costs	Includes costs for planting and all silvicultural operations such as nursery establishment, planting, harvesting, thinning, etc.
Forest concession license	A license is given to an entity to manage a public forest.
Concession fees	Annual charge payable by an entity managing a public forest area.
Export permits	Clearance to transport forest products out of the country.
Import permits	Clearance for goods being sourced into the country.
Sales pine/ <i>Eucalyptus</i> logs/m ³	The unit price for the sale of roundwood for pines or blue gum.
Sales of firewood for commercial use (pine/ <i>Eucalyptus</i>)/m ³	Unit price for selling any wood for pines or blue gum that is not roundwood for commercial use.
Domestic construction poles	Unit price per pole for commercial use
Industrial construction poles	Unit price per pole for commercial use
Conveyance certificate fee	Charge for a certificate used to transport forest products within the country
Charcoal production license	Clearance to produce charcoal from the relevant authority.

The study also collected information through key informant interviews. These interviewees were conducted with government officials (Department of Forestry), plantation managers and staff from Viphya plantations, cooperatives, and small-scale and large-scale concessionaires (Table A2). A well-designed checklist was used to collect data from the key informants interviewed (Tables A3 and A4). The questions for the key informants interviewed focused on the challenges hindering the development and growth of plantation forestry, suggestions for fostering forestry sector growth through different approaches, the primary sources of revenue for their respective institutions, and potential revenue sources that could finance the sector.

Data collected from the plantations, concessionaires and various countries was analyzed using Microsoft Excel Software. A pairwise comparison between cost items and the overall cost was made for the GoM, small-scale, and large-scale concessions costs where necessary. Research ethics approval to conduct the study was obtained from the National Commission for Science and Technology.

3. Forest plantation establishment costs

Section 3 presents findings on the costs of establishing and managing forest plantations in Malawi based on the data we collected from government plantations and concession areas managed by small-scale and large-scale concessionaires.

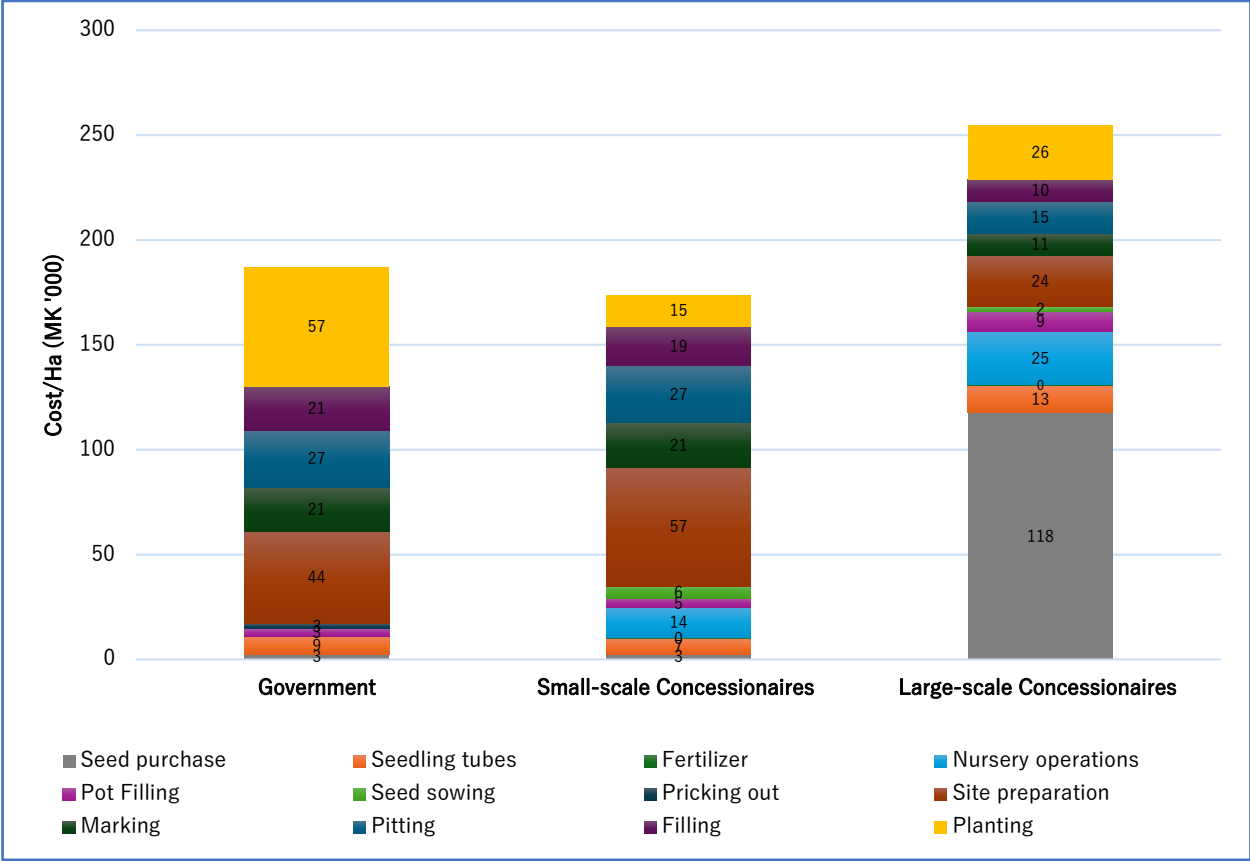
3.1. Forest plantation establishment costs

The costs related to the establishment of the plantations are presented in Figure 2. The highest plantation establishment costs are borne by large concessionaires, which cost them above MK250,000 per hectare. These are followed by government plantations and then small-scale concessionaires. Seed purchase is one of the critical costs for all plantation operators when establishing the plantations. The seed purchase is the most expensive among the large-scale concessionaires (MK118,000 per ha), possibly because they purchase high-quality improved seed from other countries, especially Zimbabwe. Government and small-scale concessionaires had the lowest costs of seed per ha (approximately MK3,000 per ha) because they procure seeds locally (usually from FRIM) and in most cases, they collect freely from TLC seed stands.

Site preparation is another relatively expensive operation for the government and small-scale operators. However, in government plantations, planting is even more expensive than site preparation. Site preparation and planting costs for the large-scale concessionaires are comparatively large for their costs after the seed

procurement costs. Fertilizer application, if productive for plantation establishment, seems cost-effective, as the cost and labour for application is low for all operators.

Figure 2: Forest Plantation Establishment Costs



Source: Author’s compilation from the key informant interviews

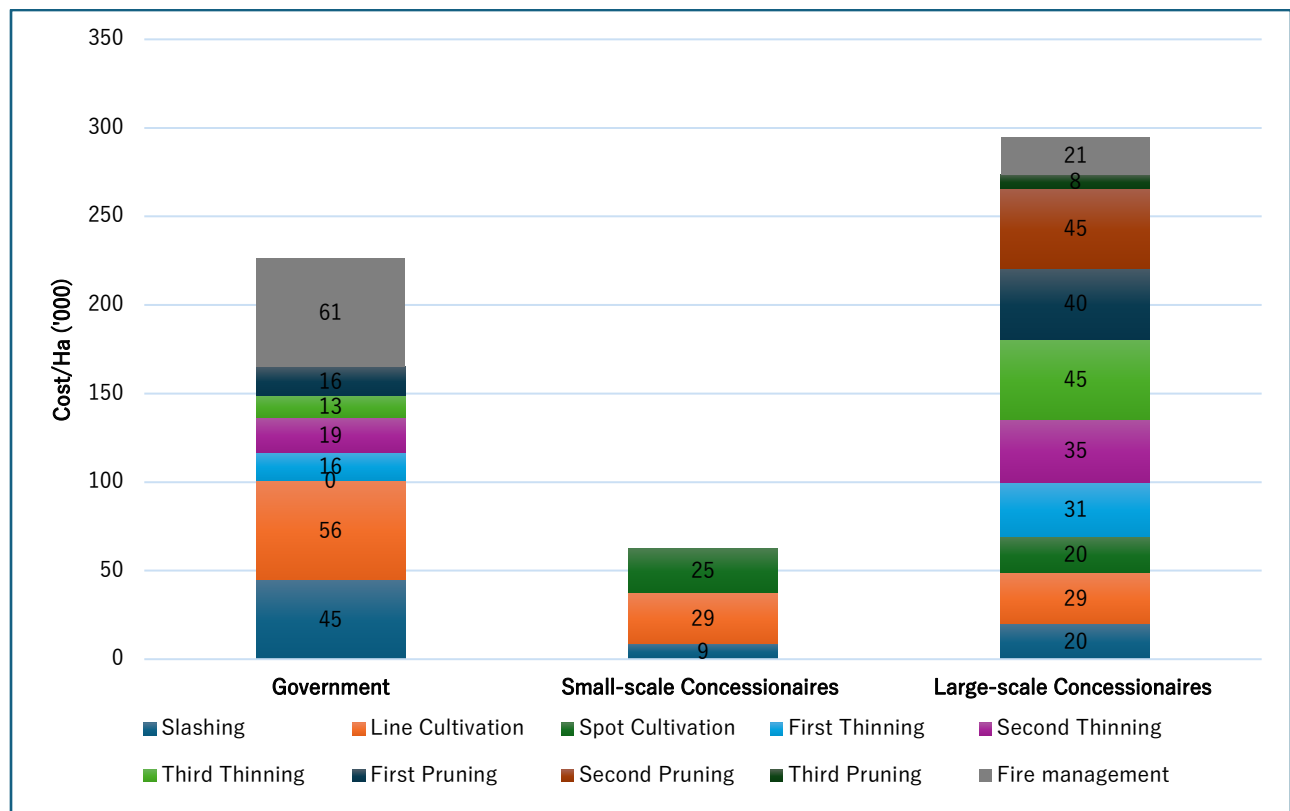
3.2 Forest plantation management costs

The forest plantation management costs incurred by government, small-scale and large-scale concessionaires are presented in Figure 3. The large-scale concessionaires bear the largest cost of management, followed by government plantations. Fire management, weeding through line cultivation and slashing⁵ seem to

⁵ Spot cultivation is a form of weeding involving cultivation of the soil immediately around the base of each tree in a circle of 1m radius around the tree.
Slashing is a form of weeding that involves cutting off all the weeds growing immediately around each tree.

be the most significant plantation management investments for the government-owned plantation while pruning, mainly first and second; and thinning, mainly third, seem to be the most exorbitant silvicultural operations for the large-scale concessionaires. Plantation management for small-scale concessionaires shows that the industry is still in its infancy with tendering for the young tree through slashing, spot cultivation, and line cultivation, the key silvicultural operations, with the latter being the most expensive. It is worth noting from Figure 3 that government do not undertake 2nd and 3rd pruning.

Figure 3: Forest Plantation Management Costs



Source: Author's compilation from the key informant interviews

Line cultivation - tillage of all the soil in the forest stands to remove weeds. The weeds are then arranged in windrows (In the form of a line)

3.3 Other costs (overlooked/underestimated)

The study also analyzed data on the cost of forest plantation establishment and management that are usually overlooked or underestimated and need to be considered. These costs included but were not limited to road maintenance, insect and disease prevention, fire management and prevention, equipment purchase and soil transportation to the nursery. The annual purchase of tools was MK227,800 for the state, MK500,000 for the large-scale concessions and MK290,000 for the small-scale concessions. Soil transportation cost the plantation between MK10,000 and MK50,000, depending on the source of the soil and transport distance. Fire management costs may also vary with the season and severity of the fire.

4. Lessons from other countries on forest plantation fees and pricing

Forest plantation fees and pricing vary significantly from one country to another, depending on the unique social, market demand, economic, and environmental contexts of individual countries. Learning from the experiences of other countries can provide useful and valuable insights for policymakers and stakeholders in the forest sector. Thus, policymakers and stakeholders in the forest sector can draw inspiration from these global and regional examples to design effective, fair and sustainable forest plantation fees and pricing systems tailored to their specific conditions and objectives and eventually generate revenue from the forest plantations. This section provides an overview of the forest fees and pricing approaches from Malawi, Kenya, Rwanda, Tanzania and Zambia.

4.1 Concession Fees

Table 4 shows the forest plantation fees related to concession fees for Malawi and other countries in sub-Saharan Africa, especially Kenya, Tanzania, Zambia, and Rwanda. This analysis has revealed differences in the concession fees and licenses,

with Malawi having the lowest fees. Forest concession licenses in different countries are granted to individuals, companies, and cooperatives are broadly categorized into different categories according to their level of operations or production capacities. Concession fees are outlined in the legal instruments, though this information is not provided in Malawi's forest fees schedule. The concession fee structure or forest concession licenses are categorized into three categories: small-scale, medium, and large-scale. Apart from the annual concession license fees, concessionaires also pay commitment fees upon license approval (Zambia) and operation fees (Kenya). Zambia has the highest concession fees compared to Malawi, Kenya and Tanzania.

Table 2: Concession License Fees by Country

Country	Category description	Fees (Local Currency)	Fees in US\$
Kenya *			
Small-scale	Has a daily timber production of <math><10\text{m}^3</math>, and the license is valid for one year	KSh30,000	29
Medium-scale	Has a daily timber production between 10 and 20 m^3 . The license is valid for one year.	KSh45,000	43
Large-scale	Has a daily timber production of over ten and 20 m^3 . The license is valid for one year.	KSh80,000	76
Zambia**			
Small-scale	The company/individual/cooperative has a production capacity of 20 to 100 m^3 per month, and the license is valid for 2 years.	ZMK3,333	189
Medium-scale	Company/individual/cooperative has a monthly production capacity of 101 to 200 m^3 . The license is valid for three years.	ZMK16,667	946
Large-scale	Company/individual/cooperative has a monthly production capacity of 201 to 400 m^3 . The license is valid for five years.	ZMK33,333	1,892
Tanzania ***			
Category A	For companies with contracts with the government, the license is valid for one year (volume not specified)	TZS200,000	84
Category B1	The license is valid for one year for industries/companies with a production capacity of 1 and 1000 m^3 per year.	TZS100,000	42
Category B2	The license is valid for one year for industries/companies with a production capacity of 1001-3000 m^3 per year.	TZS120,000	50
Category B3	The license is valid for one year for industries/companies with a 3001-5000 m^3 production capacity.	TZS140,000	59
Category B4	For industries/companies with a production capacity of over >5000 m^3 per year, the license is valid for one year	TZS150,000	63

Country	Category description	Fees (Local Currency)	Fees in US\$
Malawi****			
Concession license	Company/individual/cooperative does not pay for a concession license.		
Concession fee	Concessionaires pay concession fees per plantable ha per year	MK10,534	10
Rwanda *****			
Concession license	Company/individual/cooperative does not pay for a concession license.		
Concession fees	Concessionaires pay lease fees per ha per year (the lease fees vary from rural to urban areas, infrastructure, soil conditions etc.)	RWF5,000 to RWF20,000	4 to 17

Source: * <http://www.kenyaforestservice.org>; ** <https://faolex.fao.org/docs/pdf/zam191172.pdf>

*** Tanzania Forest Services Agency; **** Department of Forestry ***** Rwanda Forestry Authority

4.2 Licensing Fees and prices of forest produce

Forest license fees play another role in financing plantation forestry activities. Tables 5 and 6 show the selected forest producers' license fees and prices for various countries. As shown in Table 5, in areas with comparable data for various licenses, licensing fees and prices of various forest produce are generally low in Malawi compared to other countries within the SSA region. Malawi has notable nominal licensing fees for certain services, such as charcoal licenses, conveyance permits, import and export licenses and permits, and phytosanitary certificates. For instance, Malawi's commercial firewood license, export licenses, phytosanitary certificates, and charcoal production licenses are over five times less than those charged by Tanzania and Kenya. It is important to note, however, that license fees for Kenya and Tanzania were recently reviewed in 2016 and 2017, such that the figures must be a true reflection of the current economic status.

Nevertheless, the Kenyan fees (Plant Protection fees and charges) that were last reviewed in 2009 are still slightly higher than those for Malawi, even though Malawi's license fees are a year older. The license fees for Malawi are the lowest

because of the way other countries structure their license fees. For instance, the export and import permits are charged based on the type of consignment (commercial or non-commercial), and the countries also charge inspection and permit fees. For the conveyance fees, countries charge based on the volume or size of the vehicle, not per consignment, as in the case of Malawi.

Results about forest production prices have a similar trend to the countries' licensing fees. The price of pine per cubic metre (m^3) for Zambia and Kenya is four and five times higher than that of Malawi. In Kenya charges for pine/ m^3 also depends diameter at breast height (DBH). The prices of pine and eucalyptus logs in Kenya are higher because the charges per m^3 depend on the diameter at breast height (DBH). Tanzania charges per running meter for the poles if the DBH is more than 15cm instead of just focusing on the DBH alone.

Table 3 : Selected License Fees for various countries

<i>Type of license</i>	<i>Unit</i>	<i>Malawi</i>		<i>Kenya</i>		<i>Rwanda</i>		<i>Tanzania</i>		<i>Zambia</i>	
		<i>MWK</i>	<i>US\$</i>	<i>KSh</i>	<i>US\$</i>	<i>RWF</i>	<i>US\$</i>	<i>TZS</i>	<i>US\$</i>	<i>ZMK</i>	<i>US\$</i>
<i>Export license</i>											
<i>General license</i>		75,000	71.2								
<i>Export license for forest products from natural forest</i>								300,000	126		
<i>Export license for forest products from plantations</i>								800,000	336		
<i>Export permit</i>											
<i>Inspection fee</i>							-	100,000	42		
<i>Commercial consignments</i>							-	100,000	42		
<i>Non-commercial assignment</i>							-	11,000	5		
<i>General export permit</i>	Per consignment	6,000	5.7	5,000	4.7		-			100	5.7
<i>Charcoal Export Permit</i>	Per tonne		-	5,000	4.7		-				-
<i>Import license</i>	Number	75,000	71.2		-		-	500,000	210		-
<i>Import permit</i>	Per consignment	6,000	5.7	free			-				-
<i>Inspection handling fee for commercial consignments (20m³)</i>								150,000	63		

<i>Commercial consignments (20m³)</i>								-	
<i>Non-commercial consignment</i>								-	
<i>License to harvest and sawn timber (mobile sawmill)</i>	per sawmill	20,000	19.0		-	-	100,000	42	-
<i>License to harvest and saw timber (stationary sawmill)</i>		50,000	47.5		-	-	100,000	42	-
<i>Commercial firewood license</i>		20,000	19.0	30,000	28.5		-	300,000	126
<i>Conveyance certificate</i>			-		-			-	-
	2-4 tonnes		-	1,000	0.9		-	7,000	3
	5-7 tonnes		-	1,500	1.4		-	7,000	3
	over 7 tonnes		-	2,000	1.9		-	15,000	6
	Consignment	5,000	4.7	20,000	19.0		-	15,000	6
	m3							90	5.1
<i>Charcoal Movement Permit (within the country)</i>									
	Per bag		-	30	0.0		-	-	-
	7 ton below		-		-		-	7,000	3
	7 ton above							15,000	6
<i>Phytosanitary certificate</i>									
<i>Inspection fees</i>							500		
<i>Commercial commodities</i>			-	1,000	0.9		-	400	0
<i>Research materials</i>			-	500	0.5		-	200	0
<i>Fresh produce</i>			-	500	0.5		-	200	0

<i>General</i>		5,000	4.7					
<i>Charcoal production license (Annual)</i>								
<i>General license</i>		52,000	49.4	-	-	500,000	210	-
<i>10000 bags</i>	Number of bags	-	50,000	47.5	-	-	-	-
<i>10001-20000 bags</i>	Number of bags	-	200,000	189.9	-	-	-	-
<i>20,001-50,000 bags</i>	Number of bags	-	500,000	474.6	-	-	-	-

Source: Country Forest Agencies

Table 4: Prices of Selected Forest Produce in Different Countries

Produce	Unit	Malawi		Kenya		Rwanda		Zambia		Tanzania	
		MK	US\$	KSh	US\$	RWF	US\$	ZWK	US\$	TSh	US\$
<i>Sale of logs</i>											
<i>Pine logs</i>		10,000	9.5	6,351	45.2	11,200	9.6	600	34.1		-
	<5cm	sold as firewood		-						sold as firewood	
	6-10cm	Sold as poles/piece		-						Sold as poles/piece	
	11-20cm									18,400	7.7
	21-25cm									26,700	11.2
	26-30cm									47,100	19.8
	31-35cm									72,700	30.6
	>45cm									78,500	33.0
	16cm (min)			3,362	23.9						-
	99cm										-
	>100			6,351	45.2						-
<i>Eucalyptus logs</i>				3,498	24.9	10,966	9.4		450.0	33,800	14.2
	16cm (min)										
	99cm										
	>100										
<i>Sale of seeds</i>											
<i>Pine</i>	Kg	80,000	75.9			38,000	32.6			55,000	23.1
<i>Eucalyptus</i>	kg	60,000	57.0			8,400	7.2			40,000	16.8
<i>Sale of Firewood</i>											
<i>(Domestic use)</i>											
<i>Exotic</i>	m ³	700	0.7			10,966	9.4				-

<i>Indigenous</i>	m ³	700	0.7	-	10,966	9.4	300	17.0	-	
<hr/>										
<i>Sale of Firewood</i>										
<i>(Commercial/Industrial use)</i>										
			-	-		-		-	-	
<i>Exotic</i>	m ³	1,000	0.9	2000	14.2	10,966	9.4	-	2,000	0.8
<i>Indigenous</i>	m ³	2,500	2.4	2000	14.2	10,966	9.4	-	4,000	1.7
<hr/>										
<i>Sale of poles</i>										
<i>(Eucalyptus)</i>										
	dbh (cm)		-	-		-		-	-	
6-8	dbh (cm)	80	0.1	-		-	15	0.9	-	
8-10	dbh (cm)	100	0.1	-		-	15	0.9	1,000	0.4
10-12	dbh (cm)	160	0.2	-		-	22.5	1.3	1,000	0.4
12-14	dbh (cm)	200	0.2	-		-	22.5	1.3		-
14-16	dbh (cm)	240	0.2	-		-	27	1.5		-
16-18	dbh (cm)	300	0.3	-		-	27	1.5		-
18-20	dbh (cm)	320	0.3	-		-	27	1.5		-
		Price by								
>20	m ³	volume		-		-		-		-

Source: Country Forest Agencies

4.3 Factors to be considered in revising plantation structure fees

The current plantation fees for Malawi were last revised in 2010 (Forestry Amendment Rules, 2010). Since then, there have been some developments that will necessitate revision of these fees. Below are some of the factors that other countries within the SSA region have taken into account when revising their forest plantation fees and charges.

Inflation

Malawi has devalued its exchange rate twice (2012 and 2022) and floated the same since the fees were affected in 2010. When the Forestry Act was amended in 2010, the Dollar-Kwacha exchange rate was US\$1 to MK150. The rate is currently ten times more than it was in 2010. Malawi, an import-dependent nation, implies that currency devaluation increases the cost of operations for managing the plantations. This pertains to the cost of buying and maintaining equipment for operations, such as slashers, hoes, wheelbarrows, chemicals, fertilizers, and a few, most of which are imported. Further, the devaluation also increases the wage bill for managing and operating the plantations.

Forest/area conditions

The bio-physical conditions of the plantation area, such as slope, should also be considered when charging concession fees and revising the plantation fees and licenses. Some plantations are located in very steep areas, which makes operations such as logging and firefighting a challenge (for vehicles to reach such areas effectively). Further, such areas are also more labor-demanding, which adds to operational costs. In addition, the fertility of the soils should also be considered when issuing fees and licenses.

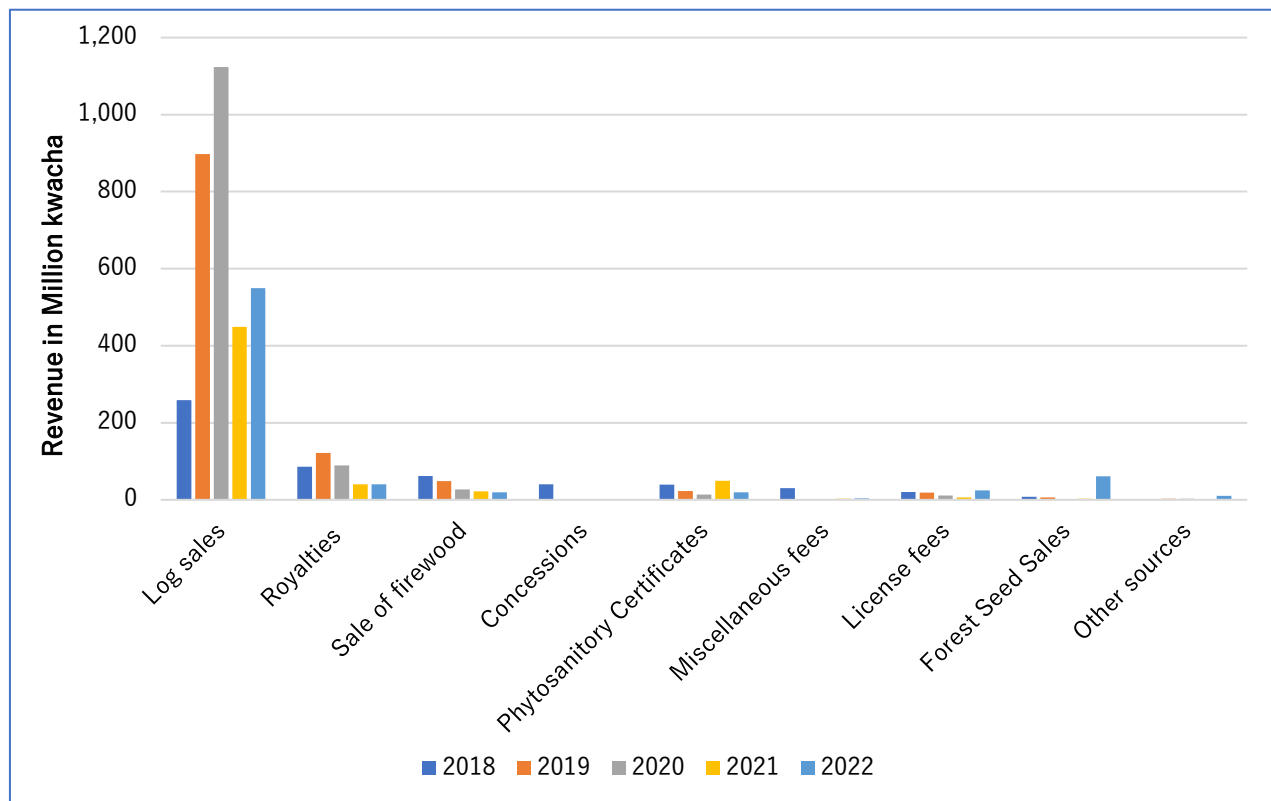
Proximity to infrastructure (roads, electricity, urban areas)

Plantation concession fees need to be structured in such a way that those plantations that are close to infrastructure such as tarmac roads, electricity and towns pay a different fee to those that are far away (forest fees should be higher to concession areas closer to these infrastructures and vice versa). Access to roads, for example, implies easy transportation of the plantation products to the markets and easy accessibility for machinery and other equipment (such as fire fighting vehicles). Similarly, access to electricity implies that such plantations can easily set up manufacturing/processing plants, unlike those furthest from the electricity grid. Fees should vary with proximity to these crucial infrastructures.

5 Forest Revenues

This section summarizes the current revenue streams for the forestry sector. The revenue streams described in section 3.2.1 are from the government only because the small-scale and large-scale concessionaires did not share their actual revenue collection by source. The Department of Forestry derives its revenue from various sources, including sales of logs and firewood, royalties, license fees and many others, as shown in Figure 4.

Figure 4: Dof Revenue Collection by Sources from 2018 to 2022



Source: Malawi annual economic reports from 2018 to 2022

Sale of logs

The sale of logs constitutes the primary revenue stream for the Department of Forestry, accounting for more than half (75%) of the total annual revenue collected by the forestry sector. The Department has several concessions in government plantations, such as Viphya Plantation in Chikangawa and Zomba Mountain Plantation in Zomba. Annually, these concessions prepare harvesting plans that detail the expected volume to be harvested. During harvesting, the planning team of the forestry department assesses the volume and, based on the amount payable, issues invoices for payment to concessionaires. The Department also signed new concession agreements with small-scale firms, which are expected to pay annual concession fees. Despite this, log prices remain very low (currently US\$10) compared to other countries in the SADC region. The ease of obtaining logs in Malawi and the low price

of logs have been the major driver attracting foreigners from Kenya and Tanzania to undertake logging in Malawi. Annually, the log sales are highly variable as they depend on factors such as amount of residual wood available after harvesting and sometimes extent of stands affected by fires and up for sale as wood. It is also important to note that the DoF has an uncollected debt of over Mk1.5 billion⁶ from companies, parastatals, politicians and individuals who undertook logging activities in the past.

Royalties on forestry produce

Royalties derived from natural resource extraction are an essential revenue source for the DoF. The Department collects royalties from individuals and firms/companies operating different structures and services within forest plantations and reserves under the Department. Significant revenues under this stream come from ESCOM through transmission poles and communication operators involved in minor supporting infrastructures such as guard shelters, etc. In addition, revenues are generated from those engaged in mining activities within forest reserves and from proprietors operating lodges owned by the Department; these activities are also charged under the royalties. This revenue stream could be improved by identifying and mapping similar additional operators. Establishing a robust database and monitoring mechanism is essential to collect above-average revenue, as there is currently under-collection and a high level of pilferage.

License fees

Under the Forestry Act 1997, The Director of Forestry is mandated to issue various forest produce licenses. The Department of Forestry administers a range of licenses, including logging licenses, licenses to operate in a forest reserve, quarrying licenses and charcoal licenses. These licenses are granted to facilitate regulated

⁶ Source: Department of Forestry

access to and usage of forestry products, ensuring sustainable harvesting and utilization practices. To this effect, the Department also grants other licenses, such as logging, gathering firewood, and producing charcoal. Revenue from permits for conveyances, imports and exports are also included under license fees.

Sale of firewood

Revenue from the sale of firewood is another stream for the forestry sector. Firewood is used domestically and commercially, with a major portion of commercial firewood being supplied to the tobacco industry. Firewood sales come from Eucalyptus plantations and remnants of pine trees destroyed by forest fires. Although the sale of firewood holds excellent potential to generate significant revenue, the prices for firewood, as provided in the pricing schedule, remain low.

Phytosanitary Certificates

Under the Plant Protection Act, the Department of Forestry also carries a delegated function (in compliance with FAO phytosanitary standards) of issuing phytosanitary certificates to exporters of forest products. These are given to certify that forest products are safe from pests and diseases before they are exported. Phytosanitary Certificates also generate revenue for the forestry sector. In 2021, the government generated MK 125000 from phytosanitary certificates.

Seed sales

It is within the mandate of the forestry sector to ensure a continued supply of high-quality viable seeds for the ongoing regeneration of forests in Malawi. The Forestry Research Institute of Malawi (FRIM) under the Department of Forestry is mandated to collect, test, certify and sell high-quality seed. Seed sales represent an additional revenue stream with significant potential. However, the Department currently operates on a business as usual in this regard. The revenue analysis over

the past five years shows that seed sales have not generated substantial income, as compared to revenues from log sales and royalties. Investing in establishing and managing seed stands holds significant potential for enhancing revenue generation from seed sales for the Department.

Sale of poles

The Department of Forestry established eucalyptus plantations to meet the demand for fuelwood and construction poles. The sale of the poles also generates revenue for the Department. However, there has been a rise in cases of pole theft within various plantations managed by the Department. Increased incidents of pole theft by communities surrounding government plantations significantly impinge on the amount of revenue generated from this source.

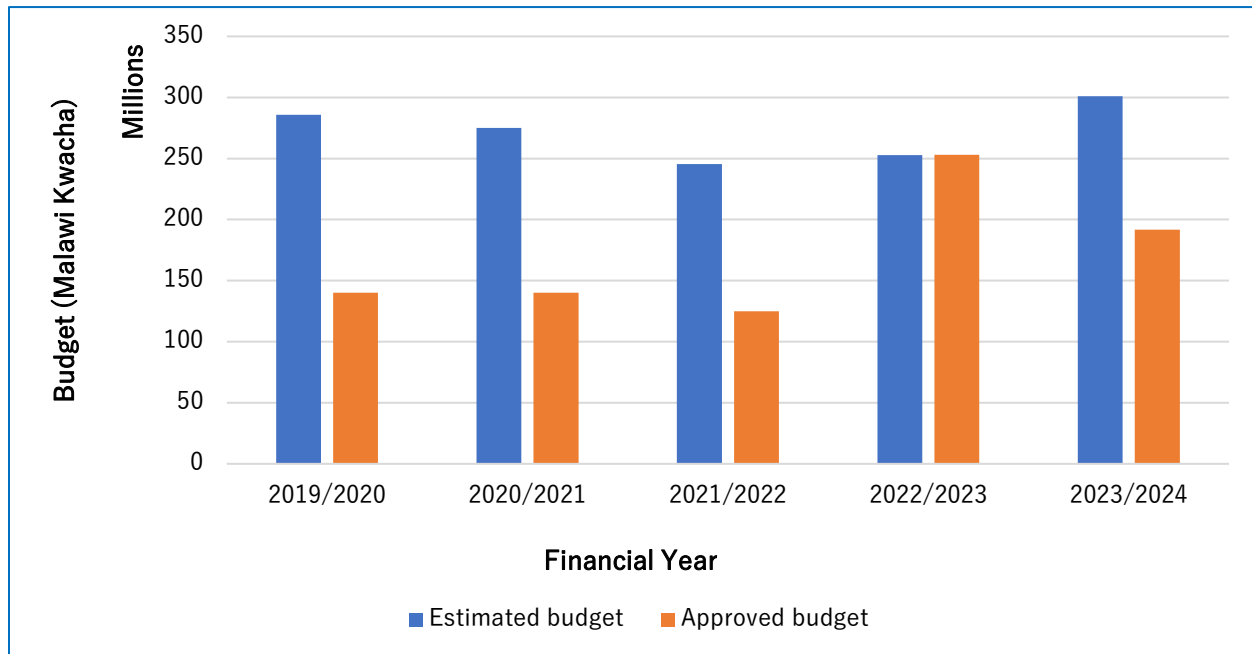
6. Challenges facing plantation forestry in Malawi

The challenges affecting the sector, based on the key informant interviews, include lack of adequate resources to develop the plantations; forest fires; weak law enforcement and governance and lack of monitoring framework; unregulated or informal markets for forest plantation products; corruption; unfavourable taxation policies; delays in the approval of forest management plans; limited access to financial resources and credit; inadequate availability of quality seeds due to limited research and development; poor relationship with communities surrounding forest plantations; lack of robust forest information and data management system; and insufficient forest infrastructure.

6.1 Lack of adequate resources to develop the plantations

Our study has found that the Department of Forestry faces constraints in terms of limited human resources, including forest guards and patrolmen. Furthermore, there

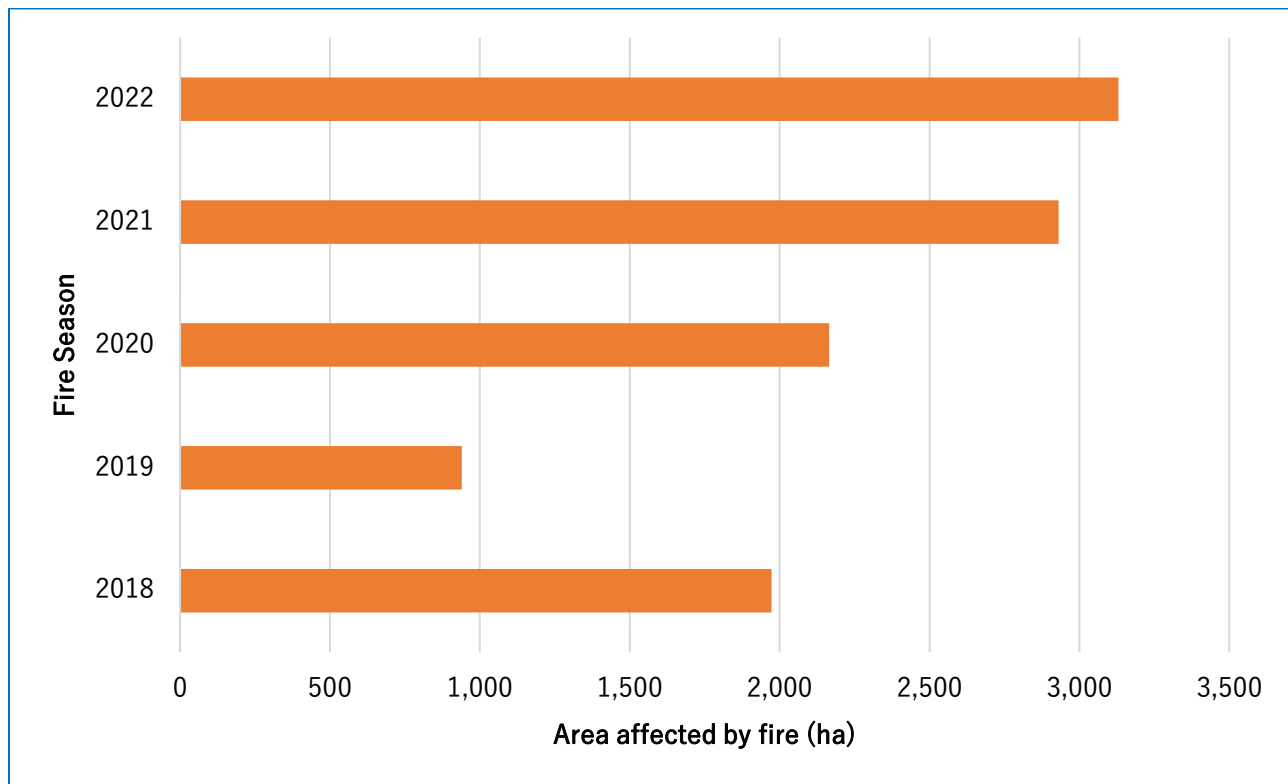
is a deficiency in necessary financial resources and appropriate equipment, such as firefighting equipment, guns, and ammunition, as well as a lack of technological capacities. These limitations hamper the enforcement of regulations and hinder the development and sustainable management of forest plantations in Malawi. There is a persistent mismatch between the planned yearly budget against the approved budgets for government-managed forest plantations. For instance, over the past five years, Viphya Plantation has received, on average, just half (of its requested (planned) budgets (Figure 5). This limited budgetary support has affected the sustenance of operations to develop the plantation, such as firefighting efforts, patrols and reforestation initiatives. Most forest plantations in Malawi, including the Viphya plantation, are funded by the Forest Development Management Fund (FDMF). The FDMF was established to support the conservation, augmentation and management of forest resources and forest lands in Malawi, independent from limited traditional budgetary allocation (ORT). The limited allocation of national budgetary resources to the forestry sector could be attributed to marginalized or low prioritization in the government policy arena and budgeting process. The forest's contribution to the GDP is underestimated, currently estimated at 0.1% (Government of Malawi, 2021).

Figure 5: Viphya Plantations FDMF Budget Estimated Vs Budget Approved

Source: Viphya Plantations Offices

6.2 Forest Fires

Increased forest fires remain one of the significant challenges affecting the development and pose a major risk to investments in plantation forestry in Malawi. These fires alter the forest landscapes, presenting a significant threat to biodiversity and the potential for forest recovery. Moreover, it contributes to forest degradation and deforestation, human injuries and deaths, and has significant economic implications for the country and the livelihoods that depend on forest ecosystems. Between 2018 and 2022, Malawi lost more than 11,000 ha of plantation of forests driven by a combination of climatic factors, policy and social behaviour (Figure 6). Forest fires in Malawi are caused by arson, carelessness (e.g., accidental human activities or negligence), mice diggers, land encroachers, hunting, honey collection, and poor agricultural practices (e.g., open burning for land preparing for cropping).

Figure 6: Forest plantation area affected by fire from 2018 to 2022

Source: Annual Economic Reports from 2018 to 2022

6.3 Weak law enforcement and governance and lack of monitoring framework

Institutions and small-scale concessionaires interviewed in this study cited weak enforcement of forest laws and regulations as well as lack of monitoring framework for the Department of Forestry (DoF) as one of the challenges affecting their concession areas, leading to illegal logging, encroachment and firewood theft resulting in government revenue losses and this portrays a vicious cycle of weak governance by the DoF. The government of Malawi (GoM), through the DoF, has developed solid regulatory frameworks, for instance, the 2019 Forest Act Amendment Bill to curb illegal activities in the forestry sector; however, the Department does not have sufficient financial resources and human capacities to administer and implement the existing laws and regulations effectively. The inability of the DoF to implement policy or to enforce the laws related to forest crimes contributes significantly to the

confusion seen in efforts to develop the forest sector in Malawi. According to a World Bank report, forest crimes resulting from the failure of the rule of law in developing countries such as Malawi go beyond asset and economic losses, primarily from uncollected taxes, royalties and other fees on legally sanctioned timber harvests. Currently, the DoF and other stakeholders conduct forest patrols to improve forest law enforcement and governance in the country. In some cases, GoM has taken drastic measures, such as deploying the Malawi Defense Force (MDF) to protect the forests from illegal activities; however, the initiative could be more sustainable.

6.4 Unregulated or informal markets for forest plantation products

For the forestry sector (plantation forestry) to have an impact on economic growth and social development, there is a need to have regulated markets for the products and produce from the forest plantations. Forest products from illegal sources and licensed concessionaires negatively impact forest management. For instance, timber from unsustainable and unregulated sources is supplied at domestic markets and, in some cases, at international markets at lower prices at the expense of legal companies (industrial timber companies) that pay taxes such as excise tax, concession fees, input taxes (illegal timber in Malawi is considerably cheaper than legally harvested timber). The forest policy and laws must be clear in regard to structured markets for products legally harvested from the plantations. Further, no mechanisms are designed to suppress illegal logging and illicit timber trade. Countries like Ethiopia are also experiencing the same challenges. For instance, the market structure in the forestry sector in Ethiopia is unregulated, such that processed product markets are unregulated and the free market gives rise to many different prices based on wood quality, species and rarity (Bekele, 2001).

6.5 Corruption

The study has established that corruption⁷ linked to the soaring illegal logging, lack of transparency and accountability in the monitoring and awarding of forest concession agreements, and unsustainable harvest are some of the bottlenecks affecting the development, growth and sustainable management of forest plantations in Malawi. In the forest sector, corruption includes falsification of documents, fraudulent interactions, e.g., diversion of funds, bribes and political influence, timber laundering, and judicial corruption. Some concessionaires alleged that some large companies have additional concession areas not included in their management agreement (the concession area is more than what they were allocated). They claim that they got the additional concession area through dubious ways. Further, expert and stakeholder consultation claimed that it is hard to fight corruption in Malawi because some political/economic elites are part of the complex network of corruption. A summary of the forms of corruption is presented in Table 7. If not addressed in Malawi, corruption may accelerate forest degradation and deforestation, threaten the livelihoods of the communities that depend on them, and deprive the government of essential revenues (the government is robbed of billions of dollars annually).

Corruption in the forest sector prevailing in many developing countries, including Malawi and Zambia, is driven by red tape, low salaries of public officials, weak governance and monitoring frameworks due to a lack of institutional capacity to monitor and enforce existing legal and policy frameworks, lack of transparency and accountability and low or non-existent civil society inclusion and participation (Kleinschmit et al., 2016; Rahman, 2020). Transparency International (TI) says corruption in Africa is high in countries with vast natural resources. The TI has also identified seven corruption risk areas in the forest sector: regulatory, licensing, timber supply, revenue, enforcement and reporting (Transparency International, 2010).

⁷ Corruption is the abuse of entrusted power for private gain

Table 5: Forms of corruption in plantation forestry

<i>Corruption related to</i>	<i>Who</i>	<i>Potential impacts</i>
Illegal and unsustainable logging	Patrolmen, Forest Guards, Plantation Managers	Deforestation, land erosion, damage to vulnerable and protected forests
Monitoring of the logging	Tallymen, DoF Surveyors, Patrolmen, Forest Guards, Plantation Managers	Informal logging/poor knowledge about actual timber production, environmental damage
Environmental control	Land Authorities, Town planners	Loose controls for the protection of non-timber values, environmental damage
Timber trade/timber theft	Roadblock managers (MPS& FGs), Law enforcement officers from Forestry,	Reduced government revenues, illegal sale of protected species, higher prices
Regulatory systems	Courts, MPS, DFO, Politicians, Patrolmen, Forest Guards, Plantation Managers	Misleading forest management plan, unsustainable logging /deforestation
Royalties	Law Enforcement officers, Patrolmen, Forest Guards, Plantation Managers	Lower government revenues
Logging licenses	Licensing Officers, Patrolmen, Forest Guards, Plantation Managers	Uncontrolled/unsustainable logging
Concession terms	Licensing Officers, Patrolmen, Forest Guards, Plantation Managers	The exploitation of forests, too large concession areas, less revenues

Source: Adopted and modified from Milledge et al. (2007)

6.6 Unfavourable taxation policies

The fiscal policy instruments (e.g., taxes) developed by the government either undermine the sustainability of forest plantations or incentivize private-sector investments in forest management. According to Estevão & Kemper (2021), fiscal

policies with the right incentives⁸ help combat deforestation and forest degradation and promote sustainable forest management (SFM). Examples of fiscal mechanisms that have proven impacts on incentives for SFM are country-specific, depending on the circumstances (Table 8). It is well-known that in plantation forestry, unlike agriculture, the gestation period between initial investment (planting) and reaping any economic rewards (maturity) is very long, and concessionaires must wait 15 to 30 years. This can be a significant constraint to forest plantation investments and greatly adds to the uncertainty and risk of this investment. The investors need sufficient fiscal incentives to afford the waiting.

In Malawi, the value-added tax (VAT) at 16.5% is charged on most forestry machinery, equipment and tools, including fire trucks, tree-growing inputs, and personal protective equipment, which you cannot recover as you do not output VAT. This basically increases the cost of afforestation and reforestation by 16.5%. Further, legal and sustainable charcoal has VAT charged, making it 16.5% more. The output product (firewood) is VAT-exempt for a new afforestation project to supply firewood. Even when you start selling your product (firewood), you cannot recover all input VAT. There is an absence of tax rebates for the environmental services provided by afforestation.

⁸ Enters et al. (2017) define incentives as policy instruments that increase the comparative advantage of sustainable forest management (SFM) and forest plantations and thus stimulate investments in SFM and plantation establishment and management

Table 6: Fiscal mechanism and their relative impact on SFM incentives

<i>Fiscal Mechanism</i>	<i>Description</i>	<i>Effect on SFM incentives</i>	<i>Other features</i>
<i>Excise tax</i>	Tax on timber and other forest-derived products Can be unit-, profit-, or resource rent-based	Mixed impact – Without additional measures can increase incentives for illegal or informal logging, selective harvesting, and land use change	Revenue-increasing High administrative costs (information, enforcement)
<i>Area fee</i>	Fee-based on harvested area	Mixed impact – Without additional measures can encourage more intensive harvesting	Low administrative costs
<i>Export tariff</i>	Tax on exported timber and other forest products, levied by customs authority	Mixed impact – Without additional measures can generate distortions in consumption and marketing of forest products or encourage inefficiency and waste in domestic industry	Revenue-increasing Low administrative
<i>Input tax</i>	Charges on capital equipment, labor, or other inputs	Mixed impact – Can be mechanism to help control illegal logging	Revenue-increasing
<i>Subsidy or tax expenditure</i>	Fiscal incentives and tax discounts	Strong impact on incentives for SFM and land use change, if well targeted	Revenue-decreasing High administrative cost
<i>Combination of taxation and subsidy/rebate (feebate)</i>	Taxation and rebate combination based on firm adoption of SFM or another environmental indicator	Strong impact on incentives for SFM, if well-targeted	Potentially revenue neutral Medium administrative cost, if used in combination with information instruments
<i>Ecological fiscal transfer</i>	Portion of central	Strong impact on public incentives for SFM and forest	Revenue neutral Low administrative cost

government fiscal conservation
 transfers
 allocated based on
 environmental
 indicators

Source: Adapted and expanded from Gray (2002)

6.7 Delays in the approval of forest management plans

Small-scale concessionaires lamented that delays in approving the forest management plans by the government authorities (Department of Forestry) had affected the implementation of their plans. For instance, some concessionaires signed their forest management agreements (FMAs) in 2020, but their plans still await approval. According to Clause 3 (condition of precedence) of the concession agreement, the management plans of the concessionaire are to be approved within six (6) calendar months from the date of agreement signing. Upon plan approval, small-scale concessionaires gain access to the land and possess the authority to arrange safety and security measures after the commencement date. Some concessionaires cannot implement some of the promised initiatives they indicated in their plans, such as promoting the Taungya system due to delay in the approval of their management plans. As a result, they are spending much money on patrols, and most trees are being lost to theft by the surrounding communities.

6.8 Lack of access to financial resources and credit

Adequate financing and access to credit are vital components of sustainable plantation management and primary conditions for long-term forest plantation investment. Considering plantation forestry is perceived to be risky in nature due to the long gestation period and lack of immediate benefits, most small-scale concessionaires in Malawi are currently facing cashflow challenges. The development, establishment, and management of forest plantations require substantial capital investments, thereby requiring investors to sacrifice. Moreover,

concessionaires' access to credit and microfinance depends on the interest rates, rates of return, collateral requirements, repayment and grace periods. Most small-scale concessionaires need help to meet the requirements set by microfinance and other formal lending institutions, limiting their access to capital from formal financial institutions. The lack of access to credit and finance is one of the drawbacks that cause small-scale investors to shy away from forest plantation investment despite the advantages of forestry plantations. Nine banks and other financial institutions were interviewed in 2014. The results showed that the banks do not consider financing forest plantations because of the mismatch between the long gestation period of forestry investments and the very short loan maturity period (Tuukka et al., 2014).

6.9 Lack of quality seeds due to limited research and development

The concessionaires interviewed stressed that lack of quality seed (especially pine) coupled with limited research investment in breeding research is one of the significant constraints to developing plantation forestry in the country. Quality seeds are critical in sustaining and achieving high-yielding and economic value forest plantations. The seeds for the current standing trees were imported from countries from Zimbabwe by Total Land Care (TLC), and there have yet to be local efforts in tree breeding programs. Almost all concessionaires, including the government, buy quality seeds and seedlings from TLC, although they sometimes get them for free. Forest Research Institute of Malawi (FRIM), a center mandated to conduct forestry research in Malawi, has no pine seed stands or seed orchards in Viphyia plantations.

6.10 Poor relationship with communities surrounding forest plantations

Community participation in plantation forestry is a critical factor for effective governance and ensuring sustainable management, protection and conservation of forest resources, thereby curbing forest degradation, deforestation and illegal activities such as encroachment, illegal logging and firewood theft (Agrawal et al.,

2008; Kamoto et al., 2023; Kusumanto & Sirait, 2000; Mazunda & Shively, 2015). The present study has established a poor relationship between concessionaires and communities surrounding the forest plantations. The poor relationship between communities and owners of concession areas is accelerating cases of thefts of plantation products. In most cases, if one community member is caught stealing plantation products, the community mobilizes for revenge by fighting back or uprooting seedlings from the plantations. Further, some forest fires are perpetuated by the surrounding communities who feel they are not benefitting from the forest plantation products.

Additionally, there is encroachment of forest plantation land by communities who claim the land is customary. Studies elsewhere have also shown that communities surrounding forest resources have found their ways of deriving direct benefits from the forest plantations through encroachment, illegal sawing and firewood and log theft due to a lack of incentives and motivation to participate in plantation forestry (Akamani et al., 2015; Derkyi et al., 2021). To enhance community participation, Malawi has formulated policies and strategies geared toward improving community participation in forest management. For instance, enacting the Malawi Forestry Act of 2017 incorporated participatory forestry, and one of the ten priority areas of the 2020 National Forestry Policy is community-based forest management.

6.11 Lack of robust forest information and data management system

A robust, modern forest information and data management system is essential for forest management and strategic planning, risk management, assets valuation, reporting and controlling and efficient forest resource management (Robinson & Hamann, 2011). This study has observed that the Department needs a proper and reliable data and information management system, especially a centralized information and data management portal system for forest activities. Data resides in

personal computers or individual repositories. The availability and access to this information are central to achieving transparency and accountability in the Department and further encourage the government and other stakeholders to make informed and effective strategic decisions regarding sustainable forest plantation management in the country. Other countries have developed forest data banks that enable them to store data and information on various aspects such as forest boundaries, species planted, age class of various species, areas affected by fire, and revenue collected from various stations, all in a centralized database (Jayaraman & Krishnankutty, 1990; Klimach & Pietkiewicz, 2022).

6.12 Lack of proper forest infrastructure

The concessionaires interviewed complained that the plantation forestry sector needs more proper infrastructure such as road networks, bridges, power supply, staff houses and offices. The existing bridge and road networks in the plantations could be better and more impassable/inaccessible, especially during the rainy season, and some of the staff houses are inhabitable due to a lack of maintenance. The absence and lack of poor road infrastructure is an obstacle to forest operations, including fire management, logging operations, transportation of forest products and law enforcement activities. Limited infrastructure also promotes illegal activities, increases forest operational costs and reduces the competitiveness of plantation forestry. Forest roads are the base infrastructure foundation of forestry operations. Therefore, constructing and maintaining forest roads are essential for sustainable management, protection and utilization of forest plantation resources. Additionally, good forest infrastructure can facilitate forest trade flows, guaranteeing domestic and international forest trade success.

7. Conclusion and policy recommendations

7.1 Conclusion

The rapid demand for wood products has put pressure on the forest reserves in Malawi. As such, Malawi established plantation forests to meet the increasing demand for timber, poles, and biomass and to restore environmental services while reducing pressure on the forest reserves. Forest plantations are crucial in meeting Malawi's socio-economic, biodiversity, environmental and climate needs. However, the development and growth of the plantation forestry sector are still lagging due to; a lack of adequate resources to develop the plantations; forest fires; weak law enforcement and governance and lack of monitoring framework; corruption; lack of quality seeds due to limited research and development among others. The study has also clearly demonstrated that the plantation fees and prices are low compared to other countries within the SSA region, which requires urgent revision of the 2010 Gazetted Forestry Fees and Royalties. Low rate of collection of fees, low forest fees and prices that undervalue forests provide little incentive for sustainable management and efficient utilization of forest resources in the country.

7.2 Policy recommendations

In order to address the challenges the plantation forests are facing and develop the sub-sector, the study calls for the following:

Revise forest plantation fees and prices

Forest pricing is an important conservation tool, supporting and enforcing the policy objectives of sustainable management of forest plantations. The study has established that our forest plantation fees and prices on forest produce are 5 to 10 times lower than those within the SSA region. The current plantation fees and prices

need to be updated, set a decade ago and fixed in legislation that is not easily changed. There is a need to revise them to reflect the current economic value. The revision of the fees should consider the cost of production affected by the past currency devaluations, thereby significantly reducing the Kwacha purchasing power, affecting forest plantation operations and management. In addition, there is also a need to consider other biophysical properties and proximity to basic infrastructure such as electricity, roads and urban centers when revising the fees. If the DoF decides to revise the plantation fees and prices, they need to determine how they will handle the issue of other companies or concessionaires that have already paid for the logs they will harvest for the next ten years at the current price of US\$10/m³. Since the forest plantation fees and prices are fixed in legislation that cannot be easily changed, there is a need for the DoF to include the automatic inflation adjustment procedure in the amended fees. Thus, there is a need for the review of the legislation to allow the responsible minister to gazette new prices to reflect costs and other contexts. Gray (2002) suggested that adjustment of forest fees should be based on the following parameters: consumer price indices, GDP price deflators, a survey of forest products, international forestry product commodity prices and wholesale or industrial price indices. The DoF should also categorize the concessions into small-scale, medium and large-scale and learn from Zambia, where the maximum contract for the concession is five years.

Provide adequate support to forest plantations

The government should provide adequate funding to the forest plantations for effective and sustained forest plantation management. These include improved welfare of workers and adequate equipment.

Create a conducive policy and regulatory environment to increase private-sector financing in Plantation forestry

The government needs to put the right policy and regulatory framework in place and strengthen the financial enabling conditions (innovative incentives) to accelerate private sector engagement and financing into SFM significantly. Thus, fiscal instruments must be redesigned to incentivize private sector investments for sustainable plantation forest management in Malawi.

For instance, there is a need;

- for reforms that will focus on lowering reforestation costs through the removal of VAT. Introduce tax rebates for afforestation/reforestation projects that provide proven environmental services
- for tax breaks (for a plantation being established) and other fiscal policies supporting environmental services.
- to formalize the timber markets so that traders have licenses/permits to undertake the trade to ensure they only obtain legal and legit timber products. The NCIC/MHC/City assembly to monitor the construction process to ensure they are from legit sources (not stolen, obtained illegally) and enforce payment of fines/penalties for non-compliance

Strengthen collaborations/relations between the government, concessionaires and communities

Local community engagement is a prerequisite to successful management of forest plantations. Community engagement and participation in forest plantation management by involving local communities adjacent to forest plantations can improve the relationship between concessionaires and communities endangering SFM. There is a need to strengthen institutional linkages with adjacent communities by adopting participatory approaches such as decentralized forest management, participatory forest management (PFM), joint forest management (co-management) and community-based forest management (CBFM). These participatory approaches

allow communities living in or around forest plantations to access, participate and benefit from the forest plantations.

Develop and implement forest investment plans

The DoF cannot entirely address some significant challenges affecting the development and growth of forest plantations in Malawi. Currently, the Department does not have a Forest Investment Plan (FIP) that can act as a framework for domestic and international investments to reduce pressure on forests, enhance carbon stock and forest ecosystem services, and improve coordination and governance in the forest sector. Mozambique, the Democratic Republic of Congo, Uganda, Zambia and Rwanda have already developed their FIP to guide the implementation of the national REDD+ Strategies across their countries.

Develop a national integrated forest fire management strategy

Forest fires are one of the main threats to *forest plantations*, causing economic and environmental losses. The DoF needs appropriate national policies, strategies, and management capacities to address forest fires in the country. The Department needs an integrated forest fire management strategy. It plans to address forest fire issues related to monitoring, reporting systems, prediction or early detection (early warning), preparedness, prevention, suppression and restoration. Malawi must also develop an information system to improve forest fire management, information management and technology. Where appropriate, strategies focusing on adjacent local communities should be promoted. The concessionaires, through corporate social responsibility, can support social infrastructure development, e.g., schools, hospitals, water and provisioning of jobs to the adjacent communities. The DoF should also strengthen fire education and awareness campaigns on fire prevention and management, targeting different stakeholders across the forest plantation value chain.

Improve the revenue collection system by developing an integrated revenue collection system

The Department of Forestry needs a transparent, comprehensive, centralized or unified forestry revenue system to administer real-time charges and collect revenue. The Department still uses traditional paper-based technology (manual receipts), providing room for corruption, fraud, extortion, underpayment, revenue leakages and fund embezzlement, thereby leading to significant losses in forest revenue. Promoting a modernized or automated forest revenue collection system will enhance the revenue system's efficiency and effectiveness, thereby optimizing the revenue base. In order to achieve this, the Department needs to invest in modern technologies such as ICT. An integrated forest revenue collection system can boost the transparency and accountability of the forestry sector. It is also a significant step towards building and improving the public/taxpayer's confidence and trust in the DoF.

Develop a forestry information management repository

Policymakers require accurate and credible data to make informed decisions. The availability of this data and access to this information are central to achieving transparency. The 2020 Forest Amended Bill would like to increase transparency and accountability by developing information systems that provide the public and other interested parties easy access to forestry-related information and data. However, the DOF needs a centralized database or portal for forest activities.

Improve research in plantation forestry

Emerging issues in the forest sector have risen, including climate change, pests and diseases, which require investment in forest research and development (R & D) to address these challenges and advance sustainable approaches to forestry plantation management. Research in the forest sector should be regarded as one of

the high-priority areas by DoF as it strives to develop plantation forestry in Malawi. Concessionaires complained that R&D in the entire forest sector is currently in a poor and declining state. FRIM no longer produces quality seeds since they collect seeds from TLC stands. There is a need for FRIM to breed new *Pinus* and *Eucalyptus* species as well as establish new seed stands for various species. The Department needs to revamp FRIM by increasing funding and deploying skilled personnel to the research institute. The success of forest plantations in the SSA region (e.g., South Africa, Côte d'Ivoire, Democratic Republic of Congo) is linked to the intensity of research, especially in the development and use of high-yielding and disease-resistant seeds and germplasm or clones and technologies (Chamshama & Nwonwu, 2004).

Further, the Department needs to develop a national forest sector research and development strategy that will guide the implementation of forestry research in Malawi. South Africa has developed its forest sector research and development strategy. In contrast, Tanzania has developed a National Forestry Research Master Plan (2020 - 2030) that outlines the forest research priority areas for the country.

Strengthen management and governance of forest plantations

The existence of corruption and other illegal activities (e.g., illegal logging and trade) in the forest plantations clearly expresses poor governance in the forest sector. Improving forest governance (e.g., law enforcement) is critical in addressing some challenges affecting plantation forestry in Malawi. The absence of robust governance frameworks, monitoring systems, and enforcement mechanisms undermines the sustainable management of forest plantations. It facilitates illegal activities such as pervasive corruption, encroachment, illegal logging, and unauthorized harvesting. There is a need to establish robust monitoring and enforcement mechanisms to ensure compliance with regulations and sustainable forest management practices.

Facilitate small-scale concessionaires to finances and credit

Lack or inadequate access to financial services by small-scale concessionaires is one of the bottlenecks affecting the development of forest plantations in Malawi. Value investors such as banks, credit companies and financial institutions are interested in generating financial returns from their investments over the short and medium term. They often do not finance forest investments due to the long gestation period, and forest investments are also perceived as high investment risk. Informal sources of credit usually need to be more consistent and have unfavorable terms and conditions for small-scale entrepreneurs. Hence, there is a need to facilitate access to formal finance for plantation forestry initiatives, especially for small-scale concessionaires. Government and the private sector need to establish financing mechanisms, such as loans, grants, or investment incentives, to support the establishment and management of forest plantations. To get the attention of lending institutions, small-scale concessionaires should provide evidence of how their businesses will create tangible financial returns.

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Appendices

Table A1: Forest plantation area under concession and under government

SI	Name of plantation	Area under concession	Area under government	Total	% area under concession
1	Viphya	38,794.0	14,206.0	53,000.0	73.2
2	Kaombe	400.0	604.3	1,004.3	39.8
3	Ntchisi	-	28.2	28.2	0.0
4	Dzalanyama	131.0	1,655.7	1,786.7	7.3
5	Katete	1,200.0	2,012.0	3,212.0	37.4
6	Chongoni	-	3,958.3	3,958.3	0.0
7	Dedza Mountain	-	1,883.4	1,883.4	0.0
8	Dzonzi-Mvai	-	3,164.3	3,164.3	0.0
9	Ngala	520.0	630.1	1,150.1	45.2
10	Dowa Hills	-	462.7	462.7	0.0
11	Nauko	-	3,000.7	3,000.7	0.0
12	Zomba Mountain	2,234.8	2,850.0	5,084.8	44.0
15	Chambe	-	579.2	579.2	0.0
16	Michiru	-	4,236.8	4,236.8	0.0
17	Chigumula	536.3	111.4	3,431.0	15.6
18	Likhubula	-	575.0	575.0	0.0
19	Eastern Outer Slopes	-	1,931.0	1,931.0	0.0
20	Fort Lister	-	3,430.8	3,430.8	0.0
21	Thuchira	500.0	1,500.8	2,000.8	25.0
22	Nanchidwa	-	2,800.0	2,800.0	0.0
23	Amalika	400.0	117.0	517.0	77.4
24	Ndirande	-	750.0	750.0	0.0
25	Milare	-	85.0	85.0	0.0
Total		44,716.1	50,572.8	98,072.2	45.6

Table A2: List of Institutions consulted

Name	Institution	Position
Dennis Salim Aibu	Pyxus	Harvesting Forester
Petro Kasanga	Pyxus	Forestry Assistant
Dalitso Kafumbala	Pyxus	Area Forest Supervisor
Jimmy Jamali	Pyxus	Research and Planning
Buliyani Imedi	Pyxus	Harvesting Controller
Shingirirai Ngoro	Pyxus	Forestry Manager
Mr. P. Mwale	TLC	Manager
Custom Nyirenda	Viphya Plantation	Plantation Manager
Maureen Munthali	Viphya Plantation	
Mr. Kumbukani	Viphya Plantation	
Peter Vili	Viphya Plantation	
Saulesi Manda	Viphya Plantation	
Mr. Mhone	Viphya Plantation	
Arthur Chipeta	RTMU	Secretary General
Grace Chipeta	RTMU	Treasurer
Mavuto Mangani	RTMU	Vice President
Luke Makuluni	Kawandama Hills Plantation	Forestry Coordinator
Nyadani Goodwell	SIANCE Company	Manager
Willy	Chisanga H. General Dealers	Manager
Loyd Mpeni	Chibvunde Timber Millers Cooperative	Chairperson
Mw Mpoya	Chibvunde Timber Millers Cooperative	Member
Feston Kabula	Mulunguzi Cooperative	Treasurer
Brigadier Njala	Mulunguzi Cooperative	Chairperson
Mr Mbepula	Mulunguzi Cooperative	Vice Chairperson
Mr. Teddie Kamoto	Department of Forestry	Deputy Director

Table A3: Checklist for government plantation offices, cooperatives and concessionaires

Date of Interview: _____

Plantation Entity: _____

Year of establishment: _____

Species planted and hectareage: _____

Purpose of plantation establishment: _____

Plantation Establishment Costs:

1. What are the current establishment costs for your plantation?

Activity	Cost per unit (MK) - Pine	Cost per unit (MK) - <i>Eucs</i>
Seed purchase		
Purchase of seedling tubes		
Fertilizer purchase		
<i>Nursery establishment and tendering</i>		
Soil transportation		
Pot filling		
Seed sowing		
Tendering – watering, pot weeding, root pruning		
Fertilizer application		

Plantation Management Costs:

2. (a) What are the current management costs for your plantation?

Activity	Cost per unit (MK) - Pine	Cost per unit (MK) - <i>Eucs</i>
Site preparation		
Marking		
Pitting and filling		
Spot cultivation		
Slashing		
Line screefing/cultivation		

Thinning		
Pruning		
Controlled burning		
Firebreak construction		
Road construction and maintenance		
Patrols		

(b) Others (e.g., equipment capital, etc), specify and cost:

3. Any critical challenges faced in plantation establishment and management whose costs are undervalued or overlooked (e.g. fire prevention and management, pesticide application, etc)?
4. What would be the estimated costs for each item in Question 3 at current market value?
5. What are the revenue sources for plantation establishment and/or management for your plantation/concession area (funding; timber sales; loan; wood sales – thinning, pruning, wood extraction after timber harvest, etc)?
6. What revenue is generated/provided annually by each source in Question 5?
7. How sustaining are the revenue sources for effectively seeing plantation growth to maturity? *Costs vs Revenue.*
8. Any potential revenue streams for the plantation?
9. Any other challenges faced during plantation establishment and management?
10. Any suggestions on how best plantation forestry can be developed in Malawi, mainly concerning reinvestment in the industry?

Table A4: Checklist for policymakers

1. What fees are currently in use at your station/plantations?
2. When were these plantation fees last revised?
3. During the last revision of the plantation fees, what factors were considered?
4. Are the factors in (3) above still relevant now or there is need for rethink? Please explain.
5. Were conservation fees considered during the last revision?
6. If no to (5), what other factors must have been considered, but were not considered then, and why?
7. Do you think ignoring these factors resulted in undervaluation/overcharging of the current forest fees?
8. Do current government forest plantation fees reflect the current market price? If not, how do they compare with the market fees.
9. In your opinion, what would roughly be the appropriate fees for each of the following in order to reflect the current market prices for forest products
10. What factors did you consider when deciding the "appropriate" fees for each category above (9)?
11. If the appropriate fees are adopted, will they be accepted? If not, what challenges would affect implementation of the new forest fees? (Please list as many challenges as possible)
12. For each of the challenges, please suggest the best way to address them
13. How can plantation forestry be developed in Malawi?