

The Kilosa District REDD+ pilot project, Tanzania

A socioeconomic baseline survey

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Citation: George C. Kajembe, Dos Santos A.Silayo, Adam B.S. Mwakalobo, Khamaldin Mutabazi
(2013) *The Kilosa District REDD+ pilot project, Tanzania. A socioeconomic baseline study*
IIED, London.

This document has been produced with the financial assistance of the Norwegian Government through NORAD, as part of a multi-country project coordinated by IIED in partnership with UMB on Poverty and Sustainable Development Impacts of REDD Architecture. The views expressed in this document are the sole responsibility of the authors and do not necessarily represent the views of the institutions involved in this project or of NORAD.

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Poverty and sustainable development impacts of REDD architecture; options for equity growth and the environment

About this project...

Poverty and sustainable development impacts of REDD architecture is a multi-country project led by the International Institute for Environment and Development (IIED, UK) and the University of Life Sciences (Aas, Norway). It started in July 2009 and will continue to December 2013. The project is funded by the Norwegian Agency for Development Cooperation (Norad) as part of the Norwegian Government's Climate and Forest Initiative. The partners in the project are Fundação Amazonas Sustentável (Brazil); Hamilton Resources and Consulting (Ghana); SNV (Viet Nam); Sokoine University of Agriculture, Faculty of Forestry and Nature Conservation (Tanzania); and Makerere University, Faculty of Forestry and Nature Conservation (Uganda).

The project aims to increase understanding of how different options for REDD design and policy at international, national and sub-national level will affect achievement of greenhouse gas emission reduction and co-benefits of sustainable development and poverty reduction. As well as examining the internal distribution and allocation of REDD payments under different design option scenarios at both international and national level, the project will work with selected REDD pilot projects in each of the five countries to generate evidence and improve understanding on the poverty impacts of REDD pilot activities, the relative merits of different types of payment mechanisms and the transaction costs.

Acknowledgements

We would like to acknowledge the contribution of various organisations and people who are participating in this research. First and foremost, we would like to thank NORAD, the Norwegian aid agency, for their financial support. We would also like to thank the management and staff of MJUMITA and TFCG – the REDD+ pilot NGOs – for their high level of cooperation.

We are indebted to district officials and NGO field staff who have always remained positive in their support for the project, and to the collaboration of Kilosa District Council, especially the staff of the Land and Natural Resources Department. Our particular thanks to Mr Haule (DNRO) and Mr Malisa (DFO) for their help in the whole period of data collection.

Our thanks to our field assistants, Mr. Tumaini Mahuve, Lyatura Njaba, Mariam Kitula and Cecilia Leweri.

Finally, we would like to extend our sincere thanks the communities of Masugu, Nyali, Lunenzi, Zombo and Lumango villages, Kilosa, for their willing participation.

Abbreviations

CBFM	Community Based Forest Management
CBO	Community-based organisation
CDM	Clean Development Mechanism
CoP	Conference of the Parties
EAMCEF	Eastern Arc Mountain Conservation Endowment Fund
FBD	Forestry and Beekeeping Division
FGDs	Focus group discussions
GHG	Greenhouse gases
JFM	Joint Forest Management
KDC	Kilosa District Council
'MJUMITA'	Tanzania Community Forest Conservation Network
NGO	Non-governmental organisation
NOK	Norwegian Kroner
NPs	National Parks
NTFPs	Non-Timber Forest Products
PFM	Participatory Forestry Management
PRAs	Participatory Rural Appraisal
REDD	Reduced Emissions from Deforestation and Forest Degradation in Developing Countries
TANAPA	Tanzania National Parks
TFCG	Tanzania Forest Conservation Group
TLU	Tropical Livestock Units
UNFCCC	United Nations Framework Convention on Climate Change
UNREDD	the United Nations Collaborative initiative on Reducing Emissions from Deforestation and forest Degradation (REDD) in developing countries
WWF	World Wildlife Fund

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Executive summary

Tanzania has decided to embark upon a national REDD programme to meet its obligations of managing its forests sustainably while responding to poverty reduction initiatives. As part of the REDD Readiness phase, nine pilot projects are being carried out in different areas of the country to draw lessons to assist in structuring a successful REDD+ in the future. The social and economic data of the costs and benefits of deforestation, forest degradation and emissions avoidance captured by this research programme will help in the development of the REDD+ policy and framework. This study was conducted in Kilosa District where the Tanzania Forest Conservation Group (TFCG), in collaboration with Tanzania Community Forest Conservation Network (MJUMITA), are implementing one of the pilots. The pilot aims to rehabilitate extensively threatened open access forests (on what is termed 'general land') by preparing proper land-use plans and setting Participatory Forestry Management (PFM) models in villages where this approach has never been practised. Five villages, three from the 16 villages in the designated pilot area and two villages that were chosen as controls, were selected for this study. Sixty questionnaires were administered in each village, and focus group discussions and resource person interviews conducted in each village to supplement information collected through the surveys.

Results showed that more than 80 per cent of people in Kilosa depend on agriculture and forest-based resources for their livelihoods. Uses of the forest include harvesting wood for charcoal, firewood and timber, as well as a variety of non timber forest products (NTFPs). Unsustainable extraction contributes to degradation of forests in the area. As is the case in many areas in Tanzania, fuelwood is a major source of energy for cooking in the study villages with about 86 per cent of it being collected from forests around the household landscapes. Results further showed that although REDD+ is a new initiative in this area, 75 per cent of the people are aware of what REDD+ entails although they have contradictory perceptions of the ability of these initiatives to curb forest degradation. Results also showed that nearly the same proportion have an understanding of the role of forests in mitigating climate change, which indicates that the pilots' awareness campaigns had a positive effect. Despite this achievement, however, 92 per cent of the people have not changed their attitudes regarding forest use.

The analysis of the REDD architecture and payment mechanisms showed that both the government and the piloting NGOs are in favour of integrating Participatory Forestry Management (PFM) models – Community Based Forest Management (CBFM) on village land and Joint Forest Management (JFM) on state land – into REDD+. Such an approach avoids the establishment of parallel structures in natural resource management that would imply high transaction costs. But little has been achieved with respect to land-use planning and the introduction of PFM. The process of preparing and approving land-use plans is very time consuming and resource intensive. As a result, it has delayed the introduction of PFM models in many pilot villages. On the other hand, the national REDD pilot NGOs have not yet decided on the forms of compensation or payments in return for reducing deforestation in the area – this is the case for all pilot projects in the country. The study found that people were positive about a range of different compensation possibilities, including direct payments. People also considered the issue to be 'business-as-usual', however, similar to the attempts to implement many other conservation programmes that have ended up offering few incentives to communities. The issue will be further explored through follow-up exercises involving choice experiments.

The study team learnt that carbon tenure is not clear in Tanzanian policy, including a lack of clarity over whether rights to carbon revenues will follow rights governing forests. However, it is assumed that forests under Community-Based Forest Management (CBFM) are likely to offer better opportunities for community-level compensation under REDD, leading to the NGOs responsible for implementing the projects in the pilot area excluding state-owned forests.

This approach can be considered destructive to state forests as these might then experience more encroachment and utilisation as a result of leakage. Therefore it is important that protected areas of different status, for example, nature reserves (national parks) and game reserves should be included under the National REDD+ framework. Preliminary analysis showed that compensating communities should be 'result-based performance' and that 'result' should be the amount of carbon. This observation was in line with the overriding concept of payments under REDD+, which are expected to be made only for changes that would not otherwise have taken place. This concept of 'additionality' is at the core of the REDD+ discussion and the development of international and national frameworks of REDD+ throughout the world. This mechanism is challenged, however, because many forest lands are left outside the project area, creating leakage possibilities. 'Result-based' also denies opportunities to communities with forests of high biodiversity value but low carbon value, which is the case for most Miombo forests, creating a serious challenge for the implementation of REDD+. Therefore funding REDD+ to enable practice-based compensation would probably be the most viable option.

Introduction

1.1 An overview

Deforestation and forest degradation are amongst the major anthropogenic sources of greenhouse gas emissions (GHG), contributing about 17 per cent globally, not to mention the associated losses of livelihoods, biodiversity and environmental services. To address this problem, efforts are under way to develop systems of payments for Reduced Emissions from Deforestation and Forest Degradation in Developing Countries (REDD). A set of policies known as REDD+ have gained momentum in international climate negotiations as a cost-effective way to reduce greenhouse gas emissions after the Kyoto Protocol in 2012. Reducing deforestation and degradation means retaining or increasing the amount of carbon fixed in the earth's biosphere, primarily through forests and other major biomass sinks (such as savannah woodlands, montane moorland or Miombo woodlands).

With the adaptation of the Kyoto Protocol, developed countries were allowed to invest in emission reduction projects in developing countries through the Clean Development Mechanism (CDM) as a way to reach their goals of emission reductions with the help of tradable certified emission credits. The activities that were accepted under the CDM were afforestation and reforestation initiatives. Avoided deforestation as an emission reduction strategy, on the other hand, was excluded (United Republic of Tanzania 2010). As a result, negotiations started at the Eleventh Conference of the Parties (CoP 11) of the UNFCCC in Montreal in 2005 after a formal proposal by a coalition of rainforest nations to include avoided deforestation in a post-2012 regime (Holloway and Giandomencio 2009). The discussions continued through CoP 14 in Poznan in late 2008. It was during this CoP that parties argued that REDD as first conceived could have a perverse incentive structure in the long term, as it would reward the 'sinners' rather than the 'angels' (Skutsch, 2011).

Consequently, another + was added to the acronym, as well as three additional terms: sustainable management of forest, forest enhancement, and forest conservation, thereby turning REDD into what some see as a potential win-win-win situation, with reduction of carbon emissions, enhanced poverty alleviation and biodiversity conservation within one policy (Skutsch 2011; Vatn and Vedeld 2011). At the CoP 15 in Copenhagen in 2009, REDD+ was fully adopted and included in the Copenhagen Accord saying that *"We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of greenhouse gas emission by forests and agree on the need to provide positive incentives to such actions through the immediate establishment of a mechanism including REDD-plus, to enable the mobilization of financial resources from developed countries"* (UNFCCC 2010).

The CoP 15 in Copenhagen was considered a failure, however, since it did not reach consensus about a final agreement on REDD+, thereby passing on the responsibility to Cancún and CoP 16 to finalise an agreement (Lang 2009). Meanwhile, through the Copenhagen Accord, a number of measures are being taken to support developing countries to prepare for REDD+. These include financial support to pilot countries through different programmes – for example, the UN-REDD Programme and the World Bank's Forest Carbon Partnership Facility – across Asia-Pacific, Latin America and Africa (UN-REDD Programme 2010). Tanzania is currently one of the 48 developing countries working on REDD+ readiness initiatives.

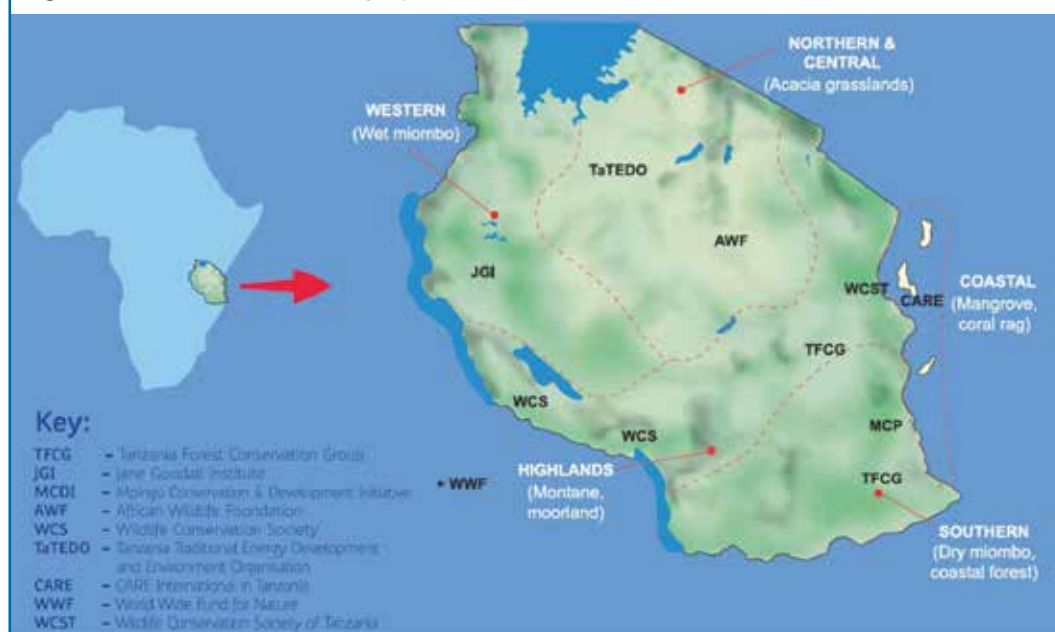
1.2 REDD+ status in Tanzania

Tanzania has decided to embark upon a national REDD programme to meet its obligations of managing its forests sustainably while responding to poverty reduction initiatives. Currently, Tanzania is in the process of establishing a national REDD+ programme. In 2008, the government of Tanzania started to develop a National Strategy and Action Plan for REDD, and a National REDD Task Force was formed to initiate strategy development and oversee all REDD activities in the country (United Republic of Tanzania, 2010).

Having already been a signatory of the UNFCCC, which makes states commit to stabilise and reduce their carbon emissions on the basis of their pre-1990 levels, and after their signing of a letter of intent in April 2008 with Norway on a Climate Change Partnership, Tanzania started preparatory work for REDD. With its commitment of 500 million Norwegian kroner to Tanzania over a five-year period, Norway has played, and continues to play, a leading role in this process (as does the Royal Norwegian Embassy in Tanzania), focusing particularly on supporting REDD+ pilot activities (The Government of Norway 2009).

Nine different NGOs, in cooperation with central and local governments, academic institutions and the private sector, were selected and received funding to start up REDD+ pilot projects (see Appendix 1) around the country (Figure 1) to generate knowledge and experience on deforestation, carbon accounting and capacity building, to address climate change challenges and test different REDD+ mechanisms. Some of these projects are already well on their way and in the process of being implemented (United Republic of Tanzania 2010). Lessons from these projects will provide guidance for better implementation of the strategy and design and implementation of future REDD+ projects. In addition to the pilot projects, funds from the Climate Change Partnership are allocated to in-depth studies, research and other capacity-building activities to further REDD+ (FORCONSULT, 2010). Currently, REDD+ issues are being mainstreamed into aspects of national development planning through the National REDD+ Strategy.

Figure 1. Location of REDD+ projects in Tanzania



Source: United Republic of Tanzania, 2011

The potential scale of REDD+ is massive at the international level but the scale of REDD+ must not be underestimated in relation to each country's specific challenges. For example, Tanzania, with its own unique characteristics, needs to develop its own set of governance structures to achieve both effectiveness and efficiency as it prepares to embark on ambitious programmes for REDD+. One issue is to determine the most suitable mechanism to distribute the REDD+ funds that Tanzania will receive; whether through direct governmental support, through a fund either separate or within the national administration, through a direct-market oriented system, and/or a combination (Vatn and Vedeld, 2011). Despite countless possible pitfalls and challenges, much of REDD+ is not new to Tanzania; various aspects of REDD+ have already been implemented through Tanzania's PFM programme. The PFM programme has helped to demonstrate possible successful approaches, which many piloting NGOs have capitalised on in their approaches to REDD+ (Milledge, 2009).

To draw lessons from the pilot projects, it is necessary to conduct research programmes to ensure successful implementation of future REDD+ initiatives. This is because it will remain difficult to develop REDD+ policy and the framework without the empirical, social and economic models that capture the costs and benefits of deforestation and degradation and emissions avoidance. To this effect, through Sokoine University of Agriculture, Tanzania is participating in the POVSUS-REDD Project, which is also being carried out in Ghana, Uganda, Brazil and Vietnam.

In Tanzania, the research project is being implemented in Kilosa District in a designated REDD+ pilot project area, with the Tanzania Forest Conservation Group (TFCG), and the Tanzania Community Forest Conservation Network (MJUMITA) being the responsible NGOs. TFCG has over 20 years of experience working with issues related to forest conservation and PFM in Tanzania. MJUMITA is a national network of community groups involved in PFM that has operated since 2000 with support from TFCG. It was officially registered as an independent NGO in 2007. This is a three-year undertaking (2010 to 2013).

1.3 Rationale

This report provides a summary of data collected on the socio-economic conditions within sample villages involved in the REDD+ pilot study in Kilosa District, Morogoro region. These findings provide a baseline, making it possible to assess the impact of future REDD+ interventions in the area.

Pilot area and responsible NGOs

2.1 Description of the study site

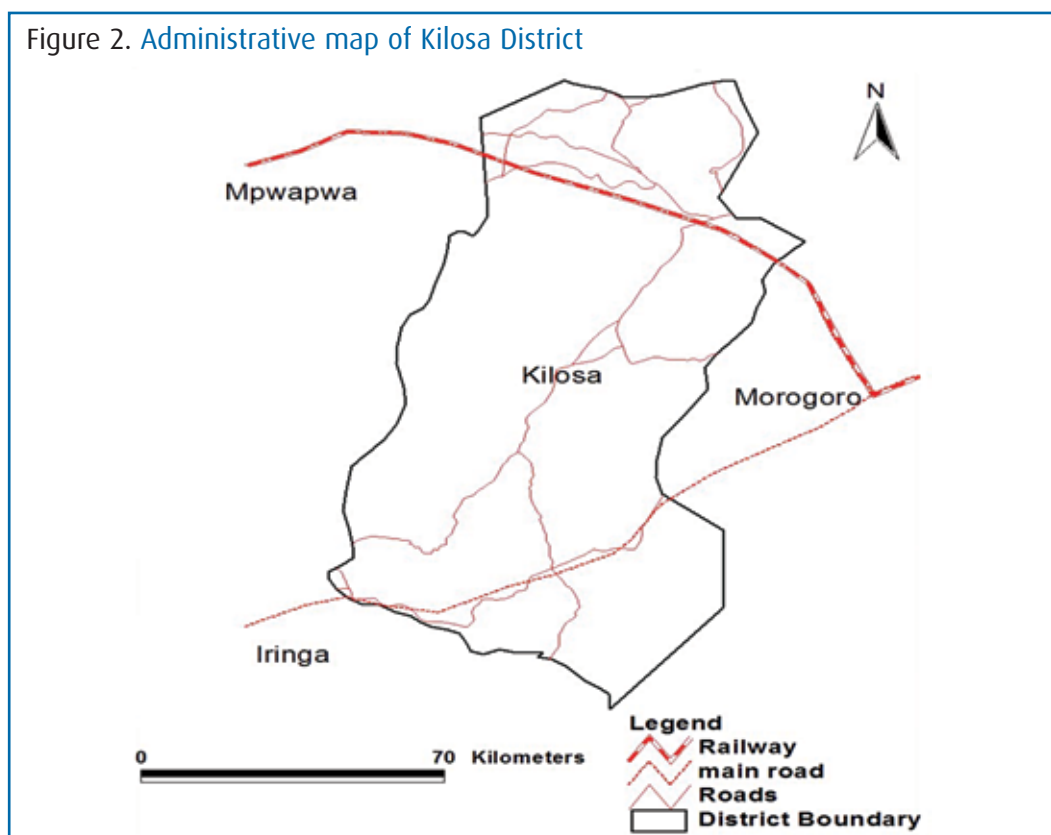
2.1.1 Location

The project site is in Kilosa District, Morogoro region (Figure 2), located approximately 300 km inland from the coast and Dar es Salaam, along one of the old East African caravan routes stretching from Bagamoyo to the eastern part of Democratic Republic of Congo (Benjaminsen *et al.*, 2009). Today, Kilosa is one of six districts within the Morogoro region, its 14,245 km² making up about 20 per cent of the region (Beidelman, 1960; KDC, 2010).

The district lies between 6°S and 8°S, and 36°30'E and 38°E. It borders the Tanga Region to the north and Morogoro District to the east. In the south, it is bordered by the Kilombero District and part of Iringa Region (KDC, 2000). Kilosa District comprises mostly flat lowland that covers the whole of the eastern part called Mkata Plains. There are seven villages in this area, namely Twatwatwa, Mbwande, Msowero, Mabwegere, Luhoza, Kiduhi and Mfilisi, with the Twatwatwa village occupying the largest portion of about 32,000 ha (Nduwamungu *et al.*, 2004).

The district experiences an average of eight months of rainfall (October–May), with the highest levels between February and March. The rainfall distribution is bimodal in good years, with short rains (October–January), followed by long rains (mid-February–May). Mean annual rainfall ranges between 1,000 and 1,400 mm in the southern flood plain, while further north (Gairo Division) has an annual rainfall ranging from 800 to 1,100 mm. The mean annual temperature in Kilosa is about 25°C.

Figure 2. Administrative map of Kilosa District



The topography of the district varies significantly and can be divided into three zones:

Flood plain: comprises both flat and undulating plains extending to the foothills in the west, with an altitude of about 550m. It has several rivers, the major ones being the Wami and the Ruaha. The central parts are mainly occupied by pastoralist communities especially Maasai and Sukuma. The soils are poorly drained, black cracking clays in the central parts, and subject to seasonal flooding. In the peripheral western part, sediment fans are of black fertile soils, making them suitable for a range of crops, such as maize, cotton and sisal (KDC 2010).

Plateau: situated in the north of the district, with an altitude of around 1,100m, it is characterised by plains and hills and is made up of moderately fertile, well-drained sandy soils. Although these soils are highly erodible, the area is intensively used for maize production and livestock keeping (KDC 2010).

Highland: runs from north to south on the western side of the district, with an altitude up to 2,200m. It is a part of the Eastern Arc mountain range that runs from Kenya down through Tanzania and is represented in Kilosa by three mountains: Ukaguru, Rubeho and Vidunda (KDC 2010).

2.1.2 Population

According to the 2002 census, there were 489,513 people living in Kilosa, distributed over 105,635 households (average household size of 4.6). The district has three major ethnic groups: (Wa) kaguru in the north, Sagala in the central zone and Vidunda in the south. However, many people from other ethnic groups have migrated to the area over the last decades.

2.1.3 The fauna and flora

The vegetation in Kilosa District is characterised by both Mediterranean and tropical types, depending largely on altitude along the south–north exterior. Typically it consists of Miombo woodland, with grass and shrub covering the soils (Misana, 1997; Benjaminsen *et al.*, 2009; KDC 2010). Most of the forests are found in the western part of the district along the Eastern Arc mountain range where all the three pilot villages are located, more specifically around the Rubeho Mountains. The Eastern Arc Mountain range has several unique ecosystems with a variety of species. Many of them are common in the area, which is internationally recognised as having an exceptional concentration of different species occurring nowhere else (EAMCEF, 2011). Even though the Rubeho Mountain range is generally poorer in native species than other areas of the Eastern Arc, less species-rich mountains will still have significant levels of them (Burgess, Butynski *et al.*, 2007). In addition, wildlife plays a significant role in Kilosa District through Mikumi National Park, a main source of revenue to the government through tourism.

2.1.4 Land use

Land in Kilosa can basically be divided into five: agricultural (37.5 per cent), natural pasture (33.5 per cent), Mikumi National Park (22.5 per cent), forest reserves (5.5 per cent) and urban areas, water and swamps (1 per cent) (KDC, 2010). Both agriculture and livestock grazing are practised on general, village and private lands, while Mikumi National Park and forest reserves are controlled areas and state owned. There are a few village forests established from general lands and are included in the pasture land category.

2.1.5 Agriculture

More than 80 per cent of people in Kilosa depend on agriculture (KDC, 2010) and with its varied conditions, ranging from a plateau characterised by seasonally flooded plains, to mountainous areas with altitudes surpassing 2000m, Kilosa District offers a variety of agro-ecological

conditions for farming (Maganga, Odegaard *et al.*, 2007). A variety of crops is grown in the district including maize, rice, millet, cassava, beans, bananas and cowpeas. Besides food crops, the main cash crops are sisal, cotton, coffee, wheat, cashew nuts, coconuts, sugar cane and tobacco. Some of the food crops are also used as cash crops. Small-scale farming – where the average farmland is less than one hectare – represents 90 per cent of agriculture, with large-scale farming representing the other 10 per cent. The small-scale farm holders are subsistence farmers who produce mostly for domestic use, selling only their surplus. There is a limited use of inputs such as improved seeds, fertilizers and/or manure, and the majority (95 per cent) use hand hoes for cultivation (Shishira, Yanda *et al.*, 1997; KDC, 2010).

2.1.6 Forestry

Most of the forests are found in the western part of the district, particularly around the Eastern Arc mountain range, and include forest reserves, forests on general land and community forests (Shishira, Yanda *et al.*, 1997). The district has 10 forest reserves: Ikwamba, Kihilihili, Mamboya, Mamboto, Mamiwa Kisara N, Mamiwa Kisara S, Palaulanga, Italagwe, Ukwiva and Uponera. These forests cover about 106,983 ha and are managed centrally through the Forestry and Beekeeping Division (FBD). Most of them are located on steep slopes around the catchment area of the Wami river system, while the rest are found on gentle sloping terrain within and around Mikumi National Park. Besides these forest reserves, there are governmental and privately owned soft wood plantations, comprising mainly pine, cypress and eucalyptus intended for production of timber and poles (Shishira, Yanda *et al.*, 1997; Kisoza *et al.*, 2004). Community forests are found within villages, while forests on general land public forests are all outside the forest reserves, which are not controlled by villagers. These forests are exploited for various purposes such as poles, timber, firewood and charcoal, but are also used for hunting.

There are long-time concerns about the sustainability of Kilosa's forest resources; in the Rubeho Mountain range where the pilot villages are located, 82 per cent of the total loss of forest happened before 1955, with a further 10.3 per cent between 1975 and 2000 (Hall, Burgess *et al.*, 2009). Forest clearance before 1955 occurred in the colonial era when many commercial farms were established to produce sisal. Since 1975, however, rates of loss have actually decreased along three mountain zones; the lowland mountains (200–800m), the mountains (1,200–1,800m) and the upper mountains (>1,800m). In contrast, between 1975 and 2000 the rate of loss of forest cover increased in the sub-mountain zone (800–1200m) – something that can be explained by people moving upwards from the lowland mountains, which suffered the highest rate of forest loss before 1975, towards the sub-mountain zone where the forests remained intact. The two major forces of deforestation within Kilosa District are forest clearing for agriculture and plantations, and extraction of biomass for energy consumption, partly a result of an increasing urbanisation and population growth (Hall, Burgess *et al.*, 2009). In addition, timber production and bushfires are also seen as other significant causes of deforestation.

2.2 REDD+ pilot organisations

The NGO responsible for piloting REDD in the area is the Tanzania Forest Conservation Group (TFCG), in collaboration with Tanzania Community Forest Conservation Network (MJUMITA). TFCG was established in 1985 and has more than 20 successful years of experience in working with issues relating to forest conservation in Tanzania. It structures itself around different programmes that have contributed to the wellbeing of forests and the communities living adjacent to them. TFCG has actively campaigned for improved forest management and reduced deforestation. It has long been in the forefront of national awareness campaigns on forest conservation, including educational and communication components of the UNDP/GEF Conservation and Management of the Eastern Arc Management project, which supports community-based conservation, and the development of sustainable financing for tropical high forest conservation

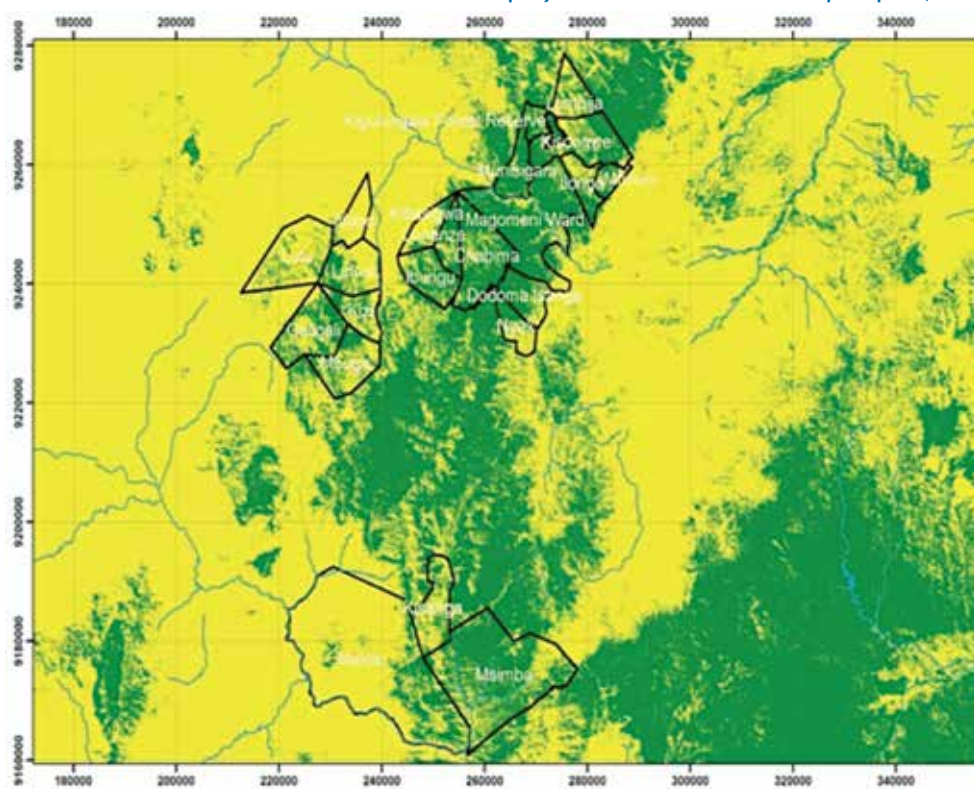
in Tanzania (World Bank, 2011). TFCG has also been involved in developing solutions to reduce deforestation including PFM, fuel efficient stoves, tree planting, improved land use and agriculture (TFCG, 2009; MJUMITA, 2009). TFCG is now the largest non-governmental organisation focusing on the conservation of natural forests in Tanzania (TFCG, 2009).

MJUMITA, which is an abbreviation for the Swahili 'Mtandao wa Jamii wa Usimamizi wa Misitani Tanzania' and in English is known as The Community Forest Conservation Network of Tanzania, is a network of community groups involved in Participatory Forest Management (PFM) in Tanzania. MJUMITA has operated since 2000 with support from TFCG but was officially registered as an independent NGO in 2007.

Currently, MJUMITA has 90 affiliated local area networks (also known as community-based organisations (CBOs)), which are made up of Village Natural Resource Committees (VNRC) and Environmental User Groups. The local-level networks are registered legal entities or are in the process of being registered. MJUMITA's members, numbering around 6,000, are present in 12 regions, 23 districts, 450 villages and represent around 500 user groups or VNRCs involved in participatory forest management countrywide. MJUMITA operates in six geographical zones: the Eastern and Coastal zone, Central zone, Southern Highlands zone, Northern zone, Southern zone and the Western zone (MJUMITA, 2011).

The two NGOs are piloting REDD+ in relatively large areas with extensive open access forests (forests located on land categories as 'general land'; see section 3 on property rights) in the district, with the possibility of extending to a few villages in the neighbouring district of Mpwapwa. Figure 3 shows the vegetation map and location of some of the villages in the pilot area. In total, 14 villages have been included in the pilot project: Chabima, Dodoma, Idete, Lumbiji, Kibasigwa, Lunenzi, Munisagara, Mkadage, Masugu Juu, Masugu Kati, Ilonga, Nyali, Mfuluni and Ibingu. Currently, TFCG is surveying these villages and preparing land-use plans while establishing the PFM model in villages where this approach has never been practised before.

Figure 3. Forest and non-forest areas for REDD project site in Kilosa and Mpwapwa, Tanzania



2.3 Selection of study villages

Four villages were sampled out of the 14 under the TFCG/MJUMITA pilot. These four are: Masugu Juu, Masugu Kati, Nyali and Lunenzi, which are all located in the western part of Kilosa and fall under the jurisdiction of three different wards: Masanze, Zombo and Lumuma. The four pilot villages were explicitly chosen from three ecological zones – the floodplain, the plateau and the highlands, located around the Rubebo Mountains. In addition, our control villages were Zombo and Lumango. Zombo is the central village in Zombo ward and has had no projects on sustainable forest management. Lumango, on the other hand, is a village practising PFM, located further away in Kidodi, a ward neighbouring Mikumi National Park in the south. These two villages were picked to give the study the opportunity to draw lessons on different management regimes of forests, given the fact that pilot NGOs use PFM as a basis for REDD+.

2.3.1 Nyali

This village is located in the plateau zone north of Kilosa District, at the altitude of 1,100m above sea level. The village is the most densely populated of the sample, with 2,622 inhabitants. The topography is characterised by plains and hills and has moderately fertile, well-drained sandy soil. However, the area is intensively used for agriculture and livestock-keeping. Both food and cash crops are grown including maize, rice, cassava, sorghum, bananas, cotton, coconut, cashew nuts, sisal, sugar cane and vegetables.

2.3.2 Lunenzi

This village is situated in the highlands, which run from north to south of the district, with an altitude of 2,200m above sea level. The village is in the Rubebo Mountains, which is part of the Eastern Arc mountain ranges running from Kenya down through Tanzania. The village has a small population of 630 inhabitants. The main food crops grown in the area include maize, rice, vegetables and cassava, sorghum and banana while cash crops include cotton, cashew nuts, sisal and sugar cane.

2.3.3 Masungu Juu and Masungu Kati

These villages are located in the floodplain and are made up of both flat and undulating plains extending to the foothills in the west, with an altitude of about 550m above sea level. Masungu Kati is mainly occupied by Maasai pastoralists and the soils here are poorly drained, black cracking clays subjected to seasonal floods. Masungu Juu is comprised of sediment fens made up of black fertile soils suitable for a range of crops including maize, cotton and sisal.

Big rivers, such as the Wami and Ruaha, run through both the villages. The villages have good climatic conditions, with an average annual temperature of 25°C and annual rainfall between 1,000mm and 1,400mm in the southern floodplain, 800–1,100mm in the north, and up to 1,600mm in the mountain forests. The western forest serves as an important catchment for the Wami River going eastwards, with three branches of the Ruaha River draining the southern end of the district.

2.4 Data collection

Three hundred questionnaires were distributed – 180 in the four villages in the pilot area and 120 in the control villages. When administering the questionnaires, Masugu Juu and Masugu Kati were treated as one because they were formerly administratively a single village, but also because the number of households was insufficient to provide 60 samples – the aim for each village. Focus group discussions (FGDs) as well as resource person interviews were conducted in all the villages.

Results and discussion

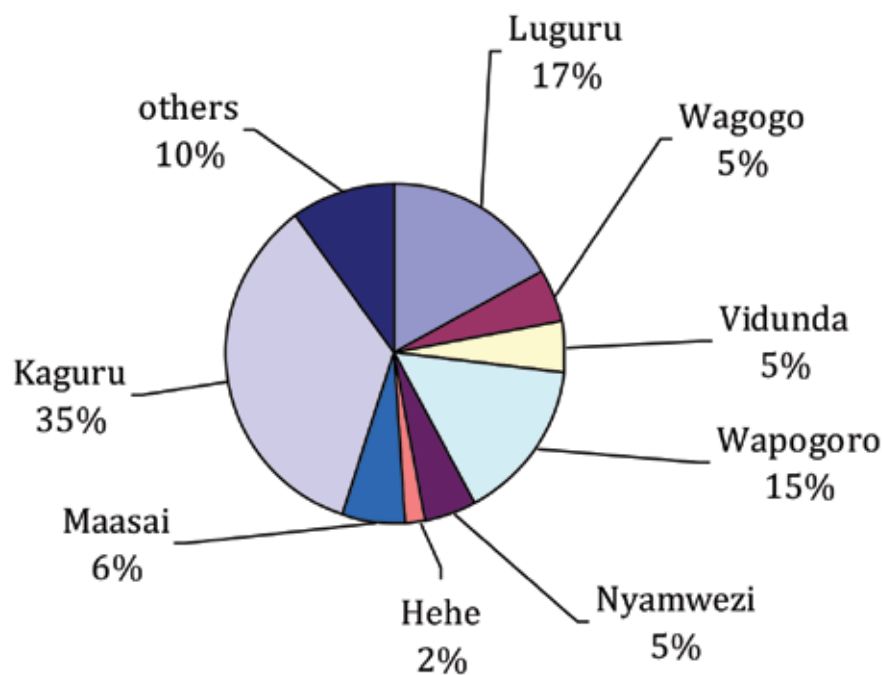
3.1 Household structure and livelihoods

3.1.1 Household structure

Results showed that most households have on average of six members including parents and four children below 15 year of age. At 15, children have completed primary school education and in rural areas form a group of forest users. Contradictorily, under Tanzania law, a child is defined as being under 18. It was observed as well that most households had at least two people in the 16–45 age range. Some households had at least two people aged 60 and above.

The ethnic composition is shown in Figure 4, indicating that Kaguru are the dominant group in the area. Discussions showed that Kilosa in general is inhabited by many tribes who came to the district as workers in the sisal estates as early as the beginning of the 20th century. Even after the collapse of the sisal industry, many people settled in different areas in the district but mostly in or around the estates where they were employed.

Figure 4. Composition of ethnic groups in the study area

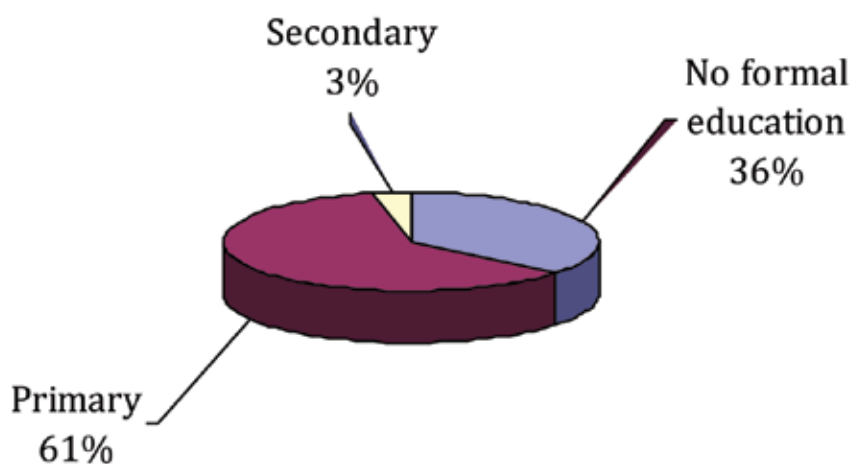


It was further observed that about 69 per cent of the surveyed households are of Christian belief, while the rest are of Muslim belief. Christianity in this regard includes all denominations, mostly Roman Catholic, Anglican, Lutheran and Seventh Day Adventist. No household was found that did not have a defined belief although it is likely that such households exist.

3.1.2 Education level

The household surveys indicate that 73 per cent of household heads had attained primary level education, while 24 per cent had no formal education. Only 2 per cent had reached secondary education and only 1 per cent attained higher education (college, university or similar). On the other hand, the education level attained by respondents' wives and the few female respondents was found to be relatively low, indicating that men have better opportunities to attend school than women (see Figure 5).

Figure 5. Education level of the respondents' wives and female respondents in the study area



Generally, these results confirm the hypothesis that in most rural areas women have more limited chances than men of pursuing education. Discussions also revealed that in some villages, such as Masugu Juu and Masugu Kati, there were no schools. Students have to walk up to 8km to a nearby primary school. This alone discourages a number of children from going to school, especially females. It is therefore obvious that the low level of education observed in the area could be one of the factors that hinder development in the community – extension services, which are crucial for agricultural production, may require a higher level of education than many have.

3.1.3 Sources of energy

As is the case in many other areas in Tanzania, fuelwood is a major source of energy for cooking in the surveyed villages. It is worth noting that the energy balance in Tanzania is characterised by biomass (woodfuel – charcoal and fuelwood) use, which accounts for about 90 per cent of energy consumption in rural areas and 75 per cent in urban areas (Kaale, 1998; WWF, 2007). Charcoal is by far the most preferred source of energy in urban areas, while firewood is mostly used in rural areas. The household survey showed that 86 per cent of the fuelwood is collected from forests around the household landscapes – although only 9 per cent is collected from areas that will become REDD pilot forests. It should be noted, however, that the response on fuelwood collection could have been affected by the fact that land-use plans were not ready in these villages, making it difficult for respondents to clearly define what areas they collected in.

There were no demarcations of the areas for collecting fuelwood within the community. Although fuelwood is traded in the area, the value is only determined when transported to the nearest town. Thus, fuelwood is not often traded within the community – only 1 per cent of households bought fuelwood (Figure 6). As emphasised earlier, charcoal is used by very few people – only 4 per cent of the households surveyed use charcoal. Discussions showed

that charcoal is used by those who are well off (according to their defined categories) and civil servants including school teachers. Charcoal is therefore sold at a fairly high price. It was observed that charcoal is produced by relatively poor people in the community. But everybody is a potential charcoal burner and many engage in charcoal burning when the harvests are poor and charcoal in the markets is scarce. A secondary source of energy in these villages, the survey showed, is kerosene, mainly for lighting.

Although there is electricity in Zombo and Lumango villages, few households have managed to connect due to the high connection charges and tariffs. Experience from elsewhere, however, showed that even if households are connected to the electric grid or supplied with alternative energy sources like LPG, firewood and charcoal still remain primary energy sources for cooking and heating. This is partly due to affordability but also cultural beliefs. Most people also admitted that they preferred the distinct smoky flavour of food cooked in a charcoal pit to that cooked by gas or electricity.

3.1.4 Relationships in the communities

The level of trust within the villages was also analysed and was found to be high, with over 80 per cent of households responding either 'High' or 'Very High' levels of trust. Despite the recent resource use conflicts between farmers and pastoralists in some places in the district, results showed that there was generally a good relationship between neighbours and others in a community. Relationships with local government and people from other communities were similarly good. Assessment of the relationship between the communities and NGOs and with village councils ranked the highest, indicating the higher level of trust communities have towards them (Table 1).

Figure 6. Primary sources of energy in households as observed in the studied villages in Kilosa District, Tanzania

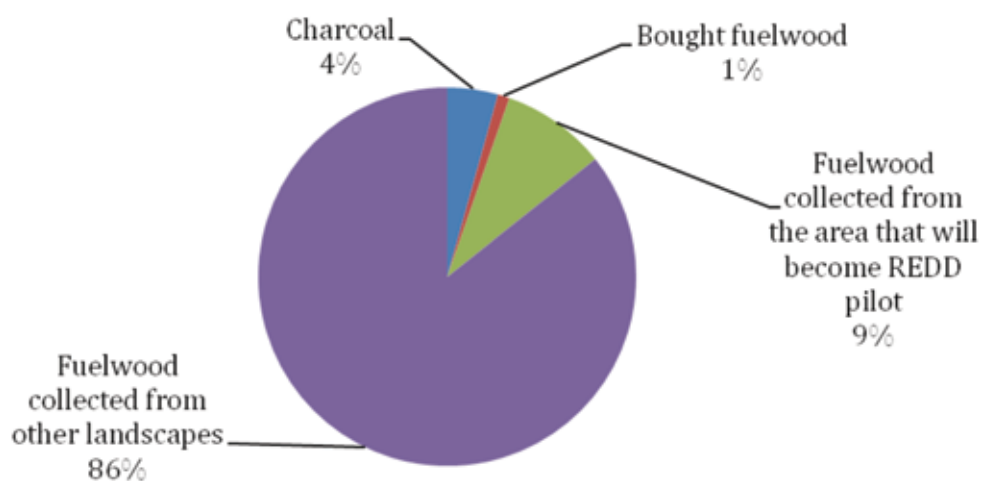


Table 1. Relationship between households and with other communities, shown as a percentage of responses in the study area

Category of relationship	1 Very bad	2 Bad	3 Fair	4 Good	5 Very good
Neighbours	0	0	7	36	56
People from other communities	0	0	6	49	45
NGO workers	1	5	4	20	71
Village council	0	0	2	15	83
Local government officials	0	2	6	47	45

3.1.5 Wealth ranking

Households that belonged to the high wealth category had cars, stores/shops, good houses (cement-floored, iron-roofed and brick-walled), agricultural machinery (tractors and/or power tillers), and farms of 20 ha or greater. Furthermore, the high wealth household categories had motorcycles, could afford three meals per day and had surplus food to sell; they also had education equal to or higher than secondary level.

The medium wealth category households had bicycles, wheelbarrows/trolleys, donkeys, small animals (hares/rabbits, goats, fowl, pigs, guinea pigs), and farms of between 3 ha and 20 ha, and iron-roofed houses, and were food sufficient without surplus.

Finally, households with grass-thatched houses, farms less than 3 ha, hand hoes and insufficient food reserves were considered to be in the low wealth category. The PRA wealth ranking exercise indicated that half the population were in the medium wealth category, with a quarter in the categories either side of it.

In Lumango village for example, households in the high wealth category included those in possession of sugar cane farms, which may reward up to 20 million Tanzanian Shillings per year; good houses made of concrete and iron roofed; and vehicles were considered as wealth indicators. Results show that a good number of people own mobile phones and a few own motorcycles. However, these assets do not necessarily indicate the higher wealth category as was the case in other villages. Generally, the ability to secure or afford regular meals was found to be the most respected indicator of wealth.

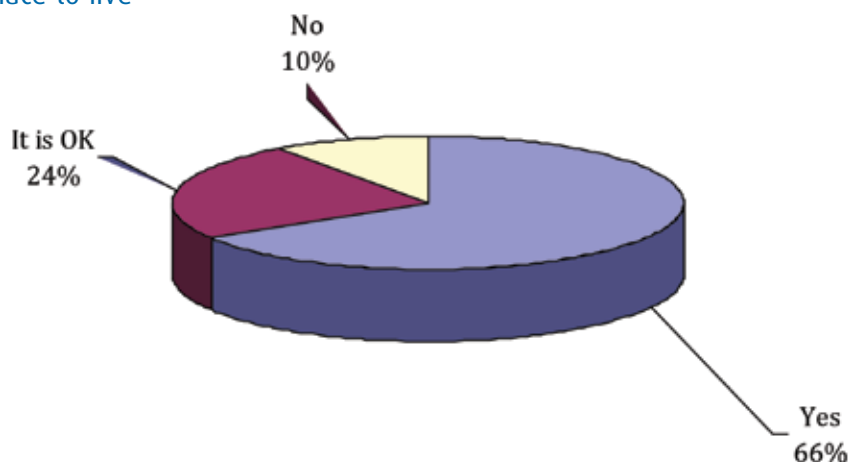
3.1.6 Social assets

Analysis of the social assets showed that most members of the community find their villages good places to live (Figure 7). During the PRA exercises in Zombo and Nyali villages, it was learnt that individuals are comfortable living in their areas of origin, despite the social and economic hardships, simply because they are uncertain about life elsewhere.

3.1.7 Assets and savings

Results of the assets and savings indicated that most households in the area own their houses, as reflected by the responses of 93 per cent of the respondents (see Table 2). More than 90 per cent of households own primary tools such as hoes and pangas (bush knife), used intensively for farm activities. A good number of households also own bicycles, with a small number borrowing from others. Bicycles are a primary means of transport in many areas where the terrain is relatively flat. Despite the increasing rate of motorcycle ownership in the district, as in many other parts of

Figure 7. Communities' responses on whether they consider their villages to be a good place to live



the country, there were only a small proportion of households that owned this type of asset. This indicates that moving goods to markets can be cumbersome for most families.

Results further showed that nearly one per cent of households interviewed owned cars. There were few television sets but mobile phones and radios were common assets in most households. This is a good indicator of communication and information sharing in the area.

Processing or crop milling centres were not reported in the area, suggesting most processing occurs away from the villages. Results for agricultural assets illustrated a high rate of ownership of cutlass, pangas (bush knives) and axes. None of the households own oxen, although some villages have cattle. Tractors were almost non-existent in the surveyed area. However, ploughing is commonly done using hired tractors a few individuals who own relatively large farms.

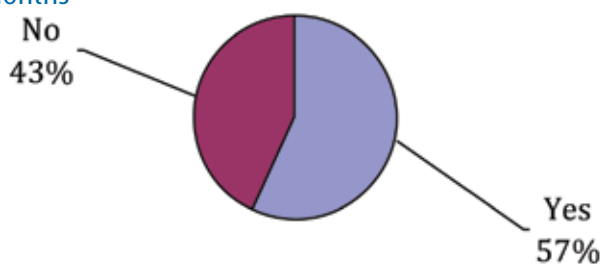
Table 2. Asset ownership in the studied communities in Kilosa District, Tanzania

SN	Asset Type	Percentage of Households
1	House	93
2	Television	2
3	Radio	59
4	Phone	29
5	Bicycle	54
6	Motorcycle	2
7	Car	0
8	Boat	0
9	Generator	1
10	Milling machine	0
11	Hoes	96
12	Cutlass	21
13	Panga	92
14	Axes	77
15	Buffalo	NA
16	Horse	NA
17	Tractor	0

3.1.8 Household income

Analysis of the income and relative wealth compared across the community showed that more than half of the population experienced income shortfalls in the previous year (Figure 8).

Figure 8. Household income shortfall in the last 12 months



As to whether people felt better off in relation to others, only 15 per cent (Figure 9) of the households considered themselves better off, while roughly half felt themselves to be about average.

Figure 9. Perceptions of household income status compared to others

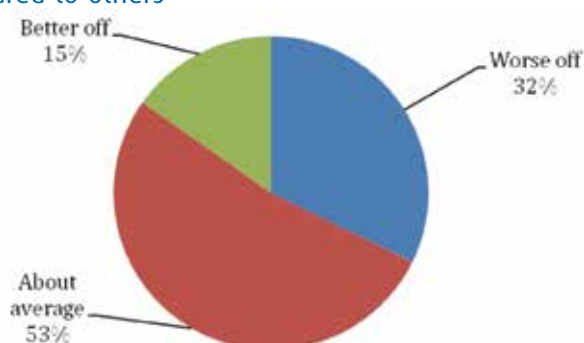
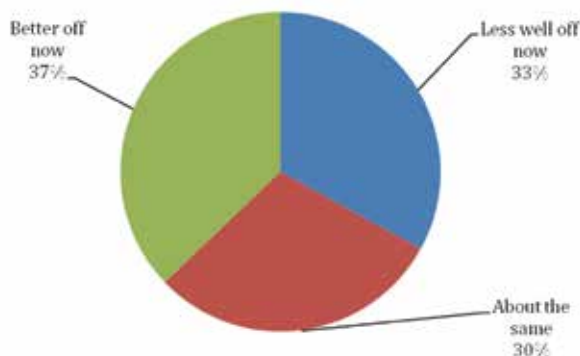


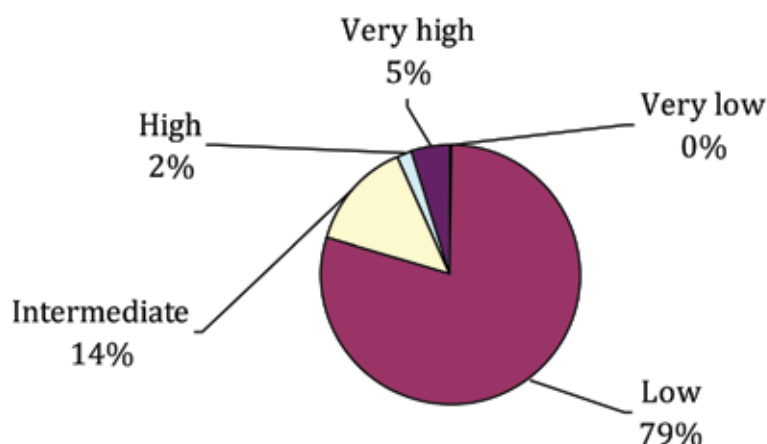
Figure 10 does suggest that improvements in wellbeing have been experienced across households over the last five years.

Figure 10. Household income status in the last five years



During PRA exercises it was found that the area has suffered different natural disasters including droughts and excessive rains (El Niño), which destabilised communities in terms of income and/or food security in the last five years. Other reported shocks included crop diseases, unreliable markets and land conflicts. For example, agricultural production has caused some conflicts with pastoralists over land use as indicated by 18 per cent of respondents. However, unlike other villages where such conflicts had resulted in fatalities – pastoralist from Mabwegere against farmers in Mfuru and between pastoralist in Twatwatwa and Mkwajuni village farmers – the conflict levels in this area were reported to be low (Figure 11). In Lumango village for example, the discussion revealed that there have been a long-term conflict between the village and the Tanzania National Parks (TANAPA) following the gazettement of the Udzungwa Mountains National Park that included part of the village land without offering adequate compensation to the village/villagers. Currently, the village government is trying to push for a re-survey of the area.

Figure 11. Level of land conflicts in the surveyed area



3.2 Resource use, income and constraints

3.2.1 Crop cultivation

Kilosa District is famous for cultivating a variety of crops due to its good environmental conditions. The observations from the PRA showed that maize is a dominant crop grown by almost every household. Other crops include rice, millet, bananas, tomatoes, cassava, sunflower, pigeon peas, sweet potatoes, beans and a variety of vegetables. A few households also cultivated coconuts and cashew nuts. Most crops are used for both own consumption and trade.

It was observed that most of the farmers neither use fertilizers nor improved seeds in crop production. Few apply pesticides. As a result, low yield levels are associated with poor inherent soil fertility, lack of agricultural inputs such as improved seeds, fertilizers and pesticides. A shortage of agricultural extension officers was also reported to hinder development of agriculture.

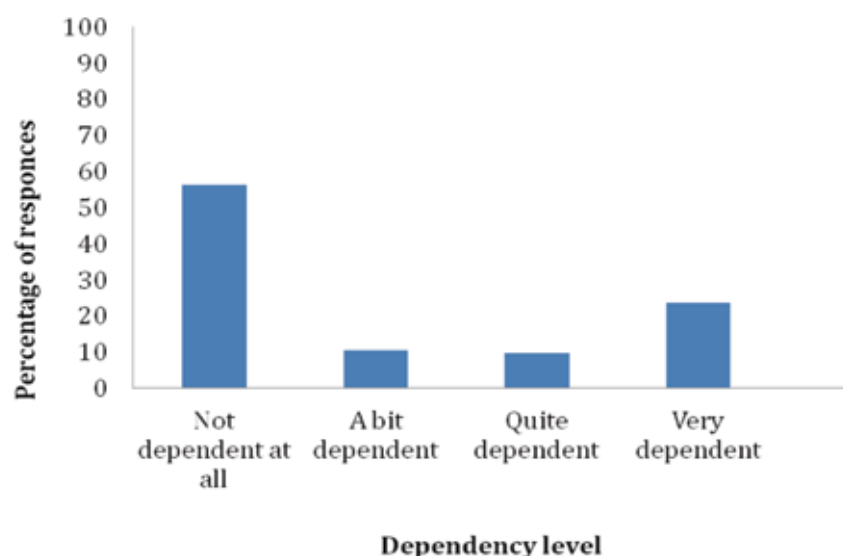
Cultivation of simsim,¹ which has gained momentum in recent years, is now associated with clearance of bush and woodlands in attempts to access more and more fertile land. Further discussions revealed that communities believe that cultivating simsim in a permanent plot results in nutrient depletion and the emergence of many diseases that attack it and other crops. Hence, planting simsim necessitates deforestation.

3.2.2 Community dependency on forests

Results from the household survey indicated that almost 34 per cent of interviewed household members responded that they were either very dependent or quite dependent on clearing the forest for expanding agriculture (Figure 12). Similarly, 11 per cent responded that they depended a little on clearing the forest for expanding agriculture while 57 per cent seemed either to practise farming in the same plots or expand to non-forested lands. These results should be treated with caution, however, because FGDs showed that some villages have set aside bylaws, which, amongst other things, hinder expansion of farms into forests. This being the case, one might speculate that respondents' answers did not reveal actual practices. FGDs further showed that for the community forests (this excludes open access forests) village councils or the village natural resources committees are responsible for routine patrol of the forests and are the issuers of the use licences. Where offenders are convicted, they are normally punished according to the existing bylaws. However, the whole communities are responsible for ensuring that the forests under their guardianship are well protected.

1. Simsim (in Arabic) or sesamum (in Latin) is a flowering plant in the genus sesamum. It is an annual plant growing 50 to 100 cm tall and is grown primarily for its oil-rich seeds.

Figure 12. Community dependence on forest land for agricultural expansion



Furthermore, the analysis showed that by comparing the situation today with the situation five years ago, the feasibility of acquiring land for agriculture by inheritance has remained the same or more difficult as stated by 82 per cent of respondents on the two aspects (Table 3). And FGDs showed that the possibility of acquiring land through inheritance has shrunk due to population increase – while the land size remains the same. As a result, more young people either buy, rent or clear forests and woodlands (see Table 3). Another reason could be due to some landowners, especially elders, selling land as a means of livelihood diversification.

Table 3. Difficulty in the study area of obtaining new land for agriculture now, compared to five years ago, by percentage

Categories	By inheritance	By buying	By renting	By clearing forest
Easier	17.3	33.3	64.3	45.0
As before	41.3	21.4	13.0	21.7
More difficult	41.4	45.3	22.7	33.3

3.2.3 Livestock keeping

Kilosa District supports free grazing (range), especially by Maasai and Sukuma communities who are the main pastoralists in the district. But the villages under survey had no permanent residents from these groups who practise pure livestock keeping. As a result, there were few people who keep livestock, particularly cattle, in these villages. Several reasons were mentioned for this, including the existence of disease (carried, for example, by tsetse flies), but culturally because the inhabitants are not used to keeping many livestock. In some villages, it was reported that keeping livestock may result in conflicts with farmers. It should be noted that Kilosa District is known to have had frequent and serious conflicts between farmers and pastoralists due to poor land-use plans, poor institutional structures and insufficient land resources (e.g. water, pasture) for livestock (Benjaminsen *et al.*, 2009).

The results showed that some of the livestock kept by most households are cattle, goat, sheep, pig and poultry, with chicken kept by every household. In terms of Tropical Livestock Units (TLU), chicken dominates, with cattle being the second.

Table 4. Livestock kept by the communities in the study area

	Type				
	Cattle	Goat	Sheep	Pig	Poultry
Total number owned	47	189	17	70	4710
TLU	32.9	18.9	1.7	14	47.1

3.2.4 Fuelwood collection

The result from the household survey regarding the importance of forest resource use indicated that 86 per cent of fuelwood is collected from the primary forests (Figure 13), while the rest is collected either from the secondary forests or from both. Assessment of labour roles in collecting fuelwood, indicated by 96 per cent of the households surveyed, showed that women are the major labour force – 71 per cent (Table 5). Men account for just a small proportion (about 12 per cent) in this activity.

The involvement of the communities in harvesting of other forest resources such as timber, poles and charcoal, as shown in Table 5, indicated that few people engage in those activities. Interestingly, these resources attract more men than women. Charcoal and timber are produced, and traded illegally, to supplement losses in agriculture in an attempt to meet basic needs in most households. Discussions showed that in some villages many men and women are involved in charcoal-making. It was said that, unlike in the past, women are now more involved with providing for their families than men taking part in diverse economic activities to secure the family's livelihood.

The Zombo village chairman insisted that, nowadays, diseases including marasmas and kwashiorkor, which were the main cause of death in children under five years, have become a thing of the past, due to the rise in women's standing within the rural economy.

Figure 13. Fuelwood collection from different forest types

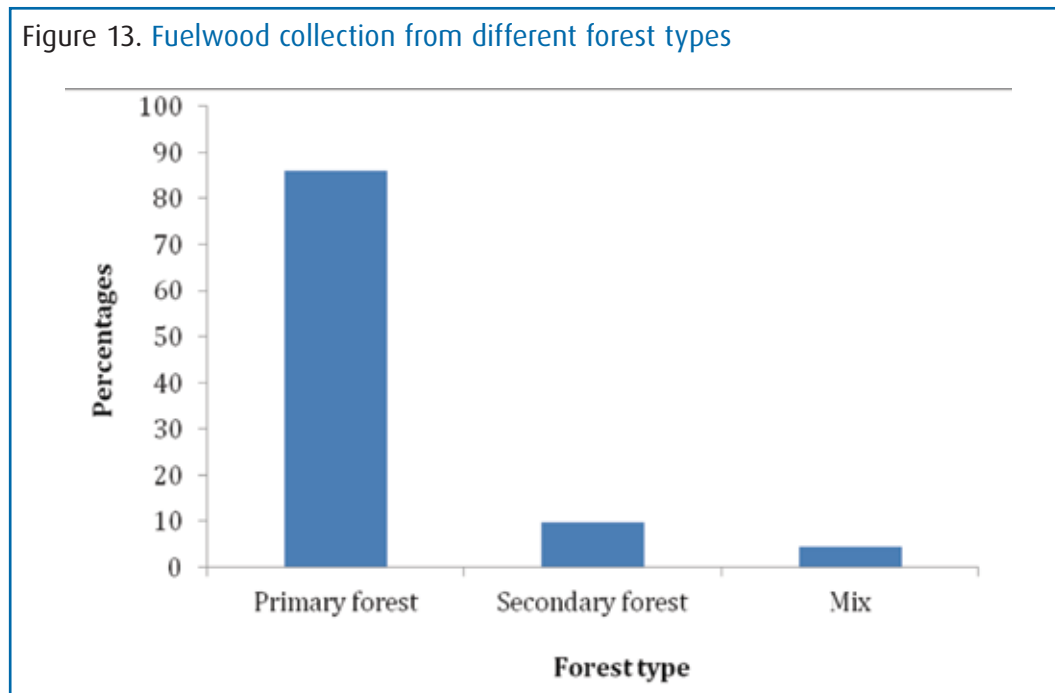


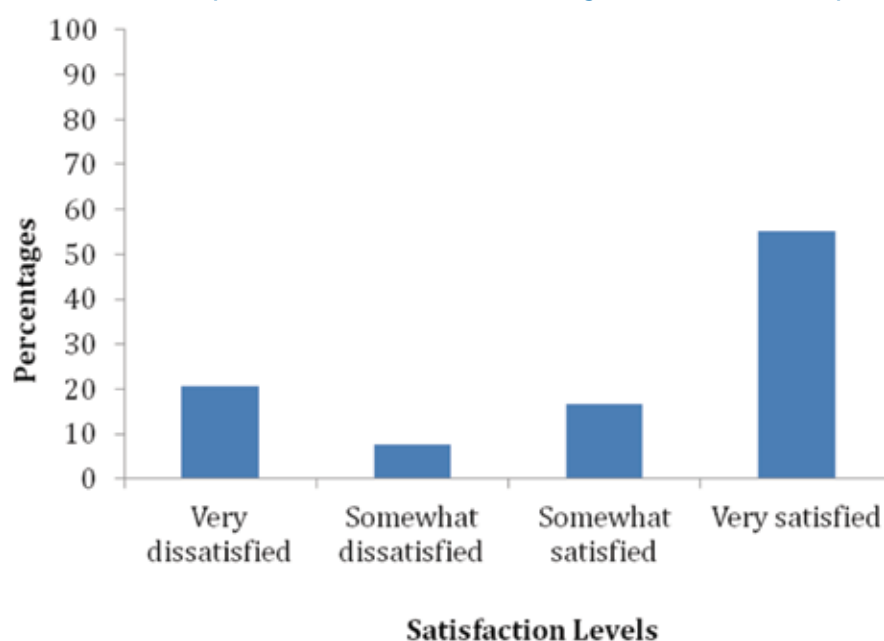
Table 5. Collection of forest resources from different forest types in the area

Forest type	Primary forest	Secondary forest	Mix	
			Fuelwood	
Proportion from the forest type	86%	10%	4%	
Collected by whom (labour)	Household	Hired	Both	
	96%	0	4%	
Sex/age group	Men	Women	Children	Mix
	12%	71%	5%	12%
			Poles and timber	
Forest type	Primary	Secondary	Mix	
	14%			
Collected by whom (labour)	Household	Hired	Both	
	14%			
Sex/age group	Men	Women	Mix	
	12%	2%	1%	
			Charcoal	
Forest type	Primary	Secondary	Mix	
	19%			
Collected by whom (labour)	Household	Hired	Both	
	19%			
Sex/age group	Men	Women	Mix	
	14%	3%	1%	

3.2.5 Community perceptions of forest management regimes

Results showed that about 55 per cent of respondents were very satisfied with forest management in their areas. Others showed mixed feelings ranging from somewhat satisfied to very dissatisfied (see Figure 14).

Figure 14. Community satisfaction on forests management in the surveyed area



About 88 per cent of respondents reported having a very good or good relationship with other people accessing and using the forests. The rest reported a fair relationship with other forest users (Figure 15).

The household surveys indicated that it takes an average of 50 minutes to walk to a nearest edge of a forest. The results further showed that an average of 0.7 ha has been cleared by a household in the last five years to establish or expand farms – as revealed by the small proportion of those who responded that they had done so (Figure 16). In PRA exercises, members were skeptical in discussions of issues related to forest encroachment. This is because some people did not completely trust that the discussions were solely for research and not for use in suing them or applying stricter management measures. It therefore implies that most people are involved in some illegal activities in one way or another in the nearby reserved lands (the forest and/or the national parks).

Furthermore, analysis showed that only 23 per cent of respondents admitted to having cleared some forests for farm expansion, while about 77 per cent did not proffer any information. The percentages were roughly the same in relation to questions about the type of forest cleared and the ownership of those forests (Table 6).

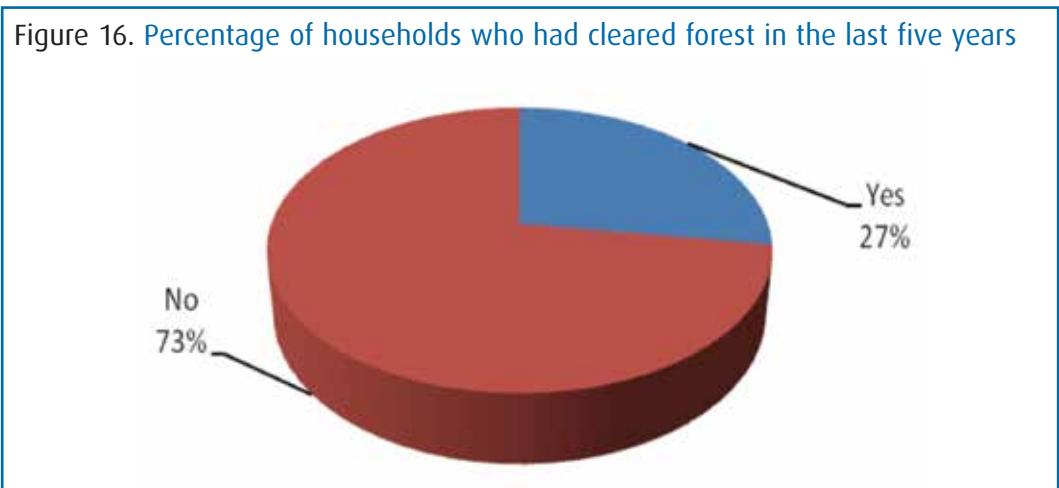
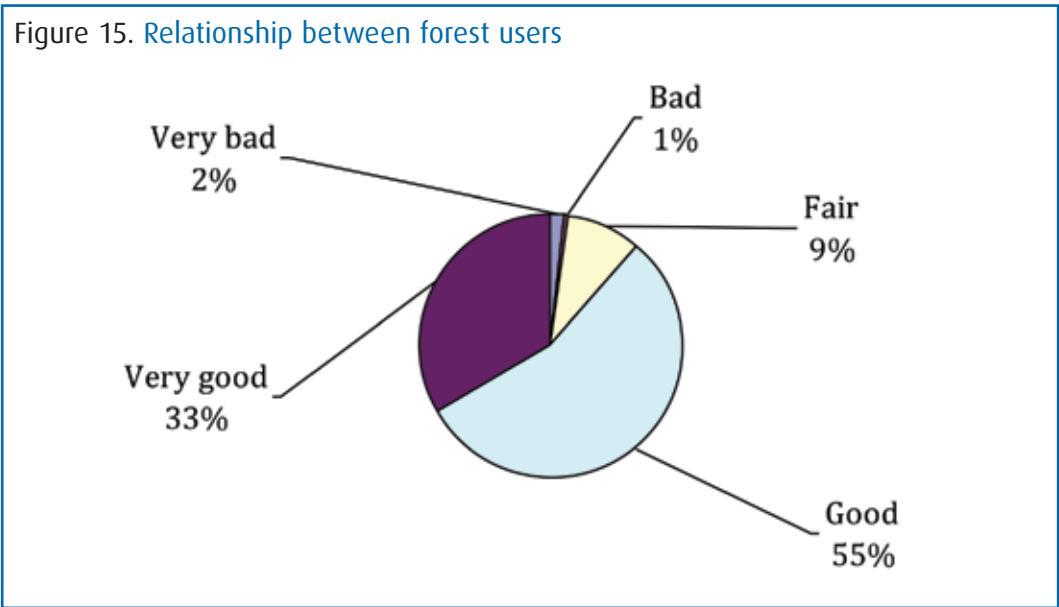


Table 6. Forest clearing and the reasons for clearing as revealed in the study area

	Rank 1 (Percentage of household response)
Cleared forest is used for	
Cropping	20
Other	3
No answer	77
Forest type cleared	
Primary forest	32
Secondary forest	2
No answer	66
Ownership status of the forest cleared	
Private	2
State (CBFM)	2
Common property	30
No answer	66

3.3 Property rights, use rights and management

3.3.1 Land ownership

3.3.1.1 An overview of land tenure in Tanzania

Land tenure is one of the principal factors affecting the ways in which resources on particular parcels of land are managed in the way that benefits are shared. Land tenure insecurity results in a number of environmental problems, including forest degradation and deforestation. The legal basis for land tenure in Tanzania relies on two basic laws that were passed in 1999, namely the Land Act No. 4 of 1999 and the Village Land Act No. 5 of 1999, which state that all land in Tanzania is public land, which the President holds in trust for all citizens. The President delegates the power to designate, adjudicate and modify land tenure status to the Commissioner for Lands. District and village councils play an important role in managing land at the local level. The two laws have the overall objective of formalising and legalising traditional and customary land tenure arrangements. Tanzania recognises three categories of land: reserved, village and general.

Reserved land

Reserved land is land set aside by the central government for purposes of nature conservation including wildlife and forest reserves, national parks, the Ngorongoro conservation area, marine parks and reserves, town and country planning, highways, and public recreation grounds. The management of these specific areas is governed by specific laws, for example forests are governed by the Forest Act No 14 of 2002.

Village land

Village land includes all land within the boundaries of villages, of which there are more than 10,500 in Tanzania. Village councils and assemblies are given powers to manage this land. The Village Land Act No 5 of 1999 (URT, 1999) allows village governments to enter into agreements with enterprises that provide wellbeing for the villagers. Village councils are required to divide village lands into three categories: communal land, which is shared by a large number of individuals within the village and may include grazing, pastures, forests or other areas with

natural resources; occupied land, which is used for housing, cultivation and businesses, and managed by individuals or families; and future land, which is set aside for future use by individuals of the community.

General land

General land refers to all public land, which is not reserved land or land whose status has been changed and gazetted accordingly.² This land category is managed by the Commissioner of Lands on behalf of the central government. The term public land is used interchangeably with general land; in Tanzania all land is public and general land is part and parcel of it. Lack of administration of the general land by the government has resulted in it being considered as 'open access' land.

3.3.1.2 Land resource use in Kilosa District

As a result of such poor management of general lands, disputes over land are frequently experienced in Kilosa District. The project observed a number of underlying causes of conflict. The introduction of cotton and sisal plantations since the colonial era has resulted in problems between African communities and European settlers. Moreover, the plantations attracted immigrant workers from all over the country, who settled in and around them. Today, many of the villagers around the former plantations are their descendants. The establishment of Mikumi National Park and gazettement of forest reserves in the area has also resulted in more land falling under conservation of land areas, amounting to about 8 per cent. Today, converted land covers almost one third of the district. Certainly this has contributed to land conflicts.

It is widely recognised that land tenure security would be a means of mitigating land conflicts. In rural areas, individuals may acquire land through inheritance, buying or getting it free from a village government. The survey indicated that 79 per cent of the land used by the communities is privately owned by sisal estates leased for 99 years. Twenty per cent of the land used is from general lands. Although statistics from questionnaires showed that 1 per cent of the land is rented from state-owned lands, the further discussions during PRA showed that most of this rent category was the land cleared in forests under the shifting cultivation practices. In actual fact, this cannot be related to renting as it is illegal in state forests.

On the other hand, 89 per cent of the land pieces ('parcels') used by individuals in the villages were 'non-rented' (Figure 17). The 10 per cent that reported renting represents a population from villages that border 'abandoned' sisal estates in the area. In some cases, villages are 'squeezed' by the sisal estates owned by companies or individuals, which unfortunately bars a good deal of land from agricultural production.

Furthermore, observations showed that only a small number of parcels were reported to be land that had been cleared for shifting cultivation (Table 7). This result needs to be treated with care, however, since a community would not always declare this practice, as it would either involve clearing of land that is protected either by the village or central government. Discussions during PRA exercises indicated that in the last two years most people started cultivation of simsim. Observations showed that the plant requires virgin land or some type of fertilisation for a farmer to realise optimum productivity.

2. 'Gazette' means "to announce or publish in a gazette"; especially where gazette refers to a public journal or a newspaper of record. 'Gazetted' here refers to all that lands which have been announced in such public newspaper as to have attained any different status from its current status.

Figure 17. Land rent categories from the three tenure categories in the study area



Table 7. Land conversation types

Conversion type	Percentage (%)
Land cleared more than 10 years ago	83
Land cleared in shifting cultivation	3
Cleared forest in last 10 years to become permanent agricultural land	13

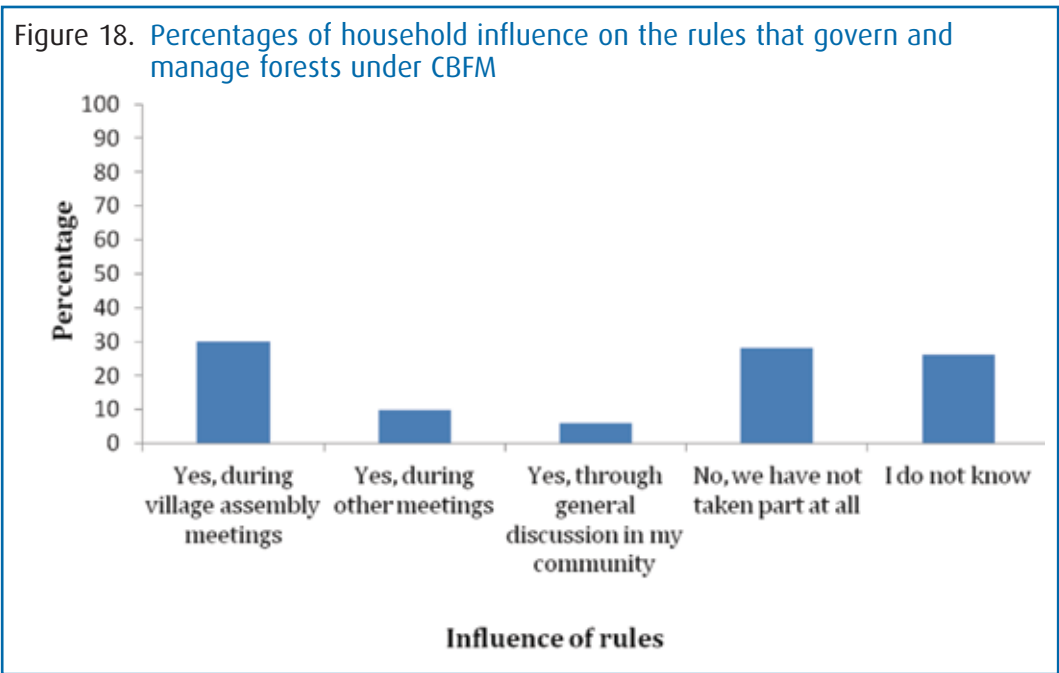
3.3.2 User rights and forest management

The survey indicated that although the villages under study had village bylaws that govern forest management, it was only Lumango village that had a forest in the Community Based Forest Management (CBFM) category. Therefore, results showed that 45 per cent of respondents had user rights to forest resources under CBFM, with the rest having full access to non-protected forests on general land in their vicinity. No one has legal access to national parks, which is restricted according to the National Policy on National Parks of 1994 (URT, 1994).

Furthermore, discussions showed that in villages where forest reserves have been established under community management initiatives, there are also demarcated portion/s of the same forest or a different forest that communities can access and use. But limitations on access and use rights to 'productive' forests, designed on the basis of community management in Lumango village, do exist. It was further learnt that the arrangement of restricting user rights in productive forests was reached to give them time to recover from the last decade's extensive use. Individuals are allowed to conduct non-destructive activities such as rituals and beekeeping in village forest reserves. Collection of dead wood for household use for energy and the collection or harvesting of Non Timber Forest Products (NTFPs) is also allowed. In some cases, harvesting of building materials, including poles and timber, is permitted. Furthermore, it was learnt during FGDs that accessibility and resource extraction from the village forests require a permit, granted by the village environmental committees that are responsible for the management on behalf of the village council.

The responses regarding to what extent households influence the rules that govern and manage forests under CBFM in Lumango village were rather divided. While 36 per cent of the members agreed that they do have influence during village assembly meetings, 33 per cent said that they

had not taken part at all. And while 31 per cent seemed to have no idea, the rest argued that they had influenced rules either during general discussions in their community or during other meetings (Figure 18).



The satisfaction level of the communities on the rules that govern and manage forest resources in the area were assessed based on following the set of possible reasons as shown below:

1. My/our interests are not taken into account
2. Unclear boundaries, allowing outsiders to intrude in the forest
3. Unequal distribution of benefits
4. Too strong limitations on access to resources
5. Rules are not followed
6. The local community is not involved enough in making the rules
7. Conflict resolution mechanisms are inappropriate
8. Too weak enforcement of rules and sanctions
9. Creates opportunities for corruption
10. Bad management or lack of coordination

The community was expected to agree, agree somewhat, disagree somewhat or disagree with the reasons above. Results showed that nearly half of the respondents were satisfied with the rules that govern and manage state forest (CBFM), with 47 per cent of households responding that they were very satisfied and 25 per cent responding that they were somewhat satisfied, while 28 per cent responded that they were either somewhat dissatisfied or very dissatisfied. The reasons for dissatisfaction were revealed to include unclear boundaries allowing outsiders to intrude in the forest; unequal distribution of benefits; and the belief that the arrangements create opportunities for corruption. Some also felt that the local community was not involved enough in making the rules.

3.3.3 Forests under common property regime (community forests)

The study found that there are forests held in common – community forests – in all the study villages, as revealed by 75 per cent of the respondents. It should be noted that community forests are those forest lands that are commonly used by the community and have not attained the status of Community Based Forest Management simply because there are no prescribed

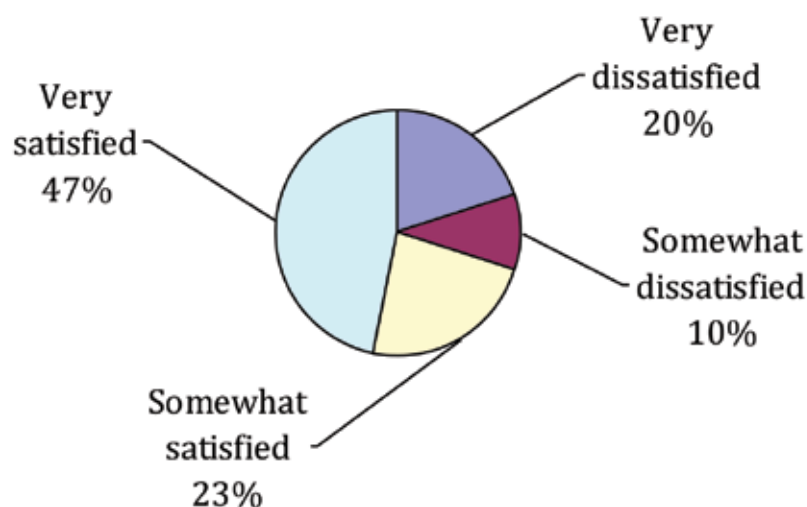
rules for approval of management as required by the law. Literally, these would mean 'common properties'. It was therefore revealed that nearly every member in the village had use rights to this type of forest. Informal arrangements dominate access and user rights (Table 8).

Table 8. Percentages of communities' perception of their access to most forests under common property regime

Type of use right arrangement	Percentage of respondents
Formal	33
Informal	67
Total	100

Some 75 per cent of respondents said that they were not constrained in their access and use of forests. The remainder felt constrained by the overall national rules that govern natural resource extraction, trade and use. However, nearly half of respondents showed a high level of satisfaction with the current rules (Figure 19) although a good number had not taken part in influencing the rules that might be in place (Figure 20). About 20 per cent know nothing about rules governing these forests. Although a good number responded that they were satisfied, discussions revealed that they liked the rules simply because they advocated conservation of forests for the future generation and that, despite the rules, their access and use of the forests is not much affected. It was further learnt that the rules referred to here were those developed by the district council, especially those responsible for revenue collections.

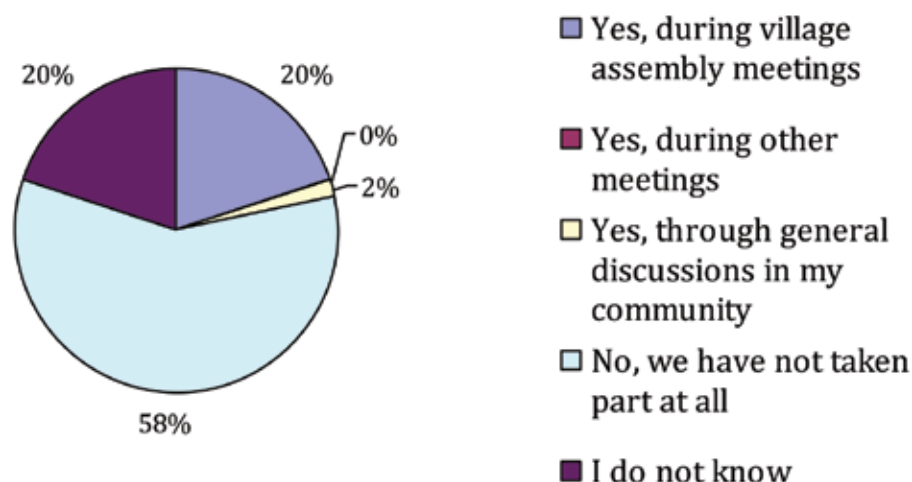
Figure 19. Communities' satisfaction levels with the current rules that govern use and management of community forests in the study area



When asked if they are satisfied or dissatisfied with the rules that govern use and management of community forests, respondents showed different perspectives, as seen in Figure 19 above. The reasons given for dissatisfaction included low enforcement of laws that allow intruders into their forests, unequal distribution of benefits, increasing corruption over natural resources, and low involvement of the local community in making the rules.

Respondents were asked to give opinions on whether they feel bound by rules that govern the use and management of community forests. Results showed that only 21 per cent felt bound to follow the rules (Figure 21), with a number feeling they have unlimited access. Further discussions on PRA showed that although state laws require individuals and communities to

Figure 20. Community participation in influencing governing rules in community forests in the area



obtain permits for commercial purposes, the state has limited capacity to enforce them and does not seem to consider doing so a priority. This apparent lack of interest in enforcing the law is regarded in communities as an intentional opening up of opportunities for the rural poor to engage in commercial activities without the need for formal licensing, which involves costs and requires knowledge of procedures. In the study area for example, it was revealed that most households have unlimited access to these forests under common property management. To the locals, the forest is theirs.

Most respondents said that there had been changes in the rules governing use and management of the community forests in the study area in the last five years (see Table 9). The relationship between users was also assessed, about 72 per cent of respondents saying that the relationship has been either good or very good (Figure 22).

Figure 21. Responses on whether the community is bound by the rules that govern use and management of community forests

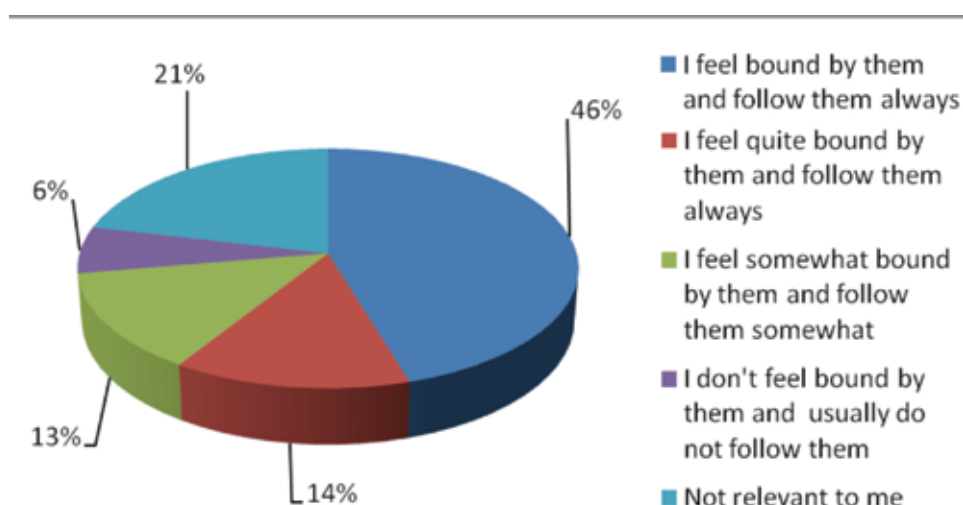
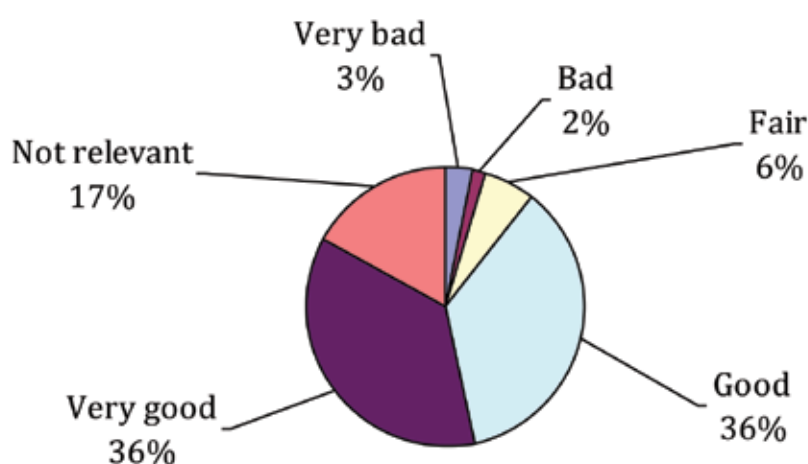


Table 9 Community response on whether there have been changes in the last five year with respect to the rules on community forests

Have there been changes?	Percentage
Yes	10%
No	81%
Not aware	9%
TOTAL	100%

Figure 22. Relationship amongst forest users



3.4 Perceptions, attitudes and norms concerning resource conservation

3.4.1 Presence of other protected forests

Results indicated that only 20 per cent of respondents agreed that there are other forests protected under the state. FGDs revealed that the forests referred to here are part of the national parks bordering the two villages of Lumango and Zombo. It was learnt that Lumango village borders Udzungwa National Park while Zombo borders Mikumi National Park. According to the law, national parks in Tanzania are out of bounds for any human activities/use. Therefore, observations showed that most respondents agreed that access is restricted and they do not support this kind of protection. Some of the reasons pointed out include poor compensation received from the government during gazettement of the parks; poor compensation in the case where crops are destroyed by wildlife from the parks; and no spin-off benefits from national park tourism activities.

Although national parks are protected under different laws (National Parks Act of 1975) from those of forest reserves (Forest Act of 2002), most communities felt that rules governing forests access and use also play a role in protecting national park resources. While the National Park Act restricts any type of human activities that are not in accordance with the conservation measures in the parks, the Forest Act provides for non-destructive use in forest reserves. When asked if they have ever developed any community protection measures for state-owned community forests and forests on general lands, a good number of respondents said yes. Table 10 shows the proportion of the population that responded positively and the type of protection measures involved.

When asked if they were satisfied or dissatisfied with the locally developed protection measures, most respondents showed a high level of satisfaction (Figure 23). The reasons for this satisfaction level are shown in Table 11.

Table 10. Responses to the types of community developed protection measures for the forests in the area

Controlled activities	Percentage
Controlling harvest of forest products	86
Limiting farm land in the forest	84
Protecting some areas in the forest	82
Placing guards to control illegal use of the forest	54

Figure 23. Satisfaction with locally developed protection measures

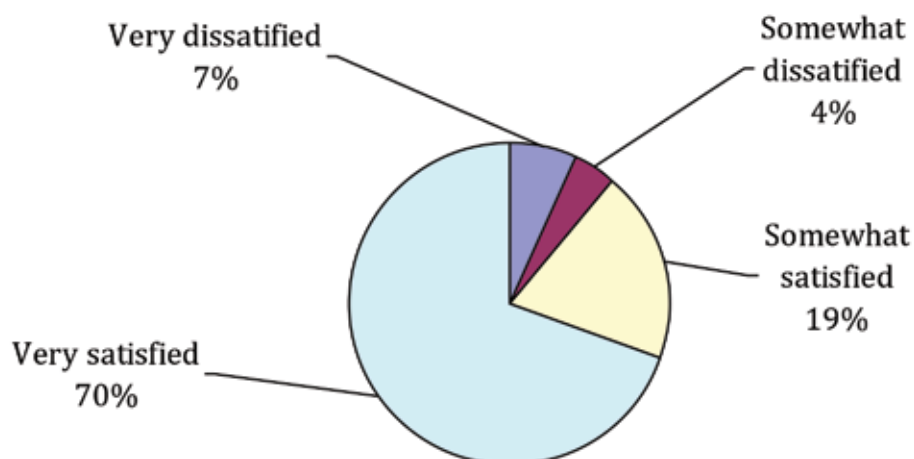


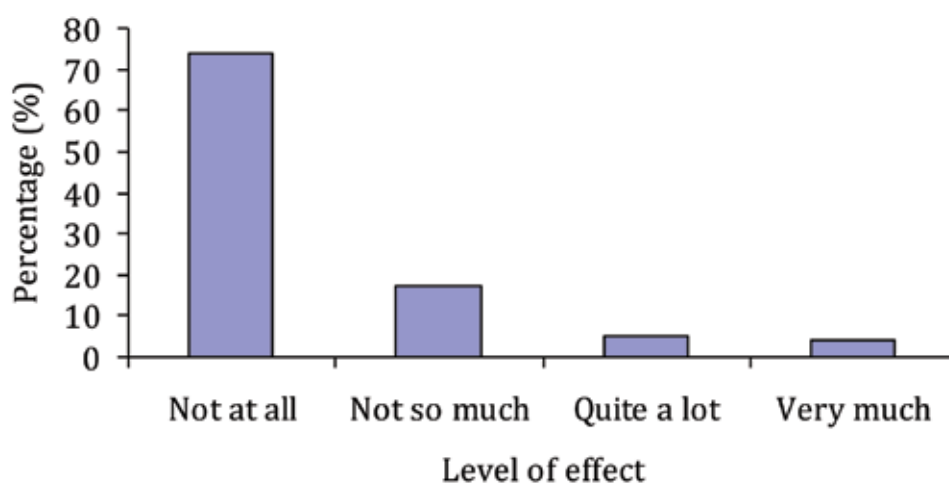
Table 11. Reasons for community satisfaction with the local protection measures of forests around them

Reasons	Percentage
Increases long-term access to forests resources	72.4
Equal distribution of benefits	60
Reduced illegal use of forests	60.8

However, these observations contradict the results obtained during PRA exercises. The discussions showed that people are not satisfied with the rules and regulations that govern national parks. As a result, illegal activities and arson do happen, often as a way of showing communities' grievances. This is supported by their responses that conservation measures have not affected the way forests resources are used (see Figure 24). The discrepancy between observations in surveys and FGDs could be due to the fact that in individual interviews respondents avoided pointing out issues (which they consider controversial) that might lead to singling out individuals, whereas mass reactions in FGDs were considered 'safe'.

There was little influence of sacred forests in the management of forests in the area. Only 18 per cent of respondents agreed that these types of forest existed in their area. In areas where such forests do exist (according to the beliefs, culture and norms of the particular area), it was learnt that nearly half of the people living around them believed in them.

Figure 24. Responses on whether conservation measures affect use of forests



3.5 Pre-REDD Analysis

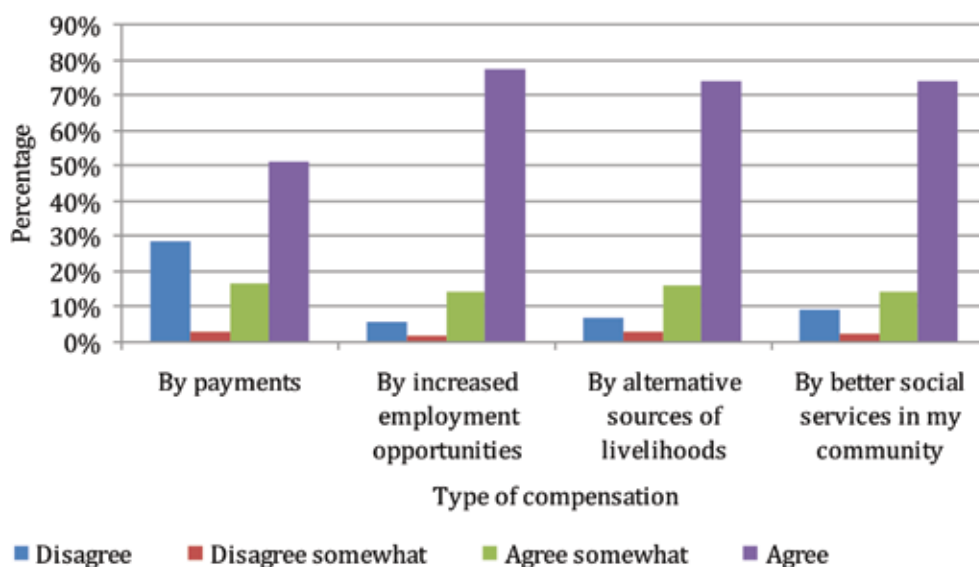
During FGDs, farmers were asked to give their views on whether climate change exists and what variables were or could be associated with such change. The discussion showed that farmers are well aware that there is climate change. Most farmers connect temperatures, precipitation and diseases with climate change. More interestingly, it appeared that the more experience that farmers have, the more likely they are to claim that temperatures have increased. Perceptions about precipitation were very similar: once again the experienced farmers are less likely to adhere to the view that there has been no change. Furthermore, discussions showed that subsistence farmers are far more likely to notice climate change than large-scale farmers. On the other hand, analysis from the household survey indicated that 75 per cent of respondents acknowledged having an idea of the role forests play in mitigating climate change, with the rest of population remaining unaware.

In some cases, farmers could connect clearance of forests with climate change through considering the likely consequences of deforestation – the drying up of water streams, the emergence of water-borne diseases, and increases in soil erosion and the consequent decline in soil fertility.

With regard to climate change, some of the farmers felt that they do not get adequate help from the concerned agencies and that more support is needed in the form of financial, technical, institutional and policy measures to help them to adapt to climate change. Some of the measures suggested by the farmers during FGDs included introducing irrigation schemes to allow continuous farming practices, alternative cropping patterns to suit the extreme variability in climate, and training and awareness campaigns. Some went even further, suggesting crop insurance schemes for farmers and financial support to poor farmers.

When farmers were asked about whether they would consider stopping clearing forests for agriculture or any other harvest if they get compensation for the loss of income they might have, they showed some level of readiness. But it was noted that most people failed to give clear answers, wanting first to know the level of compensation. On exploring the types of compensation, a good number showed that they would prefer other means (see Figure 25) rather than direct payments.

Figure 25. Types of compensation that the communities would prefer for them to stop forest clearing in the study area, Kilosa, Tanzania



On the other hand, only a small number of respondents felt that compensation is not an appropriate approach to make them stop clearing and using the forest, for several reasons including lack of trust (Table 12).

Those who showed interest in receiving compensation also had several reasons (Table 13).

Table 12. Reasons for community not to accept compensation

Responses	Disagree	Disagree somewhat	Agree somewhat	Agree
My livelihood depends too much on the forest			0.3%	4.0%
The forest has a strong cultural value to me and it is wrong to accept compensation to stop present use	1.3%		0.3%	2.7%
Money cannot compensate for reduced use of the forest	0.7%			3.7%
I do not think I will be compensated enough	0.7%		0.3%	3.3%

Table 13. Reasons for accepting compensation

Responses	Disagree	Disagree somewhat	Agree somewhat	Agree
The compensation will make me equally well or better off	2%	0%	19%	73%
Forest protection is important	4%		8%	82%
It will improve our environmental conditions	3%	1%	9%	81%
I need more income	10%	5%	16%	62%
It will improve the conditions of our village/community	4%	1%	15%	74%

The results further showed that most people would stop several destructive activities in the forest, as shown in Table 14, if compensation were provided. It was also observed that many people think NGOs would be better able to handle programmes against deforestation in their community (see Table 15).

Table 14. Communities' commitment to avoid deforestation if compensated

Response	Disagree	Disagree somewhat	Agree somewhat	Agree
Stop expansion of farming activity in forests	6	8	0	86
Reduce wildfires in forest	7	1	6	86
Stop harvesting fuelwood	8	4	18	70
Stop harvesting poles/timber	8	1	6	85
Stop producing charcoal	4	1	9	86

Note: All figures in percentages

Table 15. Community views on who should manage conservation programmes in the area

Responses	Disagree	Disagree somewhat	Agree somewhat	Agree
Government officials	45	5	32	18
The village leader(s)	26	6	30	37
Specially elected village committee	14	2	27	56
NGOs	14	4	17	65

Note: All figures in percentages

Additionally, the community identified some issues that they consider to be associated with any programme against deforestation, as shown in Table 16.

Table 16. Some issues associated with programmes on addressing deforestation in the area

	Disagree	Disagree somewhat	Agree somewhat	Agree
The overall income situation in the village/community will be better	6%	1%	13%	77%
It will result in corruption	54%	6%	12%	25%
Unequal distribution of payments	50%	5%	13%	29%
Payments will go only to land owners	49%	8%	12%	29%
There will be fewer conflicts in the village/community	17%	3%	9%	69%

Conclusion and recommendations

The Kilosa District is inhabited by many ethnic groups who came to the district as workers in the sisal estates as early as the beginning of the twentieth century. Many people remained in the district even after the collapse of the sisal industry. The level of education in the district is relatively low. This study showed that 79 per cent of the land in the study villages is leasehold, 20 per cent is communally held, while 1 per cent is under state ownership.

As is the case in many areas in Tanzania, fuelwood is a major source of energy for cooking in the study villages, with about 86 per cent of the fuelwood being collected from forests around the household landscapes. Fuelwood is not traded very frequently within the study villages. Charcoal is usually produced by the poor. However, everybody is a potential charcoal producer in any year that the harvests are poor and charcoal in the markets is scarce.

Despite the fact that conflict over land use between pastoralists and farmers became apparent during interviews in the villages visited (with exception of Lunenzi and Lumango) the study revealed that the level of trust amongst the people was high, with over 80 per cent of households responding either 'high' or 'very high'. Being able to afford regular meals was regarded as the most respected indicator of wealth in the study area. Interestingly, most respondents regarded their villages as good places to live despite socio-economic hardships, simply because they are uncertain about life elsewhere. Bicycles are a primary means of transport in most of the study villages. Tractors are almost non-existent although ploughing is commonly done using hired tractors by a few individuals with relatively large farms.

The study revealed that in the last five years the area had suffered various natural disasters including droughts, and excessive rains (El Niño), which destabilised the communities in terms of income and food security.

The cultivation of simsim, which has gained momentum in recent years, is associated with widespread clearance of bush and woodlands in the search for more and more fertile land. Most respondents argued that cultivating simsim in a permanent plot results in nutrient depletion and the emergence of many diseases that attack the crop, hence deforestation was necessary to find new fertile plots. However, some study villages have set bylaws that hinder expansion of farming into the forests. Generally speaking, respondents were reluctant to discuss issues related to forest encroachment and only 23 per cent of respondents admitted to having cleared some forest for farming expansion.

The study showed that communities bordering national parks, that is, Mikumi and Udzungwa, are not satisfied with the rules and regulations that govern their parks; as a result, illegal activities and arson are widespread as a way of showing communities' grievances. Furthermore, respondents showed that they are aware of climate change. Most associated temperature, precipitation and disease with climate change.

As in many forest-dwelling communities, forests provide essential building materials, medicine, income and food to the studied communities. Therefore, with regard to REDD+, emphasis should be placed on designing equitable, effective and efficient projects that will provide alternative means of livelihood. REDD+ has the potential to provide considerable benefits to communities

with new and supplementary environmental service incomes, but most people are highly skeptical about REDD+ because of the possibility that it might restrict access and extraction rights to their land. Restrictions placed on community access for the sake of carbon conservation have highly significant livelihood and cultural implications. The biggest problem is that REDD+ is perceived as a 'business as usual' project, especially with the experience from PFM projects in the district and elsewhere in the country, which had put more emphasis on conservation measures, with little attention paid to benefit streams that would improve the welfare of participating communities. In the final analysis, the success of REDD+ in the area will depend on what it can do to make communities' livelihoods better.

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Appendix:

REDD+ Pilot Project in Tanzania

1. Project Title: Advancing REDD in the Kolo Hills Forests (ARKFor) in Central Tanzania

NGO: African Wildlife Foundation

Project Goal: The project aims to mitigate climate change by conserving Kolo Hills Forests as well as reducing poverty amongst the target communities in the project area. The project also aims to prepare the local stakeholders to enter carbon trading successfully.

Project Area: Kondoa District, Dodoma Region, in north-central Tanzania

Expected Output:

- Improve the current knowledge and scientific understanding of the target forest.
- Build village-level, local government and civil society organisational capacity towards understanding REDD mechanisms in view of participating in future forest carbon trading.
- Work to halt and reduce deforestation and forest degradation and address the fundamental drivers of deforestation through sustainable joint forestry management (JFM), land use planning (LUP) and the development of alternative energy sources.
- Develop conservation-friendly micro-enterprises and sell community carbon certificates consistent with JFM plans, to provide direct livelihood benefits and offset the costs of conservation, including through agro-forestry and sustainable agriculture activities.
- Promote effective REDD policies and practices through shared learning and networking between project and national stakeholders, enabling REDD to contribute to climate change mitigation and offsetting the costs of forest conservation.

WEB LINK: www.awf.org

2. Project Title: Building REDD Readiness in the Masito Ugalla Ecosystem Pilot Area in Western Tanzania in Support of Tanzania's National REDD Strategy

NGO: Jane Gordon Institute

Project Goal: To build awareness and enhance capacity and governance mechanisms for local communities and government institutions to administer and benefit from REDD-related obligations and opportunities in the Masito Ugalla Ecosystem in support of national REDD readiness.

Project Area: Mpanda and Kigoma districts in western Tanzania

Expected Output:

Cadre of local trainers comprised of stakeholders from the project area empowered to facilitate broad stakeholder participation in REDD project design and management, including the collection, analysis and application of lessons learnt in reducing deforestation and forest degradation.

- Inter-village forest conservation CBOs formed and empowered to manage forest on general lands in support of national REDD accounting programme and sub-national forest carbon projects.
- Replicable and scalable methodology for remote-sensing-based forest and carbon accounting at village scale developed, tested, verified, documented and disseminated.
- Communities and CBOs provided with the tools and skills to monitor forest biomass and carbon stocks.
- Community-based equitable benefit sharing mechanism developed and practised.
- Remote sensing and GIS capacity for carbon mapping, and monitoring at the project scale supported, strengthened and disseminated.

WEB LINK: www.janegoodall.org

3. Project Title: **Making REDD Work for Communities and Forest Conservation in Eastern Arc Mountains and Coastal Forests of Tanzania**

NGO: **Forests Conservation Group (TFCG)/MJUMITA**

Project Goal: To reduce greenhouse gas emissions from deforestation and forest degradation in Tanzania in ways that provide direct and equitable incentives to communities to conserve and manage forests sustainably.

Project Area: Kilosa and Lindi rural districts in Tanzania

Expected Output:

- Piloting a pro-poor, community oriented model for REDD.
- Establishing a community carbon enterprise.
- Capacity building to PFM and REDD implementers.
- Information sharing, as this is a learning project.

WEB LINK: www.tfcg.org / www.mjumita.org

4. Project Title: **Combining REDD, PFM and FSC Certification in South-Eastern Tanzania**

Mpingo Conservation and Development Initiative (MCDI)

Project Goal: Pilot the integration of new financial flows from carbon offsetting activities under REDD with PFM and forest certification, leveraging these revenues as a catalyst to further expand sustainable forest management and use in south eastern Tanzania project area.

Expected Output:

- Combined group certificate, validation and verification scheme covering timber and carbon-based products open to widest possible variety of community-managed forests in Tanzania.
- Mechanisms to sell carbon offsets and credits for expansion of group certificate and/or forest recovery, and compatible with developing national REDD standards.
- Efficient, scientifically robust and cost-effective methods for participatory assessment and monitoring of carbon stored in forests, including soil carbon.
- Leakage mitigated by reducing pressure from charcoal, shifting cultivation and other local drivers of deforestation.
- Best practice established for equitable management and sharing of economic benefits from forest conservation across the entire community.
- Achievements disseminated with policy recommendations for national and international audiences.

WEB LINK: www.mpingoconservation.org

5. Project Title: **Development of a standardised approach for establishing baseline information in support of REDD, with a focus on the montane forests of the southwest of Tanzania**

NGO: **Wildlife Conservation Society (WCS)**

Project Goal: To develop the capacity and knowledge for Tanzania to participate in REDD activities in the Southern Highlands.

Project Area: Mt Rungwe Nature Reserve, Rungwe District, Mbeya Region; Mporoto Ridge Forest Reserve, Mbeya District, Mbeya Region; Livingstone Forest within Kitulo National Park in Rungwe District, Mbeya Region; Mbizi Forest in Sumbawanga District, Rukwa Region

Expected Output:

- Baseline knowledge to support REDD activities.
- Participatory monitoring and capacity building.
- Improved livelihoods and fuelwood availability to help address root causes of deforestation and degradation.
- Development of a leakage remediation and monitoring framework (theme 5).

WEB LINK: www.wcstanzania.org

6. Project Title: **Enhancing Tanzanian Capacity to Deliver Short- and Long-Term Data on Forest Carbon Stocks across the Country**

NGO: **WWF**

Project Goal: Contribute core data to the Tanzanian national monitoring, reporting and verifying (MRV) system that forms a part of the comprehensive forest carbon monitoring system for the country, and build capacity for sustainability in the future.

Project Area: The project is national in scale. It seeks to establish a network of carbon monitoring plots across all major forest types. Miombo Woodlands (Mbeya and Iringa); Acacia/Commiphora Woodlands (Arusha, Dodoma and Mwanza); Coastal Forests (Coast regions); Grasslands (Kilombero, Mufindi, Mbeya/Iringa); Bushlands and Thickets (Itigi); Mangroves (Kilwa); Forests (volcanic mountains of Rungwe, Hanang and the Eastern Arc Mountains).

Expected Outputs:

- Output 1: Baseline carbon plots established.
- Output 2: Hemispherical photographic survey of carbon plots established.
- Output 3: Utility of LiDar technology further tested in Tanzanian forest habitats.
- Output 4: Soil carbon surveyed across Tanzanian vegetation types.
- Output 5: A range of future scenarios for changes in carbon stock produced.
- Output 6: Capacity building, dissemination and communication of project outputs undertaken.

WEB LINK: www.valuingthearc.org

7. Project Title: **Piloting REDD in Zanzibar through Community Forest Management**

NGO: **CARE Zanzibar**

Project Goal: HIMA project is specifically aiming at promoting a pro-poor gender-equitable approach to community forest management in Zanzibar, including piloting of carbon financing for Reduced Emissions from Deforestation and Degradation (REDD), which provides forest-dependent communities with secure property rights, equitable rewards for providing ecosystem services and other livelihood benefits, and which informs the priorities of Zanzibar in national REDD strategy.

Project Area: Unguja and Pemba Islands, Zanzibar

Expected Output:

- Output 1: 12 new Community Forest Management Agreements (COFMAs) developed (covering 10,650 ha of forest area) and 17 existing COFMAs (covering 17,000 ha forest area) reviewed and improved through the development and application of effective and equitable COFM strategies.
- Output 2: Strengthen DCCFF, DOE and other relevant government institutions and CSO/local NGO's REDD and climate change capacities.
- OUTPUT 3: VCS and CCBA validation secured and marketing arrangements developed based on

national aggregation that maximises benefits to men and women in the communities while ensuring environmental integrity.

- OUTPUT 4: Replicable, equitable and cost-effective measures to reduce degradation and deforestation and to control leakage designed and implemented.
- OUTPUT 5: Monitoring, evaluation, documentation and advocacy processes supported, with particular emphasis on social equity, and experience/lessons disseminated to a wider audience.

WEB LINK: www.careinternational.org

8. Project Title: **Community-Based REDD Mechanisms for Sustainable Forest Management in Semi-Arid Areas (Case of Ngtilis in Shinyanga-Western Tanzania)**

NGO: **Tanzania Traditional Energy Development Organisation (TaTEDO)**

Project Goal: To reduce GHG emissions through sustainable forest management and carbon market incentives.

Project Area: Shinyanga rural and Kahama districts

Expected Output:

- Institutional framework for REDD implementation at community level formalised and capacitated baseline scenarios for potential carbon sources established.
- Measures for addressing drivers of degradation and forest deforestation developed and implemented.
- Mechanisms for benefit sharing established and Ngitili groups empowered.
- Project performance and impacts monitored, evaluated and documented.

WEB LINK: www.tatedo.org

9. Project Title: **Hifadhi Mapafu ya Dar es Salaam (HIMADA)**

THE CAMPAIGN OF CONSERVING THE LUNGS OF DAR ES SALAAM WILL RESCUE KAZIMZUMBWI AND PUGU FOREST RESERVE

The aim of the HIMADA project is to ensure that Pugu and Kazimzumbwi are well managed and protected in order to improve the communities that are adjacent the forests and, additionally, confront climate change.

Pugu and Kazimzumbwi Forest Reserve is highly degraded because of human activities, including the cutting down of trees for charcoal and timber, lumbering and sand extraction. Big areas are bare and soil erosion is taking place. If immediate measures are not taken, people living adjacent to the forests, as well as those living Dar es Salaam and Kisarawe, will be highly affected.

