Tanzania Forest Conservation Group
Shirika la Kuhifadhi Misitu ya Asili Tanzania

MTANDAO WA JAMII WA USIMAMIZI WA MISITU TANZANIA
MJUMITA

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TFCG Technical Paper 47

Sustainable timber harvesting in village forest reserves in Tanzania: Lessons learned from Kilwa and Kiteto

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About the Transforming Tanzania's Charcoal Sector Project – Phase 1

The Transforming Tanzania's Charcoal Sector (TTCS) initiative aims to deliver sustainable development and benefits to rural communities in Tanzania through enhanced environmental sustainability from better biomass harvesting and through more efficient production technologies and biomass energy-friendly energy sector policies. The TTCS project intends to achieve its goal through two interlinked outcomes:

Outcome 1: Establishing a real-life, pro-poor, sustainable charcoal value chain that inspires and persuades decision makers to engage in the transformation of Tanzania's Charcoal Sector; and provides a tangible demonstration of the changes that are needed in the policy and regulatory environment.

Outcome 2: The project aims to communicate credible data and analysis through coordinated advocacy leading to more biomass-friendly governance of Tanzania's energy sector.

Timescale

TTCS Phase 1 was operational from March 2012 – November 2015. Phase 2 of the project began in December 2015.

Project location for Outcome 1

The activities under Outcome 1 were implemented in 10 villages in Kilosa District, Morogoro Region during Phase 1. The project focuses on woodland adjacent to the high biodiversity forests of the Rubeho Mountains.

About the project partners

The Swiss Agency for Development and Cooperation (SDC)

SDC is Switzerland's international cooperation agency within the Federal Department of Foreign Affairs (FDFA). The project is financed by SDC.
info@deza.admin.ch www.sdc.admin.ch

Implementing Partners:

Tanzania Forest Conservation Group (TFCG)

TFCG is a national non-governmental organization whose mission is to conserve and restore the biodiversity of globally important forests in Tanzania. TFCG is the lead partner in the implementation of Outcomes 1 and 2.
tfcg@tfcg.or.tz www.tfcg.org

Tanzania Community Forest Conservation Network (MJUMITA)

MJUMITA is a national network of community groups involved in participatory forest management. The network provides a forum for capacity building, advocacy and communication for these groups. MJUMITA is responsible for advocating for policies that incentivize community-based forest management by integrating sustainable charcoal production.
mjumitaorg@mjumita.org www.mjumita.org

Tanzania Traditional Energy Development Organisaation (**TaTEDO)**

TaTEDO is a sustainable energy development organization with 20 years experience of working on rural energy projects including sustainable charcoal. TaTEDO is responsible for building capacity on improved kiln technology and is contributing to national advocacy and communication work by the project.
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Executive Summary

Introduction

Tanzania has a total forest area of 48.1 million ha of which woodlands occupy 44.7 million ha or 92% of the total forest area (NAFORMA, 2015). In Tanzania mainland, 45.7% of the total forest and woodlands is owned by the villages (*ibid*.). The total annual supply of wood at national level is estimated at 83.7 million m^3. However, only about half of this volume i.e. about 42.8 million m^3 is available for harvesting at a sustainable level (NAFORMA 2015). The supply of wood is therefore unable to meet demand sustainably. The annual deficit is currently met by overharvesting in accessible forest areas and illegal harvesting in protected areas. This leads to degradation of the remaining forests and woodlands.

The Tanzania Forest Conservation Group (TFCG) has successfully modelled a sustainable charcoal value chain in Kilosa district which supports sustainable woodland management in the village forest reserves and it has plans of establishing sustainable timber value chain in phase two of the Transforming Tanzania's Charcoal Sector TTCS project. In order to document details of this potentiality, TFCG decided to hire a consultant to document lessons learnt from other Village Forest Reserves (VFRs) that integrate sustainable timber harvesting.

Objective of the study

To document lessons learnt from communities managing VFRs that integrate sustainable timber harvesting in their management plans including Sunya, Lerai and Dongo Community Forest (SULEDO) and Mpingo Conservation and Development Initiative (MCDI).

Methodology

The study involved conducting a desk review where a number of documents were reviewed in order to get insights into sustainable timber harvesting. Also, the consultant participated in a study tour with district officials from Kilosa and Mvomero and project staff to MCDI and SULEDO project areas with the aim of documenting on how sustainable timber harvesting is being integrated into Community Based Forest Management (CBFM). Interviews with Kilombero Valley Teak Company KVTC, Domus and other timber buyers were conducted in Kilosa, Mikumi, Ifakara, Morogoro and Dar salaam involving 26 people.

Findings

Set up of the sustainable timber harvesting and its integration into the CBFM in MCDI and SULEDO

For the case of MCDI, the following steps are on how sustainable timber harvesting is integrated in their CBFM set up: First, VFRs with forest zones are established through village land use planning process. Secondly, detailed timber inventory is conducted in the timber harvesting zones so as to obtain data for preparing the timber harvesting plan. Thirdly, the villages set out quota for each species and accord classes for the species that can be sustainably harvested within the five year period.

Fourth, timber is sold to buyers at the villages. The permitting system involves several steps including the timber buyers to apply formally to the Chairperson of the Village Councils (VC) with details on the volumes of each timber species they are seeking to harvest. This comes after being registered at the districts. The Village Natural Resources Committees (VNRC) and VC discuss the letter by considering the type of species and volume they have and if it is within their five year's

harvesting plan. After being approved by the VNRC, the timber buyer gets a timber harvesting permit after paying the total royalty to the VNRC bank account.

The fifth step is for the VNRC to start the process of harvesting the timber for the traders. This process involves identifying the trees to be harvested as per the required timber species and volume, conduct the harvesting, marking of the logs by the District Forest Officer (DFO) through the official hammer. MCDI obtained their hammer in August 2015, an indication that they will be using their hammer for marking the logs.

The timber buyer must then obtain a Transit Pass (TP) from the Tanzania Forest Service (TFS) office and then the timber buyer is legally permitted to transport logs/timber outside the VFR. Most of the timber buyers for MCDI project area come from Dar es salaam, Lindi, Kilwa and Tanga and very few from outside the country including USA, China and Kenya.

For the case of SULEDO integration of sustainable timber harvesting into CBFM set up involves the following steps: First, village land use planning is conducted in which VFRs with various zones are established. The VFR in SULEDO involves ten villages. Each village has conducted land use planning and, through this process; VFRs for each village was established (with zones including timber harvesting zone). The ten VFRs were joined to form the SULEDO Village Land Forest Reserve (VLFR). Forest management plan and bylaws for the VLFR were established at this stage. Secondly, detailed timber inventory is conducted in the timber harvesting zones for each VFR as to obtain data for preparing the timber harvesting plan for the whole SULEDO VLFR. The timber harvesting plan is prepared annually and each of the ten villages has its annual quota depending on the size of the timber harvesting zones and the volume of species to be harvested in each village. Thirdly, the SULEDO VLFR harvesting plan is incorporated into the VLFR management plan whereby harvesting is conducted in a forest block of 1,000ha per year. Tree harvesting is conducted selectively whereby trees of diameter of 40 cm and above are marked and considered for timber harvesting. From 2011 to 2014, timber harvesting was conducted through tendering process. The approach was used twice and some challenges were experienced with the contractors. In 2015, they decided to start producing timber on their own for sale at the villages. They have a mobile saw milling machine. For the period of 2015/16, only five species have been identified for harvesting. The species are Mtondoro, Mpilipili, Mdaula, Mkongo and Msani.

The fourth step is on timber trading, where the timber buyer writes to SULEDO secretariat on the species and amount of timber required. The timber buyer has to be registered at the district first. After being approved by the SULEDO secretariat, the timber buyer pays the required fee through the bank and provides a pay slip to the SULEDO secretariat. No other fees which traders pay. The amount of fee charged per tree species is as shown in the table 4 below. 10% of the total amount has to be paid to the district as cess. This amount, which was approved by the Kiteto District Council and has been included in the district's bylaw; is collected by SULEDO on behalf of the district and a receipt is issued. After the proof of payment, SULEDO process the timber for the buyer, verify through their hammer and once ready the buyer applies for a Transport Permit (TP) at the district's TFS office for transporting timber outside the district. The TPs are issued by TFS according to the directives made by the Ministry of Natural Resources and Tourism that they should be issued by TFS as part of controlling harvesting at the district level.

For SULEDO, most of their customers are from Dar es salaam, Dodoma, Arusha and Moshi. Also there are few buyers within SULEDO area and also from Kiteto town.

From December 2009 to May 2015, communities in MCDI project area obtained revenue of about TZS 401 million from timber volume of 2,460m^3 (an average of TZS 163,008 / m3) benefiting more than 35,000 people. SULEDO have managed to obtain about TZS 121 million benefiting about 50,000 individuals along their timber value chain (correct data on timber volumes was not available during the survey).

Costs incurred by the communities in managing the sustainable harvesting system and their perceptions on the system

In the MCDI villages, the specific costs incurred in managing the sustainable harvesting system involve mainly supervisory costs. Other costs including training costs and provision of the harvesting documents are incurred by the MCDI and government respectively. The amount for the daily subsistence allowance ranges from TZS 7,000 – 15,000 per person depending on the size of the logging areas and distance from the village centre. In addition to this, motorbike transport is provided to the logging crew. For SULEDO, apart from the normal costs on forest management costs; other costs include personnel costs and operating costs averaging to TZS 10 million per year.

Revenue distribution within the villages and governance

In the MCDI villages, 5% of the total income earned per year is paid to the district for supporting district's technical support to the villages. Another 5% is paid to MCDI for covering monitoring and technical support costs. The remaining 90% is for covering costs of managing and conserving the VFR and for village development projects. For SULEDO villages, the revenue is divided into two main groups: the first group is on forest management costs and the second group is on village development projects costs. The division of the revenue is based on the activities. 10% of the amount charged by SULEDO is paid by the timber buyer to the district.

For MCDI villages, all the decisions on how the revenue from sustainable timber harvesting should be spent are made through Village Assemblies. In SULEDO villages, decisions are made by the SULEDO secretariat which comprises of village leaders from the project villages. After being made by the secretariat, the decisions are presented to the villages by the secretariat members. There is good participation of women along the value chain in both sites. Some are involved in the VNRCs, others in the timber harvesting and trading.

Challenges faced by the communities

The challenges which are faced in the MCDI villages are illegal harvesting, cattle invasion in the VFRs, few timber buyers in some villages especially the remote ones and boundary conflicts with neighbouring villages. Challenges which are faced SULEDO communities are pastoralist invasion, political interference, contradictions with TFS and breakage of contracts with traders. Some of the initiatives which have been put in place for addressing the challenges include conducting forest patrols, awareness raising meetings and liaising with the government to establish JFM.

Marketing opportunities with KVTC and Domus

Currently, KVTC are not interested in buying timber from the village forest reserves. The same applies to Domus. Domus are getting their timber supplies from two contractors and the supply is mainly on Eucalyptus species. Domus use the same contractors to obtain other hard wood timber species including Mninga and Mkongo. However, the Mkongo and Mninga supply is quite few as they get very few order of Mkongo/Mninga furniture from their customers.

Study limitations

Data on volumes of timber harvested from SULEDO (2011 to 2014) was not obtained. This has affected the report writing as it is difficult to conduct proper comparisons between the two projects (i.e MCDI and SULEDO) on the revenue obtained against tree volume harvested.

Recommendations for TTCS villages to engage in sustainable timber harvesting

Recommendations given to TTCS villages in engaging in sustainable timber harvesting are as follows:

a) Villages should sell sawn timber at their villages; and should follow the MCDI model.

b) Villages should prepare timber harvesting plans for the timber FMU in their VFRs so as to obtain data on the allowable cut per year. This should part and parcel of the forest management plan.

c) The villages should liaise with the District and the TTCS project to advertise and create awareness to the public about timber sales in the villages though posters in the signboards at the district, local radios and newspapers.

Morogoro town has potential as a market for the sustainably produced timber from them TTCS villages. The villages need to link with the Morogoro wholesalers and retailers.

1) Abbreviations and Acronyms

Acronym	Definition
AVA	Adding Value to the Arc
CBFM	Community Based Forest Management
DFO	Distirct Forest Officer
FSC	Forestry Stewardship Committee
JFM	Joint Forest Management
KVTC	Kilombero Valley Teak Company
MCDI	Mpingo Conservation and Development Initiative
MJUMITA	*Mtandao wa Jamii wa Usimamizi wa Misitu Tanzania*
NAFORMA	National Forest Resources Monitoring and Assessment
NGO	Non Government Organization
PFM	Participatory Forest Management
SDC	Swiss Agency for Development and Cooperation
SULEDO	Sunya, Lerai and Dongo Community Forestry
TaTEDO	Tanzania Traditional Energy Development Organization
TFCG	Tanzania Forest Conservation Group
TFS	Tanzania Forest Services Agency
TIN	Tax Identification Number
TP	Transport Permit
TTCS	Transforming Tanzania's Charcoal Sector
TZS	Tanzania Shillings
USA	United States of America
VC	Village Council
VLFR	Village Land Forest Reserve
VLUP	Village Land Use Planning
VNRC	Village Natural Resources Committee

2) Acknowledgements

I wish to acknowledge with appreciation the Tanzania Forest Conservation Group (TFCG) for contracting me to undertake this unique assignment.

I am also thankful to the TFCG's Transforming Tanzania's Charcoal Sector (TTCS) project in Kilosa especially the TTCS Project Manager and other project staff for availing me with adequate cooperation during data collection in the study sites and for logistical arrangements that facilitated the whole exercise.

I am extending my acknowledgements to all the respondents and all community members, administrative and technical staff at MCDI in Kilwa and SULEDO in Kiteto, DFOs in Kilosa and Mvomero, KVTC in Dar es salaam and Ifakara, Domus and timber dealers in Kilosa, Mikumi, Ruaha, Morogoro and Dar es salaam for their cooperation and availing information which was used in this study. *Emmanuel Mwakajumba*

TFCG also extends its thanks to Jasper Makala, Executive Director of the Mpingo Conservation Development Initiative for his thorough editing of the description of the MCDI.

1) Introduction

Transforming Tanzania's Charcoal Sector (TTCS) Project is a partnership project between the Tanzania Forest Conservation Group (TFCG), the Community Forestry Network of Tanzania (MJUMITA) and the Tanzania Traditional Energy Development Organisation (TaTEDO). The project is financed by the Swiss Agency for Development and Cooperation (SDC). The project also works closely with relevant government departments including the Kilosa District Council and the Tanzania Forest Services Agency. TTCS has two components; one aimed at developing markets and supply chains for sustainable charcoal, and the other concerned with improving knowledge management and governance in the biomass energy sector.

The project aims to deliver sustainable development and benefits to rural communities in Tanzania through enhanced environmental sustainability from better biomass harvesting and through more efficient production technologies and biomass energy-friendly energy sector policies. The project will achieve this by supporting improvements in raising the efficiency and environmental sustainability of the charcoal industry and by launching a research-based knowledge management, communications and advocacy strategy to develop credible new policy and governance measures designed to enhance the role of biomass energy enterprise in poverty reduction and national development.

As such this study sought to document lessons learnt from other Village Land Forest Reserves (VLFRs) that integrate sustainable timber harvesting including villages involved in SULEDO Community Forest and in the Mpingo Conservation and Development Initiative (MCDI). The experiences documented will help the project in supporting the communities to harvest timber sustainably from their VLFRs. The study also sought to identify timber value chains that can maximise the profit to the forest-owners (the communities) by consulting with different timber selling companies including KVTC and Domus.

In view of the above, TFCG hired a consultant to undertake the assignment. The consultant reviewed relevant information on sustainable timber harvesting, participated in a study visit to SULEDO Community Forest and MCDI; and consulted KVTC and Domus and other timber selling companies in Dar es salaam, Morogoro, Mikumi, Ruaha and Kilosa. The study visits to SULEDO and MCDI aimed at documenting the lessons learnt on how the communities are integrating sustainable timber harvesting in their CBFM set up. Consultations with KVTC, Domus and other timber selling companies aimed at assessing business opportunities for the timber which is going to be produced sustainably in the TTCS project villages. Data on timber prices per plank sizes and species including quality and volume was also documented from the timber selling companies in Dar es salaam, Morogoro, Mikumi, Ruaha and Kilosa.

2) Objectives of the survey

2.1 Main objective

To document lessons learnt from communities managing VFRs that integrate sustainable timber harvesting in their management plans including SULEDO and MCDI.

2.2 Specific objectives

i. To document how sustainable timber harvesting has been set up and how it is being integrated into CBFM including data on the volume of timber harvested and the species.

ii. To assess how the permitting system works and generally how it operates including quantitative data on the royalties charged per species.
iii. To document how communities ensure that the timber harvested is within sustainable limits and how they take into consideration any illegal harvesting within the VFR when setting sustainable limits.
iv. To document the roles of the government, TFS and district in the sustainable timber harvesting from the VFRs.
v. To document how timber is being sold from the VFRs and where are the most profitable markets for their timber. Also, to document on how much money are the villages making including quantitative data on incomes to the village through royalties and other fees and income to the harvesters.
vi. To document quantitative data on the costs incurred by the communities in managing the sustainable harvesting system and their perceptions on whether it is profitable and beneficial.
vii. To document how the revenue from sustainable timber harvesting is being shared within the villages.
viii. To document how the villages are ensuring transparency, accountability and good governance in their sustainable timber harvesting including how they report to the broader community on the finances and sustainability of the timber harvesting.
ix. To view the timber harvesting documents and records used by the respective projects.
x. To document other production and market factors which should be considered in including timber as one of the forest product that can be harvested sustainably from the VFRs.
xi. To document the challenges faced by the communities and how have they overcome them.
xii. To document the recommendations from the SULEDO and MCDI communities to other communities considering sustainable timber harvesting.
xiii. To document the perception of the MCDI communities and project implementers on the benefits of establishing the certification scheme rather than just selling into the uncertified market.
xiv. To document measures which are taken to ensure participation of women in the sustainable timber value chain.

3) Methodology

3.1 Desk review

In order to get insight into sustainable timber harvesting, a number of documents were reviewed. The documents reviewed include timber harvesting plans for MCDI and SULEDO, forest management plan and by-law for SULEDO and some villages in MCDI, leaflets on MCDI services to timber buyers, MCDI timber brochures, MCDI and SULEDO profile brochures and MCDI's VFR Quota Management Database.

3.2 Field visit to MCDI and SULEDO

A six-day study tour to MCDI in Kilwa and SULEDO in Kiteto was conducted. The study tour involved District Forest Officers from Kilosa and Mvomero districts, project staff from TTCS and AVA projects and community representatives from Ulaya Mbuyuni and Ihombwe villages. The study aimed at documenting on how sustainable timber harvesting is being integrated in the CBFM set up in MCDI and SULEDO project areas. In Kilwa, villages visited included Nanjirinji A and in Kiteto, villages visited included Dongo.

3.2 Interviews with KVTC and Domus staff and other key informants

Interviews with KVTC and Domus were conducted in Dar es Salaam. Interviews with other potential timber buyers were conducted in Kilosa, Mikumi, Morogoro and Dar es Salaam. A list of all people contacted is provided in Appendix 2 of this report.

4) Literature review

4.1 Brief description of the timber trade in Tanzania

A timber value chain in Tanzania can be organized in different ways (Wells and Wall 2005, Shayo 2006). Some chains are relatively short and involve local timber pitsawyers that also operate as dealers and sell directly to carpenters, and in other cases carpenters organize the harvesting. Longer routes exist for more expensive timber, where larger dealers, either from local or urban areas, have informal agreements with pitsawyers. They deliver in response to bids from larger contractors and retailers. In some cases, there are intermediate dealers involved.

Hardwood extraction in the natural forests and woodlands in Tanzania is an informal industry with low capital investments. Most of the timber is pitsawn (Wall and Wells 2005). Pitsawyers are usually local farmers who want to earn additional money in-between agricultural seasons. They work either individually or for timber dealers and operate deep in the forest where the chances of being caught are low. They spend a few weeks in the forest to select and fell trees. Then, they cut the logs into planks using handsaws. The planks are transported out of the forest to a collection point by carriers on foot or by bicycle or motorcycle, often by night via backroads to avoid police and forest officers. Some planks are transported onwards to local markets and sold to carpenters. The most valuable timber is transported to urban areas where the purchasing power of the population is higher. Unlike softwood, which is openly displayed and relatively cheap, hardwood is mainly delivered on demand. It is only publicly displayed or transported when converted into furniture, so that the official hammer mark obtained from the local forest officer (as an indication of legality) can no longer be checked.

4.2 Status of extraction of hardwood timber from the woodlands in Tanzania

Many Sub-Saharan African countries are experiencing robust economic growth coupled with increased domestic demand due to increasing urbanization and population growth (World Bank 2013). This has spurred economic development, part of which is fuelled by natural resources (*ibid*.). The woodlands in Tanzania are under severe pressure from conversion for agriculture and degradation due to extraction of firewood, poles, charcoal and timber (Ahrends *et al*. 2010, Hall *et al*. 2009). Population growth, development of infrastructure and competition over resources and agricultural land are among the main drivers of forest degradation and deforestation. As a result, forest cover in Tanzania is lost at an increasingly rapid rate (Hosonuma *et al*. 2012). For instance the Eastern Arc Mountains have lost around 70% of their natural forests (Burgess *et al*. 2002), which implies that many species are now threatened (Burgess *et al*. 2007).

The Tanzanian government has taken several measures to reduce deforestation. The measures include imposing a ban on logging in government forest reserves in the 1990s, establishing PFM and updating the forest regulations to incorporate concepts of biodiversity, catchment forests and nature reserves, and recognizing the potential of REDD and PES financing of conservation (Schaafma *et al*. 2014). However, there is a clear lack of adequate policy enforcement. Only an estimated 13-26% of timber royalties are collected by the government (Indufor 2005, Milledge and Kaale 2005), although this percentage may be as low as 4% (Milledge and Elibariki 2005).

Wherever illegal trade is more profitable than legal trade, and there is a lack of policy enforcement, illegal resource use and illegal markets are likely to arise (Brack and Hayman 2002). Indeed, timber harvesting is known to happen on a daily basis in the protected and unprotected areas (Makero and Malimbwi 2012). Since timber and charcoal demand from the capital of Dar es Salaam has largely depleted coastal forests (Ahrends et al. 2010, Milledge and Kaale 2005), pressure on inland forests which still contain some highly valuable timber species has increased.

The impacts of illegal and unsustainable timber harvesting include negative effects on ecosystem services of global importance such as biodiversity, carbon emissions and eco-tourism. Other externalities relate to direct forest uses such as harvesting of non-timber forest products, soil conservation and pollination, and cultural values, which are mainly of local or regional importance.

Enforced regulation of the timber industry will come at the cost of some and the benefit of others. The timber trade creates jobs and cash income which are vital to people in rural communities in Tanzania, many of whom live near the poverty line, and provides material resources to urban people. But the current rate of forest conversion casts doubt on the sustainability of resource off-take, in terms of welfare maximization and distribution over stakeholders and time. The illegality of the sector is a major management problem, as there is little information to inform decision-making, to understand the severity of the problem, let alone the distributional effects of policy interventions.

5) Findings

5.1 Set up of the sustainable timber harvesting and its integration into the CBFM set up in MCDI and SULEDO

5.1.1 MCDI

For the case of MCDI, VLFRs with forest zones are established through the village land use planning process. The VFRs have VFR management plans in which the rules for harvesting and management are stated. The harvesting plans are implemented in conjunction with the VFR management plan. All parts of their VFRs are considered for timber harvesting except 'no-take zones' which have been set aside for water catchment and biodiversity conservation. Several criteria are used in establishing the no-take zones including the following: harvesting is not allowed within 60 metres of the banks of a permanently flowing river or permanent water source, or within 20m of a spring or the banks of any regularly flowing stream or 30m of the banks of any regularly flowing small river as specified within the VFR management Plan. Also, harvesting is not allowed within a buffer distance (from the banks) equal to the width of any gully formed by ephemeral wet season stream, e.g. not within 2m of the banks of a gully which is 2 m wide. Other forest areas where harvesting is not allowed include areas that are considered as sacred and/or have religious significance to members of the community, plus additional areas that are set aside because of their biodiversity conservation value (e.g. harvesting is not permitted in high conservation value coastal forest). Collectively, these no-take zones must constitute at least 10 percent of the VFR area.

In the timber harvesting zones, a detailed timber inventory is conducted so as to obtain data for preparing the timber harvesting plan. In the harvesting plan, the villages set out a quota for each species and according to size classes for the species that can be sustainably harvested within the five year period.

In order to calculate the quotas, first the number of trees is obtained by dividing the total area of the harvesting zone by the total distance walked during the survey. The figure obtained is called the area multiplication number which is used for extrapolating the number of trees recorded during the

survey up to the whole harvesting zone within the particular VFR. Then the number of trees per species counted during the transects for the classes which will be harvested (green and blue) are multiplied by length of the time the trees will take to grow to harvestable size. Finally the numbers obtained through this calculation are incorporated with the area multiplication number to obtain the harvesting quota for the particular tree species. More details are found in the MCDI's guidelines on forest assessment and sustainable harvesting. Through this, the timber which they harvest is within the sustainable limits. Communities are also aware that if they harvest more timber than the quota that has been set out in this harvesting plan, the VFR will not be managed sustainably and the Director of Forestry and Beekeeping Division may revoke its status. The DFO reports to FBD at least annually. There is no direct reporting from the villages to FBD.

The timber trees in the quota are divided into three classes: trees of under harvestable size (denoted red in the inventory), trees of harvestable size (denoted green in the inventory) and trees of the largest size class (denoted blue in the inventory). All trees denoted green and blue trees can be sustainably harvested within the five years harvesting plan. It is not necessary to harvest all green trees in 5 years, but all green and blue trees can be sustainably harvested in the 5 year harvesting plan if demand is high enough.

The harvestable size class is split into green and blue trees to avoid loggers targeting all the big trees and leaving the smaller ones, which, if the quota is in number of trees, would be a rational response. Thus, it is a means of ensuring trees are harvested in rough proportion to their size distribution. This approach also helps to improve ecological sustainability as blue trees have much lower quotas associated with them than green trees and so some are left for seed dispersal.

Trees denoted red are immature trees for timber and are not harvested in the particular harvesting period. The harvesting plan treats each species separately, and it provides a distinct quota for sustainable harvesting of each considered tree species. MCDI do not have particular zones for particular years. They harvest anywhere in the harvesting zone. Their harvesting plan is prepared every 5 years. MCDI monitor the volume which they are supposed to harvest for particular tree species in a particular period to make sure that the volume does not exceed the quota allocated.

In the sample MCDI harvesting plan that was reviewed by the Consultant for the period of 2014 – 2019, seven tree species were considered in the harvesting quota. The species are Mkongo (*Afzelia quanzensis*), Mninga (*Pterocarpus angolensis*), Mlondolondo (*Xeoderis stuhlmanii*), Mpuga, Msenjele (*Acacia nigrescens*), Mpingo (*Dalbergia melanoxylon*) and Mlipadeni. An additional nine tree species had been considered for harvesting previously from 2009 – 2013. Table 1 below shows the 16 tree species which were harvested in the period of December 2009 to May 2015.

The harvesting in each VFR is being monitored by the VNRCs and the Village Harvesting Supervisors who have been trained by MCDI. The DFO must be present to make sure that harvesting is conducted as per the legal requirements including following the management and harvesting plans. Table 1 shows the volume of timber per species harvested and revenue obtained as timber royalties for the past five years in the MCDI project area.

Table 1. Volume of timber per species harvested and the revenue obtained in the MCDI project area from Dec 2009 to May 2015

Vernacular name	Latin name	Tree volume (m3)	Revenue obtained per species
Mtondoro	*Julbernardia globiflora*	140.38	15,312,624
Msufi pori	*Bombax rhodognaphalon*	34.61	3,232,332

Vernacular name	Latin name	Tree volume (m3)	Revenue obtained per species
Msenjele	*Acacia nigrescens*	10.64	1,085,563
Msekeseke	*Bobgunnia madagascariensis*	54.81	9,227,264
Mpingo	*Dalbergia melanoxylon*	955.28	198,217,673
Mpangapanga	*Millettia stuhlmanii*	11.97	1,972,128
Mninga jangwa	*Pterocarpus angolensis*	818.02	80,985,923
Mninga bonde	*Pterocarpus tinctorius*	14.59	11,142,976
Mninga	*Pterocarpus angolensis*	6.35	1,300,480
Mnepa		1.46	168,192
Mlondolondo	*Xeoderis stuhlmanii*	0.86	132,096
Mkuruti	*Baphia kirkii*	1.76	270,336
Mkulyungu		1.3	140,760
Mkongo	*Afzelia quanzensis*	402.1	77,304,442
Miombo	*Brachystegia spiciformis*	1.47	225,792
Mgelegele		4.24	651,264

Source: MCDI data, July 2015.

5.1.2 *SULEDO*

For the case of SULEDO, the harvesting plan is incorporated into the forest management plan whereby harvesting is conducted in a forest block of 1,000ha per year. Tree harvesting is conducted selectively whereby trees of diameter of 40cm and above are marked and considered for timber harvesting. From 2011 to 2014, timber harvesting was conducted through tendering process. The approach was used twice and some challenges were experienced with the contractors. The challenges include breach of agreements with the contractors due to complaints on insufficient timber availability and timber quality in the blocks which they were allocated. In the year 2010 – 2011, 500 ha were allocated to one contractor, but only 130 ha of forest were harvested. Similarly, in the year 2011 – 2013, 660 ha were allocated to another contractor, but only 300 ha were harvested. Both contractors complained that the timber harvested was of poor quality and was also not sufficient to the expected volumes. As a result, the contracts were breached and the matter was taken to court. The unsettled royalty balance was not paid to SULEDO.

In 2015, they decided to start producing timber on their own for sale at the villages. They have a mobile saw milling machine. For the period of 2015/16, only five species have been identified for harvesting. The species are Mtondoro, Mpilipili, Mdaula, Mkongo and Msani. Table 2 below shows the revenue obtained from 2011 to May 2015. Data on the volumes of timber harvested from SULEDO was not available during the survey.

Table 2. Revenue obtained from timber royalties in the SULEDO project area from 2011 to 2015

Year	Revenue obtained (TZS millions)
2011- 2012	32
2012 – 2014	48
2015 (up to May 2015)	41
Total	**121**

Source: SULEDO data, July 2015.

5.2 The permitting system, timber sale procedures and the amount of royalty charged per tree species

For the case of MCDI, logs are the forest products which are being traded and the royalty is being paid by the timber buyers in the villages. All of the harvesting is done by the VNRC plus other skilled members of the community to provide additional employment opportunities for local people. In order for the buyers to be eligible to purchase the logs, they should be registered at the district as traders of forest products. In order to register, timber buyers must present to the DFO their business license, TIN number and company registration. The timber buyer should use the registration number to pay an annual registration fee of approximately TZS 256,000/= to the DFO, following which they will be presented with a registration certificate. The same procedures apply to the timber buyers for SULEDO.

After being registered at the district, the next step is for the timber buyer to obtain a harvest permit. In order to do this, for the case of MCDI, the timber buyer writes a formal letter of application to the appropriate Village Council, detailing the volumes of each timber species in which they are interested. Harvesting is done by villages through the logging crew. The VNRC and VC discuss the letter by considering the type of species and volume they have and if it is within their harvesting plan. Then, the buyer will need to complete an Application Form and pay an Application Form fee of TZS 5,000 in cash to the VNRC. Once the application is approved the buyer must deposit the money for the volume requested in the VNRC bank account and submit the paying-in slip to the VNRC. After this payment, the timber buyers will be given a receipt for the amount paid to the VNRC. The amount which the VNRC charge for each species is as shown in Table 3 below. The VNRC charge the same amount as per the government scales on timber royalties. Upon formal contractual agreement with the VNRC, the timber buyer will be issued with a Harvest Permit. Normally, the deposit is 100% of the total amount agreed for the transaction. 5% of the total payment is paid as district cess by the timber buyer. The VNRC must publicise a notice of harvesting on the village notice board for at least 2 days before harvesting starts.

Table 3. Amount of royalty charged per volume of timber tree species harvested in MCDI-

Vernacular Name	Latin Name	Royalty charged per m^3 (in TZS)
Mpingo	*Dalbergia melanoxylon*	230,400
Mtondoro	*Julbernardia globiflora*	153,600
Mninga jangwa	*Pterocarpus angolensis*	204,800
Mninga bonde	*Pterocarpus tinctorius*	204,800
Msekeseke	*Bobgunnia madagascariensis*	204,800
Mpangapanga	*Millettia stuhlmanii*	204,800
Mkongo	*Afzelia quanzensis*	204,800
Mkuruti	*Baphia kirkii*	153,600
Msenjele	*Acacia nigrescens*	153,600
Msagawi	*Spirostachys Africana*	153,600
Msufi pori	*Bombax rhodognaphalon*	115,200
Mwembeti	*Sterculia quinquiloba*	115,200
Miombo	*Brachystegia spiciformis*	115,200

Source: MCDI data, July 2015.

After obtaining a receipt, the timber buyer with her/his logging team and the VNRC arranges how to enter in the VFR to harvest the agreed volume of timber. They will be accompanied by at least one member of the VNRC who is trained as a Harvesting Supervisor; she/he will advise the team on which trees are of legally harvestable size (this varies by species) among other rules and regulations. The amount which the trader usually takes is only 70% of the whole standing volume of

the tree. 30% is left in the forest as off-cuts. The DFO must be present to ensure that the harvesting is conducted according to legal requirements and also to stamp the logs. This takes place at the location where each tree was felled. Each felled log is measured at the landing site, the volumes calculated, and log statements maintained. The team assists in calculating the volume of each tree.

Hammers are needed to stamp logs and without them logs cannot be legally transported away from the felling site. However, hammers weren't available in all district offices for years after PFM was institutionalised, meaning that communities could set up VLFRs but not benefit from selling timber. MCDI played an active role in advocating for the release of these hammers by the Forestry and Beekeeping Division to District Authorities. In August 2015 the hammers were released and are now under the custodian of the DFO until when the government develops guidelines on how to use the hammers by the villages

Recently in August 2015, MCDI facilitated six Districts they work with to obtain VLFR hammers from Forestry and Beekeeping Division. The hammers will be under the custodianship of the DFO until the government develops guidelines on how to use the hammers by the villages.

The timber buyer must obtain a Transit Pass (TP) from the DFO before the logs can be legally transported outside the forest. Upon receipt of the TP, the timber buyer is legally permitted to transport logs outside the VFR.

For the case of SULEDO, after being registered at the district, the timber buyer writes to SULEDO secretariat on the species and amount of timber required. After being approved, the timber buyer pays the required fee through the bank and provides a paying-in slip to the SULEDO secretariat. The amount of fee charged per tree species is as shown in the table 4 below. 10% of the total amount has to be paid to the district as cess. This cess was set by the Kiteto District Council and it is in the district's bylaw. This amount is collected by SULEDO on behalf of the district and a receipt is issued. No other fees are paid by the traders. After the proof of payment, SULEDO processes the timber for the buyer, verifies it through their hammer and once ready the buyer applies for a TP at the TFS office for transporting timber outside the district. The TPs are issued by TFS according to the directives made by the Ministry of Natural Resources and Tourism that they should be issued by TFS as part of controlling harvesting at the district level.

Table 4. Amount of royalty charged per volume of timber tree species harvested in the SULEDO project area in 2015

Tree species	**Royalty charged for a volume of sawn timber per m^3 (in TZS)**
Mninga and Mkongo	800,000
Msani, Mtondoro, Mpilipili and Mdaula	700,000

Source: SULEDO data, July 2015.

As correct data on volume harvested was not available from SULEDO, it was difficult for the consultant to compare between the two approaches on which one has more economic benefits than the other.

5.3 The most profitable markets and the marketing approach

Most of the timber buyers for MCDI-supported VFRs come from Dar es Salaam, Lindi, Kilwa and Tanga. From the period of 2009 – 2015, the villages have conducted timber trade with 36 buyers. Most of the buyers are from within the country and about three are from outside the country including USA, China and Kenya. The buyers buy logs, process them and sell the planks. Most of

the buyers export the planks and some of them sell within the country. Some of the traders make blocks from the timber for parquet flooring and some sell the timber for making musical instruments.

MCDI assists the villages in seeking reliable markets and buyers for their timber inside and outside the country. Several marketing techniques are used in conveying information to potential traders including advertising in their website and door to door marketing with information on the list of available timber species and the fee rates. Also, the villages have been trained on sales and marketing strategies including certifying the timber with the Forest Stewardship Council (FSC); They have also been supported on facilitating transactions by liaising with the communities, timber buyers and other stakeholders throughout the timber harvesting process.

For SULEDO, most of their customers are from Dar es salaam, Dodoma, Arusha and Moshi. Also there are a few buyers within SULEDO area and also from Kiteto town. They advertise their timber sales through media e.g. newspapers and radios; and also by participating in the Sabasaba exhibitions. Currently, they are in the process of opening timber yards in Dar es Salaam, Gairo, Arusha and Kilindi. No sales which have been conducted so far as the timber yards are not yet ready at the moment.

5.4 Harvesting within sustainable limits and controlling of illegal harvesting within the VFR

Through the harvesting plans, the villages have harvesting quotas. This means that the timber harvested must not exceed the natural growth rates or greatly alter the structural composition of the forest. In harvesting forest products, it is also necessary to take into account that some trees are going to die naturally. Illegal harvesting is controlled by conducting forest patrols. Any person doing illegal activities in the VFRs will be arrested by the patrol team. Illegally harvested forest products and tools which were used for the illegal harvesting are taken to the VNRC and are confiscated. The illegal doers are punished as per the VFR bylaw where they pay fines. If the illegal doer denies, then s/he is taken to district court by the VNRC. The VNRC informs the DFO about the confiscated forest products and tools which were used for the illegal harvesting and, if no claim has been made within 30 days the VNRC will auction the confiscated forest products and the revenue is deposited in the village bank account. Importantly, regardless of whether a suitable buyer is found for the illegally harvested timber, the volume is calculated and the amount deducted from the quota for the affected species within the harvesting period. This is crucial to ensure sustainability.

When SULEDO's block approach and MCDI's non-block approach are compared, the advantage of MCDI's approach is that it is conducted systematically and each tree worth harvesting for timber is measured and documented. The SULEDO's block approach does not involve detailed measurement per tree as MCDI. Secondly, harvesting quota for each tree species to be harvested is obtained through the MCDI's approach while through SULEDO approach only a block is set aside for harvesting per year with no data on how much can be harvested sustainably per species.

According to VFR management in the MCDI villages, all the communities bordering the VFR are guardians of the forests and any individual person who notices any illegal activities should report them to the Village Government, the VNRC or the patrol team.

In MCDI's area of operations, there are three types of forest patrols and these vary within villages. The first one is where the VNRC are the ones doing the forest patrol, the second one is where the VNRC plus other selected villagers forms the patrol team and the last one is where there is separate patrol team formed through the village assemblies independent of the VNRC. The latter

two forms of patrol are also undertaken by the communities supported by SULEDO, whilst the first is only done by MCDI-supported communities.

In villages where there is a patrol team which exists independently of the VNRC, forest patrols are conducted by the team and reports are submitted to the VNRC. The VNRC also conducts forest patrols inside the VFRs at least one per month so as to control illegal harvesting and counter-checking the effectiveness of the patrol teams. This follow up patrol is conducted by alternating among the VNRC members and it involves also camping in some parts of their VFRs especially in forest areas which are remote and where frequency of illegal activities are more pronounced. This is in place in MCDI project area only.

In other villages, the patrol team is elected by the village assembly in each village. The patrol team is responsible for carrying out regular patrols of the VFR. This is in place at both MCDI and SULEDO. The patrol team in each village consists of one patrol commander (usually a member of the VNRC), two members of the VNRC and three community members who are familiar with the VFR boundaries. The patrol team records details of each patrol in the Patrol Book and reports its findings to the VNRC after its activities. Normally, the patrol is conducted twice per month. Each week the entire VFR boundary is patrolled. Patrol members are paid allowance for their work. The patrol members are changed through a Village Assembly after every six months or at any time when the need arises. Members of the patrol team found to have acted dishonestly are instantly dismissed and replacements chosen by the particular village. In both MCDI and SULEDO, members of the patrol team are paid allowances for their duties ranging from TZS 10,000 – 15,000 per person per day.

Also in some villages in the MCDI project area, forest patrols are conducted jointly with adjacent villages which are not in the project. This helps in reducing illegal activities in the villages with CBFM from the adjacent villages which are not in CBFM.

Apart from having the forest patrols, MCDI staff liaise with the DFO to conduct ‘spot checking’ so as to assess the efficiency and effectiveness of the forest patrols by the village teams.

5.5 The roles of the government, TFS and district in the sustainable timber harvesting from the VFRs

5.5.1 Roles of the central government

i. To provide the villages with forest hammers.
ii. To provide the villages with permit books including licence books, receipt books, income and expenditure books, fines books and forest patrol books. This applies to both sites.
iii. In MCDI project area, FBD staff monitors harvesting within the VFRs by obtaining information from the DFO and also through field visits to the project areas.
iv. To provide various guidelines and regulations on PFM. This includes providing simplified guidelines on establishing CBFM, conducting forest resource assessments and guidelines for preparing harvesting plans. This is applicable to both MCDI and SULEDO.

5.5.2 Role of the District

i. To monitor timber harvesting process in the villages including collecting copies of buyers licences issued by the villages and file them at the DFO’s office. This is for district’s records and also for confirming to various checkpoint staff when the buyer transports the timber.

ii. To provide support on marketing for timber. This applies to both MCDI and SULEDO. When timber buyers visit the district, DFO connects them with the villages.
iii. To manage and resolve conflicts and disputes which are beyond the capacity of the village governments. This applies to MCDI project area especially when the illegal doers have been taken to court by the VNRC after disagree to be fined as per the VFR bylaw.
iv. To provide technical support and backstopping once per quarter in the responsibilities of the villages in conserving their VFRs and in the harvesting timber. This is applicable to both MCDI and SULEDO.
v. To receive semi-annual reports on implementation of forest management activities from the villages. This is applicable to both MCDI and SULEDO.
vi. To audit all revenue and expenditure books used by the VNRCs and take necessary steps when required.
vii. To support the communities with verification of the timber through timber harmer.
viii. To approve VFR management plans, harvesting plans and bylaws. This applicable to both MCDI and SULEDO.

5.5.3 Roles of the TFS

i. To register the timber traders before they purchase timber from the project villages. This is applicable to both MCDI and SULEDO.
ii. To provide TP to the timber and log buyers before transporting their products outside the district. This is also applicable to both MCDI and SULEDO.

5.6 Amount of revenue obtained by the villages in the MCDI project area

Out of 16 MCDI-supported communities in Kilwa, Rufiji and Liwale districts; five have conducted sustainable timber harvesting and have obtained income from timber royalties ranging from approximately TZS 9 million to more than TZS 300 million from Dec 2009 to May 2015, benefiting more than 35,000 individuals; as shown in the table below. The royalties were charged from timber logs.

Table 5. Amount of revenue MCDI-supported villages in Kilwa have obtained from timber royalties from Dec 2009 – May 2015

Village	VFR size (ha)	Revenue (TZS)
Nanjirinji A	61, 505	300,708,934
Nainokwe	15,967	40,947,050
Liwiti	6,229	29,490,128
Kisangi	1,966	20,955,600
Kikole A	454	9,277,137
Total	**85,650**	**401,378,849**

Source: MCDI data, July 2015

For the case of SULEDO, the annual revenue obtained from timber royalties ranges from TZS 32 million to TZS 41 million as shown in the table six below. The total number of beneficiaries along their sustainable timber value chain is about 50,000. The royalty was charged from timber logs (2011 – 2014) and from timber planks (2015).

Table 6. Amount of revenue obtained by SULEDO from the timber royalties from 2011 – May 2015

Year	Revenue (TZS)
2011- 2012	32 million

2012 – 2014	48 million
2015 (up to May 2015)*	41 million*
Total	**121 million**

* This is for sawn timber only. The rest is the revenue obtained when they were selling logs.

Source: SULEDO data, July 2015

5.7 Costs incurred by the communities in managing the sustainable harvesting system and their perceptions on the system

In the MCDI villages, the specific costs incurred in managing the sustainable harvesting system involve mainly supervisory costs. Other costs including training costs and provision of the harvesting documents are incurred by the MCDI and government respectively. The supervision costs include costs on identifying the trees, taking tree measurements, tree harvesting and during packing of the logs. Supervision is mainly through the logging crews. Harvesting supervision costs include daily subsistence allowance for the logging crew when on duty and their transport costs. The amount for the daily subsistence allowance ranges from TZS 7,000 – 15,000 per person depending on the size of the logging areas and distance from the village centre. In addition to this, motorbike transport is provided to the logging crew. The logging crew is assisted with more VNRC members when need arise. This is in addition to other VNRC costs incurred for the normal forest management activities including meetings with the VC which are held after every three months, patrol costs, office costs, buying motorbikes and buying patrol equipments.

For SULEDO, apart from the normal costs on forest management costs; other costs include personnel costs including salaries to their Project Manager, Forest Officers, Sawmill Operator, Chainsaw Operator, log loaders. Operating costs include fuel for the patrol vehicle and tractor for transporting the logs from the forest to the sawmill. The SULEDO costs are summarized in the table seven below.

Table 7. Costs incurred by SULEDO in managing timber harvesting system from 2011 - 2015

Year	Amount (TZS)
2011 – 2012	8,745,000
2012 – 2013	9,882,000
2013 – 2014	10,365,000
2014 – 2015	12,360,000

Source: SULEDO, July 2015

The communities in both sites perceive well the costs in managing the timber harvesting system since it is beneficial in safeguarding their forest resources within village and in ensuring sustainable forest management.

5.8 Revenue distribution within the villages

In the MCDI villages, 5% of the total income earned per year is paid to the district for supporting district's technical support to the villages. Another 5% is paid to MCDI for covering monitoring and technical support costs. The remaining 90% is for covering costs of managing and conserving the VFR for village development projects. The proportion spent on VLFR management and community development projects varies between villages depending on what they decide when developing a management plan.

For SULEDO villages, the revenue is divided into two main portions: the first portion is allocated to cover forest management costs and the second posrtion is on village development projects costs. For each year, the SULEDO's zone secretariats prepare work plan and budget for the forest management activities and present to the Village Assemblies for approval. After the budget for the forest management being set side, the remainder is divided equally to the ten villages for village development projects where each village will decide on the projects to implement through Village Assembly. However, their work plans and budgets need to be approved by the SULEDO secretariat before being disbursed with fund.

5.9 Good governance and accountability in sustainable timber harvesting

For MCDI villages, all the decisions on how the revenue from sustainable timber harvesting should be spent are made through Village Assemblies. In SULEDO villages, decisions are made by the SULEDO secretariat which comprises of village leaders from the project villages. After being made by the secretariat, the decisions are presented to the villages by the secretariat members. The two approaches have both advantages and disadvantages. One advantage of the MCDI approach is that most of the villagers participate in decision making on how the revenue should be spent since the decisions on how to spend revenue on royalties collected from sustainable timber harvesting are made through Village Assemblies. However, since the benefits will be of communal interest rather than individual interest, attaining direct impact to individuals becomes a challenge. This is one of the disadvantages of this approach. On the other hand, the advantage of the SULEDO approach of involving the secretariat in making the decisions is that it ensures good participation of the community members through their leaders. However, if the communities' ideas and thoughts will not be presented adequately through their leaders, this may result into making decisions with insufficient information.

In both sites, revenues and expenditures are presented in the Village Assemblies and also names of the timber buyers are announced in the meetings. The Village Assemblies are conducted quarterly. The work plans and budgets for the VNRC's activities on forest management and conservation are approved through the Village Assemblies. Through the quarter meetings, progress of the implementation of the VNRCs together with challenges and lesson learnt are presented and discussed. The same applies to the village development projects which are administered by the committees formed by the Village Council members from the hamlets within the sub-villages. This is one way of enhancing accountability and transparency.

In both sites i.e MCDI and SULEDO; we were able to review all important documents including harvesting plans, management plans and bylaws for VLUP and CBFM, receipt books, revenue books, expenditure books with meeting minutes of VC approving the use of money as per budget and work plan, crime books with number of people who committed crimes and the measures taken. Other books which were reviewed include licence books and applications form books. All of these documents were easily accessed in both sites. All of the books were in use with a few showing minor errors on data entry and recording. Supporting the communities in record keeping is of paramount importance.

5.10 Other production and market factors to consider in the sustainable timber harvesting

From the experience from SULEDO and MCDI, calculating the tree volume to be harvested needs to be done carefully, since if it is not properly done it may lead into conflicts with buyers. The other thing which was observed is that the MCDI villages are selling logs not sawn timber. Contrary to MCDI, SULEDO were previously selling logs by tender but nowadays they are selling sawn timber.

Also, MCDI is now planning to sell sawn timber as it is more beneficial than selling logs; and are looking for a mobile saw mill to achieve this. Most of the traders now are looking for sawn timber and few logs as logs need to be processed to obtain the planks. SULEDO decided to sell sawn timber after experiencing challenges outlined in section 5.1 above. As data on harvested tree volume from SULEDO is not available, it is not possible to describe the revenue difference per volume of tree harvested by selling planks versus logs.

5.11 Challenges faced by the communities and how were overcome

Challenges faced by the villages involved in MCDI include illegal harvesting, cattle invasion in the VLFRs, few timber buyers in some villages especially the remote ones and boundary conflicts with neighbouring villages. The illegal harvesting is conducted by some of the community members within the project villages and from outside the villages. They harvest logs and timber illegally and this has been a challenge to most of the MCDI villages. Forest patrols by the VNRCs and patrol teams are conducted in trying to minimize the problem of illegal harvesting. Initially the villages faced challenges related to the speed of harvesting once an order had been placed. Harvesting operations have been speeded up by introducing chain saws.

Some of the forests bordering some of the MCDI project villages are central government and local authority forest reserves where reserve management effort is low. This to some extent contributes to presence of illegal harvesting, cattle invasion and boundary conflicts within the MCDI project area.

Challenges which are faced SULEDO communities are pastoralist invasion, political interference, contradictions with TFS and breakage of contracts with traders. As most of the villagers are pastoralists, they have been allowed to graze in the forest due to the fact that it is very difficult for the communities to stop grazing in the forest. However, not all parts of the forest are allowed to be grazed including water catchment and water courses areas.

On solving the political interference, the SULEDO secretariat is providing more awareness to the communities on the importance of having the SULEDO Forest Community and the most likely negative impacts to occur if SULEDO will not be there. On solving the problem of contracts with traders, SULEDO has started to sell sawn timbers on themselves rather than through contracts with buyers.

5.12 Recommendations from the SULEDO and MCDI communities have for other communities considering sustainable timber harvesting

The recommendations made by MCDI and SULEDO communities to other communities in Tanzania who have forests which are wishing to have sustainable timber harvesting are as follows:

I. Sustainable timber harvesting is possible. The VLUP and CBFM procedures are simple and can be done by the community with support from the district and other stakeholders.
II. Sustainable timber harvesting is one of the sources of income to the villages which can be used for development project in the villages and sustainable forest management.
III. The villages should think of selling sawn timber rather than logs. By selling sawn timber the villages will get more buyers than logs. Secondly, for the sustainable charcoal villages in Kilosa, they may earn more income from producing charcoal from the off-cuts from timber harvesting which royalty has been already paid.

5.13 The perception of the MCDI communities and project implementers on the benefits of establishing the certification scheme

MCDI see certification as a tool which assists forest owners to be able to sell their timber to the eco-conscious buyers, recognition to MCDI as an NGO which supports harvesting of forest products sustainably from legal sources and also meeting international standards in producing forest products in sustainable manner. Also MCDI sees certification as a marketing tool, management tool, and fund raising tool. Certification increases the Organization's visibility and credibility. For the case of community members they perceive that certification helps them to meeting demands for international markets and selling their product in large amount compared to uncertified market even though for the local market certification is not important. However, the communities in MCDI perceive certification to be of less benefit for the local timber buyers. This is so because most timber traders in Tanzania are not certified as the certification costs are higher and the local demand of certified timber is lacking. At present FSC certification is mostly for international markets and also depends on the demands of the buyer. Few people in Tanzania are willing to pay more the certified timber. As a result, very few buyers who follow the certification rules. As the certification costs are higher, very few are certified. The certification rules require each processor of the certified forest product to be also certified. This becomes a barrier to most timber traders, thus most of them are operating without being certified.

MCDI is selling certified timber to mostly non-certified buyers. Certification costs to MCDI are added costs and are not included in the final royalty amount to the buyers as very few are willing to pay more for the timber royalty. Currently, MCDI is meeting certification costs amounting to £20,000 per annum through donor support.

5.14 Participation of women in the sustainable timber value chain.

For the case of MCDI, women are taken into consideration from decision making where women are prioritised in their participation in VNRCs by having 1/3 of all members in committee. Also in implementation of sustainable timber harvesting some women participate in timber felling and forest patrolling. Also on village development activities, women needs have been given priority. For example in Nanjirinji A village they have implemented a water project to reduce the distance travelled by women to fetch water. Also they have agreed to give maternity support of TZS 50,000 to every expectant mother to assist them during the delivery of their child and for buying necessary items for delivery process.

For the case of SULEDO women are considered by given priority of being members in the zonal VNRCs and in the secretariat. There are few traders who are women and conducting trade with SULEDO.

5.15 Marketing opportunities with KVTC and Domus

Currently, KVTC are not interested in buying hardwood timber from the village forest reserves. The reason is that KVTC are currently interested in trading with hardwood from teak tress and it seems that they are getting a good supply to meet their trading demands. They get the teak timber from their plantations and also have some teak tree growers in the villages adjacent to their plantations. The plan is for the tree growers to sell the timber to KVTC. Their main market is in India and other Asian countries. As a business company, currently they feel that they are comfortable with the teak species they are trading with and showed little interest to hardwood from the village woodlands. However, the long term plan of KVTC is to develop in partnership their 15,000ha of woodland into sustainable forest management. Their plan, through their anticipated sustainable woodland management; is to support local forest management within their project areas.

Domus also showed little interest in purchasing timber from the TTCS project villages. Currently, they are getting their timber supplies from two contractors and the supply is mainly on Eucalyptus species. The reason for not being interested into purchasing timber from the TTCS project villages is due to their low sales volume on their furniture they produce from the hardwood from indigenous trees including miombo trees. In the previous years, the demand for hardwood furniture from the indigenous trees was high compared to recent years. According to Domus, the low demand has been contributed by two main factors: too higher prices of the hardwood from the indigenous trees in the Dar market for most customers to afford and secondly the presence of substitutes of hardwood timber in the market including softwood and non-wood furniture from outside the country. Domus get very few orders on hardwood from indigenous trees from their customers. If it happens that they get an order (for instance Mninga and Mkongo), they just use the same contractors who supply them with Eucalyptus to obtain the hardwood timber species.

Other potential buyers identified included individual timber business companies in Keko and Mwenge areas in Dar es salaam, Morogoro, Kilosa, Mikumi and Mikumi – Ruaha areas. All the buyers showed interest of purchasing sustainably produced timber and are ready to pay as per the current market price in their areas. The Dar es Salaam buyers were willing to pay for the timber which will be transported up to their selling points. The same applies to Kilosa, Mikumi and Mikumi – Ruaha timber buyers. The Morogoro buyers were willing even to buy the timber from production sites in the villages and transport it to their selling centres in Morogoro town. The Morogoro, Dar es salaam and Mikumi - Ruaha buyers seem to be interested on big volumes of timber while the Kilosa timber buyers showed to be interested with small supply of timber. Contacts of all potential buyers were taken during the survey (Appendix 2 of this report).

5.16 Timber prices in Kilosa, Mikumi, Ruaha, Morogoro and Dar es salaam

The timber prices from different buyers in Kilosa, Mikumi, Ruaha, Morogoro and Dar es Salaam is presented in Appendix 1 of this report.

The table below shows the prices of Mtondoro (*Julbernadia globiflora*) in the markets of Kilosa, Mikumi, Ruaha, Morogoro and Dar salaam. Mtondoro is one of the top five most common timber species in the woodlands (NAFORMA 2015). It is also one of the most preferred timber species in the furniture industry in major town visited during the survey.

Table 8. Prices of Mtondoro in the markets of Kilosa, Mikumi, Ruaha, Morogoro and Dar es salaam

	Prices (in TZS)				
Plank size	**Kilosa**	**Mikumi**	**Ruaha**	**Morogoro**	**DSM**
1'x10'x7ft	6,000	14,000	17,000	15,000	25,000
2'x6'x7ft	12,000	12,000	17,000	25,000	30,000

From the table it shows that Mtondoro of plank size 1’x10’x7ft is being sold at a good price in Ruaha within Morogoro region. Although Dar es Salaam appears to have the highest price for all sizes when compared to Ruaha and Morogoro markets, but if factors are considered including transport costs, still selling the timber in Ruaha and Morogoro looks more feasible.

6) Recommendations for TTCS to engage in sustainable timber harvesting

1. Villages should sell sawn timber at their villages.

Evidence from SULEDO and MCDI shows that it is more profitable for the villages to produce timber from their VFRs and sell at their sites. As presented in section 5.6 of this report, it is clear that the villages in MCDI and SULEDO are benefiting economically from revenues obtained charging royalties on sustainable timber harvesting from their VFRs. The MCDI villages have been able to obtain more than TZS 401 million and SULEDO has obtained TZS 121 million from December 2009 to May 2015 and from 2011 to May 2015 respectively. Apart from the royalties collected, the MCDI villages also have benefitted from revenue from applications from timber buyers as presented in section 5.2.

By comparing between the two approaches used in timber harvesting, the MCDI approach is being recommended for the TTCS villages because it ensures proper utilization of the forest resources in a more sustainable way than that of SULEDO. Another advantage of MCDI's approach is that it is conducted systematically and each tree worth to be harvested for timber is measured and documented. The SULEDO's block approach does not involve detailed measurement per tree as MCDI. Also, the MCDI approach involves preparing harvesting quota for each tree species to be harvested while through SULEDO approach only a block is set aside for harvesting per year with no data on how much can be harvested sustainably per species.

The MCDI approach involves conducting a detailed forest inventory through transects and timber tree species worth for sustainable timber harvesting are recorded. The SULEDO'S block approach may contain timber trees which may not be worth for timber harvesting.

Therefore, the TTCS villages should do the following:

a) Prepare timber harvesting plan for the timber FMU in their VFRs so as to obtain data on the allowable cut per year. This should be part and parcel of the forest management plan. In addition to this, the TTCS villages can plan to include sustainable timber harvesting in the charcoal FMUs. The cut-offs from timber harvesting can be used for making charcoal.

b) The villages should identify two to four members of the VNRC as a 'logging crew'. The members should be trained on the basics of timber harvesting including on how to calculate the timber volume to be harvested and how to monitor the harvesting process. Alternatively, the same members who are used for showing charcoal producers harvesting areas within the charcoal coupes can take this responsibility.

c) Loggers within the village should be identified and known to VNRC and the village. These should be experienced pit sawyers and should be trained on the VFR regulations including sustainable harvesting of the trees. Their task is to process the timbers for the buyers and will be supervised by the VNRC through the 'logging crew'.

d) Fee rates should be set and agreed with the village governments. The fee should reflect the government scales.

e) Timber sales should be done by getting orders from the buyers. VNRCs should discuss the orders and check if it is within the annual quota. The buyers should fill the application form at the VNRC office. The buyer should present copies of the certificate of registration from TFS and TIN certificate.

f) A permit should be issued by the VNRC to the buyer after paying the agreed timber royalty through villages' bank account.
g) The logging crew has to show the loggers (in presence of the buyers) the trees which will produce the required timber volume. The DFO should be involved in verifying by marking the felled logs and the remaining stumps on the ground by the district hammer. (If the village will have their own hammer at a later stage, this activity will be conducted by the logging crew).
h) Timber processing should be done by using the loggers through pit sawing. Alternatively, a mobile sawmill; if available within the area, can be hired. Chainsaws can be used for cutting the trees and for preparing the logs. The logging crew plus some VNRC members should monitor the whole process.
i) The buyer should be issued with a licence showing that the timber has been produced from the VFR.
j) The buyer should present the licence together with the receipt from the villages to TFS for applying for TP.
k) After presenting the TP to the VNRC, then the buyer should be allowed to take the timber from the VFR and transport it the planned destination.
l) The villages should liaise with the District and the TTCS project to advertise and create awareness to the public about timber sales in the villages though posters in the signboards at the district, local radios and newspapers.

Evidence also from the timber buyers in Morogoro show that they are ready to buy timber from the villages as far as they will be assured that the timber is legal, is of good quality and enough quantity of at least to fill a truck for one trip. They further mentioned that they are ready to buy it as per the government's price scales.

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8) Appendices

Appendix 1: Data on timber trade in the markets of Kilosa, Mikumi, Ruaha, Morogoro and Dar es salaam

Place	Plank size	Price	Species
Kilosa	1'x10'x7 ft	6,000	Mtondoro, Msonda, Mnyenye
Kilosa	2'x6'x7ft	12,000	Mtondoro, Msonda, Mnyenye, Mwango
Kilosa	2'x4'x7ft	6,000	Mtondoro, Msonda, Mnyenye
Kilosa	2'x2'x7ft	3,000	Mtondoro, Msonda, Mnyenye
Kilosa	1'x10'x10 ft	15,000	Mninga, Mkongo/Mkola, Msungo/Mpilipili, Mtondoro, Mvule
Kilosa	2'x6'x10ft	15,000	Mninga, Mkongo/Mkola, Msungo/Mpilipili, Mtondoro, Mvule
Kilosa	1'x10'x7 ft	6,000	Mninga, Mkongo/Mkola, Msungo/Mpilipili, Mtondoro, Mvule
Kilosa	2'x6'x7ft	10,000	Mninga, Mkongo/Mkola, Msungo/Mpilipili, Mtondoro, Mvule
Mikumi	2'x6'x7ft	12,000	Mtondoro
Mikumi	1'x10'x7 ft	14,000	Mtondoro
Mikumi	1'x10'x12ft	15,000	Mninga, Mkongo, Mkambala
Mikumi	2'x6'x12ft	15,000	Mninga, Mkongo, Mkambala
Mikumi	2'x6'x7ft	6,000	Mtondoro, Mpilipili
Mikumi	1'x10'x10 ft	15,000	Mninga, Mkola
Mikumi	2'x6'x10ft	15,000	Mninga, Mkola
Mikumi	1'x10'x11ft	14,000	Mikamba, Mtondoro
Mikumi	1'x10'x8ft	14,000	Mikamba, Mtondoro
Mikumi	2'x6'x8ft	14,000	Mikamba, Mtondoro
Ruaha	1'x10'x12ft	20,000	Mkola, Mkongo
Ruaha	2'x6'x12ft	20,000	Mkola, Mkongo
Ruaha	1'x10'x7ft/11ft	17,000	Mtondoro
Ruaha	2'x6'x7ft	17,000	Mtondoro
Ruaha	1'10'x11ft	18,000	Mninga, Mkongo
Morogoro	2'x6'x9ft	28,000	Mgama
Morogoro	2'x6'x9ft	25,000	Mkalati, Mtondoro
Morogoro	1'x10'x9ft	18,000	Mpilipili
Morogoro	1'x10'x8ft	15,000	Mtondoro
Morogoro	1'x10'x12ft	60,000	Mninga, Mkongo
Morogoro	2'x6'x12ft	60,000	Mninga, Mkongo
Morogoro	2'x6'x7ft	30,000	Mninga, Mkongo
Morogoro	1'x10'x7ft	30,000	Mninga, Mkongo
Morogoro	1'10'x7ft	15,000	Mtondoro
DSM	2'x10'x10ft	95,000	Mninga, Mkongo
DSM	2'x10'x8ft	80,000	Mninga, Mkongo
DSM	2'x8'x10ft	65,000	Mninga, Mkongo

Place	Plank size	Price	Species
DSM	2'x6'x8ft	55,000	Mninga, Mkongo
DSM	2'x10'x10ft	60,000	Mtondoro
DSM	2'x8'x10ft	50,000	Mpangapanga
DSM	1x'10'x7ft	25,000	Mtondoro
DSM	2'x6'x7ft	30,000	Mtondoro

Appendix 2: List of people who were consulted

Name	Place	Contacts
Abdul Chande	Kilosa	0769 762 999
Andrea Charles	Kilosa	0717596 503
Mawata John	Kilosa	0719 625 435
Abdallah Tuwa	Kilosa	0719 515187
Abdallah Katosi	Mikumi	0719 405 083
Mboya Thadei	Mikumi	0754 602 830
Mwang'amba	Mikumi	0754 203 575
William Ngao	Mikumi	0789 999 800
Pray John	Ruaha	0683 714 755
Deo Mathias	Ruaha	0789 409 268
Musa Msangi	Morogoro	0714 057 210
Alex John	Morogoro	0682 394 997
Selasini Ramadhani	Morogoro	0654 082 949
Kally Musa	DSM	0713 849 412
Mwakibinga	DSM	0716 181 112
Mametus Malunda	DSM	0683 437 851
Mbaruku	DSM	0754 296 447
Mustafa	DSM	0783 296 447
Hans Lemm	DSM	0756 374 354
Abdallah Dulla	DSM	0657 187 557
Haule	Ifakara	0767 341 942
Hamidu	Ifakara	0789 856 155
Peter	Ifakara	0782 274 513
Jasper Makala	Kilwa	0784 938 097
Bakari Hemedi	Kiteto	0787 182 830

Appendix 3: Terms of Reference

Sustainable timber harvesting feasibility study for the project area

1) Introduction

Transforming Tanzania's Charcoal Sector (TTCS) Project is a partnership project between the Tanzania Forest Conservation Group (TFCG), the Community Forestry Network of Tanzania (MJUMITA) and the Tanzania Traditional Energy Development and Environmental Organisation (TaTEDO). The project is financed by the Swiss Agency for Development and Cooperation (SDC). The project also works closely with relevant government departments including the Kilosa District Council and the Tanzania Forest Services Agency. TTCS has two components; one aimed at developing markets and supply chains for sustainable charcoal, and the other concerned with improving knowledge management and governance in the biomass energy sector.

The project aims to deliver sustainable development and benefits to rural communities in Tanzania through enhanced environmental sustainability from better biomass harvesting and through more efficient production technologies and biomass energy-friendly energy sector policies. The project will achieve this by supporting improvements in raising the efficiency and environmental sustainability of the charcoal industry and by launching a research-based knowledge management, communications and advocacy strategy to develop credible new policy and governance measures designed to enhance the role of biomass energy enterprise in poverty reduction and national development.

As such the project is interested in documenting lessons learnt from other Village Forest Reserves (VFRs) that integrate sustainable timber harvesting. This will include visiting SULEDO Community Forest and Mpingo Conservation and Development Initiative (MCDI). The lessons documented will help the project in supporting the communities to harvest timber sustainably from their VFRs and also on identifying timber value chains that maximise the profit to the forest-owners (the communities) by consulting with different timber selling companies including KVTC and Domus.

2) Scope of Work

This consultancy aims to document lessons learnt from communities managing VFRs that integrate sustainable timber harvesting in their management plans including SULEDO and MCDI. The consultant will provide evidence-based recommendations on how the TTCS project should include sustainable timber harvesting in the Phase 2 of the project. Among other things, the study will consider costs and benefits associated with pursuing different timber value chains.

In documenting the lessons in SULEDO and MCDI, the consultant will describe the following:

- How sustainable timber harvesting has been set up and how it is being integrated into CBFM including data on the volume of timber harvested and the species.
- How the permitting system works and generally how it operates including quantitative data on the royalties charged per species
- How they ensure that the timber harvested is within sustainable limits and how they take into consideration any illegal harvesting within the VFR when setting sustainable limits.
- What are the roles of the government, TFS and district in the sustainable timber harvesting from the VFRs?
- How timber is being sold from the VFRs? Where are the most profitable markets for their timber? How much money are the villages are making including quantitative data on incomes to the village through royalties and other fees and income to the harvesters?

- Quantitative data on the costs incurred by the communities in managing the sustainable harvesting system and their perceptions on whether it is profitable and beneficial.
- How the revenue from sustainable timber harvesting is being shared within the villages?
- How the villages ensure transparency, accountability and good governance in their sustainable timber harvesting including how they report to the broader community on the finances and sustainability of the timber harvesting.
- Viewing the timber harvesting documents and records used by the respective projects. Are records transparent?
- What other production and market factors should be considered in including timber as one of the forest product that can be harvested sustainably from the VFRs?
- What have been the challenges faced by the communities and how have they overcome them;
- What recommendations would the SULEDO and MCDI communities have for other communities considering sustainable timber harvesting;
- In the case of MCDI what do the communities and project implementers perceive to be the benefits of establishing the certification scheme rather than just selling into the uncertified market.
- What measures are taken to ensure participation of women in the sustainable timber value chain.

The consultant shall provide additional data on the current prices of timber in the Kilosa, Mikumi, Morogoro and Dar es salaam markets. Data will state explicitly plank size and species for each price with additional comments on quality and overall volume.

3) Expected Outputs of the study:
The consultant shall produce a consultancy report that will include the following sections:

- Executive Summary
- Table of contents
- Acknowledgements
- Introduction outlining the objectives of the survey; the background to TTCS project; and a review of the literature already available on sustainable timber value chains relevant to the project area,
- A description of the methods employed including the data collection.
- An analysis of the results that answer the questions outlined in the scope of work. This will include separate sections on:
  SULEDO including quantitative data on the volume of timber that they are trading; incomes received over the last 5 years; numbers of women / men benefiting directly from the SULEDO timber value chain; plus other details as outlined in the scope of work.
  MCDI as above with additional data on the marginal benefit of having certification
  Market opportunities with KVTC including species that they are interested to buy; conditions of production associated with their certification scheme; and prices.
  Market opportunities with Domus and other Dar es Salaam timber buyers including details on species, prices and other conditions.
- Evidence-based recommendations that provide clear guidance for communities in the TTCS villages to engage in sustainable timber harvesting.
- A more general analysis on the key factors on production and marketing to be considered by the communities in engaging with sustainable timber harvesting.
- An annex documenting the people who were consulted.

- An annex listing all references cited in the report.
- Annexes providing data on timber trade in the markets covered byt he report

The consultant shall take particular care with the quality of the report. The report shall be in arial 11 point 1.5 spacing. Headings shall be properly formatted. Citations shall be properly referenced. Where possible, information shall be provided in tables. Sentences should be as concise and specific as possible.

4. Timescale

The assignment shall be completed by 31st July 2015.

Date	**Activity**
9th July 2015	Travelling to SULEDO
10th – 11th July 2015	Data collection in SULEDO
12th July 2015	Travelling to Kilwa
13th – 15th July 2015	Data collection Kilwa
16th July 2015	Travelling to Dar
17th – 18th July 2015	Data collection in Dar
19th July 2015	Travelling to Morogoro – data collection in Morogoro
20th July 2015	Travelling to Ifakara – data collection in Mikumi (on the way to Ifakara)
21st July 2015	Data collection Ifakara
22nd July 2015	Travelling to Kilosa
23rd July 2015	Data collection in Kilosa
24th – 26th July 2015	Report writing
31st July 2015	Report submission