



# Kilolo District Harvesting Plan

Developed by

Aigen Paulo Mwilafi (DFO-Kilolo)

Catherine Onesphory (AFO-TFS Kilolo)

Robert W Sigge (Kilolo Forest Officer)

Emmanuel Richard Lyimo (TFCG-Project Manager)

Raymond Nlelwa (TFCG-PFM officer)

Baraka Samweli (TFCG Forest monitoring officer)

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## **FOREWORD**

Kilolo District Harvesting Plan has been developed in 2019

The objectives of this harvesting plan include:

- Promoting ecologically sustainable harvesting of forest products including charcoal and fuel wood.
- Promoting good governance including transparency, accountability, participation, equitable benefit sharing, and
- Promoting free, prior and informed consent for communities and promoting revenue generation from sustainable harvesting of charcoal and timber for local government including the villages.

The methods used to calculate sustainable harvesting limits are more scientifically rigorous approaches and involve a combination of ground surveys and remote sensing. The plan is not only the first of its kind in Kilolo District but also in the whole of Tanzania. The scope of this harvesting plan focuses on procedures for harvesting charcoal only in un-reserved forests on village land. It focused on charcoal due to lack of enough of tree species for timber in Kilolo district.

The methods used to calculate sustainable harvesting limits are more scientifically rigorous approaches and involve a combination of ground surveys and remote sensing. The plan is not only the first of its kind in Kilolo District but also in the whole of Tanzania. The scope of this harvesting plan focuses on procedures for harvesting charcoal only in un-reserved forests on village land.

For the purpose of developing a district timber and charcoal harvesting plan, a reconnaissance timber survey was conducted for some parts of Kilolo district woodlands which by using remote sensing we observed to have the woodland cover that is suitable for timber harvesting. The aim of this survey was to collect data that could help in reaching a decision of extending the timber survey to more areas within the district.

Timber transects for the reconnaissance survey were developed in three villages namely Mtandika, Magana and Nyanzwa. A total of 12 transects have been done which cover 54km of timber transects were surveyed which is equivalent to 54hectares. Out of 12 transects 5 transects indicated no timber species at all, 4 transects dominated by *Commiphora ugandensis* and 3 transects has few species of timber.

Through the reconnaissance timber survey, the only tree species that was observed and whose quota can be established is *Commiphora* which is locally named as Mkongolo. Unfortunately, this tree species produce very low valuable timbers and this is why it is still prevalent in most areas as it is not harvested. Other timber species which were spotted during the survey are *Albizia gummifera* (Mkenge), *Vitex doniana* (Mfuru), *Azelia quanzensis* (Mkongo), *Entandophragma* sp (Muhondo). Unfortunately, all these valuable timber tree species that were found during timber survey have their DBH lower than the Legal Minimal Diameter for Harvesting (LMDH) and their numbers are low to the extent that they do not qualify to establish a quota.

As per this reconnaissance survey, there is no sufficient number of wood stock for establishing any quota from Kilolo woodlands for sustainable harvesting timber. The *Commiphora* tree

species should be conserved for ecological and environmental stability purposes of those particular areas because they lack commercial value and that is why they still exist in lowland areas despite the existing excessive demand for timber.

However, Ikula village has good woodland stock and CBFM interventions may need to be established in the village so that the existing wood stock can be conserved and communities can benefit from those resources. The village has good woodlands that are dominated by many *Brachystegia* species which are good for both timber and charcoal and through verbal discussions with community members; their willingness to establish CBFM interventions is high. For the purpose of developing a district timber and charcoal harvesting plan, a reconnaissance timber survey was conducted for some parts of Kilolo district woodlands which by using remote sensing we observed to have the woodland cover that is suitable for timber harvesting. The aim of this survey was to collect data that could help in reaching a decision of extending the timber survey to more areas within the district.

The plan includes detailed descriptions of how it should be implemented, particularly with regards to how the district and TFS should work with villages and includes estimates of sustainable harvesting broken down by village.

The harvesting plan was developed by a team from Tanzania Forest Conservation Group (TFCG), representatives from Tanzania Forest Services (TFS) and Kilolo District Council.

The assignment was part of the activity of the project: Reducing Charcoal's threats to biodiversity: government mainstreaming of sustainable charcoal production in energy-sector policy tools, which is funded by Critical Ecosystem Partnership Fund (CEPF).

In Kilolo, as in any other parts of Tanzania, people depend on forests and woodlands either directly or indirectly. Forests and woodlands are essential for providing a wide range of products such as timber, charcoal and woodfuel. They also provide a wide range of environmental services such as water catchment, biodiversity, clean air and ecotourism. Forests and woodlands are an important source of income and employment.

However, woodland management in Kilolo is facing challenges. Most of the un-reserved woodland resources in the village lands are being harvested without the presence of harvesting plans. This leads to widespread deforestation and woodland degradation in the district. The presence of this harvesting plan in Kilolo will help in addressing the challenge.

## **Acknowledgements**

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Furthermore, special thanks are extended to Village leaders and villagers of Mahenge, Ikokoto, Mtandika, Vitono, Watalisoli, Isagwa, Mkalanga, Ikula, Msosa, Ruaha Mbuyuni, Ibumu, Hambingeto, Iwungi, Image, Kilumbwa, Ilambo, Ikula, Irindi, Magana, Mgowelo, Nyanzwa, Ipalamwa, Lulindi, Kipanduka, Udekwa, Igunda and Ifua who participated actively in data collection, village assembly, and village council meeting and the discussions during our visits to their villages are highly appreciated.

# **EXECUTIVE SUMMARY**

## **Introduction**

### Background information

Kilolo District Council is located at the north-eastern end of Iringa Region, about 37 kilometers from the regional headquarters. It also lies adjacent to the eastern borders of Iringa Rural and Iringa Municipal Council. The District Council, however, shares borders with Mpwapwa District (Dodoma Region) in the North, Kilosa district ( Morogoro Region) in the North East, Kilombero District (Morogoro Region) on the East, while Mufindi District is on the south with Iringa Rural District on the west.

The total land area of the council is 675,008 ha whereby Kilolo division occupies a total of 278,559 ha followed by Mazombe division occupying 259,619 ha and Mahenge division covers an area of 155,972 ha. Based on social economic profile 2015 indicate that the area covered by natural forest in the council accounts for 48,319 ha and forest plantation covers 47.761 ha.

### **Agro – Ecological Zones (AEZ)**

Basically the district has three distinctive agro-ecological zones, namely, High lands, mid lands and Low lands.

#### **High Lands Zone**

These are a continuation of the Udzungwa Mountain Ranges which have high altitude ranging from 1,600 – 2,700 meters above sea level. The zone is characterized by a mountainous and undulating topography with temperate temperatures and heavy rainfall per annum and occupies the greatest part of the district.

The terrain of the zone is characterized by high hills, steep slopes and valleys covered with volcanic potash soil which is moderately suitable for agriculture. The rainfall here is between 1,000 and 1,600 mm per annum.

#### **Mid Lands Zone**

The midland zone lies on the rift valley of Mazombe plains and the portion of the northern part of the district especially Image ward, covered with sand clay soils. The zone is characterized by undulating topography and plateau at an altitude of between 1200 and 1600 meters above sea level. It has moderate temperatures ranging between 150 and 200 centigrade and characterized by moderate rainfall.

#### **Low Lands Zone**

The low land zone lies in the rift valley of Mahenge plains and portion of northern part of the district especially Ruaha-Mbuyuni ward, covered with sand red soils. The zone has hot temperatures ranging between 150 and 290 centigrade and characterized by unreliable rainfall. This zone is characterised by lowlands with altitude between 900 and 1200 meters above sea level. Due to its low mean rainfalls it is known as the marginal area and rainfalls here range between 500 and 600 mm and quite unreliable.

## **The Harvesting Plan**

The objectives and Scope of the Harvesting Plan

The objectives of the district harvesting plan include:

- Promoting ecologically sustainable harvesting of forest products including timber, fuelwood and charcoal;
- Promoting good governance including transparency, accountability and participation;
- Promoting equitable benefit sharing;
- Promoting free, prior and informed consent for communities and;
- Revenue generation for local government.

The scope of this Harvesting Plan focuses on harvesting charcoal in un-reserved forests on village lands. The harvesting plan stipulates the following:

- Roles and responsibilities of different stakeholders including of the District Harvesting Committee, LGAs, TFS, Village leaders and others.
- Procedures to be followed by those requesting permission to harvest to ensure transparency and the free, prior and informed consent of the communities on whose land harvesting is proposed.
- Permits to be issued to those requesting permission to harvest.
- Procedures for identifying the trees to be harvested and mechanisms to ensure compliance.
- Schedule of fees to be paid by those requesting permission to harvest.
- Schedule of fees to be paid to the villages from whose land timber is harvested; and those to be retained by the District.
- Procedures for the district to channel revenues to the affected villages.
- Procedures for seeking and documenting consent from communities with forests covered by the plan.
- Guidelines clarifying that harvesting within village forest reserves will be covered by the respective VLFR management plans.
- Procedures to adjust the plan when communities include their village forest in village land forest reserves.
- Monitoring and reporting procedures and responsibilities.
- Strategies to ensure enforcement of the plan and procedures for addressing those who contravene the plan.
- Communication and visibility of the plan.

### **Criteria for a Forest to be harvested**

In order for unreserved village land forests and general land forest to be eligible for harvesting, different requirements need to be fulfilled. Therefore the proposed criteria range from procedural to ecological aspects. Generally these include:

- Forest assessment – a current assessment of harvestable stock should be available
- Forest harvesting plan – a current village harvesting plan that has been approved by the respective village assembly should be available.
- Status of forest condition.
- Approval of the village – the village must have approved the harvesting plan and by-laws.
- By-laws – village by-laws governing harvesting must be in place.

## **Application Procedures**

No applications for issuance of harvesting licence of forest produce shall be considered for approval save as there is proof of existence of Harvesting Plan prepared and approved by the Director of forestry.

Harvesting of timber and charcoal in un-reserved forests on village land follow the following application procedures.

The Village Assembly must have approved a proposal to permit harvesting in the unreserved forests on village land. Permits shall only be issued in villages where the Village Assembly has approved harvesting.

The forest dealer identifies the forest and village from which timber is to be harvested.

- The Forest dealer submits an application letter to the respective Village Council addressed to the Village Executive Officer.
- The application letter is reviewed and approved by the Village Council and Village Environmental Committee (if existing) who will compare the request with the available harvesting quota as stipulated in the Village Harvesting Plan and taking prior harvesting into consideration.
- The applicant fills a special application form (TFS 1).
- The relevant section in TFS.1 will be filled by the Village Executive Officer.
- Minutes documenting the approval of the request by the village council are attached with the special application form (TFS 1) and are submitted to the District Forest Office for registration.
- The DFO will submit the registered application forms (TFS.1) together with the District Harvesting Plan to the District Harvesting Committee for decision making.
- The applications are discussed by the District Harvesting Committee on a quarterly basis.
- Based on the Committee's recommendations, the DFO will issue a license to the applicant, after paying relevant fees.

## **District Harvesting Committee**

Based on the Forest (Sustainable Utilization of Logs, Timber, Withies, Poles or Charcoal) Regulations, 2019. The current composition of the District Harvesting Committee is as follows:

The District Commissioner,	Chairperson
District Forest Manager	Secretary
District Land and Natural Resources Officer	Member
District Forest Officer	Member
Village Executive Officer of the village owning the forest	Member
Village Chairperson of the village owning the forest	Member

## **Permit and License Procedures**

Permit and license procedures for harvesting forest products in un-reserved forests on village land are guided by Forest (Sustainable Utilization of Logs, Timber, Withies, Poles or Charcoal) Regulations of 2019, the National Harvesting Guidelines of 2015 and Forest Act of 2002. The

key sections in the Forest Act regarding permit and license procedures include Sections 49, 50, 54 and 55.

### **Jurisdictions and area of Operation of the Plan**

This Plan will operate in Kilolo District. The area of jurisdiction is Un-Reserved Forests on Village Land.

### **Roles and Responsibilities**

The key stakeholders in the Harvesting Plan are the District Forest Manager, District Forest Officer (DFO), District Land and Natural Resource Officer (DLNRO), District Economic, Works and Environmental Committee, Full Council Meeting, District Harvesting Committee, Village Executive officer and Chairpersons of the villages where harvesting is planned and the Customer. The key actors have different roles and responsibilities in the Harvesting Plan that are detailed in the document.

### **Actual felling Operation**

Regarding charcoal harvesting the following shall be taken into consideration:

- Timber species (except *Brachystegia* spp) shall not be harvested for charcoal, except branches left during timber harvesting and timber trees with poor quality (e.g. rotten, crooked and burnt by fire).
- Charcoal production should use efficient technologies (e.g. half-orange, IBEK or Casamanse Kiln) as provided in the National Harvesting Guidelines of 2015 or Methods provided by Chief Executive (The Chief Executive shall provide guidelines for methods of charcoal production which are efficient, significantly offsets carbon dioxide, reduces deforestation and ensures eco-system resilient to climate change).
- Reserved tree species shall not be used for charcoal making.
- Trees for charcoal production will be harvested selectively.

### **Forest potential and harvesting operations in un-reserved forests on village lands**

Kilolo District is estimated to have an area of 64,292.64 ha of woodlands and thicket suitable for charcoal harvesting on unreserved village land. The potential harvestable volume in a village will be divided to Charcoal harvesting includes trees which are much smaller (assumed starting age of at least 10 years) and thus a longer period is required to replace the existing stock, which also includes very old trees. Since very large trees are not required for charcoal production, a shorter rotation could be used (e.g. 24 years) to capitalize on the faster growth of younger trees, but since the unreserved forests on village land are not under any management, it is more appropriate to use a longer rotation. Also, with a 90 year rotation.

### **Charcoal harvesting operations in the un-reserved forests on village land**

Charcoal production will be done in the areas that were designated for harvesting by villages. Also, charcoal production on a limited scale can be directed to trees felled during new agricultural plots preparation in areas set by the village for agriculture. This will not be selective harvesting, but charcoal making using trees felled during new agricultural plots preparation will be done in accordance with the District Harvesting Plan. This will reduce demand for cutting trees from non-farming areas.



## **Compliance to relevant laws, policies and regulations**

In order to ensure sustainable supply of forest products such as timber and charcoal the Government has put in place several policies, laws, regulations and guidelines that must be complied with.

Regarding timber and charcoal harvesting important provisions of the Forest Act of 2002 are provided in the harvesting plan. The District authority shall identify and set selling centres for charcoal.

## **Natural Regeneration**

The potential for woodland to produce charcoal and timber sustainably mainly hinges on the ability of the woody species to regenerate and grow.

The plan encourages natural regeneration. Literature shows that the most efficient way to restore vegetative cover in miombo is to protect it from excessive grazing, wildfires and agriculture expansion. On the other hand, enrichment planting of trees in degraded areas would speed up the process. On the overall, in order to ensure effective regeneration in the timber and charcoal producing areas, the following need to be taken into consideration:

- Ensure that the seed-producing trees are left uncut to facilitate adequate regeneration.
- The harvesting of charcoal and timber should ensure maintenance of adequate stocks of seed-bearing trees.
- Ensure that seedlings are not damaged during timber and charcoal harvesting.
- Disused paths and tracks should be closed so that regeneration of secondary vegetation occurs.
- Enrichment planting may be done in harvested areas using indigenous species that will not change the vegetation composition.
- Wildfires are controlled and fire management is implemented to ensure maximum natural regeneration.
- Natural regeneration in the harvested areas should be protected against grazing, wildfires, shifting cultivation through by-laws and regular patrols. Dense grass cover can inhibit regeneration through competition for resources and by providing fuel for hot fires. Therefore, low -intensity grazing of cattle to reduce grass cover may be beneficial in some circumstance. However, grazing of goats and other livestock should not be allowed in harvested areas as they will eat regenerating trees.

## **Tree planting**

At present tree seedling production for tree planting activities is done by various institutions and individual in the District. The main objective of tree planting is to supplement trees cut for timber and charcoal making from the natural forests.

## **Ecological sustainable harvesting**

Charcoal and timber production requires protecting the ecology of the forest. That means the activities should have minimum impacts to water sources, biodiversity, wildlife and the entire ecosystem functions. Some of the conditions that will ensure ecological sustainable harvesting are:

- Harvesting methods that do not impair the original structure and diversity of the forest should be promoted.

- Harvesting methods should minimize impacts on the biological, chemical and physical characteristics of the soil.
- A map showing the protected sites within the harvesting areas should be available for effective monitoring of the ecological sustainability of harvesting.
- Protection of sites of religious, historical, cultural or particular socio-economic value should be ensured. The clearing of forests for farming and related agricultural activities in the District should be regulated through by-laws.
- Post-harvest species composition and density of undergrowth do not show increased abundance of populations of invasive species.
- Sensitive areas as defined in the Environmental Management Act (EMA) of 2004 should be identified and selected through ecological surveys and included in the protected sites in the harvesting areas.
- Ensure that standardized data on fauna and flora are available for effective ecological monitoring.
- Ensured that diversity and relative abundance of fauna species do not change significantly.
- Exhaustive list of the requirements guiding ecological sustainability are stipulated in the Environmental Management Act of 2004, therefore apart from the District by-laws and village by-laws it is very important to adhere to the Environmental Management Act together with the sectoral regulations.

### **Governance and Control**

To enhance good governance and control the Harvesting Plan proposes that:

- Relevant staff at district (including DED, DLNRO, DFO and DFM) and village levels (Village Natural Resource Committee Members, Village Chairpersons and Village Executive Officers) deal with forest harvesting in un-reserved forests on village lands forest reserves shall be trained on the elements of good governance (e.g. democracy, civil rights, transparency, and the rule of law, accountability, efficient public services delivery, conflict mediation, budgetary and financial management, revenue mobilization and public expenditures).
- All activities being implemented in a gender sensitive manner, ensure free, prior and inform consent (FPIC) principles, and attention is paid to the cultural, educational and resource constraints that women may have.

### **Royalties, Fees and Benefit sharing**

Every harvesting permit should specify fees, royalties and other charges that must be paid in accordance with the law. The DFO/DFM has a duty to collect all revenue from fees, royalties and licenses charged.

In addition, the timber, charcoal and commercial firewood harvesters are required to pay 5% of the royalty paid as a contribution to tree planting. This amount is currently administered by Tanzania Forest Fund. Other fees are payable on services such as transit pass and registration.

Local government authorities such as District Councils and villages have powers to formulate their own by-Laws within their area of jurisdiction. Therefore, Kilolo District Council and Village Councils can collect cess and fees respectively. The by-laws shall stipulate fees that can be collected on the forest products harvested from their areas of jurisdictions.

Unfortunately, all of the village councils are yet to formulate and approve by-laws that stipulate fees for the forest products such as timber and charcoal harvested from un-reserved forests on village lands within their areas of jurisdictions. Village councils are advised to formulate their by-laws that will allow them to charge fees on forest products from un-reserved forests on village lands of their jurisdictions.

### **Benefit Sharing**

Benefit sharing in this Harvesting Plan can be improved through the following approaches:

- Regarding un-reserved forests on village lands, Village Councils should formulate by-laws to enable gaining benefits from timber and charcoal harvesting.

### **Revenue generation for local government**

The Local Government Finances Act makes reference to Section 10 of the Forest Act and allows the District Council to collect revenues derived from fees for forest produce and licenses into the general fund of the Council therefore may not necessarily be available to the forest activities in the District. The sources of revenues of Village Councils are also provided in the Local Government Finances Act. The sources mainly include all moneys derived from licenses, permits, dues, fees, charges or tariffs specified in the by-laws made by the Village Councils. The Act allows Village Councils to formulate by-laws that prescribe reasonable fees, charges and tariffs for any license or permit issued by the Village Council.

### **Promotion of free, prior and informed consent for communities**

For the purposes of the District Harvesting Plan, the underlying principles of free, prior and informed consent can be summarized to include:

- Information and consultation on preparation and implementation on the Harvesting Plan;
- Participation of communities on preparation and implementation on the Harvesting Plan and,
- Representation of communities to the harvesting committees. Communities need to be given an opportunity to build/strengthen their individual and collective capabilities in order to take advantages of available opportunities.

### **Coordination at District and National Level**

In order to coordinate the harvesting plan, control illegal harvesting, improve revenue collection and law enforcement the following will be done:

- Increase information sharing and communication
- Increase participation in decision making and implementation of the Plan
- Use of existing network
- Promote joint patrol between stakeholders
- Increase regular feedback meeting
- Charcoal producer associations will be promoted

### **MONITORING AND EVALUATION AND ADJUSTMENT OF THE PLAN**

Frequent joint forest patrols involving different stakeholders from the district to the village level specifically Village Natural Resource Committees have to be conducted regularly to ensure harvesting activities comply with district harvesting plan. The DFO is responsible for preparing monthly, quarterly and annual reports showing the amount of tree volume harvested and forest

royalties collected. The District Forest Harvesting Committees have to conduct meetings every four months to discuss the harvesting trend as required by the guidelines.

## **RECOMMENDATIONS**

The following are key recommendations:

- The harvesting plan should be valid for 5 years and should be reviewed with updated information on forest areas and timber and charcoal stocks at that point.
- Kilosa District Council should ensure that harvesting in un-reserved forests on village lands is done according to the Harvesting Plan, and customers should comply with the Plan.
- District Council should increase awareness to villages on Community Based Forest Management so as to declare more forest into village land forest reserves.
- The District should identify areas to be used as charcoal selling centers and establish them.
- Charcoal producers and traders should be encouraged to form associations.
- The Kilolo District Council and TFS should enhance their capacity to implement Harvesting Plan.
- Villages should develop By-Laws to enable the villages to benefit from the timber and charcoal harvesting activities within their areas of jurisdictions.

## LIST OF ACRONYMS / ABBREVIATIONS

CEPF	Critical Ecosystem Partnership Fund
CMT	Council Management Team
DED	District Executive Director
DFM	District Forest Manager
DFO	District Forest Officer
DHC	District Harvesting Committee
DNRO	District Natural Resource Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
FD	Forestry Division
FPIC	Free Prior Informed Consent
GN	Government Notice
IBEK	Improved Based Earth Kiln
KDC	Kilolo District Council
LAFR	Local Authority Forest Reserve
LGAs	Local Government Authority
MNRT	Ministry of Natural Resource and Tourism
PFM	Participatory Forest Management
PPF	Private Forest Programme
FDT	Forest Development Trust
PMO-RALG	Prime Minister Office- Regional Administration and Local Government
KCCMP	Kihansi Catchment Conservation Management Programme
TFS	Tanzania Forest Services Agency
TFCG	Tanzania Forest Conservation Group
TP	Transit Pass
VEO	Village Executive Officer
VLFR	Village Land Forest Reserve

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# 1) INTRODUCTION

## 1.1. Background Information of the District

Kilolo District Council is located at the northeastern end of Iringa Region, about 37 kilometers from the regional headquarters. It also lies adjacent to the eastern borders of Iringa Rural and Iringa Municipal Council. The District Council, however, shares borders with Mpwapwa District (Dodoma Region) in the North, Kilosa district ( Morogoro Region) in the North East, Kilombero District (Morogoro Region) on the East, while Mufindi District is on the south with Iringa Rural District on the west (Figure 1).

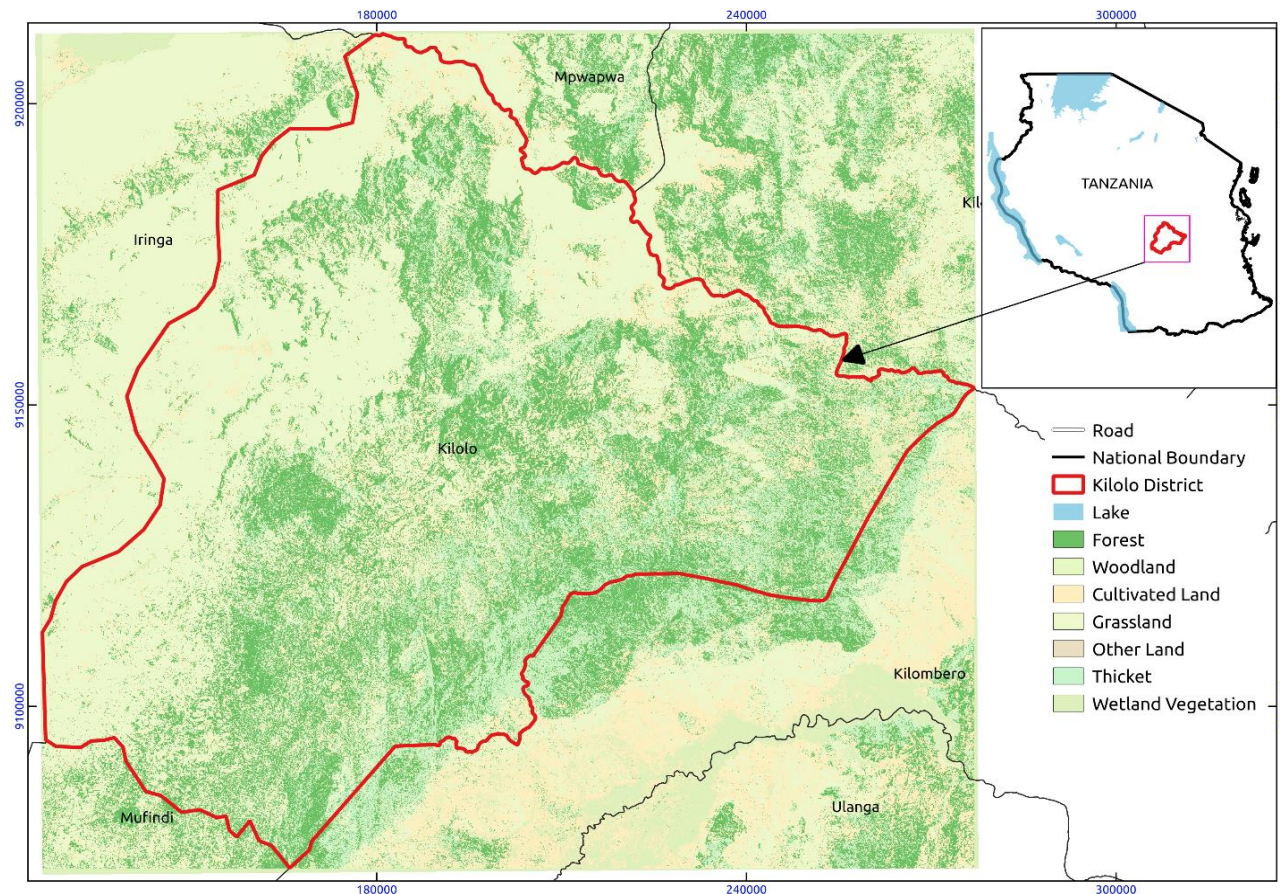


Figure 1: Location Map of Kilolo District

## 1.2. Kilolo District Land Area

Kilolo district council has a total area of 7,875 square kilometers (the land area is 6,757 square kilometers and water area is 1,117 square kilometer). Distribution of total land area by division and ward is given in Table 1. Kilolo division has the largest of land area accounting for 40% of the total area of the district followed by Mazombe with 38.4% and Mahenge with 21.6%.

Table 1: Land Area in Square Kilometers by Division and Ward, Kilolo District Council, 2015.

Division	Ward	Land area	Water area	Surface area	% of land area	% of water area
Kilolo	Ihimbo	156	81	237	2.3	7.2
	Mtitu	128	68	195	1.9	6.1
	Ukwega+Kising'a	398	55	453	5.9	4.9
	Dabaga	537	50	587	7.9	4.5
	Kimala	383	26	409	5.7	2.3
	Idete	196	62	258	2.9	5.6

	Ng'ang'ang'e	110	43	152	1.6	3.8
	Bomalang'ombe	133	71	205	2.0	6.4
	Masisiwe	418	54	472	6.2	4.9
	Ng'uruhe	101	100	201	1.5	8.9
	Ukumbi	142	21	163	2.1	1.9
Mazombe	Irole	353	93	446	5.2	8.3
	Lugalo	453	56	509	6.7	5.0
	Nyalumbu	88	20	107	1.3	1.8
	Ilula	456	45	501	6.7	4.0
	Mlafu	278	53	331	4.1	4.7
	Udekwa	202	49	251	3.0	4.4
	Uhambingeto	303	39	342	4.5	3.5
	Image	261	26	287	3.9	2.3
	Ibumu	203	31	234	3.0	2.8
Mahenge	Mahenge+Nyanzwa	591	38	630	8.8	3.4
	Ruaha mbuyuni	868	38	906	12.9	3.4
	<b>Total</b>	<b>6,757</b>	<b>1,117</b>	<b>7,875</b>	<b>100.0</b>	<b>100.0</b>

*Source: District social economic profile, 2016*

### **1.3. Climate, Soil and Topography**

With the exception of a few plateaus, the district is mountainous with the Udzungwa Mountains and several steep slopes and lies at an altitude of between 900 meters to 2,700 meters above sea level, covered by alluvial soil. Udzungwa Mountain Ranges is a common feature of Kilolo District and divide the district into East and West. The Udzungwa Mountains separate Kilolo district and Kilosa district of Morogoro Region in the east. The northern parts of the district are relatively flat, high plain cut by the eastern arm of the Great Rift Valley in which the Great Ruaha River runs. Because of the high altitude, the district experiences temperate climate with low temperatures below 15o c and long rainy seasons. However, temperatures and rainfall vary with the altitude. High altitudes between 1,500 – 2,700 meters above sea level fall under cold zones with temperatures ranging between 80 – 100 centigrade and rainfall vary from 1,000 – 1,600 mm per annum. Areas at low altitude such as Mahenge plains experience high temperatures of 150 – 270 Centigrade with unreliable rainfall normally ranging between 500 and 600 mm per annum.

#### **Agro – Ecological Zones (AEZ)**

Basically the district has three distinctive agro-ecological zones, namely, High lands, Mid lands and Low lands.

#### **High Lands Zone**

These are a continuation of the Udzungwa Mountain Ranges which have high altitude ranging from 1,600 – 2,700 metres above sea level. The zone is characterised by a mountainous and undulating topography with temperate temperatures and heavy rainfall per annum and occupies the greatest part of the district, (11wards).

The terrain of the zone is characterised by high hills, steep slopes and valleys covered with volcanic potash soil which is moderately suitable for agriculture. Rainfall here is between 1,000 and 1,600 mm per annum.

#### **Mid Lands Zone**

The midland zone lies on the rift valley of Mazombe plains and the portion of the northern part of the district especially Image ward, covered with sand clay soils. The zone is characterized by undulating topography and plateau at an altitude of between 1200 and 1600 meters above sea level. It has moderate temperatures ranging between 150 and 200 centigrade and characterized by moderate rainfall.

#### **Low Lands Zone.**

The low land zone lies in the rift valley of Mahenge plains and portion of northern part of the district especially Ruaha Mbuyuni ward, covered with sand red soils. The zone has hot temperatures ranging between 150 and 290 centigrade and characterised by unreliable rainfall. This zone is characterised by lowlands with altitude between 900 and 1200 meters above sea level. Due to its low mean rainfalls it is known as the marginal area and rainfalls here range between 500 and 600 mm and quite unreliable.

The total land area of the council is 675,008 ha whereby Kilolo division occupies a total of 278,559 ha followed by Mazombe division occupying 259,619 ha and Mahenge division covers an area of 155,972 ha. Based on social economic profile 2015 indicate that the area covered by natural forest in the council accounts for 48,319 ha and forest plantation covers 47.761 ha.

#### **1.4. Population Size and Growth**

According to the 2012 population census, Kilolo District has a population of Total population 218,130 persons; out of that 112,274 were females and 105,856 were males with average household size 4.3. Annex 2 shows the distribution of the population by ward and sex based on the 2012 census.

#### **1.5. Forest Coverage**

The total land area of the council is 675,008 ha whereby the area covered by natural forest in the council accounts for only 48,319 ha (7.2%) and forest plantation covers 47.761 ha (7.1). The district has potential for tree planting for timber and charcoal. The most of trees planted in the district are pine for timber and wattle for charcoal.

In Kilolo district, tree seedling is done by three institutions which are namely; New Forest Company, Kilolo District Council and the community. Table 2 indicates that, the trend of tree seedlings raised in the council increased from 10.9 million seedlings in 2011 to 16.5 million seedlings in 2015. The community-led in planting a large number of tree seedlings in 2015 with about 16.3 million seedlings followed by New Forest Company with 200,000 seedlings and Kilolo District Council had the least number of tree seedlings with 4,800 seedlings.

**Table 2: Tree planting in Kilolo District**

<b>Institution</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>
New forest Company	20,000	20,000	200,000	200,000	20,000
Kilolo DC	3,000	42,000	4,000	40,000	-
Community (supported by KCCMP, EAMCEF, TaFF, PFP and FDT)	No data	15,083,485	17,732,883	14,865,394	13,082,856
<b>Total</b>	<b>23,000</b>	<b>15,325,485</b>	<b>17,936,883</b>	<b>15,105,394</b>	<b>13,282,856</b>

*Source: District Land and Natural Resources Office, 2019*

#### **1.6. Demand for Forest Products and Previous Harvesting Plan**

Kilolo District is well connected to major the highways of Mbeya – Morogoro – Iringa. Forest products from Kilolo District forests are frequently sold along the roadside. This is due to the

fact that forest products from Kilolo District can easily be transported to the urban markets of Morogoro, Iringa, Dar es Salaam, and Dodoma sometimes. Empty trucks returning from upcountry and from outside the country and passing through Kilolo District have been the main means of transport for forest products such as timber, charcoal, and fuelwood. Its close vicinity to major towns and easy transportation attracts more forest product dealers to Kilolo.

### **1.7. The Harvesting Plan Formulation Process**

The Plan formulation was undertaken in January 2019. The plan was started by raising awareness to the communities on the importance of having district harvesting plan. The awareness has been done after satellite image analysis, the villages which show the potential of natural forest and woodland are the one who visited by the team.

Harvesting Plan was developed by a team including representatives from the Tanzania Forest Services Agency-Kilolo, Kilolo District Council and TFCG and selected representatives in 27 villages.

### **1.8. Key Definitions and Implications**

#### ***1.8.1. Un-reserved Forests on Village Land***

According to Section 7 (1) of the Village Land Act of 1999, village land shall consist of:

- Land within the boundaries of a village registered in accordance with the provisions of section 22 of the Local Government (District Authorities) Acts 1982.
- Land designated as village land under the Land Tenure (Village Settlement) Act 1965.
- Land the boundaries of which have been demarcated as village land under any law or administrative procedure in force at any time before this Act comes into operation whether that administrative procedure based on or conducted in accordance with any statute law or general principles of either received or customary law applying in Tanzania and whether the demarcation has been formally approved or gazetted or not;
- Land, the boundaries of which have been agreed upon between the village council claiming jurisdiction over that land and:
  - (i) where the land surrounding or contiguous to that village is village land, the village councils of the contiguous village;
  - (ii) where the land surrounding or contiguous to that village is general land the Commissioner; or
  - (iii) where the land surrounding or contiguous to that village is reserved land the official or public organisation for the time being responsible for that reserved land; or Land, other than reserved land, which the villagers have been during the twelve years preceding the enactment of this Act regularly occupying and using as village land in whatever manner such persons or the village assembly or village council were allocated such land including land:

Lying fallow at any time during the said preceding twelve years;

Used for pasturing cattle belonging to villagers or to persons using that land with the agreement of the villagers or in accordance with customary law; land customarily used for passage of cattle.

This definition of village land clearly applies to the majority of unreserved land in Kilolo District.

On the other hand, the Land Act of 1999 defines general land as all public land which is not reserved land or village land includes un-used or un-occupied village land. In Kilolo District, the

forests are undoubtedly used by the villages for fuel wood, poles and other non-timber forest products. Since the woodlands of Kilolo District are used by villages, in this Plan they are considered to be un-reserved forests on village lands. This is provided for in the Forest Act in Section 4 (c) which states that Village forests consist of:

- Village land forest reserves;
- Community forest reserves created out of village forests;
- Forests which are not reserved, which are on village land and which the management is vested in the Village Councils.

This Harvesting Plan is focusing on un-reserved forests on village land.

### ***1.8.2. Selective harvesting***

In this plan selective harvesting means that only mature, commercial trees of a specific diameter (as per National Harvesting Guidelines of 2015) can be harvested so as to maintain the forest's natural eco-balance. Selective harvesting will allow the younger trees to grow for the next harvesting cycle. This provides younger trees with a chance to grow to their full commercial potential, while removing aged trees that would otherwise die naturally. Selective harvesting prohibits harvesting on river buffers and high terrain, protected trees species, seed trees and nesting trees.

### ***1.8.3. Degraded forest***

Former forest land severely damaged by: excessive harvesting of wood or poor management or other disturbances to a degree that inhibits or delays re-establishment of forests to its former status.

### ***1.8.4. Timber/sleepers***

According to Part 1 Section 1 of the Forest Act of 2002, "timber" means any wood or tree which has fallen or has been felled or cut off and all wood whether unsawn, hewn, sawn or machined, split, or otherwise cut up or fashioned and shall include lumber (sawnwood), flooring strips, shingles, and sleepers but does not include any article manufactured from such wood or firewood. Sleeper is an oversize sawn wood.

## **2) THE HARVESTING PLAN**

Un-reserved Forests on Village Land the Kilolo District Harvesting Plan provides clear guidance to all stakeholders on its objectives, scope, procedures, monitoring, and reporting. The Plan is aligned with relevant laws, policies and regulations including, but not limited to, the Forest Policy, the Forest Act 2002 and its regulations; and the Village Land Act 1999. The Plan promotes free, prior and informed consent and equitable benefit sharing for villages whose land is covered by the Plan. Also, this Plan is intended to contribute to the development of national guidelines on the development of district harvesting plans that integrate timber and charcoal.

### **2.1. The Objectives and Scope of the Harvesting Plan**

#### ***2.1.1. Objectives of the plan***

The objectives of the district harvesting plan include:

- promoting ecologically sustainable harvesting of forest products including timber, fuel wood and charcoal;
- promoting good governance including transparency, accountability and participation;
- promoting equitable benefit sharing;
- promoting free, prior and informed consent for communities; and revenue generation for local government.

### **2.1.2. Scope of the plan**

The scope of this Harvesting Plan focuses on procedures for harvesting charcoal in un-reserved forest on village land.

The harvesting plan stipulates the following:

- Roles and responsibilities of different stakeholders including of the District Harvesting Committee, LGAs, TFS, Village leaders and others.
- Procedures to be followed by those requesting permission to harvest to ensure transparency and the free, prior and informed consent of the communities on whose land harvesting is proposed.
- Permits to be issued to those requesting permission to harvest.
- Procedures for identifying the trees to be harvested and mechanisms to ensure compliance.
- Schedule of fees to be paid by those requesting permission to harvest.
- Schedule of fees to be paid to the villages from whose land timber is harvested; and those to be retained by the District.
- Procedures for the district to channel revenues to the affected villages.
- Procedures for seeking and documenting consent from communities with forests covered by the plan. This plan cannot be used as a basis for harvesting in Village Land Forest Reserves (VLFRs).
- Procedures to adjust the plan when communities include their village forest in village forest reserves.
- Monitoring and reporting procedures and responsibilities.
- Strategies to ensure enforcement of the plan and procedures for addressing those who contravene the plan.
- Communication and visibility of the plan.
- This Plan will be reviewed after every five years.

## **2.2. Criteria for a forest to be harvested**

In order for un-reserved forests on village land or local authority forest reserves to be eligible for harvesting, the following criteria need to be fulfilled:

### **2.2.1. Criteria for un-reserved forests on village land**

- A forest assessment to determine the harvestable potential species and their volumes for timber and charcoal production needs to be conducted. This assessment will help to establish the quality of the forest in terms of biodiversity value, catchment value and vulnerable areas such as steep slopes and valleys that are susceptible to degradation.
- A current forest harvesting plan should be in place that shows: species, volume, annual harvesting quotas that can be sustainably harvested. Such a plan should also adhere to the legal procedures. Additionally, the harvesting plan should show that reserved/protected tree species are not allowed to be harvested without a legal written permit or license.
- The status of forest condition should be known to help decisions on whether the forest should be harvested or left for conservation /regeneration e.g. degraded forests should be protected to facilitate regeneration.
- Approval of the village assembly for a forest inside the village boundary to be harvested is required. Moreover, the villages should develop by-laws in order for them to be able to benefit financially from the forest products harvested from unreserved forests on village land.

### **2.3. District Harvesting Committee**

The Ministry of Natural Resources and Tourism is responsible for guiding the composition, roles and operations of the District Harvesting Committee. The Committee has been established according to the Forest Act 2002, Government Notice No. 69 and 70 of 2006 and National Harvesting Guidelines of 2015. All applications approved by village governments are to be forwarded to the District Harvesting Committee for scrutiny, approval or rejection. The current composition of the District

Harvesting Committee is as follows:

The District Commissioner,	Chairperson
District Forest Manager	Secretary
District Land and Natural Resources Officer	Member
District Forest Officer	Member
Village Executive Officer of the village owning the forest	Member
Village Chairperson of the village owning the forest	Member

The number of Village Chairperson and Village Executive Officers in the meeting will depend on the number of villages submitting applications for harvesting. The committee meets once per quarter to go through all applications and make decisions. The decisions of the meeting will be implemented in collaboration and with full knowledge of the Village Natural Resources Committees (VNRC) in villages where harvesting operations will be carried out. The Committee will use this Harvesting Plan to guide decisions.

### **2.4. Permit and License Procedures**

#### **2.4.1. Unreserved Forests on Village Land**

According to the National Harvesting Guidelines 2015 licensing procedures for harvesting forest products (timber, charcoal and commercial firewood) in village forests is as follows:

- Application approved by respective village in accordance with Section 49(6) of the Forest Act
- The forest dealers should be registered for specific forest produces
- Application approved by District Harvesting Committee
- Possession of a valid license to harvest in the unreserved forests on village land granted by the DFO.

### **2.5. Jurisdictions and area of Operation of the Plan**

This Plan will operate in Kilolo District. The areas of jurisdiction are (1) unreserved forests on village. This Plan excludes National Park, game reserves, local government forest reserves, central government forest reserves and village land forest reserves/community forest reserves and plantations. The Plan focuses on charcoal only in the District. The Plan encourages harvesting of other produces to be done sustainably.

This Harvesting Plan is flexible as it is possible to adjust the plan when a village declares part of its un-reserved forest to become a village land forest reserve. The procedure to follow for un-reserved forest on a village land to become village land forest reserve is given in Section 3.8.4.

In case a village decides to up-grade part of its un-reserved forest land to VLFR the information in Annexes ... and ... will have to be adjusted i.e. involved villages, un-reserved forest area to be harvested. The adjustment has to be reflected in the Kilolo District Harvesting Plan. DFO and DFM will have to initiate the process of reviewing the District Harvesting Plan, submit the adjusted Plan to the District Harvesting Committee and to the District Council for approval. The adjusted Plan has to be sent back to villages for implementation.

## **2.6. Roles and Responsibilities**

The key stakeholders in the Harvesting Plan are the DFO, DFM, District Land and Natural Resource Officer (DLNRO), District Economic, Works and Environmental Committee of the District Council, Kilolo District Council, District Harvesting Committee, Customer and villages.

The key actors have different roles and responsibilities. Annex ... presents the roles and responsibilities of different stakeholders.

## **2.7. Cutting Cycles**

The Harvesting Plan provides estimates of how much can be harvested annually and sustainably. In principle, the total harvestable volumes of every potential unreserved forest on village land will be estimated and divided into annual quotas using a harvesting cycle of 90 years for charcoal to ensure sustainable harvesting based on natural regeneration. Charcoal harvesting includes trees which are much smaller (an assumed starting age of at least 10 years) and thus a longer period is required to replace the existing stock, which also includes very old trees. Since very large trees are not required for charcoal production, a shorter rotation could be used (e.g. 24 years) to capitalize on the faster growth of younger trees, but since the unreserved forests on village land are being managed for both timber and charcoal simultaneously and will not have the level of management in a true village forest reserve it is more appropriate to use a longer rotation. Also, with a 90 year rotation, the effective seed to harvest rotation for charcoal is the same as for timber – 100 years.

Harvesting of annual quota will be supervised and monitored by the District Forest Manager with the support of Village Councils (Village Natural Resources Committees).

Chain saws shall not be used in the forests for any operations. Charcoal production should use efficient technologies (e.g. half-orange, IBEK or Casamanse Kiln) as provided in the National harvesting Guidelines of 2015. Reserved tree species shall not be used for charcoal making. Trees for charcoal production will be harvested selectively as defined in Section 1.9.3

## **2.8. Blocking Procedures, Forest Potential and Harvesting Operations in Un-Reserved Forests on Village Land**

### **2.8.1. *Timber potential***

Potential sustainable timber harvesting was estimated through a combination of ground surveys of forest, GIS and remote sensing carried out in 2019.

The remote sensing used a combination of historical Landsat imagery and PALSAR radar imagery to arrive at a reliable map of forest areas in Kilolo that have been forested at least since 2010. Forest areas were broken into three forest types: sub-montane forest, woodland, and thicket. A map of Kilolo showing the distribution of these forest types is presented in Figure 2

Nearly 100% of the remaining sub-montane forest in Kilolo is protective government or village Forest reserves or steep mountains.



Timber transects for the reconnaissance survey were developed in three villages namely Mtandika, Magana and Nyanzwa. A total of 12 transects have been done which cover 54km of timber transects were surveyed which is equivalent to 54hectares. Out of 12 transects, 5 transects indicated no timber species at all, 4 transects dominated by commiphoraugogensis and 3 transects has few species of timber. Through this reconnaissance timber survey, the only tree species that was observed and whose quota can be established is Commiphora which is locally named as Mkongolo. Unfortunately, this tree species produce very low valuable timbers and this is why it is still prevalent in most areas as it is not harvested. Other timber species which were spotted during the survey are Albizia gummifera (Mkenge), Vitex doniana (Mfuru), Afzelia quanzesis (Mkongo), Entandophragma sp (Muhondo). Unfortunately, all these valuable timber tree species that were found during timber survey have their DBH lower than the Legal Minimal Diameter for Harvesting (LMDH) and their numbers are low to the extent that they do not qualify to establish a quota.

As per this reconnaissance survey, there is no sufficient number of wood stock for establishing any quota from Kilolo woodlands for timber sustainable harvesting. The Commiphora tree species should be conserved for ecological and environmental stability purposes of those particular areas because they lack commercial value and that is why they still exist in lowland areas despite the existing excessive demand for timber.

However, during the biomass assessment, the team noted that, Ikula village has good woodland stock and CBFM interventions may need to be established in the village so that the existing wood stock can be conserved and communities can benefit from those resources. The village has good woodlands that are dominated by many *Brachytergia* species which are good for both timber and charcoal and through verbal discussions with community members; their willingness to establish CBFM interventions is high. The estimated stock for timber in this villages were not enough for timber harvesting. Therefore, no timber business harvesting is anticipated in these villages. Therefore, this plan recommended that business timber should not be carried in Kilolo for this five years of this plan.

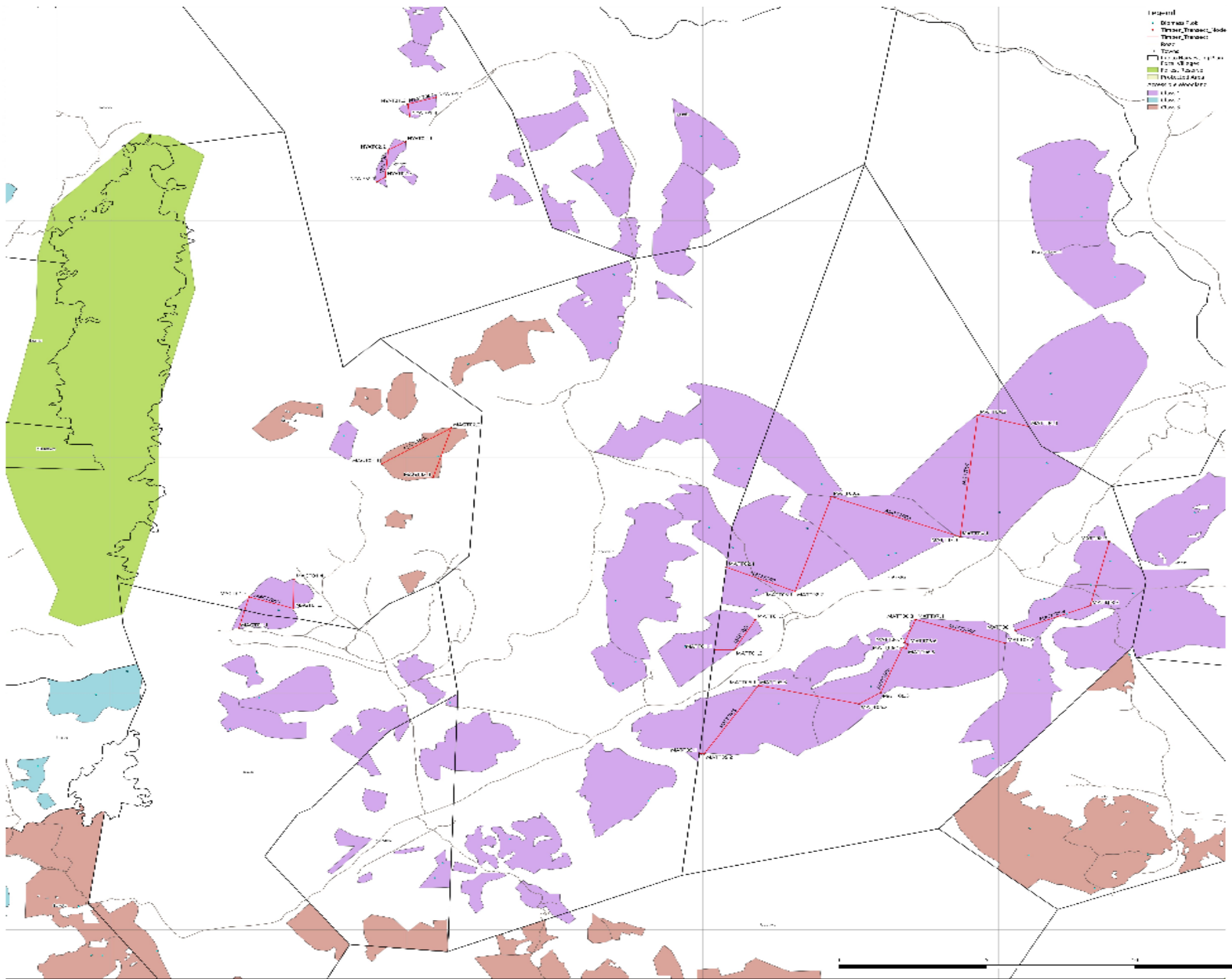


Figure 2 Kilolo District 2019 Timber Transects and Forest Cover

### ***2.8.2. Charcoal potential***

Potential sustainable charcoal harvesting levels from unreserved forests in village land were estimated through a combination of ground surveys and remote sensing. Ground data was obtained from biomass plots conducted in the northern, western and eastern of the district. In total, 138 plots were conducted in woodland or tall thicket (Figure 3). Potential stocks for charcoal harvesting were calculated by removing all timber species except Mtondoro and Myombo and all trees less than 10 cm DBH. The result was 38 tons of biomass per ha on average.

The Transforming Tanzania's Charcoal Sector project has previously estimated the efficiency of different types of charcoal kilns used in the Kilosa district which could be applied in Kilolo. The average efficiency in terms of conversion of biomass to charcoal was about 15%. Thus, taking 15% of 38 tons per ha, the average hectare in the district can produce 5.7 tons of charcoal once timber and trees smaller than 10 cm DBH are excluded. Then, dividing that figure by 90, yields potential sustainable charcoal harvesting 0.063 tons of charcoal per ha per year over a 90 year rotation.

In practice, charcoal harvesting tends to be less selective than timber harvesting. Thus, it is not ideal to harvest charcoal in areas of steep slope prone to erosion or where regeneration will be hindered by more intense fires. Thus, for charcoal before calculating the amount of unreserved woodland and tall thicket falling within each village, it was also necessary to remove all woodlands and tall thickets from unreserved village lands that were on slopes greater than 40%. The villages qualified for sustainable charcoal harvesting indicated on figure 4 while the estimates of potential sustainable annual charcoal harvesting from unreserved village land are presented in Annex 2.

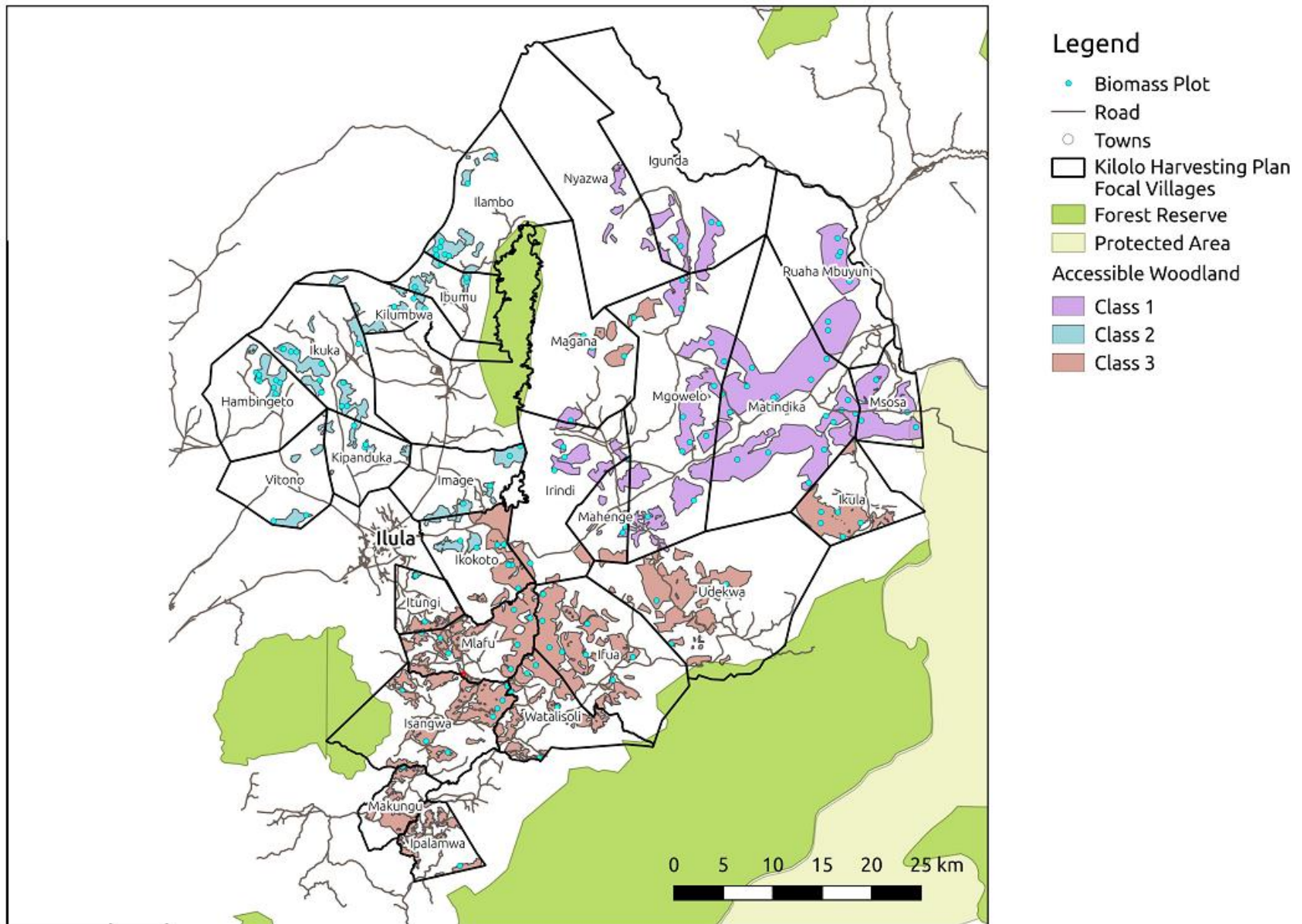


Figure 3 Kilolo biomass plots used to estimate potential charcoal making stocks

### ***2.8.3. Charcoal harvesting operations in un-reserved forests on a village land***

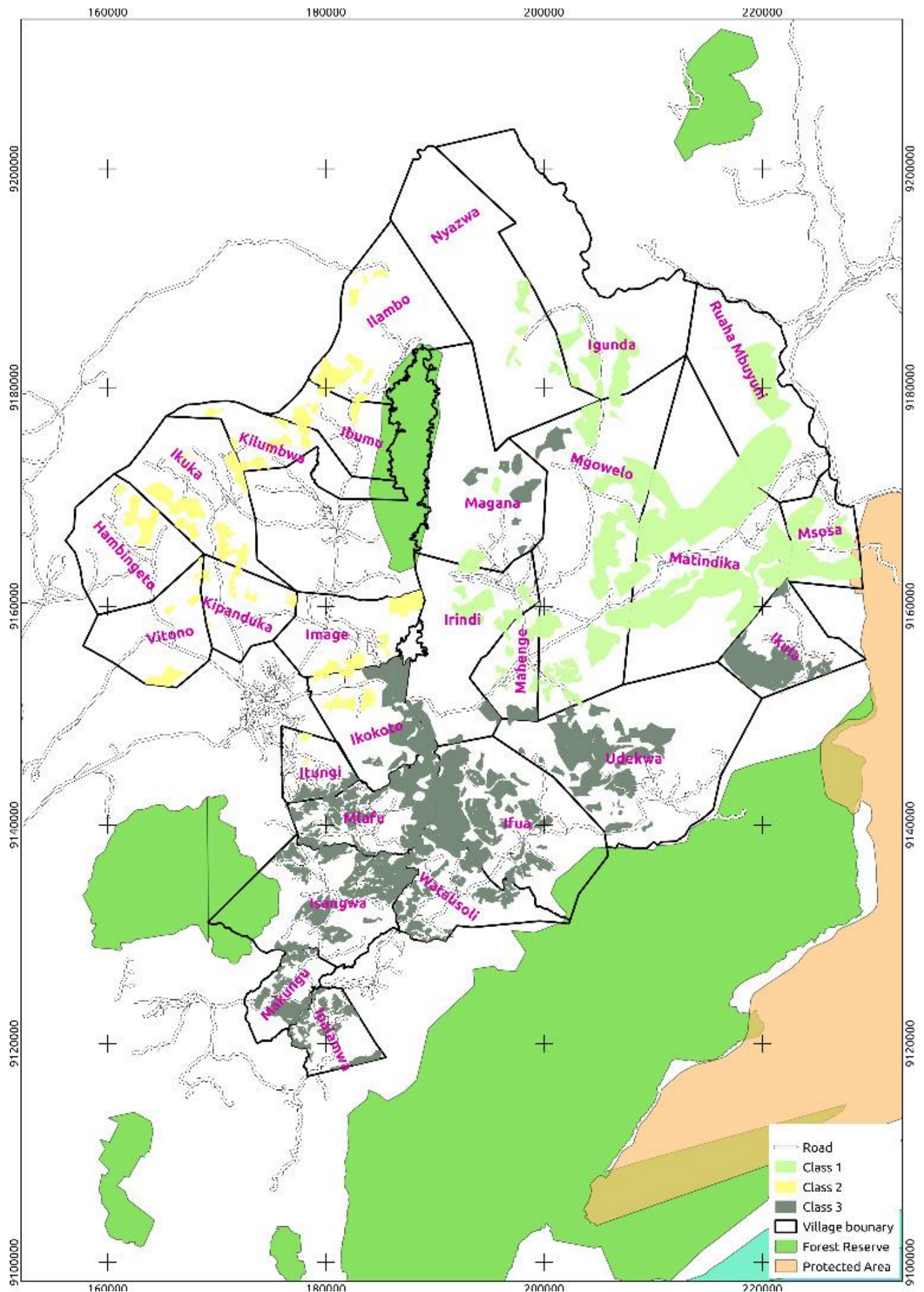
Charcoal production on a limited scale can be directed to trees felled during new agricultural plots preparation in areas set by the village for agriculture. This will not be selective harvesting, but charcoal making using trees felled during new agricultural plots preparation will be done in accordance with the District harvesting Plan. This will reduce demand for cutting trees from none farming areas.

Together with the above conditions, also the following shall be taken into account during charcoal production:

- Timber species except *Brachystegia* spp, shall not be harvested for charcoal, except branches left during timber harvesting and timber trees with poor quality (e.g. rotten, crooked and burnt by fire).
- Charcoal production should use efficient technologies (e.g. half-orange, IBEK or Casamanse Kiln) as provided in the National harvesting Guidelines of 2015 Reserved tree species shall not be used for charcoal making
- Trees for charcoal production will be harvested selectively as defined in Section 1.9.3
- Only trees above 15 cm diameter will be harvested.
- All trees that support ecosystem biodiversity (e.g. nest trees, fruit trees) shall not be harvested.
- Trees within water sources, steep slopes, areas prone to soil erosion shall not be harvested.

The Environmental Management Act of 2004 Section 57 (1) prohibits human activities that can affect river banks, water dams or reservoirs etc. within 60 m. Steep slopes are recognized as environmental sensitive areas by EMA 2004 Section 52. The Minister responsible for environment shall determine a gradient not to be exceeded after taking account of proper scientific advice.





- Road
- Class 1
- Class 2
- Class 3
- ▭ Village boundary
- ▭ Forest Reserve
- ▭ Protected Area

### 3) FOREST DEVELOPMENT AND GOVERNANCE

#### 3.1. Compliances to Relevant Laws, Policies and Regulations

In order to ensure sustainable supply of forest product such as timber and charcoal the Government has put in place several policies, laws, regulations and guidelines that must be complied with. Regarding timber and charcoal harvesting the following provisions in the Forest Act of 2002 are among the most important to be observed:

- Harvesting of forest products for business purposes requires a license.
- Harvesting should be done according to the harvesting plan.
- All applications for harvesting of forests in un-reserved forests on a village land should be approved by the Village Councils.
- All applications for harvesting of forests should be approved by the District Harvesting Committee.
- Reserved tree species are protected by law, therefore can only be harvested with a written permit and license from the DFO.
- A Transit Pass (TP) is required for transportation of forest products. In accordance with

Section 7.5.1 of the National Harvesting Guidelines of 2015. A Transit Pass is issued by the DFM or any other authorized forest officer. The Transit Pass shall include: the name, License number, Registration number, type and quantities of forest produce and means of transportation inter alia.

- Transportation of forest products should be between 6 am to 6 pm.
- Vehicles used for transportation should be open to allow quick verification.
- Logs, timbers and stumps should be marked with an FD Hammer from the respective district.
- Vehicles carrying forest produce should stop at every forest checkpoint for inspection.
- For each harvestable species a minimum girth of trees that may be felled is provided for in the Third Schedule of Forest Regulations of Forest Act 2002, for example, *Brachystegia spiciformis* is 55 cm and *Terminalia spp* 45cm which are common in Kilolo District.
- Charcoal production should be done using efficient kilns.
- Use of chain saws is prohibited.
- Charcoal bags shall weigh approximately 50 kg per bag as stipulated in the Forest
- Removal of the forest produce allowed by license shall be completed within the period prescribed in the license or within such further period as shall be extended by the District Forest Manager upon payment of prescribed fees.
- The license holder must fill-up pits dug during the process of timber and charcoal harvesting. In addition to the above, District administration have agreed that the DFO shall identify and set selling centres for charcoal. Charcoal sale points should be known and enforced.

#### 3.2. Natural Regeneration

The potential for woodland to produce charcoal and timber sustainably mainly hinges on the ability of the woody species to regenerate and grow. Woodland regeneration generally involves coppicing of the harvested trees, natural seeds production and germination, vegetative

regeneration and overall survival of seedlings. In the absence of intense disturbance such as frequent late fires and overgrazing, woodlands have the capacity to regenerate almost to their original status. Unless the trees have been uprooted, most of the subsequent development of woodland will be derived from re-growth of coppice from the surviving stems, stump/root sucker shoots and recruitment from old stunted seedlings already present in the grass layer at the time of tree cut, fall or death (Chidumayo, 1993).

Therefore, one of the principles for sustainable forest management in the woodland areas is to encourage natural regeneration. Natural regeneration is easier in miombo woodlands and is favoured by villages compared to tree planting because tree planting requires more time, labour and other resources and survivorship of regenerating trees is higher than planted trees.

Regeneration of miombo also provides added benefits in terms of biodiversity conservation compared with the introduction of exotic tree species. Literature shows that the most efficient way to restore vegetative cover in miombo is to protect it from grazing, wildfires and expansion of agriculture. Vegetation will usually regenerate naturally, even on bare lands if such land remains undisturbed. On the other hand, enrichment planting of trees in degraded areas would speed up the process. In such cases, indigenous tree species should be used.

Overall, in order to ensure effective regeneration in the timber and charcoal producing areas, the following need to be taken into consideration:

- Ensure a few seed-producing trees are left uncut to facilitate adequate regeneration.
- Disused paths and tracks should be closed so that regeneration of secondary vegetation occurs.
- Enrichment planting may be done in harvested areas using indigenous species that will not change the vegetation composition.
- Wildfires are controlled and fire management is implemented to ensure maximum natural regeneration. Natural regeneration in the harvested areas should be protected against grazing, wildfires, shifting cultivation through By-laws and regular patrols.

### **3.3. Ecologically Sustainable Harvesting**

Charcoal and timber harvesting requires protecting the ecology of the forest. That means the activities should have minimum impacts to water sources, biodiversity, wildlife, soils and the entire ecosystem functions. Charcoal production should only be allowed in the area once the charcoal harvesting plans that consider ecological sustainability are prepared and approved. Such conditions to ensure sustainable ecological harvesting are that:

- The harvesting methods that do not impair the original structure and diversity of the forest should be promoted.
- Harvesting methods should minimize impacts on the biological, chemical and physical soils characteristics.
- A map showing the protected sites within the harvesting areas should be available for effective monitoring ecological sustainability of harvesting.
- Protection of sites of religious, historical, cultural or particular socio-economic value should be ensured.
- The clearing of forests for farming and related agricultural activities in the District be regulated through By-laws.
- Post-harvest species composition and density of undergrowth do not show increased abundance of populations of invasive species.



- Sensitive areas should be identified and selected through ecological survey and included in the protected sites in the harvesting areas.
- Ensures that standardized data on fauna and flora are available for effective ecological monitoring.
- Selective harvesting should be used instead of clear felling so as to ensure ecological sustainability.
- Ensured that diversity and relative abundance of fauna species do not change significantly.

An exhaustive list of the requirements guiding ecological sustainability are stipulated in the Environmental Management Act of 2004, therefore apart from the District by-laws (KDC, 2015a) and village by-laws it is very important to adhere to the Environmental Management Act together with the sectoral regulations.

### **3.4. Governance and Control**

At the time of preparing this plan in the early and mid of 2019, forest harvesting in the District is characterized by very weak governance. Access to resources is almost complete unrestricted, leading to illegal and unsustainable production and trade without payments being made for the raw material (e.g. wood), and licenses and levies largely evaded. The main cause for these problems is inadequate and improper instruments, low transparency, low participation, and weak rule of law, lack of fair legal frameworks, low equity and inclusiveness, inefficiency on resource use, and low accountability.

Given a lack of resources in the government for day to day monitoring of forest harvesting, there is a need to involve the villages more closely in the implementation of the forest harvesting plan, initially through the following:

- Relevant staff at District (including DED, DLNRO, DFO and DFM) and village levels (Village Natural Resource Committee Members, Village Chairmen and Village Executive Officers) deal with forest harvesting in un-reserved forests on village lands and local authority forest reserves shall be trained on the elements of good governance (e.g. democracy, civil rights, transparency, and the rule of law, accountability, efficient public services delivery, conflict mediation, budgetary and financial management, revenue mobilization and public expenditures).
- Ensure implementation of all activities in a gender sensitive manner, ensure use of the principles of free, prior and informed consent, and paying attention to the cultural, educational and resource constraints that women may have.
- Proper application of the Forest Act by empowering the villages to manage the un-reserved forest on village land.

### **3.5. Royalties, Fees and Benefit sharing**

#### **3.5.1. Royalties and fees**

Section 77 of the Forest Act of 2002 states that the Minister may determine and thereafter prescribe, the services and permits for which fees shall be charged by Forest Managers and their corresponding charge rates. Section 77 (3) of the Forest Act 2002 states that no royalties shall be required for the harvesting or extraction of forest produce within a village forest reserve or a community forest reserve by the resident of the village or the members of a Group as the case may be unless such a requirement is specifically provided for any agreement under which they are managed.

Regarding payments for forest produce from unreserved forests on village lands are indicated in Table 4, 6, and 7. The payments include royalties, 5% of the royalty to be paid as a contribution to tree planting and other fees (transit pass, registration and fees for reserved trees). Any fees, royalties or other imposts arising out of any permitted activity are owing to the Government. The DFO has a duty to collect all revenue from fees, royalties and licenses charged or issued in respect of such District local authority forest reserves and un-reserved forests on village land, and pay them into the proper accounts. DFM has a duty to collect revenue from Transit Pass on behalf of the Central Government.

Table 3: Royalties for different timber classes

<b>Class</b>	<b>Royalty per m<sup>3</sup> (standing Volume)</b>
<b>Logs</b>	
Class IA	264,960
Class IB	235,520
Class II	176,640
Class III	132,480
Class IV (Other species)	88,320
<b>Poles of non-plantation forest species</b>	
5 cm but not more than 10 cm diameter at butt each	1,500
Over 10 cm but not more than 20 cm diameter at butt each	2,200
<b>Charcoal</b>	
Fees for a bag of charcoal (75 kg per bag) or (Tsh. 240 Tsh/kg)	16,600
<b>Firewood</b>	
Firewood from natural forests (per stacked m <sup>3</sup> from dead branches and off cuts)	5,900

Source: Forest (Amendment) Regulations, 2015

In addition, the timber, charcoal and commercial firewood harvesters are required to pay 5% of the royalty paid appearing in Table 3 as a contribution to tree planting. This amount is currently administered by Tanzania Forest Fund.

Other fees are payable on services such as transit pass and registration. The current service fees as extracted from Forest (Amendment) Regulations, 2015 are presented in Table 4.

Table 4: other fees payable on services related to forest products

<b>Services</b>	<b>Fees payable in TZS</b>
<b>Transit pass application fees</b>	
i) For a 7 tonne vehicle or below	7,500
ii) Above 7 tonnes	15,000
<b>Fees for reserved trees</b>	
Reserved trees on private farms should be 20% of respective forest royalty	20%

given in Table 3 above	
Fees for registration of forest produce dealers and traders per year	256,000
Timber (For Pit sawyers in productive natural forest)	256,000
Timber	256,000
Charcoal	256,000
Firewood	256,000

All fees and royalties stated above are paid to the Central Government through TFS. In addition to the Central Government royalties, Kilolo District Council and Village Councils can collect Cess and fees respectively. Local government authorities such as villages have powers to formulate their own By-Laws within their area of jurisdiction. These powers are guaranteed by Local Government (District Authorities) Act CAP 287 and Local Government (Urban Authorities) Act CAP 288 (RE 2002). These acts provides the procedures under which local authorities can make by- laws. The by-laws shall stipulate fees that can be collected on the forest products harvested from their areas of jurisdictions. This means, such Cess and fees have to originate from the District Council and Village Council By-laws.

Unfortunately, at the time of preparing this plan in 2019, Village Councils had yet to formulate and approve by-laws that stipulate fees for the forest products such as timber and charcoal harvested from un-reserved forests on village land within their areas of jurisdictions. Village Councils are advised to formulate their by-laws that will allow them to charge fees on forest products from un-reserved forests on village land in areas of their jurisdictions. Collection of fees and issuing of permits must be linked to sustainable harvesting plan. Therefore harvesting from unreserved forests on village land should be done when by-laws are in place.

### **3.5.2. Benefit sharing**

In order to maintain sustainable harvesting, benefit-sharing among stakeholders is an important item in the Harvesting Plan. Stakeholders with rights to benefit from harvesting of timber and charcoal include: villages in the harvested areas, the District Council and Tanzania Forest Services. Currently, there are no agreed and approved benefit sharing systems for the local authority forest and un-reserved forests on village land that would directly benefit villages where harvesting is taking place. Benefit sharing in this Harvesting Plan can be improved through the following approaches:

- Regarding un-reserved forests on village land, Village Councils should formulate by-laws to enable them to charge fees for timber and charcoal harvesting. Therefore harvesting from unreserved forests on village land should be done when by-laws are in place.
- On District Council Forest Reserves, the Council should enter into Joint forest management agreement with adjacent villages to facilitate sharing of benefits in line with page 18 - 21 of the Joint Forest Management Guidelines of December 2013.

### **3.6. Revenue Generation for Local Government**

The sources of revenues for District and Village Councils are provided in the Local Government Finances Act of 1982 and the amendments made to it since its enactments in 1982 up to 30th June, 2000 (URT, 2000). Regarding District Councils, the Act allows Councils to collect all revenues derived from any cess (ranging between zero and five percent of the farm gate price); all revenues derived from licenses, permits, dues, charges or fees specified by by-law made by the District Council. Specifically, the Local Government Finances Act makes references to

Section 10 of the Forest Act and directs the District Council to collect all revenues derived from fees for forest produce and licenses. However, Section 4 of the Local Government Finances Act directs that all revenues of a District Council shall be paid into the general fund of the Council therefore may not necessarily be available to the forest activities in the District.

The sources of revenues of Village Councils are also provided in the Local Government Finances Act. The sources mainly include all revenue derived from licenses, permits, dues, fees, charges or tariffs specified in the by-laws made by the Village Councils; and all taxes imposed on non-major trading centres within the village boundaries.

### **3.7. Promotion of Free, Prior and Informed Consent for Communities**

For the purposes of the District Harvesting Plan, the underlying principles of free, prior and informed consent can be summarized to include: (i) Information and consultation on preparation and implementation on the Harvesting Plan; (ii) Participation of villages on preparation and implementation on the Harvesting Plan and, (iii) Representation of villages to the harvesting committees.

#### ***3.7.1. Information and Consultation***

In the formulation of this Plan, stakeholders at all levels were informed and consulted to provide their inputs important for the inclusion in the Plan. In other words stakeholders assisted in hatching the Plan. Implementation of this Plan is designed to ensure that villages' right to free, prior and informed consent (FPIC) will be recognized by all stakeholders and decision making bodies. These include Village Natural Resource Committees, Village Councils and District Harvesting Committee. For example, Chair persons of the Village Governments and Village Executive Officers are members of the District Harvesting Committee when considering harvesting applications from the respective villages.

At the village level, implementation of the harvesting plans will require informed consent from that village before harvesting can take place. In other words, the FPIC is required to be done in each village.

#### ***3.7.2. Village participation in the decision making process***

Given the importance of charcoal and timber harvesting in the villages, and in order to adhere to the principles of FPIC, inputs of villages in the development and implementation of the Harvesting Plan is a requirement. Hence the participation villages in the decision making process is mandatory to ensure the Plan responds to their priorities, respects their culture and their choices of development. Participation of VNRC, Village Council, Village Assemblies and membership in the District Harvesting Committee guarantee the requirement of villages participation in the decision making process.

#### ***3.7.3. Representation of villages to the District Harvesting Committees***

Villages' effective participation in the decision making organs relevant for timber and charcoal harvesting is paramount. The role of villages in the decision-making process and in negotiating or bargaining with other parties including forest dealers, district authorities is important. The existing governance structures at the village and district levels already allows for adequate representation. However, villages need to be given an opportunity to build/strengthen their individual and collective capabilities in order to take advantages of available opportunities. To this effect, training and capacity building is important to support villages. Additionally, legal training should also be provided during implementation of the Plan on issues pertaining to timber and charcoal harvesting. Exchange visits have also become an increasingly important tool in training; therefore will be used in this Plan. Also, experience sharing with other villages that are

already practicing sustainable harvesting may provide further insights and increase their capacity.

### **3.8. Coordination at District and National Level**

Currently, timber and charcoal harvesting in the District in most cases is informal, almost totally unregulated, and open to any and all who wish to participate in it. Harvesting involves a multitude of commercial, institutional (village and district) and policy players who operate with no comprehensive, unified national, regional, district or local coordination thereby complicating monitoring activities. Coordination of District and village level governing institutions will be enhanced. In this Plan the coordination hub will be at the DFM/DFO offices. The DFM/DFO offices shall network with harvesting areas and authorities at village, district and national level. Charcoal producer associations will be promoted and expected to be key players of sustainable harvesting at village and district level. In order to control illegal harvesting and improve revenue collection and law enforcement coordination will be done through:

- Increased information sharing and communication;
- Increased participation in decision making and implementation of the Plan;
- Use of existing networks;
- Promotion of joint patrol between stakeholders;
- Increased regular feedback meetings.

## **4) MONITORING AND EVALUATION AND ADJUSTMENT OF THE PLAN**

### **4.1. Roles and responsibilities in monitoring the plan**

There should be a mechanism set in a participatory way to monitor the Harvesting Plan. District Forest Officers and District Forest Manager offices are to be on the frontline of monitoring the Harvesting Plan. They have to ensure that harvesting of timber and charcoal is managed in accordance with approved Management and Harvesting Plans. The Plan provides that monitoring to be done at several levels.

#### ***4.1.1. VNRC roles and responsibilities in monitoring the plan***

A Village Natural Resources Committee which is a sub-committee of the Village Council formed under the Environmental Management Act (EMA) No. 20 of 2004. The principal functions of the Natural Resources Committee are to oversee and manage the forest and harvesting of natural resource products, including forest products, from village forests, firewood, charcoal, trees, timber and poles. The Committee determines harvesting areas within the village forest and prepares and coordinates harvesting plans, and reviewing quarterly reports on harvesting activities with the Ward and DFOs. The VNRC and village leadership should monitor to ensure that timber and charcoal production in the un-reserved forests on village land is done in accordance with the District Harvesting Plan.

Frequent joint forest patrols involving Village Natural Resource Committee members from areas surrounding the forest and DFO/DFM should be conducted. Field physical surveillance should be conducted to ensure that harvesting rules are adhered to and that harvesting is done in such a way as to minimize its environmental impact. This can be realized if By-laws that ensure villages earn revenues from harvesting are in place. Part of such revenue should support VNRC activities including monitoring.

#### ***4.1.2. District Forest Manager roles and responsibilities in monitoring the plan***

The DFM monitors harvesting to make sure that the harvesting is carried out according to the Plan in the specified areas and only trees shown on the license are harvested. The DFM is responsible for monitoring transportation of the forest products by making verifying products against documents (e.g. TP, License, receipts etc) at Check Points and elsewhere. The DFM shall produce monthly, quarterly and annual reports showing amount of tree volume harvested and forest royalty collected.

#### ***4.1.3. District Forest Office roles and responsibilities in monitoring the plan***

District forest office should construct forest products inspection checkpoints within the district and strengthen the capacity of available check points in order to realize the intended results. Most of the Kilolo District checkpoints are in fact established by District Councils for the purpose of collecting revenue from agriculture products. Jointing forest patrol involving different stakeholder from the district to the village level have to conduct regular patrol within the district to ensure harvesting activities comply with district harvesting plan.

#### ***4.1.4. District Forest Harvesting Committee roles and responsibilities in monitoring the plan***

The District Forest Harvesting Committees have to conduct meetings every six months to discuss the harvesting trend as required by the National Harvesting guidelines of 2015.

### **4.2. Indicators**

Indicators for monitoring and evaluations will include:

- Harvesting activities are based on the District Harvesting Plan and as approved by the villages, District Harvesting Committee and District Council.
- The actual timber and charcoal harvesting does not exceed allowable annual quota.
- The data for M& E will be annual allowable quota and actual harvest figures.
- Number of villages that have formulated by-laws to support sustainable harvesting of timber and charcoal from un-reserved forests on village land increased.
- The data for M&E will be the number of approved By-laws (previous years compared to current).
- Number and area of un-reserved forest on village land that are declared VLFR increased and revenues for villages improved. The data on number of VLFR will be collected from Kilosa District Annual Report.
- Mechanisms for sharing benefits are in place. Data on the number of by-laws formulated by villages to increase benefits and actual benefits received by villages as shown in Village Council Minutes.
- Revenue for local government (villages and district councils) increased. Data for M&E to be collected include: revenues from charcoal and timber harvesting for the villages and District Council.
- Degradation and deforestation due to timber and charcoal decrease in un-reserved forests on village land. Data for M&E to be collected include illegal felling of trees, size of areas cleared for agricultural expansion etc.
- Legal compliance by timber and charcoal producers in un-reserved forests on village land increased. Data for M&E to be collected include number of illegal activities within the un-reserved forest on village land.
- According to the National Forest Harvesting Guidelines of 2015, the Monitoring and Evaluation Report shall be prepared quarterly by the District Harvesting Committee and submitted to the District Council and TFS.

## 5) RECOMMENDATIONS

The following are key recommendations:

- The harvesting plan should be valid for 5 years and should be reviewed with updated information on forest areas and charcoal stocks at that point.
- Kilolo District Council should ensure that harvesting in un-reserved forests on village land is done according to the Harvesting Plan, and customer should comply with the Plan.
- District Council should increase awareness to villages on Community Based Forest Management so as to declare more forest into village land forest reserves.
- The District should identify areas to be used as charcoal selling centres and establish them.
- Charcoal producers and traders should be encouraged to form associations.
- The Kilolo District Council and TFS should enhance their capacity to implement Harvesting Plan.
- Villages should develop by-laws to enable the villages to benefit from the charcoal harvesting activities within their areas of jurisdictions.

## 6) REFERENCES

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## 7) Annex

### Annex 1: Distribution of population by ward and sex based on 2012 census

Serial No.	Ward	Population (Number)			Average Household size	Sex ratio
		Total	Male	Female		
	<b>Total</b>	<b>218,130</b>	<b>105,856</b>	<b>112,274</b>	<b>4.3</b>	<b>94</b>
1	Image	9,180	4,404	4,776	4.2	92
2	Irole	12,146	5,734	6,412	4.1	89

3	Ilula	11,109	5,264	5,845	4.1	90
4	Uhambingeto	10,327	5,100	5,227	4.2	98
5	Udekwa	5,803	2,949	2,854	4.2	103
6	Mahenge	10,039	5,074	4,965	3.8	102
7	Mtitu	11,328	5,558	5,770	4.4	96
8	Dabaga	7,787	3,700	4,087	4.6	91
9	Ukumbi	12,912	6,352	6,560	4.3	97
10	Ukwega	12,195	5,913	6,282	4.9	94
11	Boma la Ng'ombe	11,313	5,358	5,955	4.4	90
12	Idete	8,059	3,791	4,268	4.8	89
13	Masisiwe	10,053	4,729	5,324	4.5	89
14	Ng'uruhe	11,012	5,339	5,673	4.4	94
15	Ng'ang'ange	4,123	1,942	2,181	4.3	89
16	Ihimbo	10,212	4,978	5,234	4.4	95
17	Lugalo	12,359	6,004	6,355	4.0	94
18	Nyalumbu	15,306	7,406	7,900	4.0	94
19	Mlafu	6,386	3,190	3,196	4.2	100
20	Ibumu	6,681	3,252	3,429	4.3	95
21	Ruaha Mbuyuni	12,151	6,144	6,007	4.1	102
22	Kimala	7,649	3,675	3,974	4.7	92

Source: Census report, 2012

## Annex 2. Roles and Responsibilities of stakeholders

Stakeholder	Role	Responsibilities
<b>Un-reserved forests on village land</b>		
VNRC	Local forest manager	<ul style="list-style-type: none"> <li>• Patrol and supervision of forest harvesting within the village boundaries</li> <li>• Law enforcement</li> <li>• Prepare draft village bylaws regarding forest activities in un-reserved forests on village land including revenue collection and benefit sharing within the village</li> <li>• Receive, discuss and recommend harvesting applications to the Village Council</li> <li>• Prepare reports on forest activities</li> <li>• Initiate and follow-up the process for un-reserved forests on village land to become VLFRs</li> <li>• Hold a 'hammer' for timber harvested legally from a VLFR</li> </ul>
Village Council	Decision makers	<ul style="list-style-type: none"> <li>• Prepare and submit quarterly report to the Village Assembly</li> <li>• Prepare draft of village bylaws and submit to the Village Assembly for approval</li> </ul>



		<ul style="list-style-type: none"> <li>• Select and recommend VNRC members to the Village Assembly for approval</li> <li>• Revenue collection from timber, firewood and charcoal</li> <li>• VEO and Chairman are members to the District Harvesting Committee</li> </ul>
Village Assembly	Forest beneficiaries/Forest owners	<ul style="list-style-type: none"> <li>• Overseer of all forest activities in the village</li> <li>• Receive, discuss and make decisions on utilization of revenue from forest harvesting activities</li> <li>• Receive and approve village bylaws from the village council</li> </ul>
DFO	Technical Advisor	<ul style="list-style-type: none"> <li>• Prepare and Implement forest harvesting plan</li> <li>• Provide technical advice on harvesting of forest products</li> <li>• Ensure law enforcement including harvesting compliances</li> <li>• Receive and compile harvesting applications and recommend to the District harvesting Committee</li> <li>• Develop draft bylaws on forest harvesting and present to DLNRO</li> <li>• Issue harvesting licenses</li> <li>• Revenue collection related to timber and charcoal harvesting</li> <li>• Keep records on timber and charcoal harvesting and trade</li> <li>• Implement monitoring, evaluation and reporting of forest activities</li> <li>• Member to the District Harvesting committee</li> <li>• Overseer of all forest activities</li> </ul>
DFM	Technical Advisor	<ul style="list-style-type: none"> <li>• Issue forest harvesting application form</li> <li>• Registration of forest product dealers</li> <li>• Custodian of FD Hammer</li> <li>• Hammer all logs and timber in the un-reserved forests in the Districts</li> <li>• Issue and monitor TP to forest product dealers</li> <li>• Participate in preparation and Implementation of District Harvesting Plan</li> <li>• Provide technical advice on harvesting of forest products</li> <li>• Ensure law enforcement including harvesting compliances</li> </ul>

		<ul style="list-style-type: none"> <li>• Revenue collection related to Transport Pass for timber and charcoal</li> <li>• Implementation of monitoring, evaluation and reporting of forest activities</li> <li>• Overseer of all forest activities in unreserved forests on village land</li> <li>• Member and Secretary to the District Harvesting committee</li> <li>• Keep records on TP for timber and charcoal</li> </ul>
District Harvesting Committee	Decision makers on forest product harvesting applications	<ul style="list-style-type: none"> <li>• Receive and make decision on applications for harvesting forest products by dealers</li> <li>• Monitoring of implementation of harvesting plans and tree planting in harvested areas</li> <li>• Provide advice to the DED and TFS-CEO</li> <li>• Prepare quarterly reports on the progress of harvesting and tree planting in the district</li> </ul>
Customer	Forest product dealers	<ul style="list-style-type: none"> <li>• Comply with harvesting laws, bylaws, regulations and rules</li> <li>• Keep relevant documents and records on harvesting and trade of forest products</li> </ul>

### Annex 3. Potential sustainable annual harvest of charcoal on unreserved village

Village Name	Unreserved Woodland (ha)	Charcoal Limit (tons)
Kilumbwa	808.7	50.95
Mlafu	3874.4	244.09
Ikuka	1898.9	119.63
Nyazwa	399.3	25.16
Watalisoli	2665.1	167.90
Ilambo	1141.0	71.88
Isagwa	59.3	3.74
Ruaha mbuyuni	3438.4	216.62
Ifua	4809.0	302.97
Nyanzwa	179.4	11.30
Vitono	529.8	33.37
Ipalamwa	940.8	59.27
Makungu	1237.3	77.95
Magana	1259.5	79.35
Mgowelo	6754.8	425.55
Ikokoto	2892.5	182.23
Itungi	583.0	36.73
Udekwa	4570.7	287.95
Ikula	2522.8	158.93
Mahenge	819.1	51.60

Kipanduka	395.0	24.89
Ibumu	519.8	32.75
Ipalmwa	174.1	10.97
Isangwa	3707.8	233.59
Hamingeto	731.2	46.06
Igunda	1796.3	113.17
Matindika	10018.1	631.14
Msosa	2602.7	163.97
Irindi	1898.4	119.60
Image	1065.7	67.14
<b>Total</b>	<b>64,292.64</b>	<b>4,050.44</b>

#### Annex 4. Charcoal Tree species available in Kilosa District

Village name	Venecular name (hehe)	Common name (scientific name)
Udekwa	Mhani/Mkwee	<i>Brachystegia spiciformis</i>
	Mtelela	<i>Brachystegia microphylla</i>
	Mgunga	<i>Acacia sieberiana</i>
	Mlama mweusi	<i>Combretum zeyheri</i>
Ifua	Mkwee	<i>Brachystegia spiciformis</i>
	Mhani	
	Mtelela	<i>Brachystegia microphylla</i>
	Mtevele	
	Mgunga	<i>Acacia sieberiana</i>
	Mpululu	<i>Terminalia sericea</i>
	Mhenyi	<i>Faurea saligna</i>
Mkalanga	Myombo	<i>Brachystegia longifolia</i>
	Mkwee	<i>Brachystegia spiciformis</i>
	Mkusu	<i>Uapaka kirkiana</i>
	Mkolongo	<i>Agauria salicifolia</i>
	Mhalagatu	<i>Phillippia pallidiflora</i>
Makungu	Mtelela	<i>Brachystegia microphylla</i>
	Mkwee	<i>Brachystegia spiciformis</i>
	Muhalagatu	<i>Phillippia pallidiflora</i>
	Myombo	<i>Brachystegia lingifolia</i>
	Mbadilo/Mlama	<i>Combretum molle</i>
	Mtowo	<i>Azanza garckeana</i>
Isagwa	Myombo	<i>Brachystegia spiciformis</i>
		<i>Brachystegia microphylla</i>
		<i>Brachystegia longifolia</i>
Ikuka	Miyombo	<i>Brachystegia species</i>
	mlama	<i>Combretum molle</i>
Vitono	Mkalala	<i>Albizia petersiana</i>
	Mkungugu	
	Mbata	<i>Acacia gerrardii</i>
	Mkwee/Miyombo	<i>Brachystegia spiciformis</i>
	Muwisa	<i>Boscia mossambicensis</i>
	Mlama	<i>Combretum molle</i>
	Mtimbwi	<i>Ormocarpum trichocarpum</i>
	Mliasenga	<i>Combretum zeyheri</i>

	Mfudu	<i>Vitex iringensis</i>
	Mtowo	<i>Azanza garckeana</i>
Mahenge	Myombo	<i>Brachystegia longifolia</i>
	Mtondoro	<i>Brachystegia spiciformis</i>
	Mhavava	
	Mlama yote	<i>Combretum spicies</i>
	Mgandu	<i>Berchemia discolar</i>
	Mgunga	<i>Acacia sieberiana</i>
	Mkwata	<i>Cordial africana</i>
	Mkapu	<i>Grewia fallax</i>
	Mnyenye	
	Ikokoto	Mkwee
Mtelela		<i>Brachystegia microphylla</i>
Myombo		<i>Brachystegia longifolia</i>
Ruaha mbuyuni	Mkwaju	<i>Tamarindus indica</i>
	Mhavava	
	Mgunga	<i>Acacia sieberiana</i>
	Mdai	<i>Vitex donia</i>
	Mpogoro	<i>Faidherbia albida</i>
	Mkwata	<i>Cordiala africana</i>
	Mkengelechuma	
	Mgandu	<i>Berchemia discolar</i>
Msosa	Mkwaju	<i>Tamarindus indica</i>
	Migunga	<i>Acacia sieberiana</i>
	Mkwata	<i>Cordila africana</i>
	Mduma	<i>Garcinia sp</i>
	Mdai?mkwaju	<i>Tamarindus indica</i>
	Mkololo	
	Mfukwe	
	Mpogolo	<i>Faidherbia albida</i>
	Msafia	
	Mkaapu	<i>Grewia fallax</i>
Ibumu	Mkwee	<i>Brachystegia spiciformis</i>
	Mtelela	<i>Brachystegia microphylla</i>
	Mlama	<i>Combretum molle</i>
Kilumbwa	Mkwee	<i>Brachystegia spiciformis</i>
	Mtelela	<i>Brachystegia micriophylla</i>
	Mlama	<i>Combretum molle</i>
	Mliyasenga	<i>Combretum zeyheri</i>
	Msukanzi	<i>Acacia polyacantha</i>
	Msisina	<i>Albizia harveyii</i>
	Mkalala	<i>Albizia petersiana</i>
	Mtowo	<i>Azazna garckeana</i>
	Mtanula	<i>Toddalia asiatica</i>
	Msasati	<i>Vitex mombasae</i>
	Mlianongolo	
	Mnyaluhanga	<i>Clotalaria agatiflora</i>
	Msaula	<i>Parinari excelsa</i>
	Mkoga	<i>Vitex doniana</i>
Image	Mkwee	<i>Brachystegia spiciformis</i>

	Mlama	<i>Combretum molle</i>
	Mliasenga	<i>Combretum zeyheri</i>
	Mgegele	<i>Dichrostachys cinerea</i>
	Mkalala	<i>Albizia petersiana</i>
	Mluvasunza	
	Mnyaluhanga	<i>Clotalaria agatiflora</i>
	Mbaya	<i>Strychnos innocua</i>
	Mhanzwa	
	Mulagavega	<i>Acacia nilotica</i>
	Mkengelechuma	
Mgowelo	Mgunga	<i>Acacia sieberiana</i>
	Mkwata	<i>Cordia africana</i>
	Mhavava	
	Mpogolo	<i>Faidherbia albida</i>
	mgandu	<i>Berchemia discolor</i>
	mdanga	
	mgulukanziva	<i>Kigelia africana</i>
	mkwaju	<i>Tamarindus indica</i>
Mtandika	Mgunga	<i>Acacia sieberiana</i>
	Kwata	<i>Cordia africana</i>
	Mhavava	
	Mfukwe	
	Mkengele chuma	
	Osigwai(maasai)	<i>Teclea simplicifolia</i>
	Mkwaju	<i>Tamarindus indica</i>
	Mkengelechuma	
	Osigwai(maasai)	<i>Teclea simplicifolia</i>
Mkwaju	<i>Tamarindus indica</i>	

Source: Village Assemble meetings, February 2019.