



# PARTICIPATORY PLANTATION FORESTRY PROGRAMME

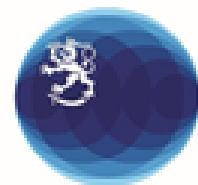
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## MAKETE FOREST-RESOURCE MARKET SYSTEMS ASSESSMENT

February 2021



United Republic of Tanzania  
**MINISTRY OF NATURAL RESOURCES  
AND TOURISM**  
Forestry and Beekeeping Division



Embassy of Finland  
Dar es Salaam



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## ABBREVIATIONS

ATWG	Angaza Timber Trader Group
CSO	Civil Society Organization
EUR	Euro
NSSF	National Social Security
MNRT	Ministry of Natural Resources and Tourism
MaIS	Market Information System
MTTCS	Makambako Timber Traders Cooperative Society
NGO	Non-governmental organization
PFP	Private Forestry Programme
SME	Small and medium enterprises
STGs	Small Tree Growers
TGA	Tree growers' association
TZS	Tanzanian shilling
UWAMBANJO	Umoja wa Wafanya biasharawa Mbao Njombe

## EXECUTIVE SUMMARY

This report focuses on the findings, conclusions and recommendations of a study of forestry resources in Makete and their markets as well as their points of aggregation along the value chains. It encompasses the processes involved in the production, processing, transportation and marketing of forest produce in various nodes; in other words, it covers all steps until the forest products of Makete reach their final consumers. The study also explores the roles of support functions and service providers to answer the question of why forest markets fail to work well for the poor. Its intention was to lay down a foundation for the Participatory Plantation Forestry Programme (PFP 2) to understand the root causes of poverty among small tree growers (STGs) and small and medium enterprises (SMEs), which are the primary actors and the main investors in forestry resources.

The study was undertaken in Makete District, and included Njombe Town Council (TC), Makambako TC and Wanging'ombe District in Njombe Region; Rungwe and Mbeya districts of Mbeya Region; Tunduma District of Songwe Region and the Zambian border to Tanzania. The study's methodologies included interviews, focus group discussions (FGDs), measurements of trees, observations and literature reviews. In order to be consistent and to ensure self-validation/triangulation of the reported data, we added a referral method in which we interviewed the trading partners whom early respondents referred to without revealing how we had gotten their names. Altogether there were 214 respondents, 139 in Makete and the remaining 75 along the value chains. These include STGs, SMEs, traders and their organisations, government officials, civil society organisations, community radios, buyers, processors and their organisations, transporters and consumers. In terms of scale of operations and nature of work, the respondents differed: there were individuals, small and large organizations representatives – whose degree of sophistication and levels of understanding of the sector also varied. The preliminary findings of this study have been presented to 344 forestry value chains actors across the country through three stakeholders workshops, in Makete, Njombe and Mafinga organized by PFP 2 to gain deeper insights and receive feedback.

The findings reveal that the sales by volume of the main forest products from Makete are sawn timber (89%), charcoal (8%), and pine resin, furniture, decorations and others (3%). Except for charcoal, which is produced from wattle trees, 96% of the products are produced from pine tree species; eucalyptus and cypress contribute about 4%. Tree growing is part of the culture in Makete; in fact, the majority of households own a plot of land on which trees are grown. Wattle trees are grown in small pockets within household compounds while pine regenerates naturally both within household compounds and at a distance, and trees comprise the main income generating activity. On average, respondents owned 3-5 acres of tree woodlots, and the majority (64%) were old people aged 55 years or above.

Most of the tree growers and SMEs in rural areas of Makete were running at a loss, but most were unable to determine that fact. They had a limited business mindset as they did not have a basic knowledge of either bookkeeping or cash flow and mixed personal and business incomes together. In addition, they failed to account for many steep costs involved in the production and processing processes. Furthermore, they were not organised, so it was difficult for them to access information related to markets, inputs, and finances and to collectively bargain. They also lacked exposure to the importance of using good-quality planting materials and best forest management practices to increase yields. As the forest products moved from remote villages to small towns and even further, closer to consumers in larger towns, traders started making profits as these had a form of organisation, could access market information or credit, had better costing methods and were good at managing risks. Some of these traders in the later stages of the value chain serviced large tenders from government and corporations, while others fixed market prices, thereby preventing small traders in remote areas from benefitting.

Despite the fact that forest products are the main source of revenue for Makete District Council, the local government reinvests very little back to forestry. During the fiscal year 2019/20, revenue from produce CESS in forestry produce were TZS 806 million, but the budget for fiscal year 2020/21 was TZS 16 million or 2%. This is contrary to the requirements of the Local Government Financial Act (1982) and other government directives. Many stakeholders have long argued that at least 20% of the revenue collected should be ploughed back. In the 2018/19,

government guidelines for preparation of budgets directed local government authorities (LGAs) to reinvest 40 to 60% of LGAs' revenue collection into major revenue generating sources to improve and sustain those sources. It was found that 10 prospective LGAs under the jurisdiction of PFP 2, including Makete, depend on forestry produce, and on average they collect over 60% of the revenues but currently only about 1-2% of the collection from forestry were being reinvested. Lack of input subsidy, extension services and poor processing technologies highly affects tree growth, recovery rates and incomes.

Government-supporting agencies such as the Tanzania Rural Roads Agency (TARURA), which is mandated to support infrastructure development in rural areas, were found lacking financing and there was limited coordination of or matching in priorities between local governments and TARURA, a fact which prevented the majority of tree growers in remote areas from connecting to the market, especially during the rainy season. This lack of support demotivated tree growers, who no longer had an incentive to look after their trees as the price dropped as low as TZS 500 per standing tree in some areas.

Nevertheless, the fact that tree growing conditions are excellent in Makete, there is huge potential to transform the status quo. Improved management practices in some better managed woodlot indicate a significant potential to increase productivity, recovery rates and reduce wastes. PFP 2 interventions on proper management practices are already being perceived by stakeholders as key solutions towards addressing some market failures. Likewise, there is potential for the value chain actors and stakeholders to collaborate, to identify and access inputs, markets or meet market demands.

## **1. INTRODUCTION**

### **1.1 Background to the study**

The Participatory Plantation Forestry Programme (PFP 2) is a four-year (1 November 2019 – 31 October 2023) bilateral development cooperation programme between the governments of Tanzania and Finland. The programme intends to strengthen the initiatives of its first phase (PFP 1) which had an overall objective “to promote sustainable an inclusive private forestry that contributes to Tanzania’s economic growth and alleviates poverty”. PFP 2’s expected outcome is developing a socially sensitive, environmentally sustainable and financially profitable private forestry sector including tree growers, SMEs and their organisations and service providers in the Southern Highlands of Tanzania.

In contrast with PFP 1, which focused on actual implementation, such as tree woodlot establishment activities, PFP 2, takes a more people-centred and human rights-based approach through facilitation, communication, and inclusiveness with the aim of building greater sustainability. It builds on the success of and addresses key challenges identified by PFP 1, such as security of land tenure; technical forestry and processing expertise; access to improved seedlings, new technologies and finance; management of wildfires; support to vulnerable people; attention to gender issues; and communication and coordination with participants in the forestry sector.

During the inception phase of PFP 2, it was decided to assess forest-product market systems as part of a general needs assessment of the programme’s interventions. The intent was to establish a clear understanding of the market system in the Makete cluster and establish a programme to later roll out in the other two PFP 2 clusters. Clustering refers to allowing small-scale processors and growers to pool or share resources, focusing on manufacturing of specific components of products to benefit from the increased scale of operations offered by the collective cluster. This study was intended to enable the programme to identify the most appropriate of solutions for the causes of market failures in its implementation areas and beyond but also to minimize risks by creating a basis for making informed decisions on issues related to value chains and market-system development in forestry. Therefore, it expects to provide the basis for what can best be described as a baseline market-system scenario in the Makete cluster and will help guide project implementation and measure progress over time.

The study was designed to gather information on the types of actors in the market, looking into relations such as who trades with whom and how, as well as to identify key infrastructures and services and their linkages with market chain actors and the environment in which they operate. It looked at the types of forestry products currently being traded; how they are produced, processed and distributed into the market; how commodities move between marketplaces; and how the marketplace itself is organised to serve the needs of market actors, particularly the poor.

While analysing the availability of forest resources in markets, their production processes and how supply and demand affects the market, it is imperative to remember that no market system operates in isolation. The forest-product market system is affected by various internal and external forces and factors which, at both the macro and micro-levels, affect the size and growth potential of the market. At the micro level impactful factors identified in this study included the availability of support services, seasonal variations, competition, infrastructure, risks and opportunities. At the macro level, factors such as the economic conditions of people; government policies, laws and regulations including those concerning subsidy systems; import/export policies and exchange rates; and social and cultural issues were considered in the present study. This is because the later may have far-reaching impacts for communities at the local level and can affect the market access of vulnerable groups.

### **1.2 Scope and relevance**

Reports produced by the National Bureau of Statistics (NBS) on the contribution of the forestry sector to the country’s gross domestic product (GDP) are somewhat generalized. The newly revised Tanzania Forest Fund Strategic Plan 2021/22 – 2025/26 indicates that the sector



contributes 3.5% to GDP through the production and sale of wood products and currently employs more than 3 million people. Given the current population growth rate of 3.0%<sup>1</sup>, the forestry sectors role in contributing to the country's economic growth is huge and increasing. The demand for forest products and services is high now and, is bound to be higher in the future. Natural and large plantation forests alone cannot feed this demand. There is enormous potential to support STGs in producing good-quality forestry products which can make up for the deficit in the market. The main challenge is that STGs are not trained in forestry, business or markets and, for this reason, lack the basic skills they need to conduct tree-growing as a business activity and therefore stay poor despite their income-generating efforts.

As noted earlier, the forestry-resource market systems study was conducted at the onset of PFP 2 to develop insights into how the market system operates in programme-implementation areas. The study was limited to the scope of the forestry value chains in the Makete cluster and focused on forestry producers, small and medium enterprises (SMEs) that process forestry products, as well as traders and their organisations, retailers and buyers, producers of finished forestry products and decorations, service providers, competitors and regulatory bodies. This value chain approach was chosen to keep track of how the market for forestry produce functions as products change locations and form.

It was important to understand existing markets and how market actors function and relate to each other to enable the programme to identify key barriers to the smooth operation of the market system and root causes for its not functioning properly or supporting poor people. With this information, the programme could rank the issues identified and, having clearly understood them, develop strategies to address them. In the end it was expected that the study would identify incentives and opportunities so that actors could participate fully in forestry value chains and markets. The programme's interest lies in seeing the full participation of poor people in markets. This study will inform and contribute to improvements in the PFP 2's design and its subsequent annual work planning.

### **1.3 Study objectives**

The overall objective of the study was to examine the forestry market system by identifying barriers to and opportunities for developing a market system that works for poor people.

#### **1.3.1 Specific objectives**

- Identify and study the value chains for all forest produce from private woodlots in Makete.
- Identify and study market actors and their relationships as well as the constraints and opportunities they face at each node of the value chain.
- Analyse costs and benefits and losses and profits in each segment of the value chain and their implications for existing market systems in Makete
- Review existing market-system practices and develop strategies to introduce best practices that can improve the situation.
- Evaluate external environments affecting or supporting the market systems in Makete
- Document relationships among the proposed best operational practices (BOPs) of PFP 2 and the performances of forestry products in markets

### **1.4 Limitations**

Some government data, such as the volumes of timber being moved to various destinations, were hard to obtain from the central government. It is sensitive data so its acquisition will require securing formal written approval.

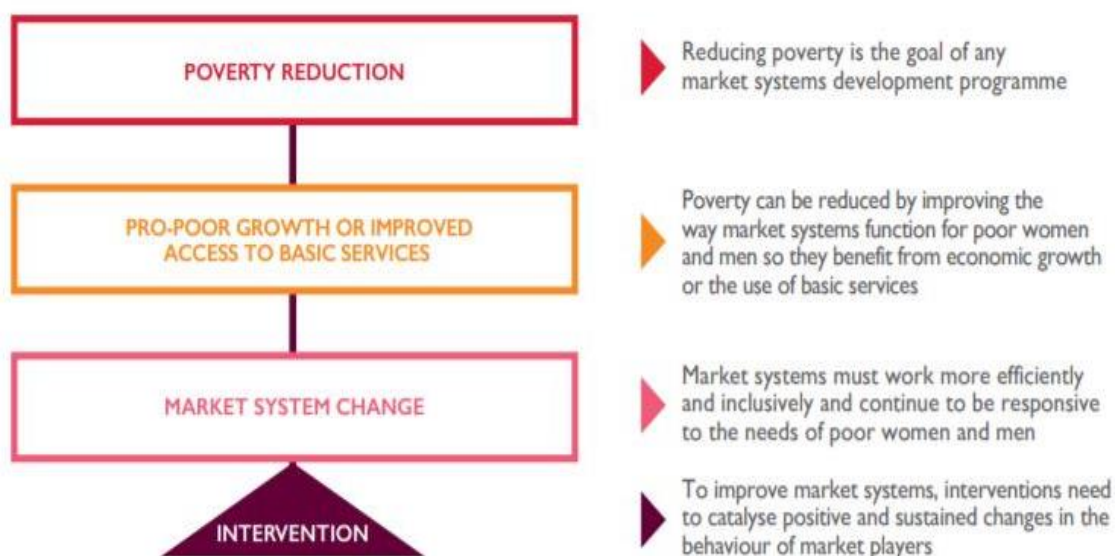
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<sup>1</sup> Tanzania human population census report, 2012

## 2. APPROACH AND METHODOLOGY

This study was guided by two market systems development approaches, namely Making Markets Work for the Poor (M4P) and Participatory Market Systems Development (PMSD). Both approaches provide step-by-step diagnostic processes to uncover the root causes, and not just the symptoms, of why markets underperform for poor people. It took a value chain development approach in which forestry products or commodities were the basis for the analysis. This is the method used by the Organisation for Economic Co-operation and Development (OECD) when conducting value chain analysis for agriculture-based commodities. The aim is to increase the participation of poor people in value chains and improve the efficiency of the market systems. Figure 2.1 below presents a snapshot of the M4P model for tackling market system inefficiencies in poverty reduction projects.

**Figure 2.1** Adopted from the M4P approach, 2<sup>nd</sup> edition<sup>2</sup>



### 2.1 Desk review

Prior to undertaking the market-analysis field visits, a desk review was conducted to understand and thereby be able to build upon the work that had already been conducted in similar subject matters during PFP 1, both in Makete and in other areas of the Southern Highlands. Discussions with PFP 2 staff and other key stakeholders were held to clarify some of the issues and learn about their expectations of the study.

### 2.2 Focus group discussions and key informant interviews

#### 2.2.1 Sampling

16 villages and 2 town centres in Makete/near Makete District were selected. Of the 16 villages selected, 12 (52%) were among the 23 pre-selected PFP 2 villages; three were forest rich with active trade activities; one in Makete and two on the way to Njombe and Mbeya. One village was non forest rich village in Makete with active agricultural crops trade. The two town centres were active trade areas where key traders were located, they were used for sub-aggregation points (please refer Table 2.1). The PFP 2 pre-selected villages included in this study were

<sup>2</sup> Available online at: [https://beamexchange.org/uploads/filer\\_public/6f/94/6f9444bf-da88-45b3-88d7-5118a7479517/m4pguide\\_full\\_compressed.pdf](https://beamexchange.org/uploads/filer_public/6f/94/6f9444bf-da88-45b3-88d7-5118a7479517/m4pguide_full_compressed.pdf)

selected randomly but covered four proposed management units by PFP2 intervention. This would enable PFP 2 to compare information over time. The study of the four management units' were also linked to movements of forest produce to different directions of markets in Mbeya and Njombe/Makambako and interactions of the Makete Districts with its neighbouring Districts of Wanging'ombe and Madaba (**Error! Reference source not found.**). Selection of non-PFP2 selected villages was purposive to enable comparison in future, but also analyse related attributes other than forestry produce and ascertain their effects or relationship with forestry markets.

Seven marketplaces outside of Makete Districts, two in Njombe, two in Makambako, two in Mbeya and one at the border between Tanzania and Zambia in Tunduma were selected. These constitute advanced marketplaces, but also they were used as aggregation points or end markets of the forest produce in Makete.

**Table 2.1 Selected villages and trade centres for the Study in Makete**

Village Name		PFP 2 preselected village	Reason for selection
1	Nkenja	Yes	Forest rich village; selected for PFP 2 implementation
2	Ivilikinge	Yes	Forest rich village; selected for PFP 2 implementation
3	Ivalalila	Yes	Forest rich village; selected for PFP 2 implementation
4	Ihela	Yes	Forest rich village; selected for PFP 2 implementation
5	Ipepo	Yes	Forest rich village; selected for PFP 2 implementation
6	Usungilo	Yes	Forest rich village; selected for PFP 2 implementation
7	Lupalilo	Yes	Forest rich village; selected for PFP 2 implementation
8	Mang'oto	Yes	Forest rich village; selected for PFP 2 implementation
9	Ibaga	Yes	Forest rich village; selected for PFP 2 implementation
10	Iindiwe	Yes	Forest rich village; selected for PFP 2 implementation
11	Isapulano	Yes	Forest rich village; selected for PFP 2 implementation
12	Ipelele	Yes	Forest rich village; selected for PFP 2 implementation
13	Ikonda	No	Active trade centre/sub-aggregation point in Makete
14	Igoma	No	Forest rich; active trade centre on the way to Mbeya
15	Ujuni	No	Non-forest rich but active trade center as a control
16	Makete	No	Active trade centre; sub-aggregation point
17	Igosi	No	Forest rich; active trade centre on the way to Njombe
18	Masisiwe	No	Non-PFP 2 forest rich village

Altogether 214 market actors comprising tree growers, charcoal producers and traders, timber processors and timber traders, resin tappers, transporters, middlemen, SMEs, local and central government staff, non-government organisations, community radio, and civil society organisation were selected for key informant interviews and discussions. Those people were selected based on their long expertise and experiences in forestry and related activities.

## 2.2.2 Interviews and group discussions

Focus group discussions (FGDs) were held with groups of tree growers and SMEs, both in PFP and non-PFP villages. The number of participants in each group ranged from seven to eleven people and, in most cases, tree growers as well as charcoal and timber SMEs were combined. About 50% of the participants both grew trees and engaged in either the charcoal or timber trade. Thus, combining them together provided a mix of information and raised discussions which provided more answers to the study questions than separate groups might have.

Key informant interviews (KII) were carried out with SMEs and tree growers to learn more about specific experiences and collect case studies of timber-harvesting, furniture-making, resin-tapping, charcoal businesses and tree-growing. The participants provided specific examples of the investments and arrangements they had made and informed us about their costs, sales and profits. Holding such interviews was essential for probing and gauging the inefficiencies of the market system. KIIs were also carried out with people higher up in the value chain and with specific actors such as traders, civil society actors, government officials, associations/organisations, trade companies and input suppliers. Guides with structured and unstructured questions were developed for both FGDs and KIIs. These were tested prior to the

study and the interviews were normally held at the respondent's premises to allow for observations and probing. A total of 15 focus group discussions and 94 interviews were held.

### **2.3 Field visits and observations**

Field visits and observations were conducted along with the interviews and FGDs. Through this method, physical features such as infrastructure, terrain, tree performance under various management practices, the amount of waste generated during sawing, market structures and institutional facilities were observed.

### **2.4 Measurements**

The tree diameters of 25 randomly sampled trees were measured both in poorly managed forest woodlots and in relatively well-managed woodlots of various age. These trees were then sawn using harmec timber sawing technology, which is the prevailing technology in Makete, and the recovery rates recorded. Stem disc analysis on annual growth rings to determine growth rates of poorly managed regenerant trees; then growth rates for poorly managed woodlots and that which is better managed was studied. This data provided a basis for understanding how the planned BOPs under PFP 2, such as various thinning schedules and pruning practices with a selection of improved seeds, can translate into economic gains for tree growers and SMEs. It also provided information on the availability of waste resources that could be utilised to attract investment in such resources and on the relationship between forest management practices and market functions.

### **2.5 Referrals**

The referral method was used to trace products and analyse their profitability as they change hands, locations and form due to value addition. In this method, whenever an interviewee mentioned persons whom they traded with and provided contact details, we interviewed those people, too. 23 traders along the value chain were met and interviewed. Doing so was important for the triangulation and authentication of findings as it enabled us to gauge the credibility of the information provided by actors at various locations/nodes along the value chains. In addition, it gave us an idea of where products flow and whom to contact. In the interest of confidentiality, the information provided by one actor was not disclosed to any other actor but was instead used as basis for probing in order get the required level of detail and clarity.

### 3. FINDINGS

#### 3.1 Forest products in Makete cluster

This study found that four forestry products are currently being produced in Makete. These include sawn timber, charcoal, pine resin, and furniture and decoration, as elaborated in detail below.

##### 3.1.1 Sawn timber

At 89% of the total, sawn timber constitutes the largest forest product by volume. It also contributes significantly to the revenue collection of the local government. TZS 712 million were collected during the financial year 2019/2020.

##### *Production arrangement and costing*

There are two different forms of arrangements in the timber production line. In the first, a tree grower harvests and sells sawn timber and in the second, an entire woodlot is sold to the SME or a timber trader. Either way, once the decision is made to harvest a woodlot, the first stage is to engage a harvester. Harvesting is sub-contracted. Normally, the chainsaw operator/owner fell trees and then cuts timber into required log sizes. He charges for the entire package.

In the second stage, the logs are collected, rolled to and arranged in a central area where a mobile sawmill is set up. This activity, too, is sub-contacted and paid per the whole package. Depending on the volume of harvest and the terrain, one setting will produce 400–600 pieces of timber. Then, the sawmill will be shifted to the next point, and the same process continues.

The third stage is sawing. Again, this piece or work is sub-contracted. Even if the trader or woodlot owner own a sawmill, they normally hire an operator and his team to do the work. This activity is costed per piece of timber and depends on the timber sizes produced. Small pieces command the lowest rates and the price increases with the size of timber (Table 3.1)

The fourth stage is carrying the timber to the roadside from where it will be sold. This is done by people carrying timber to the roadside on their shoulders. Most people carrying timber to the roadside are women and some children. From there it is transported by small trucks to the nearest town centre where the timber is dried and semi-aggregated prior to being transported to the main timber markets in Mbeya or Makambako. Additionally, at the field where sawmilling has taken place, the wood wastes are left on site. Since this resource is of no use, it will be the responsibility of the landowner to clean the farm or it would be left there to rot – both of which increase environmental and economic burdens to the landowner.

**Table 3.1 Service provision with respect to timber production**

Stage	Activity	Service provider
1 <sup>st</sup>	Woodlot tree harvesting (felling, sizing and cutting into pieces of pre-determined sizes)	Harvester/Chainsaw operator
2 <sup>nd</sup>	Collection, rolling and arrangement of logs in a central sawing area	Collection crew
3 <sup>rd</sup>	Sawing	Sawmill operator
4 <sup>th</sup>	Carrying timber to the roadside	Mainly women

Most small traders find it hard to wait for their timber to dry before transporting it to markets because they lack capital. Another activity which adds cost involves transporting and carrying mobile sawmills to sawing sites. If a mobile sawmill is to be transported from a distant village or from Makete/Ikonda townships, small trucks are used to carry the mill to the nearest roadside, but then, since harvesting often takes place far from a roadside, the mill would be carried manually into the sawing site. If a sawmill is available in the same village that the harvesting took place, the operators carry it on their shoulders. The cost of transporting and carrying varies by distance. To standardise the data, all costing is based on one kilometre.

A case study of the cost of harvesting an eight-year-old tree, sawing it into logs, and carrying the timber to the roadside was carried out. This assessment represents a scenario commonly practiced by STGs and SMEs in Makete and analysed during the present study. In this scenario,

one tree produced two longs and a total of three pieces of timber. Two pieces were 2x4 each and other is a 2x2. The cost of tree cutting was TZS 500, while rolling and arranging was costed TZS 300 each for the two logs. Sawing costed TZS 250 each for the 2x4s and TZS 150 for a 2x2. Moving each 2x4 to the roadside costs TZS 150 and moving a 2x2 costs TZS 100. Transporting a sawmill costed TZS 70,000. One set-up produced 500 pieces of timber, but the mill had to be set up thrice at the same woodlot, but there was no extra cost for setting up the mill in the other two. Production costs are as illustrated in Table 3.2 below.

**Table 3.2 Cost of timber production from one sawmill set-up**

Activity	Charged per	Nature of Activity	Average Cost (TZS)
Tree cutting and sizing	Tree	Subcontracted	500
Rolling and arranging	2 logs	Subcontracted	600
Sawing	3 pieces of timber	Subcontracted	650
Moving to roadside	3 pieces of timber	Subcontracted	400
Transporting chainsaw	3 pieces of timber	Subcontracted	140
<b>Total</b>			<b>2,290</b>

The grand total of TZS 2,290 is an average estimate since the costs varied widely among the villages studied (see Table 3.3 for the average costs of sawing and carrying timber to the roadside). The three pieces of timber would be sold at TZS 4,600 (see also Table 3.6, section 3.2.1). The data suggests that without including the cost of buying trees, the profit margin is TZS 2310 per tree for one instance of setting up a sawmill. One eight-year-old tree was sold between TZS 1,500–TZS 3,000. It follows that the SMEs or traders who buy woodlots must bargain to make a profit. In doing so, tree growers would end up with low farm-gate prices.

Since tree regeneration is common practice, the actual cost of raising a tree or even a woodlot was hard to determine - because of varied conditions for different woodlots. Existing woodlot management practices include thinning, pruning and in rare cases protection against fire. There was no guidance on when the trees should be thinning or pruned and therefore each tree grower followed their own schedules; and in most cases the management practices were inadequately done. This, however, does not mean that the trees grown were perceived as having low value, but did not know what to do in order to change the market. Non-forest rich villages such as Ibumi, compared land productivity for tree planting and shorter rotation crops such as round potatoes which were sold at TZS 30,000 per bag of 40-50 kgs, and could trade-off between potatoes and trees, although they also said that the tree woodlots were being used as a security when they needed cash and it was not harvesting season for those crops. This means that even though the cost of managing trees was hard to calculate, the fact that trees have longer rotations, their value needs to exceed those of seasonal crops.

**Table 3.3 Average costs of sawing timber per size**

Timber size	Cost of sawing (TZS)	Cost of carrying a piece of timber at 1 km (in TZS)
2x2	150	150
1x4	150	150
2x3	200	150
2x4	350	250
1x6	350	250
2x6	350	250
1x8	400	250
1x10	600	250

It is also worth noting that all activities in the production line are expensive, and that together they constitute the largest production cost in the timber business. The above is a conservative estimate of the costs per tree in a traditionally managed woodlot, but the costs for sawing and moving sawn timber vary from location to location, with locations close to main town centres such as Makete and Ikonda charging more than villages at a distance. In any case, costs are very high and, in most cases, do not match the actual cost of the activity. This inflation could be one reason why some traders and SMEs use family members, including children, to carry out activities and at times engage in tax evasion. In comparison, companies priced labour for similar

activities on the basis of an eight-hour workday. Companies' costs were low because a lot of work could be carried out in one man-day (see Table 3.5)

### ***Timber drying and transportation***

Two stages of transportation were noted. The first stage involved moving timber from a roadside in the village it was grown, harvested and cut to the nearest town centre while the second stage involved semi-aggregation in the main markets in Mbeya and Makambako. Moving timber from villages involved small trucks such as seven-ton lorries. The timber would then be dried for a week or two and combined with other timber prior to being transported to the markets. Much of the timber coming from villages is wet, and seven-ton lorries could carry 400–600 pieces depending on size. The same lorry, however, could carry 600–800 pieces once it had been dried. Small trucks charge TZS 500,000 to transport 400–600 pieces from Makete to Makambako, whereas large trucks charge TZS 800,000 for 1200–1,500 pieces. Small trucks normally ply the route from Makete to Mbeya, charging TZS 550,000 per trip.

### ***Record-keeping and costing methods***

Tree growers and SMEs did not keep records of transactions made for production or sales, and they mixed personal and business incomes together. In most cases they didn't take their businesses or tree farming seriously. The costing method for production activities is decided traditionally and is based on existing common prices, which are normally very high for each activity. Since tree growers and SMEs both lack the skills, they need to determine the cost of an activity in relation to the price for which they can sell the final produce, neither can make a profit. For instance, carrying a bag of charcoal for an average of one kilometre—a one-hour task at most—was priced at up to TZS 3,000 but that one bag, which takes about three weeks to produce, would be sold at TZS 8,000 - 10,000. As a point of contrast, companies and other organised settings paid workers just TZS 6,000 for eight hours of work. Furthermore, the production process requires that activities be subcontracted to many actors, each of whom charges small amounts, but which collectively add up to a considerable amount. Unfortunately, these costs weren't recorded, and as they were unusually done by unpaid family members, they were not even felt.

### ***Processing technologies and recovery rates***

Makete is dominated by a low-recovery processing technology traditionally known as ding-dong or Armec. This technology is designed to take advantage of hilly and sloping terrain and is suitable for areas with limited accessibility and no electricity. Since the Makete terrain is rough and woodlots are scattered, accessibility is a major challenge, a fact that makes most advanced technologies, particularly stationary ones, less suitable. Unfortunately, it is these advanced technologies that have the best recovery rates. The saw blades of ding-dongs, in contrast, produce large kerf sizes, thereby leading to the loss of much wood to waste and low recovery rates. Ding-dongs/Armec produce even greater proportions of waste when they cut trees with small diameters than large ones because they lack systems to align the log with the sawmill properly, leading into unevenly sized and asymmetric pieces of sawn timber.

Poor management practices limit both the height and the diameters of trees and adversely affect tree form. Despite there being good growth conditions in Makete, most woodlots are too heavily stocked and improperly managed, hence resulted in slender trees. These facts exacerbated by the technologies results in trees that produce only a few and small pieces of timber. Since the market does not demand small pieces, they are sold at very low prices. In addition, small trees and trees which are not well looked after producing larger amounts of waste than larger and better managed trees. The result of no or poor tending operations is already visible in the market as the timber produced fails to meet most market specifications, especially those of export markets such as those in Zambia and DR Congo, which demand long timber of relatively large widths. The most preferred size specifications in these markets are 2x4, 2x6 and 1x8 of 16-foot-long timber sizes. The majority of the timber coming out of Makete can meet the 2x4 specification and some, the 2x 6, but it is hard to make 16-foot-long timber pieces because trees are harvested from the age of seven, when they are still young and immature. Some trees are

affected by a lack of high pruning which limits the growth of trees to the required height due to heavy branching. It also reduces timber quality because of the knots it produces on timber. Other trees do not grow well due to excessive stocking.

### 3.1.2 Charcoal

#### *Production arrangement and costing*

Charcoal is mainly produced by small-scale businesses, most of the time all lying in a single village. It is made from wattle trees, which are planted in small pockets—often less than an acre—in the woodlots which surround households. Charcoal constitutes over 10% of the sales of forest wood products from Makete. During the fiscal year 2019/2020, for instance, TZS 94 million was collected from charcoal while total collection in forest produce was TZS 806 million, making charcoal production 12% of the total. Charcoal is normally produced for sale in towns outside of the production areas since families in rural areas where it is produced don't use charcoal for cooking; they use wood instead.

**Figure 3.1 Charcoal production**



#### *Costing of charcoal production*

The existing technology for charcoal making in Makete is traditional earth mound. Charcoal production involves many steps, but these can be summarized into 5 stages as elaborated in Table 3.4. However, before the charcoal is produced the initial step will be buying trees since a few households owned mature wattle trees for harvesting and charcoal making.

Once the woodlot is harvested the first stage would be tree cutting. This activity is sub-contracted to chainsaw owners and is charged per one tank full of fuel. the activity involves felling the trees, sizing and debranching so as they can easily fit into the kiln. The second stage will be collecting the trees and arranging at a certain central area where the kiln is to be set. This is followed by proper setting, covering with earth and then burning. The first three stages (cutting, collecting, arranging and covering) involve more labour and likewise costs. Once the kiln is burnt it will be only one person monitoring the fire burning to required standards for two



weeks. This would normally be the owner of the kiln (SME). After the charcoal of burned, it will be collected and filled into bags and sewn ready for carrying to the roadside. Again, this is a lighter activity and hence require minimal labour. Since charcoal is heavy and it is normally produced farther than a kilometre away (sometimes up to 3), normally men are involved in carrying. Additional costs include buying bags and ropes for packing.

**Table 3.4 Service provision with respect to charcoal production**

Stage	Activity	Service provider	Charged by
1 <sup>st</sup>	Tree cutting and debranching	Chainsaw operator	Full tank of fuel in the chain saw; TZS 15,000 – 20,000 per tank
2 <sup>nd</sup>	Collecting trees, arranging and setting up the kiln	Collection crew - depends on size of kiln	Daily pay is TZS 7,000 for a day worked 5 hours or more
3 <sup>rd</sup>	Covering with earth, burning and monitoring – for 14 days	Burning crew – depends on number kilns	Daily pay is TZS 7,000 for a day worked 5 hours or more
4 <sup>th</sup>	Charcoal harvesting and packing	Burning crew – depends on amount of charcoal	Daily pay is TZS 7,000 for a day worked 5 hours or more
5 <sup>th</sup>	Carrying to the roadside	Done by men only	Depends on distance, TZS 1000 – 3,000 per bag of 30-40 kg

One setting was found to produce between 30 – 50 bags on average. This was highly dependent on the availability of wood as raw material and capital. Women led charcoal kilns were smaller, as they could produce as little as 10 bags while men's- kilns were larger and could go up to 70 bags per one setting. There were also scenarios where multiple kilns were set in one setting. A bag full of charcoal at the roadside was sold TZS 8,000 -10,000. Once at the roadside businesses from Njombe or Dar es Salaam could collect and transport directly.

The present study examined carefully costs involved in the production line for charcoal through listing all costed and un-costed activities by assuming each activity was sub-contracted, and nothing was done by family members. The finding is that only a few charcoal producers, make profit and but they do so, it isn't consistent. The majority make losses. However, it is difficult for them to estimate the costs of the trees and labour charges, and especially for carrying the bags to the roadside. Similarly, the traditional earth kilns require much time of supervising burning, the later results into low recovery low if not properly done. After costing all activities, the results were discussed with respondent SMEs. It was shocking for them to see that they were making marginal profits of losses. When asked how they survived in business some of them said it was only possible by using their own and family members' labour. Some of them reported to have bribed tax collectors or hide part of the produce when paying taxes.

### 3.1.3 Pine resin

Pine resin is an emerging business in Makete. During the study, two companies were reported to have requested permission from Makete District Council to operate resin business in the district. At the time of the study, East Africa Wood Chemicals (EAWC), had already started piloting a resin-tapping business. This company is finalising its first, pilot phase of 50,000 trees and is ready to move to the next phase of 200,000 trees after having succeeded in its first phase. It has acquired 25,000 trees each from the local government plantation and community woodlots. In total 18 people are involved in the business. Most of the trees in the pilot phase are 10 years old or older and it is anticipated that the initial contracts will be extended for a maximum period of five years.

**Figure 3.2 Pine resin-tapping of a *Pinus patula* tree on Makete**



#### ***Production arrangement***

The business involves the signing of contracts between tree growers and resin-tapping companies. Owners of woodlots with trees with diameters measuring 20 cm or greater at DBH are identified and then engaged in discussions about using their woodlots for resin-tapping. When an owner is happy with the terms of interaction, they register the business and sign a contract. In order for a business to be feasible, a village/location must tap a minimum of 5,000 trees. Only trees with a diameter of at least 20 cm are included; those with smaller diameters are not part of the contract. Contracts last one year but are renewable. The current cost of tapping one tree per annum is TZS 6,000 and owners are paid in full at the beginning of the contract.

To produce a lot of pine resin, *Pinus patula*, *Pinus elliottii* and *Pinus oocarpa* species are needed. In Makete, however, only *Pinus patula* is being used since this is the only species available and has proven to do well in almost all the locations in which it has been tested. It is estimated to produce up to 1.2 kg of resin per month. This figure is higher than what was expected when the business started. In many other parts of the world, *Pinus elliottii* is known for producing significant volumes of pine resins. At Sao Hill Plantations, it is estimated that more than 300 metric tonnes are produced every three months from over-mature *Pinus patula* trees.

#### ***Production costs***

The resin-tapping process begins with bark shaving and proceeds to tapping, which comprises inserting plastic bags with nails, cutting the bark and applying paste; then resin collection starts. Re-cutting takes place every 15 days, which is when the resin around the cut area and the paste are exhausted. Resin is emptied into special collection bags 1.5–3 months afterwards, when the bag is full (at 900–1000 grams). Resin-emptying is paid per kilo of harvest. Payments are on a weekly basis, but workers have a monthly contract (see Table 3.5).

**Table 3.5 Activity costing for pine resin-tapping**

Activity	Costed by	Amount (TZS)
Back shaving	One man-day is 350 trees	6000 + NSSF
Inserting plastic bags	One man-day is 300 trees	6000 + NSSF
Cutting		
Paste application		
Emptying and collection (including transporting to the collection point)	One man-day is 400 kilos	6000 + NSSF
Re-cutting	One man-day is 550 trees	6000 + NSSF
Transportation	Small trucks	Paid per distance

**Product quality and markets**

The production volume of young trees in Makete is estimated to be 1.2 – 1.4 kilogramme per year. Each kilogramme is sold for TZS 750. The product, turpentine, is used to make paint. The proportion of turpentine in good-quality resin is 19% or more. Results from multiple tests in the Southern Highlands suggested that the proportion of turpentine in the resin collected from the trees that grow there is about 25%. To prevent turpentine from evaporating when exported to air, it is necessary to allow water into the resin bags. At present, the main market for resin is China where it is mainly used for making turpentine. Competition is growing as the Chinese companies have already started sample testing in Makete. It is still possible that another two Chinese companies, currently piloting in Makete, will receive approval from the government to run a resin business although it is anticipated that they will be given different allocations in different geographical locations.

**Synergy with PFP 2**

Since woodlots are not well tended, they produce little resin. The expectation is that PFP will support tree growers with silvicultural practices. EAWC is set to construct a gum resin factory in Makete once the second phase of the pilot is complete. It has already started negotiating with the Makete DC to acquire land for the installation of a factory. If successful, the company, taking advantage of the forest resources in Makete and surrounding districts wishes to use Makete as a central processing unit. If this initiative is successful, it will create additional jobs for communities in the Makete area. In addition, any resin business must secure export approval from the TFS. Such approval is given at the area of origin and also serves as a certificate of origin. Such businesses have huge potential for increasing the revenue of the TFS and the local government. However, despite a lack of scientific proof demonstrating conclusively that resin tapping has significant negative effects on tree growth and timber quality, the business entails certain risks related to a reduction in timber yields and the breaking of saws by steel nails.

**3.1.4 Furniture and decoration markets**

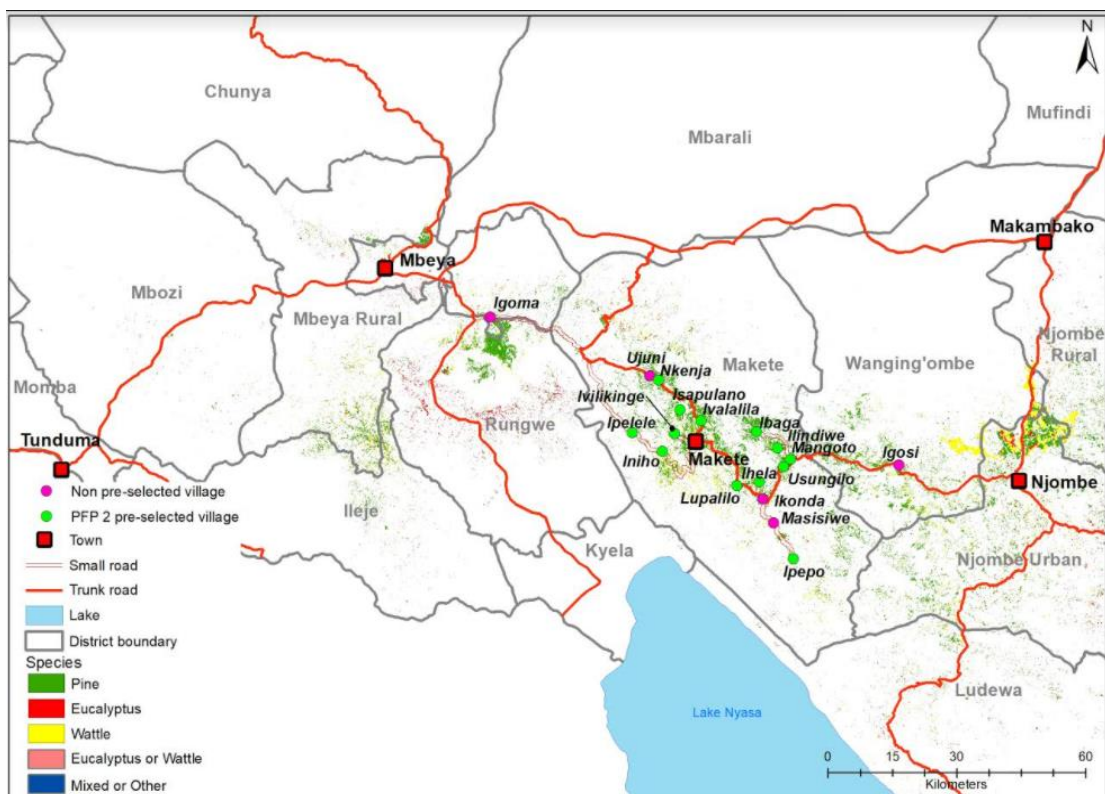
In Makete, furniture is mainly made from cypress and eucalyptus trees, both of which are grown in small quantities. Pine timber is used to make windows and door panels and frames. However, a very small proportion of the timber (less than 2% of Makete's total production) is consumed in Makete. Changes in lifestyle both in Makete and Mbeya revealed that several developments in the construction as well as furniture-making industries have increased demand for wood from these species. In Makete, for instance, new designs in house construction included adopting large windows as opposed to smaller window in the past. On the other hand, this means that more timber is needed. In Mbeya, pine timber provided great wood properties due to its smoothness, a whitish colour and lightness, which enables furniture makers to produce designs which could be decorated to suit customer tastes for domestic and business needs. While these designs keep on developing, their uptake is limited by the culture to use furniture made of timber from natural forests. Nevertheless, the designs from pine timber and slabs are already becoming popular in entertainment houses such as in bars and pubs as well as in clothes boutiques.

### 3.2 The market system

The timber business constitutes about 89% of the total forest produce from Makete, while charcoal constitutes approximately 9%, and pine resin and other finished products, construction and furniture, about 2%. Around 93% of the timber comes from pine tree species. Makete forest products are consumed in many regions within Tanzania as well as in several nations outside the country. The main in-country destinations include Dar es Salaam, Dodoma, Mwanza, Rukwa, Songwe, Katavi, Mtwara, Ruvuma, Shinyanga, Singida, Tabora, Mbeya and Iringa regions, while export markets include Zambia, DR Congo and Kenya. Makambako and Mbeya marketplaces are currently the two main points of aggregation for the timber leaving Makete for other regions and Njombe market is where charcoal is aggregated (Figure 3.3).

Forest resources are handled in wide variety of ways. Similarly, there is great diversity in how value is added to products and how they are marketed and traded in various locations within and outside of Makete cluster. In many cases, this variety has an impact on the livelihoods of communities in Makete. The various market systems are analysed below. The analysis includes existing market structures and their characteristics, market chains and the flow of commodities as they change locations, the behaviours of market actors and their interactions as well as the role of supporting institutions which positively or negatively influence the outcomes of the market system as a whole.

**Figure 3.3 Forest resources and market links**



#### 3.2.1 Makete markets

Currently there is no clear market structure or strategy for forest products in Makete. The markets are largely informal, and products are traded mostly by word of mouth and through personal connections. A few market actors are, however, aware of the prevailing market situation due to their long experience with traders outside of their communities or connections to buyers in other parts of and even outside Tanzania. In the existing scenario, middlemen dominate the market as they know the market situation better than any other person. Market

actors are not organised, so they operate in isolation and no institution directly controls or supports the forestry market system. For this reason, it is challenging for producers to understand which types, specifications and quality of products are demanded in the market at any specific point in time. In most cases, market actors, particularly tree growers and SMEs, are not informed about market prices and are unable to bargain. This fact creates loopholes, enabling some market players to take advantage of the faults in the market systems to benefit at the expense of others.

### **Description of the marketplaces**

The marketplaces in Makete District can best be categorised into two types: village markets and town centre marketplaces. The village markets are also divided into two types. First, there are highly marginalised and disorganised markets in remote villages. These are characterised by inaccessibility due to poor infrastructure and poor links with town centres. The second type are found in villages close to town centres. These are characterised by close links with external markets and accessibility. In many cases, remote villages are resource-rich, and trade is done in raw form; that is, woodlots are sold instead of timber or value-added products. Villages close to town centres or those in main roads heading to main external markets (see figure 3.3) were observed to have their tree growers and SMEs trade in both woodlots and value-added products. In addition, in such markets, there are many actors in the businesses and the SMEs are quite aware about the markets available. Furthermore, these markets enjoy the benefit of good accessibility and low production costs, so they demand comparatively higher prices than do remote villages (see Table 3.6).

**Table 3.6 Price of different sizes of timber for select villages in Makete**

Village	Price per Timber Size (TZS)								Distance to Makete (km)
	2x2	1x4	2x3	1x6	2x4	2x6	1x8	1x10	
Ivalalila	700	700	1,300	2,000	2,200	3,300	4,500	8,000	<b>22</b>
Ivilikinge	700	700	1,300	2,000	2,000	3,600	4,000	7,500	<b>17</b>
Nkenja	700	700	1,300	2,000	2,500	3,500	4,500	8,500	<b>35</b>
Ipepo	400	400	800	1,500	1,700	3,000	4,000	7,000	<b>59</b>
Ikonda	700	700	1,300	2,000	2,000	3,800	4,500	8,000	<b>36</b>
Usungilo	500	500	1,300	1,800	2,300	3,800	4,800	8,000	<b>52</b>
Ilindiwe	500	500	1,200	2,000	2,200	3,500	4,800	8,000	<b>68</b>
Ibaga	500	500	1,200	2,000	2,200	3,500	4,800	8,000	<b>86</b>
Lupaliilo	600	600	1200	2300	2300	3500	4500	8500	<b>19</b>
Mang'oto	600	600	1300	1600	2300	3600	4500	8500	<b>54</b>
Isapulano	700	700	1300	2000	2000	3600	4500	8500	<b>22</b>
Ihela	600	600	1300	2300	2300	3600	4800	8000	<b>29</b>
Ipelele	700	700	1,300	2,000	2,200	3,500	4,500	8,500	<b>46</b>
<b>Average</b>	<b>608</b>	<b>608</b>	<b>1,238</b>	<b>1,885</b>	<b>2,169</b>	<b>3,523</b>	<b>4,515</b>	<b>8,077</b>	

Town centre marketplaces form sub-aggregation points for forest products in village markets. This means that, before products leave Makete, they are collected from various villages, transported to a central location and accumulated and combined in that location. Town centre markets are normally found along the main roads to the Makambako and Mbeya markets. They provide facilities to dry timber to a certain moisture content before it is transported, a process that allows for the transportation of large quantities and thus reduces operation costs. Once forest products are produced in a village, they are transported to town centres in small lorries. Large lorries cannot access small villages due to poor infrastructure. In addition, the timber is normally wet and requires drying prior to transporting. For these reasons, small lorries are the best option: they suit the prevailing road conditions and the small loads to be moved.

### ***Causes of market failure in Makete***

This study discovered faults in the market system which have meant that most market actors, particularly small-scale tree growers and SMEs in Makete, do not benefit from forest resources. Interestingly, SMEs and tree growers are not fully aware that they are running at a loss, but they feel disincentivised and, hence, are not motivated to invest in forestry activities. Some of them are trying to shift to other crops that take less time to mature. These include potatoes. Because woodlots are not well looked after, the timber they produce is consistently poor quality. Although diversification was not seen as a major threat to forestry activities, it is noted that if it is not properly planned, it could create risks to forestry operations in the future. The reasons why small-scale actors are not participating or benefiting equally from markets are explained in much detail below.

### ***Poor extension services and lack of input subsidy schemes***

The Makete District government has not invested in extension services. Interestingly, a number of studies have been conducted by various research institutes, including Sokoine University of Agriculture. These studies collectively indicate that forestry has great potential to contribute more to the economic performance of the district if looked after properly. During the last fiscal (2019/2020), forestry contributed TZS 806 million and is a major source of revenue for the district. The two forestry officers who are currently employed by the district, however, lack the financial resources they need to operate and cannot even take care of their own district plantation (Figure 3.4).

**Figure 3.4 A poorly managed plantation owned by Makete District Council**



On community woodlots, trees which normally grow naturally from regenerants are pruned or thinned partially only when they are five or six years old. Most woodlots are site index I or II. If not properly taken care of at initial stages of growth, the trees tend to be heavily affected by overstocking and require much labour to attend. The majority of woodlots have not followed the best of silvicultural practices. According to the Local Government Financial Act, produce CESS is charged at the source in order to be re-invested to increase productivity and sustain hence

sources. During financial year 2018/19, the government produced guidelines<sup>3</sup> on preparation of plans and budgets which instructed local government authorities (LGAs) to reinvest 40 to 60% of LGAs' their collection into major revenue generating sources to improve and sustain those sources, but no limited government subsidies or forestry inputs such as planting materials and very limited extension services have been invested in forestry. During fiscal year 2019/2020, Makete DC collected was TZS 806,805,453 as forestry forest produce CESS, in the fiscal 2020/2021, a budget of TZS 16,000.000 or 2% of collection was set aside for forestry activities. Additionally, there is no support for improving the opportunities of tree growers and SMEs to market forestry products.

### ***Lack of organisation***

Each tree grower, SME or trader in Makete works independently. There is no collective market for forest produce or formal organisation in full operation. A few Tree Grower Associations (TGAs) were established by the local government and Tanzania Tree Grower Association Union (TTGAU) but were not fully functional at this stage. Because the market is so informal, a few popular traders and middlemen dominate. They benefit by dealing with individual market actors and distorting market prices. The markets which they supply, in contrast, have strong organisations which can control the market as a whole. For this reason, individual traders from Makete cannot sell their products at prices higher than those set by their buyers.

### ***Lack of business development services***

Almost no tree growers or SMEs keep proper records or estimate the full cost of their operations and most are poor in costing and pricing. For this reason, it is very difficult for them to determine what their break-even point is. In many cases they rely on traditional costing of activities, which is unrealistically high given the prices of final products. Since activities aren't properly costed and records are lacking, it is difficult for them to determine whether or not they run at a profit or loss. Poor financial and business management practices make it difficult to monitor businesses growth. However, having worked out specific case studies of business operations, we found that, at the village level, the majority of SMEs and tree growers are either running at a loss or making very minimal profits. The traders remain in business because they themselves work or have their families work, a fact which goes unrecorded, and because they evade taxes.

### ***Lack of capital and poor processing technologies***

The market in Makete is dominated by small-scale traders, most of whom have less than 10 million TZS in capital and have poor processing and transportation technologies and facilities. Moreover, they cannot borrow money because they lack collateral or cannot afford the high interest rates (21-24%). This limits their ability to compete with large businesses and to run profitably. The timber trade is capital-intensive: considerable investment is needed to be able buy large amounts of timber, to process it to the required standards and to transport it in bulk. Despite the fact that large trucks can carry greater load and thereby cut operational costs significantly, small traders use small trucks for transportation as they cannot purchase large amounts of timber. To exemplify, a small truck that carries 400–600 pieces of timber from Makete to Makambako charges TZS 500,000 while a large truck which carries up to 1,700 pieces and charges just TZS 800,000. Transporting the same amount of wood by small truck, therefore, costs 77% more than it does by large truck. The cost per unit volume, therefore, was higher for traders with limited capital than those with plenty of capital. Since most timber was transported before it was dry as small traders cannot afford to wait, it consumed a lot of space and the number of pieces that could be transported was limited.

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<sup>3</sup> Guidelines for the preparation of plans and budget, URT, 2018/19: [https://www.mof.go.tz/docs/Plan%20and%20Budget%20Guidelines\\_2018\\_19\(6\).pdf](https://www.mof.go.tz/docs/Plan%20and%20Budget%20Guidelines_2018_19(6).pdf)

Similarly, the processing technologies that small traders use generate a lot of wood waste, thereby causing tree growers and SMEs to run at a loss (Figure 3.5). Not only does the ding-dong technology in use create more waste than useful wood, the premature age of tree and poor management practices exacerbate that waste. It is estimated that, at present, depending on the age and size of the trees sawn, the recovery rate is 25–35%. The waste is also scattered around woodlots, making land preparation for the next season more costly. Currently such wasted resources are not used.

**Figure 3.5** Timber-processing technology



#### ***Operating under a debit system***

The timber business operates on the basis of trust. Timber is delivered first, and payment is made afterwards, after a buyer has sold the timber a few weeks to a few months later. Some buyers were reported to be untrustworthy and timber traders complained that, at times, they were not paid at all or were paid in instalment after long periods of time. Such dilatoriness adversely affected the growth of businesses, particularly those of women traders, who have less capital than men do. This system also increases the dominance of men in the timber trade.

#### ***Lack of market information***

Market information is usually spread by a word of mouth. For this reason, middlemen and traders end up understanding market dynamics the best and are therefore the ones who set prices for tree growers and SMEs. Since they are connected to markets through long-established trading relationships, they well understand how the business works. The fact that tree growers and SMEs in the villages are not organised means that they accept whatever prices are set for them. Traders and middlemen take advantage of their string understanding of the prevailing market conditions to set low prices for tree growers and SMEs. Market information in this form marginalises the poor farmers, who have no direct or even indirect connections with markets. Individually, tree growers and SMEs can neither bargain nor voice their views. The persistence of an informal market system discourages market growth since the end markets cannot communicate with producers, who, for that reason, fail to understand the requirements of the markets and consistently produce products that are not in demand. This study indicated that customers are dissatisfied with the quality of timber in the market, which is substandard due to immaturity of the trees that are harvested.



### **Multiple taxation and lack of plough-back**

Several taxes and deductions were instituted by the government. Some taxes were levied equally on all products, irrespective of the different sizes of timber and charcoal and their associated market prices, and most taxes were higher than what is suggested by law. Different close by Districts charged different rates of produce CESS, and, at times, rates were based on individual estimates instead of as percentages of sales or volumes as guided by the local government Financial Act. Since produce CESS for timber are the same on both small and large sizes, SMEs and tree growers see no profit from their work. SMEs compensate by paying tree growers a low price for all the trees in a woodlot, knowing that the large trees can compensate for the losses associated with the small trees. By charging similar CESS for all sizes of timber, the government invited tax evasion. As an alternative, tree growers were shifting to shorter-term crop produce. In any case, revenues collected from forestry produce have not been reinvested in forestry activities to support production and trade. Table 3.7 and Table 3.8 present a snapshot of the taxes to be paid and the financial requirements met for a business to be able to participate in the charcoal or timber trade.

**Table 3.7 Tax and registration requirements for the timber trade**

Type of Tax/Deduction	Amount	Responsible Authority	Comments
Business registration fee	205,000	TFS	
20% of registration fee	41,000	LGA	
Business licence	50,000	LGA	Minimum
Transit pass	7,000	TFS	Less than 7 MT <sup>4</sup>
20% of the transit pass	1,400	LGA	Less than 7 MT
Transit pass	15,000	TFS	7 MT
20% of the transit pass	3,000	LGAs	
Cess	150	LGA	Charged per piece
TMDA	Unspecified	LGA	In Mbeya
VAT - turnover 100+ mil	18%	TRA	Based on valuation
Cleanliness	Varied	Municipal council	Mbeya
Fire rescue	Varied	Fire team	Mbeya

**Table 3.8 Tax and registration requirements for the charcoal trade**

Type of Tax/Deduction	Amount	Responsible Authority	Comments
Business registration fee	300,500	TFS	
20% of registration fee	60,100	LGA	
Business licence	50,000	LGA	Minimum
Transit pass	7,000	TFS	Less than 7 MT
20% of the transit pass	1,400	LGA	Less than 7 MT
Transit pass	15,000	TFS	7 MT or more
20% of the transit pass	3,000	LGAs	7 MT rmore
CEess	2,000	LGA	Charged per bag
Tanzania Food and Drug Authority	Varied	LGA	In Mbeya
VAT - turnover 100+ mil	18%	TRA	Based on valuation

The transit permit requires a trader to deliver his or her goods to a certain specific destination for control purposes. It was learnt that such a requirement affects traders immeasurably. When a business is not successful at the destination indicated in a trader's existing transit pass, the trader needs to file new documentation to get permission to trade in an adjacent marketplace. If he fails to secure permission, he or she suffers penalties. The requirement to request permission to move to and sell in alternative marketplaces means that much time is wasted and additional costs are incurred.

<sup>4</sup> MT means metric tonnes

### ***Enabling business environment***

The study found that trade in forestry products, particularly timber, has gone down since 2015. During group discussions and interviews it became apparent that some traders had run at a loss or even lost their businesses. Their losses were linked both to the strict measures imposed by the government to collect revenue from forest produce but also to the fact that purchasing power was declining or the Tanzanian currency stabilized, two trends that have seen prices falling since 2015. Such changes have not been reflected in the CESS, which remained the same pre 2015 and post 2015. Successful traders reported that they would not get involved in timber processing because they were worried about losing money. They thought that estimating the cost of a woodlot and processing it made it difficult to recover their investment and make a profit. They were more willing to buy timber that was already processed. It was also reported that in some areas the construction industry had started shifting to alternative products in place of timber and had thus reduced its demand. Alternatives include PVC sheets, which have started to replace the 1x10 timber traditionally used to support long walls. This and several other issues can be addressed by creating district-level business councils to allow dialogue among actors in the sector.

#### **3.2.2 Markets outside of production areas in Makete**

As products move away from production sites in Makete and particularly to place outside of Makete, the actors gradually earn a greater profit. The greatest profit-makers were relatively large businesses measured in terms of capital and investment, businesses that enjoyed the benefit of economies of scale. They were better informed about markets, risks and opportunities than their smaller counterparts. Additionally, they had good costing methods for their operations and used advanced or large processing technologies and transportation facilities, both conditions which minimised losses. Furthermore, they operated as formal entities or organised into groups of associations or cooperation, a development which enabled them to access financing and express a collective voice in the market. Villages in semi-urban settings and those close to town centers in Makete also behaved similarly although at a smaller scale because they had closer connections to markets than those who lived far away from towns and tended to trade locally.

#### **3.2.3 Market segmentation**

##### ***Timber market***

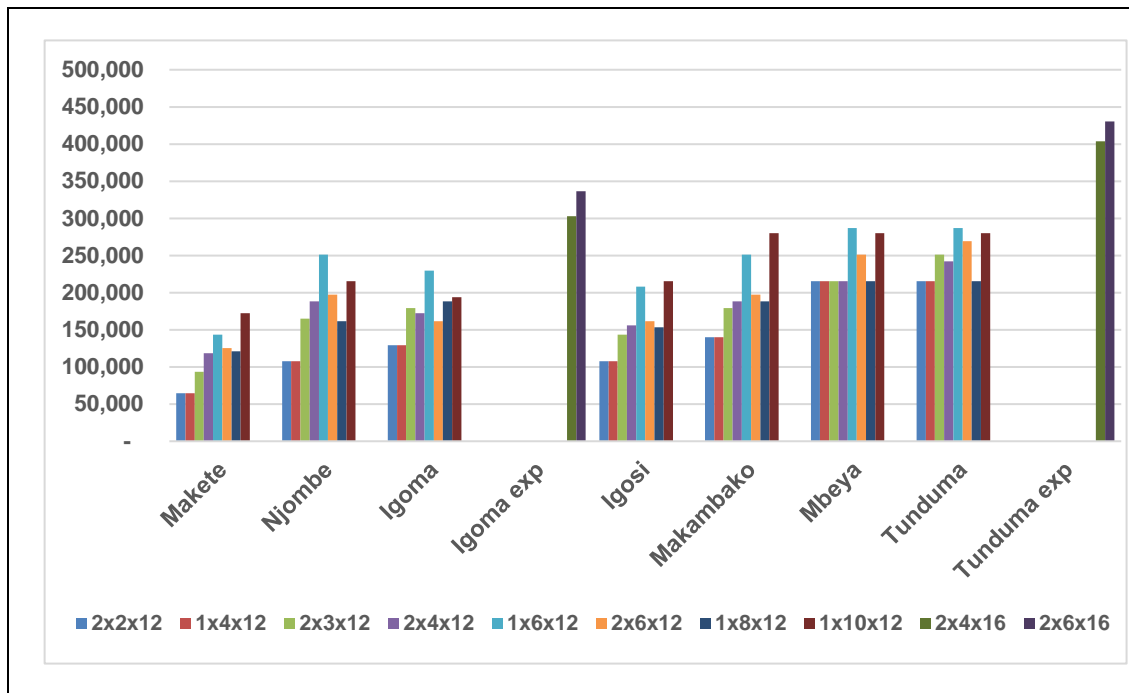
Various market nodes have unique specifications, mainly in terms of timber sizes, although there were some similarities in tastes and consumer preferences. The Mbeya semi-gateway market concentrates on small timber sizes (1x4, 2x2, 2x3, 2x4 and 2x6), whereas Makambako market is known for large sizes (2x4, 1x6, 2x6, 1x8 and 1x10). The Tunduma export market, in contrast, was dominated by medium sizes (2x4 and 2x6) although these were 16 feet long as opposed to the 12-foot pieces in demand in Makambako and Mbeya. In Mbeya, the rapid population growth of the city and its suburbs demands relatively small sizes of timber for house construction. The Makambako market, in contrast, serves a wide range of customers from various locations. Since a very limited amount of timber is consumed by the town itself, the demand is for a variety of sizes. The Tunduma hub serves as export markets to Zambia and DR Congo, whose specifications are different from those of the Tanzanian market. Both Makambako and Mbeya prefer well-dried timber while the Tunduma export market prefers semi-dried or wet timber.

Trees with large diameters produce large timber sizes, which command higher prices than do smaller pieces (see also Table 3.6). However, the market in Mbeya has mixed sources and acts as an end market as well as an aggregation point for the neighbouring regions of Katavi, Songwe, Shinyanga and Tabora. Because Mbeya is an end market, the timber prices there are higher than those in Makambako. This explanation can be justified in economic terms by the fact that, the producer is closer to the end consumer, hence likelihood of making profit. Comparing the price per one cubic meter of timber for the same timber size, we discovered a

great deal of variation among markets. For instance, the timber size 2x2x12 cost TZS 64,583 and TZS 215,278 in Makete and Mbeya respectively (see Figure 3.5)

In the export market in Tunduma, the sale price per volume of timber was more than double the price in local markets. However, there was limited awareness amongst actors in Makete about such a difference in market price and even how the export market operates. Furthermore, long pieces of timber with large widths were not easy to find in Makete due to poor forestry management practices and premature harvests. The data available for the export market was, therefore, based on Igoma village, which is 75 km away from Makete. The people of Igoma, in contrast, are aware about the export market and benefit from the Kiwira government-owned forest plantation, which observes with proper management practices.

**Figure 3.6 Sales per one cubic meter volume of timber by location**



Key: exp. means export sizes (16 feet). Exchange rate: 112 Zambian Kwacha for 1 TZS

### **Charcoal market**

The charcoal market was a bit different from the timber market. In Makete, charcoal is produced from wattle trees, and is sold in bags weighing 30–40 kg each. Charcoal is usually transported directly to final destinations although at times it is get aggregated in Njombe. The market price in Njombe is not very different from that in Mbeya. Almost all the studied SMEs producing charcoal were small and produced charcoal as a second activity or on subsistence basis. Charcoal-making is characterised by high production costs and most of the SMEs were running at a loss. The raw materials were also limited since only a few households owned small plots of wattle trees. To limit the amount of charcoal leaving the district, the government decided to charge produce CESS higher than the lawful rate of 5% cap. The fact that there is a demand for charcoal and a shortage of raw materials to make it presents an opportunity to use charcoal made from the waste of sawing pine trees, a resource available in large quantities and currently not exploited.

### **Furniture and decoration**

The Mbeya market is fond of decorations made from pine wood. Both carpenters and customers mentioned that they liked pine products pine products because of its light natural colour. Pine wood is easy to paint with a range of other colours since it is plain and whitish. Pine furniture

such as cupboards, shelves, dressing tables, chairs and tables are easy to assemble, disassemble and transport. Carpenters reported that these products attract customers from various age groups and are becoming a fashion especially in boutiques, bars and homes. Their reasonable prices enable them to compete with imported Chinese products and they are more durable than the Chinese models they look alike (Figure 3.7).

**Figure 3.7** Various products made from pine trees



### ***Pole business***

The pole business is not very common in Makete as they are made of eucalyptus and most trees in Makete are pines. Very little planting of eucalyptus trees has taken place and just a few trees were found sprouting in small woodlots. None of the interviewed traders had engaged in the pole business in recent years. Thus, the data used in this study was based on information from district offices. The majority of traders and tree growers have only limited knowledge about the pole business. However, district officials reported that some poles had been transported to Ruvuma Region to support road construction activities there. No poles were found in any of the seven markets on which this study concentrated, and the traders in them had no clue about this business. Nevertheless, observations suggest that eucalyptus grows well in Makete and that the Makete cluster has great potential to grow eucalyptus and benefit from pole business.

### ***Market arrangements***

As mentioned above, very little of the three main products coming out of the Makete cluster—timber, charcoal and pine resin—are consumed in Makete. Their destinations include, but could go beyond, Mbeya, Songwe, Katavi, Tabora, Morogoro, Iringa, Dar es Salaam, Dodoma, Shinyanga, Mwanza, Mtwara, Pwani, Ruvuma and their districts for the internal market, and Zambia, DR Congo and Kenya for the export market. Because of the nature of the road network and current arrangements, none of these three products is transported directly to its destination. Instead, each is aggregated at a node prior to being moved to its destinations.

While the Makambako and Mbeya markets are known for timber aggregation, Njombe is known for charcoal aggregation. Mbeya is also the market for Makete charcoal; however, this is normally an end market, meaning that once charcoal is delivered to Mbeya, it is not transported beyond that region. It was also noted that forest products are brought to these aggregation points/markets from various sources and not just from Makete. These other sources include Njombe and Rudewa districts for Makambako, and forestry plantations surrounding Mbeya (Kawitiri and Kiwira) as well as small woodlots for the Mbeya market. The timber or charcoal is then mixed and dried until it is ready for sale or the seller has identified a buyer. It is then sold in large quantities (normally more than 3,000 pieces of timber or a larger lorry carrying its full capacity of either timber or charcoal) and moved to its final destination. Pine resin does not have

an aggregation point; instead, it is moved directly to Dar es Salaam for export. Three types of arrangements were observed and are elaborated in detail below.

### ***Free joint market***

This market constitutes traders who jointly rent a single facility for drying and marketing their products but who operate independently. This type of marketing was found in Mbeya; and was characterised by large and experienced businesses that dominate the market. Businesses with years of experience have a better idea of how the market operates, more easily win tenders and are more connected to outside markets than nascent businesses. Small and emerging businesses find it difficult to operate because it takes time to build trust with suppliers of products and markets. Moreover, the well-established and successful businesses were linked to markets in other regions, and most of them owned shops elsewhere, too. Those new in the business and with minimal connections or capital were adversely affected by the disparities, and there was no platform through which to share best practices.

There was also a difference in the way large, established and small, new businesses set their prices and acquired goods from the source. The market giants were able to buy larger volumes, acquire more goods, and command more trust from their suppliers for goods not paid for. The discrepancies disadvantaged new businesses, which were unlikely to reap such opportunities. Furthermore, buyers trust those large, well-established businesses because they are sure they will get the products they want. For these reasons, the market giants enjoyed a lucrative business and better market prices than their competitors.

### ***Trade associations***

Trade associations are groups of traders organised together and registered by the local government as an association. Two of these associations were studied, one, Angaza Timber Workers Group (ATWG), at Makambako market, and the other a replacement for UWAMBANJO in Njombe. ATWG was formed by a group of like-minded businesses in 2015 but operated informally until 2020 when it was formally registered as an association. In this arrangement, traders share the place where they dry and assemble their timber, contribute an entry fee to the group, make monthly payments for security, and pay a monthly membership fee. Each business, however, is run independently by the concerned trader. Traders are free to identify the markets they wish to trade in and to negotiate and sell their timber at the prices they agree upon with buyers. Their relationship with the rest of the members mainly related to maintaining the services of the facilities. However, unlike a free joint market arrangement, an association allows for the possibility of discussing market trends and sharing market information among members. They also share facilities such as the electronic fiscal devices (EFD) used to produce receipts.

In this sort of arrangement, members and their leaders had limited experience in and knowledge about group formation and the rights and benefits of members. Importantly, associations also lacked clear lines of accountability in their organisation charts. They lack full time workers to manage daily operations and since their finances were not being properly managed or audited, they were prone to default/death.

### ***Cooperatives***

Two cooperatives were visited and reviewed, namely Umoja wa Wafanyabiasharawa Mbaao Njombe (UWAMBANJO) (Njombe Timber Traders Organisation in Swahili) in Njombe and the Makambako Timber Traders Cooperative Society (MTTCS) in Makambako. Cooperatives are an advanced form of organisation in the trade of forest products. In this arrangement, traders who are united under some form of an agreement share common facilities and services. They share the costs of renting storage and drying space as well as hiring security in the marketplace. They also assemble products and collaborate in marketing them in order to increase the visibility of their products. They contribute entry fees and monthly payments for security and membership. It is also easy for this form of arrangement to create a brand and manage business risks.

The two cooperatives studied were formed at different times but have both remained vibrant for a considerable period. Their modes of operation are similar. UWAMBANJO was formed in December 2013 and became operational in June 2014, while MTTCS was registered in 2008. At the time of this study, UWAMBANJO was serving 157 timber-trading members while MTTCS had slightly over 50 members. UWAMBANJO has hired two permanent staff (an accountant and a secretary) as well as four temporary staff including three revenue collectors and a toilet attendant who is also a cleaner. MTTCS has eight security guards and three members who voluntarily serve as chairperson, deputy chairperson and secretary. Their roles are almost the same as those of the executives of UWAMBANJO.

That said, UWAMBANJO has a much clearer administrative structure as well as clearer lines of responsibility and accountability than does MTTCS (see Table 3.9). The board of directors is the highest decision-making organ in UWAMBANJO and is responsible to its members, who are timber traders operating in the Njombe marketplace. The members elect their own leaders, that is, a chairperson, a vice-chairperson and board members to lead the group. The chair and vice-chair, plus the two employees (a secretary and an accountant) are responsible to the board of directors. Key decisions are made during the annual general meeting, during which members receive financial reports and the annual budget, approve newly enrolled members, and endorse the removal of members as per recommendations made by the secretariat or permanent staff. MTTCS's membership comprises both traders and non-traders. It offers services to members and non-members who wish to conduct business in Makambako but does not engage in transporting timber to markets itself.

Both cooperatives have their accounts audited by external auditors, normally from the government body Co-operative and Audit Supervision Corporation (COASCO). Hence, they use their finances in a very disciplined manner. Their careful bookkeeping distinguishes them from other forms of organisations, which tend to lack proper records and well-managed cash books. In addition, cooperatives allow traders to be heard when they have issues. The leadership of UWAMBANJO and MTTCS ensure that the rights of their own members and other non-member traders who rent space in its marketplace are respected. The natural networking that follows among players and the guaranteeing of the security of properties minimise risks. By working together in a group, a cooperative can support its members in accessing loans and is likely to increase sales orders from large construction companies. Moreover, traders have the advantage of increasing the visibility of their products, their knowledge about the market situation and their confidence in negotiating with market-savvy actors.

The government can easily collect revenue from the two cooperatives since each meets the criteria of making a turnover of TZS 100 million or more per annum. TRA receipts simplify business when trading with large businesses which require receipts. Receipts are also good for calculating expenses. Large and experienced traders, mainly members of cooperatives, are the main borrowers. In fact, they borrowed 50 million or more from the NMB bank branch in Makambako and managed to repay their loans in a timely fashion. Those in small group arrangements were the main defaulters.

**Table 3.9 An elaboration of the roles of key staff in UWAMBANJO**

<b>Accountant</b>	<b>Secretary</b>	<b>Revenue collectors</b>
Prepares budgets and financial reports	Prepares meetings and takes minutes for action	Collects from traders
Maintains records for auditing/verification by COASCO	Manages communication with members /traders	Makes daily financial deposits and records
Prepares payment vouchers	Follow-up to ensure all issues agreed in meetings are attended	N/A
Prepare journal vouchers and cash book	Resolves conflicts between and amongst members	N/A

Cooperatives are supervised and audited annually by the COASCO. For this reason, it is important for every cooperative to have an accountant who can prepare auditable financial reports. In Njombe, UWAMBANJO replaced a trade association which had defaulted because it

had not properly managed its finances. Its lack of accountability and regular conflicts among its leaders lead to its death. The fact that it is a requirement for cooperatives to hire an accountant and present audited financial reports is perhaps one reason why the cooperative is a successful model. Organisations without a financial system in place normally suffered from poor costing, over-expenditure and poor projections of expenses and revenues. In Makambako, the MTTCS adds income to the group by collections from tree-growing activities and the timber trade as well as membership fees but also by using the cooperative-owned weighing scales and renting facilities such as drying grounds.

**Sources of income which enabled groups to thrive**

- Registration fee – TZS 10,000 per annum
- Monthly contributions – TZS 25,000
- Renting space for food vendors – TZS 5000 per month
- Keeping market infrastructure - TZS 15,000 for each lorry loading or offloading
- Weigh bridge charged per each loaded lorry leaving the market
- Shares (unconditional) – TZS 200,000 per share

The funds are used to pay key staff as well as to cover the costs of cleanliness, security and the utilities of the support offices.

**Table 3.10 Summary of the differences among the three market arrangements**

<b>Cooperative</b>	<b>Association</b>	<b>Free Joint Market</b>
Contributes space for members and non-members to rent for TZS 1000	Members contribute monthly fees of TZS 20,000	Rents are paid individually
Members contribute annual fees	Members contribute annual fees	No contribution
Members and non-members pay taxes individually	TRA revenue collection on sales by the group	
Members have responsibilities other than the timber business, such as tree growing	Members only collaborate with timber traders	All activities are done individually
Members are not necessarily in the timber trade	Members must be timber traders	No membership
There are additional services such as a weighbridge, and each lorry pays as it leaves the gate or pays for infrastructure	No additional services	No additional services
Members benefit from the marketing facility and membership in the society	Members benefit from marketing facility	No additional benefits
Large groups of 50 or more, so costs are minimised	Relatively small groups of 10-30 members, so the cost per person is relatively high	All costs are incurred on an individual basis
Has an accountant and its financial reports are audited	Financial reports are not audited	Financial reports are not audited

**Benefits of trade organisations and joint markets**

To reiterate, markets at a distance from production sites in Makete are more organised and create more profits for their participants/players than those that are close by. Organisations seemed to address various market dysfunctions. An in-depth analysis of the three types of marketplace arrangements demonstrated that, despite their differences in structure and approach, all provide insights into how best to address market dysfunctions. The benefits of organisations are elaborated in detail below.

- Creation of a one-stop centre with a network of participants who receive timely and accurate market information and therefore help avert losses among businesses and ensure the collection of government revenues
- Market players know exactly where products can be obtained, and traders are aware of the specifications and quality standards of the products required by the market.

- Provision of facilities which offer drying services, weight measurements for loaded lorries/trucks and joint marketing due to the large volumes traded
- Negotiation power increases and prevailing market prices are easily known by market participants; hence, profits are maximised along the value chain
- Contributions from members can be borrowed during crises or periods of insecurity, a fact that can help members to respond positively to financial shocks
- There is enough security since guards are on duty 24-7 at a relative lower cost
- Traders can enjoy the ease of using a joint TRA receipt, which enables them to make deals with corporations, which tend to be more profitable than trading with individuals. Keeping receipts also simplifies the process by which regulatory authorities can estimate taxes based on incomes and expenses
- Provision of the leadership necessary to manage risks at the market.
- Collaboration enables traders to get heard by authorities when they have issues
- There is sense of responsibility as leaders are afraid to misuse funds
- Increase in trust by financial institutions due to a good credit history among members and the presence of physical assets to serve as collateral, so members have access to credit
- Annual financial (external) audits ensure a good sense of accountability

Overall, there seems to be a common consensus that organisation can influence profitability or sustainability of a business as opposed to operating in isolation. What seems to be more important than the type of organisation is the way in which a group defines its objectives and lines of accountability, and how it operates its business. Each of the three forms of arrangement highlight key but different issues which should be considered when forming a group or establishing a marketplace. These issues range from the services which the group will offer to its members, to the structure of the organisation, collaboration with key stakeholders, the need for accountability mechanisms such as audit schemes and establishment of a common marketing space including sharing market information.

#### **3.2.4 Export market**

A small proportion of timber from Makete is being exported to Kenya and Zambia through the Makambako main market and Mbeya respectively. Pine resin is also being exported to China. The proportion of timber being exported was not revealed as accessing this official data from Tanzania Forest Service (TFS) offices required written permission that the researcher did not have. However, despite the growth in export markets in Zambia, Kenya and DR Congo, very little of the timber produced was being exported. Most of it was consumed in domestic markets. Even though there is a burgeoning export market, particularly in Zambia and DR Congo, it is possible that if the best management practices are not employed and if harvesting continues to be mature, this opportunity will be missed.

#### **3.2.5 Transportation**

The price of timber in the Mbeya market is highly affected by whether or not a buyer pays for transporting the timber from Makete. Transport costs TZS 550,000 for a small lorry carrying 500–600 pieces of wet timber or up to 800 when dry. When the timber reaches aggregation points such as Makambako, it is offloaded, dried to required moisture content and then re-loaded onto large trucks to be transported to destination points. This process adds to operational costs and means that the aggregation point is treated as the point of origin and hence that the trader has to again pay CESS on timber for which they have already paid CESS at the point of origin.

#### **3.2.6 Regulatory environment**

##### ***Compliance with laws, regulations and procedures***

The prevailing market is a free market in which every actor is free to fix prices as he or she wishes without interference from regulatory bodies. Similarly, tree growers are free to decide when they will harvest their trees. This lack of regulation poses a major risk to maintaining the



quality of forestry products from Makete. There are already complaints in the market regarding the quality of timber, and if the issue goes unaddressed, the timber business is likely to suffer. Law enforcers strive to support the forestry product business. However, they are highly constrained by a lack of resources, both human and financial.

Traders complained about there being too many roadblocks, which somehow attract corruption. Six roadblocks were listed from Makambako to the market in Dar es Salaam city (Nyigo in Mufindi, Iringa, Morogoro, Kibaha, Kigwazi and Mbezi). These checkpoints increase the time spent on the road, and there is excessive asking of documentation. It was mentioned that, at times, fines meant to impose mistakes that create a conducive environment for corruption. For example, traders were fined for showing receipts for timber bought at prices lower than those charged in government plantations even though they had bought the timber from individuals who were free to set their prices. The penalties ranged from TZS 300,000 – TZS 3,000,000.

Respondents also objected to CESS as many, particularly traders, thought they paid it many times. The Local Government Financial Act 1982 and its subsequent amendments and revisions state that produce CESSes should be charged at the source. It was unclear why traders at aggregation points such as Makambako had to pay CESS as they were not the point of origin. Moreover, CESS charges for adjacent districts varied significantly. Some charged per piece of timber while others charged by percentage (see Table 3.10). In addition, forestry produce CESS rates were the same for different sizes of timber which are sold at different prices (Table 3.6). These differences created confusion among traders and difficulties in setting prices because of the differences in production costs. The law requires produce CESS to be charged either by volume or sale price, not exceeding 5%, at the farm gate.

It was also noted that, in 2017, the government made amendments to the Local Government Financial Act, reducing the cap on produce CESS from 5% of farm-gate prices to 3% for all agricultural crops. The produce CESS on forestry resources, however, was not reduced despite the fact that the prices of forestry products prices have been falling steadily since 2015 as the Tanzanian shilling has continued to stabilise and inflation has decreased. Another problem is that transit passes expire within short periods of time, as short as one day. Thus, if a loaded truck breaks down, the driver finds it hard to justify his presence. Occasionally, a trader is even penalised in this situation. Taxes, charges, fees and deductions were found to be a burden on tree growers and to contribute to reductions in farm-gate prices.

For the above reasons, tree growers' confidence about investing in their trees is declining. They are concerned that differences in CESS in adjacent districts (see Table 3.10) and similar and high charges for different sizes of timber increase costs. The deductions resulted into tax evasion. A similar finding was documented in a study on produce CESS that covered 80 rural districts and 19 urban LGAs out of the total 166 LGAs in the Tanzanian mainland. This study found that, across the country, LGAs collect not more than one quarter of the revenue potentially available from produce CESS because of tax evasion (David. et al. (2014)<sup>5</sup>.

**Table 3.10 Comparison of forestry produce CESS for different Districts**

District	Timber		Charcoal	
	TSZ per piece	% of sale price	Tshs @ 35Kg bag	% of sale price
<b>Makete</b>	150	Unspecified	10,000	20%
<b>Makambako</b>	200	Unspecified	16,000	5%
<b>Wanging'ombe</b>	100	Unspecified	10,000	5%
<b>Mbeya</b>	100	Unspecified	16,000	5%
<b>Rungwe</b>	300	Unspecified	14,000	5%
<b>Njombe TC</b>	150	Unspecified	14,000	5%

**Source:** PFP 2 survey, October 2020

<sup>5</sup> Agricultural produce CESS in Tanzania: policy options for fiscal reforms: [file:///C:/Users/HP/Downloads/ProduceCessStudy\\_FINAL\\_Dec2014%20\(4\).pdf](file:///C:/Users/HP/Downloads/ProduceCessStudy_FINAL_Dec2014%20(4).pdf)

### **3.2.7 Support Functions**

#### ***Roads Networks***

Out of the 680 km of road network in Makete only 83 km are accessible throughout the year and 215 km are partially accessible during the dry season. The remaining network of 383 km was never constructed/serviced hence inaccessible by cars throughout the year. Because soil in Makete is clay loam and slippery when wet, villages far away from town centers get disconnected during the rainy season, thereby making it hard for forest products to reach markets. In remote villages, trade in forestry products is active only during a specific period of the year, and prices for forest products tend to be low. Poor participation of primary actors in markets due either to marginalisation or inability to access market information renders these actors powerless or amenable whatever prices they receive.

#### ***Media***

There are two community radios in Makete, Green FM and Kitulo FM. These media platforms can be instrumental in sharing market and other information with stakeholders, including tree growers and traders living in remote areas. Social media can provide a range of information to value chain actors such as new product designs, market prices, technologies to use, timber sizes currently in demand as well as available products by location. Mobile phone applications such as whatsapp group adverts can also be useful in forest produce marketing and information sharing among members.

#### ***Civil society organisations***

We visited SUMASESU, a local organisation which was supporting agribusiness activities for potato farmers. Key initiatives included supporting marketing for farmers in remote areas as well as developing business planning and facilitating access to credit. SUMASESU worked closely with local governments and was able to help vulnerable farmers obtain loans to expand their businesses. Collaboration with similar organisations in the future is needed to join efforts and thus have far-reaching impacts for beneficiaries in target communities.

#### ***Input suppliers***

There are currently a few input suppliers in Makete and even along the value chain. EFTA, an equipment financing company which specialises in serving SMEs, has an office in Mbeya but has not been able to support SMEs in Makete. SMEs are not aware about the capital financing products in machinery and equipment that EFTA and other suppliers offer. Hence, the most predominant technology is the circular saw, which has a low recovery rate (25-35%).

Seedlings aren't used since trees self-regenerate. Tree growers find the cost of the initial investment low because they do not have to prepare land or do any planting and thus, they see tree-growing as an attractive business practice. Growth rates and yields could increase significantly if farmers used seeds from genetically improved sources. Furthermore, self-regeneration discourages tree growers from adhering to best practices. However, respondents were eager to use improved seeds as they would like to plant trees which grow faster and produce more timber. The PFP's established seed orchards seem to be strategically positioned to serve this purpose.

A few saw doctors who service circular saws are located in Njombe township. The technology in use is very old and competence of the doctors is limited, facts which reduce the efficiency of the saws (see Figure 3.7). Since the level of maintenance is poor, saws frequently break or bend and have to be serviced regularly. The cost of maintaining a saw is TZS 12,000–TZS 15,000, depending on the amount of work required. Furthermore, poor maintenance reduces recovery rates due to poor setting of the saw kerfs. Saw doctors said that it is challenging for them to serve their customers as they have not been trained and the technology, they rely on is inferior.

**Figure 3.8** A saw-doctoring workshop



### ***Financial service providers***

Financial service provision is still developing. Only one bank, National Microfinance Bank (NMB), operates in Makete. In Njombe, however, there are several financial service providers, including commercial banks. Five banks, NMB, National Bank of Commerce (NBC), Tanzania Postal Bank (TPB), CRDB Bank as well as FINCA Microfinance Bank, have started to develop products for forestry value chain actors, particularly traders. In most cases, collateral is in the form of title deeds for land which has already had houses built on it or tree woodlots/plantations established. The interest rates for these products, however, are high. NMB charges 21% and 24% for houses with title deeds from the Commissioner for Lands and Certificates of Customary Rights of Occupancy (CCROs) respectively. CRDB Bank charges 20% and 24% respectively. To attract women borrowers, CRDB bank charges just 14% interest on loan applications by women or firms at least 50% of whose shares are owned by women. Loan products through plantations/woodlots have been introduced, but no beneficiaries enjoy this product because insurance companies have not agreed to finance their projects.

### **3.2.8 Competition**

In non-competitive markets, traders are likely to collude so that they can force consumers and producers to accept unfair prices and workers to accept unfair wages. To appreciate this fact it was important to understand the number, size, and level of specialisation of traders as well as difficulties that market actors faced in entering markets. This study uncovered several competitive environments. First, there is rising competition between forest products and iron products for construction. Consumers reported that iron products are both stronger and cheaper than timber. Second, there was competition between forest produce and agricultural crops. Respondents outside of forest-rich villages in Makete said they earn more from crops such as potatoes than from forest produce. They noted that a bag of potatoes was worth TZS 30,000 while a bag of charcoal was just TZS 10,000. This disparity also had an adverse effect on the cost of producing charcoal because the per unit cost of carrying a bag of charcoal was higher than that of carrying a similar sized bag of potatoes. The disparity also incentivised farmers to

favour short-rotation crops regardless of their market volatility and other associated risks. Third, there is competition between well-managed forest trees and poorly managed forest trees in selected markets, such as export markets. Timber from poorly managed forests or trees prematurely harvested is less preferred.

Even though the Zambian and Congo markets are growing rapidly, traders in Makete were not fully aware of this opportunity because large businesses kept them in the dark for fear of competition. However, there are clear signs that these markets will benefit the Tanzanian forestry sector. Zimbabwe competes with Tanzania for the Zambia and DR Congo markets but although they have been trading with Zambia for a long time, Zambia seems to currently prefer Tanzanian timber to Zimbabwean timber. Zambia is currently running out of planted trees and looking to import more. In addition, the fact that Zimbabwe charges more for the same timber than Tanzania means that Tanzanian producers have a competitive edge and that there is a bright future for the Tanzanian timber trade. However, in this market it will soon become apparent that only mature trees are in demand.

### **3.3 Poor forest management practices and market failure**

Poor woodlot management practices were found to contribute significantly to low gains and, in consequence, to market failure. A large part of Makete, however, is classified as site index classes I and II (SI I&II) relatively higher than Sao Hill site index classes, meaning that conditions for wood growth are excellent. The heavy stocking and poor care of woodlots has resulted in the production of slender and weak trees or trees with a short merchantable height. They often produce only one or possibly two logs of 12 feet. In addition, the trees were harvested at the young age 7–12 years. This combination of heavy stocking and pre-mature harvest led to the production of small sizes of timber, mainly 2x4x12 or much smaller. When 2x6x12 timber is produced, it is only from the first log as it is hard to have the second log produce the same size due to heavy branching or slender growth resulting from poor silvicultural practices. Moreover, small trees produced more waste than mature ones, with large trunks.

#### **3.3.1 Best forest management practices introduced by PFP2**

PFP 2 is introducing its best operational practices (BOPs) to woodlot management in Makete and will later roll them out to Mafinga and Njombe clusters to address issues related to growth rate. These BOPs are based on scientific computations at each site class, and the expected volume increment for each tree age if management practices are followed as recommended is projected. Table 3.11 below presents conservative estimates of tree growth measuring diameter at breast height at different ages of pine tree species, which is the dominant species and whose growth is easy to estimate. It must be re-emphasised that these growth rates are computed based on site index classes I and II. This measurement is based on stem disc analysis of annual growth rings by age class for poorly managed regenerant trees compared with proper management practices based on initial study commissioned by PFP.

Based on data collected and analysed through destructive sampling, poorly managed woodlots have an average annual growth rate of 1.5 cm while a well-managed tree woodlot has an annual growth rate of 2.5 cm for the same site index. The estimate is conservative because, in most cases, poorly managed woodlots achieved average growth rates of 1–1.5 cm per year while those properly managed may go up to 2.5–3.5 cm per year. On the left-hand side of the table below is an estimate of the timber sizes (maximum) which would come from a log with a given diameter, while on the right is a comparison of achievable volume (diameter) at each tree age when different management practices are followed. Existing practices mean the status quo: trees are partially looked after, or thinning follows no specific schedule and there is little, or no pruning done at all.

**Table 3.11 Effects of management practices on timber sizes at different ages**

Timber sizes for dif. tree diameter

Diameter (Cm)	Timber Size
>30	1x10
>25	1x8
>20	2x6
>20	1x6
>15	2x4
>10	2x3
>8	2x2
>8	1x4



Tree Growth (DBH) with dif. Management practices

Tree Age	Existing Practices (Cm)	PFP2 BOP (Cm)
7	9	15
8	11	18
9	12	20
10	14	23
11	15	25
12	17	28
13	18	30
14	20	33
15	21	35
16	23	38
17	24	40
18	26	43

**Source:** PFP 2 Market study survey, 2020

Another key finding was that well-looked after trees produce more logs as the tree boles grow straighter and longer than those of neglected trees. The uniform growth rate means, too, that a lot of timber of large sizes will be produced. Although the majority of tree growers did not look after their woodlots, this study did find one tree grower who had sought expert support in managing his woodlot/plantation. The growth rate of his trees was studied by measuring diameters of over 25 trees and compared to that of a badly managed woodlot in a similar site class. The trees responded quite differently in these two woodlots (see the photos below).

**Figure 3.9 A poorly managed woodlot owned by Makete DC (left) and a well-managed woodlot owned managed by a tree grower in Makete (right)**



The two woodlots were owned by the local government and a tree grower, and they were aged 12 and 10 years respectively. Their average diameters at breast height were 12 cm and 29 cm respectively. Dominant trees measured diameters 30–36 cm at breast height (as seen in the picture), confirming that the trees can grow up to 3.5 cm per year. Five of these large trees were later cut down and the number of pieces of various sizes of timber calculated. These trees were able to produce up to five logs, each of 12 feet long. On average, these trees produced several sizes of timber, as presented in Table 3.12 below.

**Table 3.12 Estimation of sizes and numbers of timber pieces harvestable from one tree of a well-managed woodlot**

Timber size	Number of pieces
1 x10	8 - 10
1 x 8	6 - 7
2x6	2-3
1 x 6	2-3
1 x 4	1

The discussion above illustrates that well-managed trees will result in greater profits than poorly managed trees even if there are more of the latter. The same analysis indicates that the earning from dominant trees goes up to TZS 100,000 or even more per tree after sawing (refer Table 3.6). In any case, small trees are limited to producing small sizes of timber which earn lower prices. Similarly, too small sizes fail to meet the demands of some markets. The Zambian market for instance requires 16-foot-long pieces, four feet longer than the 12 feet demanded in Tanzania. Comparing the sales per volume of timber produced in the local and export markets revealed that tree growers could double their earnings if they were effectively engaged in export markets (see Figure 3.5, Section 3.2.3). Yet, most woodlots cannot produce the specifications demanded, and some traders in Makete, revealed that they could not service contracts with Zambian traders despite having received such tenders.

That said, the study found that the PFP's initiatives to improve the quality of timber at the woodlot level would positively influence the market. It was also seen by traders and tree growers alike, as a sign of new hope, as they were keenly looking forward to see better quality timber and their business and incomes growth. They are well both aware that large trees command higher market prices, and even at the woodlot level, SMEs were willing to pay up to TZS 20,000 per certain trees. The opening of the road to Makete was also seen as a hopeful sign to improve market systems and increase trading with main markets. Respondents believed that large trucks would be able to load at Makete hence reducing transaction costs. If that were the case, large businessmen would be more likely to operate from Makete, thereby eliminating profit-hungry middlemen.

### **3.3.2 PFP2's efforts to close the gap**

In response to inefficiencies observed during the baseline studies, PFP 2 is designing and applying best management practices by following well-established procedures to enhance tree growth and yields. The programme is currently establishing demonstration plots and will adopt a thinning regime at 4, 8 and 13 years followed by clear felling at 18 years. It will also carry out pruning activities and forest protection practices, all to introduce best practices so that tree growers will be able to reap good harvests. In the picture below is a three-year-old woodlot, initially stocked with over 100,000 trees per hectare and now being thinned to 1,111 trees per hectare.

**Figure 3.10 Demonstration plot showing three - year-old trees, unattended (left) and after thinning (right)**



### **3.3.3 Forest resource availability and emerging market opportunities**

This study has revealed that there is a significant forest resource in Makete; and that the losses resulting from poor forest management, harvest and post-harvest processing are massive. The average recovery rate is below 30%, and a lot of waste was observed scattered around in woodlots after harvesting. This waste comprised slabs, sawdust, top-cuts, stumps and branches. This significant amount of resources left onsite causes environmental damage rather than being put to use. This waste represents an additional cost to tree growers when they are preparing their woodlots for subsequent planting seasons. There is a risk, too, that the waste could catch on fire and destroy other resources, including standing trees in neighbouring woodlots. Furthermore, to counter the negative impacts of over-stocking, PFP 2 introduced best practices will produce thinnings which would be left on site.

The study carried out a parallel initial pre-feasibility study to ascertain the availability of waste resources and the technologies available to put such wastes into use. Three facts need to be kept in mind. First, sawmilling produces small piles of waste as the mills tend to shift much frequently. There are usually 25–35 bags of sawdust at each pile. The moisture content of the sawdust is 14%-35%, with lower rates associated with having been dumped for a long time in sunny weather and higher associated with rain. Slabs and branches are also found in larger amounts – but the costs of moving them to roadsides are higher. Second, because of the hilly terrain of Makete and the poor quality of its roads, few woodlots can be directly accessed via roads. Third, harvesting activities normally take place 0.5–3 kilometres from the roadsides. The combination of these three factors calls for careful consideration of the technologies to use to profitably convert such wastes into useful products.

It is key to identify several technologies that could be used in the various set-ups found in Makete. These technologies range from small mobile charcoal-making machines to medium-sized semi-movable machines to large, stationary technologies which can assist in achieving economies of scale. Once these technologies have been determined and identified, they can be tested and various products such as wood charcoal, biochar and wood vinegar produced. Assessing which products will be the most profitable will require more time. A separate analysis is recommended in order to analyse the different options more carefully. Nonetheless, the conversion of waste into useful products and finding local and international markets for them will help to increase the value of the trees in Makete.

## **4. CONCLUSIONS**

### **4.1 Market information system**

When examined closely, all markets in Makete and beyond were found to have a certain way of communicating, ranging from using business networks to understand prices to organising into trade associations and cooperatives. These approaches are already functioning and, in many ways, support market actors in conducting business. However, they did not allow the market system to function optimally because there are many free riders who, in essence, benefit more in the market than other key actors, including tree growers and primary processors, many of whom are currently running at a loss. Interestingly, when asked whether having a system that would facilitate access to market information would facilitate business transactions, a fair number of actors, particularly those high up in the value chains, thought that such a system would not be of much use for them. They were confident that they already knew when to buy and who to sell to. At the bottom of the pyramid, tree growers and SMEs were eager to learn more about how a market information system would work, and even more interested in paying for the service. This discrepancy suggests that the current system benefits a small portion of market actors and disadvantages a significant number of market players.

### **4.2 Poor quality of timber in Makete**

The market for timber from small-scale tree growers in Makete is increasing and had major prospects of continuing to grow. The demand is driven mainly by in-country house construction and the steady rise in furniture- and charcoal-making. Demand from international markets in Zambia, DR Congo and Kenya is also rising steadily. The expectation is that the demand in Zambia and Congo for certain grades/sizes of timber will continue to climb as the need in those countries climbs with population growth and development efforts. However, scrutiny is required to ensure that the quality of exported wood is maintained at a high level in order to preserve Tanzania's reputation for consistently supplying good-quality products. Any decline in quality may see its brand suffer and the market decline.

There is also evidence to suggest that the market system in Makete is not performing well, partly because of the poor grade of timber available there. Even though Makete is categorised as site classes I and II, the trees are not properly tended; thus, the timber produced is poor quality and the market has not flourished. In fact, customers have started complaining. Makete timber is traded only because it is sold at much lower prices than trees harvested from government-owned forests.

#### **4.2.1 Competition with non-timber products**

Non-timber products are increasingly in demand and often replace timber products in the markets. This development was triggered by the deterioration in the quality of timber being delivered in the market. Some customers have started to opt for steel products, for instance, in order to avoid the risks related to quality issues.

#### **4.2.2 Competition with other suppliers of the same products**

Timber from Makete faces stiff competition from other suppliers. Across the border, it competes with Zimbabwean timber while internally it competes with more well-managed timber from well-established plantations. In order for timber from Makete to compete in the market, it is imperative to keep quality standards high.

### **4.3 Prospects from best operating practices**

The best practices PFP 2 introduced are viewed by market players as a milestone with great transformative power to produce top-quality wood products and meet the specifications of a wide range of markets, including export markets. Both traders and resin-tapping businesses mentioned the contribution best management practices played in their earning a profit. PFP 2's intention to engage primary producers and processors in discussion will enable them to appreciate the losses they currently make and take appropriate action to earn a profit. The final



decisions, however, will remain in the hands of the tree growers. The government also has a role to play in enforcing laws and facilitating market functions for all actors.

#### **4.4 Heavy taxation and tax evasion**

It was evident that tax evasion is the result of imposing multiple taxes and heavy taxes on forest products. Charging similar taxes for different sizes of timber and high taxes on all products discourages small traders who produce small volumes and small timber sizes from trading as they are disproportionately affected by this scheme of taxation. Similarly, the fact that transit passes are given for a specific destination and a specific time period, which, in most cases, is very short; adversely impacts traders and raises serious concerns worth checking. In response, some traders evaded paying taxes in Makete by paying them in a district where taxes were lower. As a result, Makete lost undocumented revenue.

#### **4.5 Effects of poor business development services among traders and tree growers**

The fact that tree growers, SMEs and small traders do not have financial management, business management or marketing skills means they are prone to making losses. Since SMEs are not registered and do not own bank accounts or keep proper records, they lack cash-flow records and are thereby ineligible for bank loans. Similarly, it is hard to determine at which prices they make profits or losses. Furthermore, since it is difficult for Tanzania Regulatory Authority to estimate taxes, SMEs end up paying high rates of taxes. As a result, they end up running their businesses at a loss.

#### **4.6 Businesses and tree growers operate in isolation**

SMEs, traders and tree growers are not aware about the market situation and are unable to bargain collectively, realities partly attributable to their operating in isolation but also because there is no mechanism by which they can access market information. As a result, they are the consumers of information provided by middlemen who are also traders, information which is normally distorted and works against their interests. Nevertheless, there are clear indications that the market is coming closer to Makete and that market players are likely to benefit more than they currently do if appropriate actions are taken.

#### **4.7 Gender disparity**

It was found out that gender disparity still exists in the forest resource market systems in Makete. Women were predominantly occupied in the low-end value chain operations, such as timber collection, while men were employed in processing and trade activities.

## **5. RECOMMENDATIONS**

### **5.1 Strengthening the market information system**

#### **5.1.1 Establish a market information system**

A market information system is required in to provide real-time information on market trends and consumer behaviours. Through a market information system, various actors along the value chain can communicate with ease, hence eliminating those actors who benefit but who would not necessarily be wanted by the market. Among those who will be eliminated are free riders (middlemen) who are responsible for creating bureaucratic processes and who benefit greatly but make little contribution towards market growth. The fact that the gap between consumers and producers will be shortened will enable producers to reap more profit and, hence, will benefit the entire system at the production level including local governments.

A solution will need to be developed through participatory market system development approaches with inputs from key actors. The need for participation rests on the fact that such a system is likely to be of use for many actors, including research institutions, government at the local and national levels, communities and forestry traders in various locations, and other programme stakeholders. Their involvement will allow the gathering of a wider range of inputs to be used and will therefore enable the programme to address the diverse market challenges of various groups of actors. We also recommend that the host party of the platform be an organisation which would continue to serve the forestry sector beyond the lifetime of PFP2, thereby making it sustainable. A financing mechanism for the services can be incorporated such that some services are paid for in order to raise funds to maintain the system or update information.

#### **5.1.2 Formation of trader organisations at the cluster level**

Trader organisations are needed for both charcoal and timber businesses. They will strengthen their unit in order to address market failure challenges such as limited bargaining power and poor access to market information. Trader organisations can assist in setting up market prices and dealing with business risks as well as in accessing credit. Strong trade organisations can increase the volume traded and hence build customer confidence in the market. For PFP 2, strengthening trade organisations may make delivering support easier, while for the government it may make tax collection easier and for banks it may facilitate loan repayment management. It is also easy for businesses to protect their rights.

We recommend two types of organisations, trade associations and cooperatives, or a combination of the two. Whatever types is formed, formation needs to be facilitated by experts looking into among many other issues, clear lines of responsibility, clear expectations and the like-mindedness of members. At the outset, registration and businesses plans need to be developed for the organisations to serve as a guide to the nature of the business and participation of its members.

#### **5.1.3 Establishment of joint marketing areas**

Marketplaces are more likely to operate successfully if they trader organisations are formed at the same time. Joint markets provide physical marketplaces which customers can rely on. They also would enable timber traders and tree growers to meet easily and traders to aggregate their products prior to transportation. Through the formation of a common market, the local government is likely to have control over businesses and the SMEs will be able engage with buyers directly as opposed to middlemen. In addition, security of property and fire risks are easily controlled when businesses operate together. Joint marketing areas have the potential to increase the tax base but also to provide services to traders. Tree growers will be able to easily access market information and the government will be able to regulate prices. In a one-stop centre, all necessary government services can be offered, thereby reducing costs for traders as they will not have to move around, seeking services. Finally, by having such groups, traders can channel their challenges directly to government departments and they can be attended timely.

#### **5.1.4 Streamline tax collection system**

Both local and central governments set taxes as per law. Taxes higher than those recommended by the law and multiple taxation adversely affect business growth for traders and tree growers. The formation of market information systems will assist government agencies to understand the exact price of forest produce at any given time. It will be useful for government bodies to rely on current prices when charging taxes. It is also of importance for government bodies to keep the continuity in the tax collection systems once they are established.

### **5.2 Explore other market options**

#### **5.2.1 Invest in emerging and finished products**

New products, including wood-based bio-energy products, char, furniture and decorative products can not only expand the market but also increase the customer base for those products. Products such as furniture from pine timber and slabs are becoming popular in the decoration industry, particularly in boutiques and entertainment houses such as pubs and hotels in big cities, including Mbeya. Thus, the technologies adopted in Makete should boost trade in finished goods rather than semi-finished goods. Interventions initiated by PFP 2 are set to explore the use of various products including bioenergy, char and furniture. It is imperative for a wider range of actors, including governments in PFP implementation areas, to see this as an opportunity and an important source of revenue and to allocate resources in order to boost incomes for communities in those areas.

#### **5.2.2 Promote advanced and affordable technologies**

New technologies which can increase recovery rates or convert waste into useful products exist. Combined with an improvement in management practices, such technologies have great potential to transform the lives of tree growers and SMEs, enabling them to earn three or more times the incomes they currently do.

### **5.3 Provide incentives and awareness raising to tree growers to keep their trees to maturity**

#### **5.3.1 Alternative income-generating activities**

The programme needs to support tree growers with alternative income-generating activities (IGAs) to incentivise them to keep their trees to maturity. However, IGAs will need to be properly defined in terms of criteria for selecting activities, target number of beneficiaries and the degree of support will be provided. The selection and production of short-term agricultural crops or other IGAs needed to be guided by experts in order not to change the focus from what tree growers are already involved in. The engagement of tree growers in these activities, especially when combined with land-use planning, has the potential to enhance the economy in Makete as additional revenue streams are added and while long-term investment in forestry is being looked after. Short-term crops grown around forestry woodlots can minimize forest fires as they act as buffer zones.

#### **5.3.2 Provide subsidies to tree growers**

PFP has already invested in tree seed orchards and seed stands. It aims to support tree growers by supplying fast-growing trees, which would enable them to see returns on their investments at shorter rotations. The programme will soon start supporting the supply of improved seeds to stakeholders in the Southern Highlands and beyond. However, the market for the seeds may grow within and outside the country, and some tree growers, especially those in marginalised rural areas, may not fully benefit from the initiative. It will therefore be the responsibility of both the government under its mandate to produce tree seeds and the Tanzania Tree Growers Union to ensure that the seeds are made available to larger numbers of small-scale tree growers, who constitute the majority of tree investors, in order to scale up the initiative. Doing so requires skills development, awareness creation, and demonstration. Another key

challenge that needs to be looked into is keeping quality standards high by ensuring their enforcement by mandated government institutions or by facilitating stakeholders to provide support.

### **5.3.3 Provide extension services beyond the reach of PFP 2**

Tree growers from all groups (men, women, vulnerable groups) will need to be motivated to grow better trees and receive good yields with demonstrations and support in building their technical skills. In Makete, it is now evident that tree growers are not motivated to grow trees because of the losses they are making. Providing extension services is one way to motivate them to grow trees. Both the programme and the government should identify an innovative way in which local community leaders can participate in training programmes and be supported to deliver services to fellow tree growers. Community leaders are likely to work on a voluntary basis and achieve better results than paid outsiders since they are respected and trusted by their fellow community members. With demonstration plots established in their woodlots, they are likely to be easily understood by their fellow tree growers and knowledge retention would be high. For sustainability purposes, the local government would work with the programme to train more community leaders, including women, to expand the knowledge in additional villages – enabling the initiatives to spread across the District. Support on extension services by the local government would be possible through re-investing CESS collected on forestry products as required by law.

## **5.4 Improve business management practices**

### **5.4.1 Business development services**

Both tree growers and SMEs need to be provided basic knowledge of business development services, which may include the application of simple tools in business management as well as financial management and marketing. If they are educated, they will understand when their businesses will break even and be able to make better decisions about setting prices and costing activities as well as about taking a loan or not. Developing business plans can help tree growers and SMEs have a clear vision of their businesses and access credit when they need it.



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