

TANZANIA FOREST CONSERVATION GROUP

IDENTIFYING LOCAL STAKEHOLDERS IN FOREST LANDSCAPES

Understanding the Use of Ecological Goods Kasyoha-Kitomi Landscape, Uganda Nguru South Landscape, Tanzania

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Kim Raben, DIIS, with Johnson Nyingi, David Loserian,
Zerupa Akello and Michael Kidoido



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Acronyms

CBFM Community-based Forest Management
CFM Collaborative Forest Management
FBD Forestry and Beekeeping Division
ICDP Integrated Conservation and Development Projects
JFM Joint Forest Management
NFA National Forest Authority
PEMA Participatory Environmental Management
PFM Participatory forest management
VEC Village Environmental Committee

1.0 Introduction

Tropical forests are characterised by actors with multiple and often conflicting interests. Policies to conserve the environment may further increase the competition, if the total amount of natural resources, that can be extracted legally, declines. When resources are contested and/or restricted, it is essential to establish collective management plans that consider different interests and that mitigate potential conflicts among resource users. As no “one-size fits all” solution exists to design and implement plans (Gibson et al. 2005), it is a prerequisite to understand the particular context of interests in and uses of the goods and services provided by the forest and the ways in which stakeholders collaborate or conflict over these.

When environmental policies restrict access to natural resources the costs often fall on the poor who can least manage to bear them; and therefore may ignore, circumvent or resist such restrictions in order to secure their livelihood. Seen from the perspective of resource conservation this can be considered as an unintended consequence. Seen from the perspective of poverty alleviation it is also a non-desirable situation.

Today, the involvement of the poor in resource conservation programs is to an increasing extent recognised as crucial in order to make collective natural resource management arrangements work (Kerr 2002). Improved environmental management does, however, not necessarily result in poverty eradication or vice versa. The recent scientific literature emphasise that while poverty reduction and environmental sustainability goals can be reconciled and tradeoffs minimised, there is no simple relationship that brings benefits on both fronts (Barrett et al. 2005). Therefore, a core feature to engage the poor in natural resource management and conservation is to draw special attention to the interests of the poor and how these differ from those of other stakeholders.

The investigations, on which this working paper is based, are closely related to the PEMA Programme.¹ The PEMA programme seeks to address a number of weaknesses in current conservation and development projects of which two should be mentioned here.

Firstly, substantial progress in forest conservation approaches the performance of many conservation and development projects has not met the expectations. Well-documented investigations have shown that the interests of the poor have not been sufficiently addressed, that they have failed to demonstrate a conservation impact and not thoroughly addressed the underlying causes of environmental degradation (Barrow and Murphree 2001). One of the central problems has been the lack of understanding the relations between the forests and the broader agro and agro forestry landscape. Among other things, the PEMA programme seeks to address this weakness by working with a forest landscape restoration approach that views the broader landscapes as lived-in working areas that are central to the use of the forest.

Secondly, the failure of the political system to promote and protect the interest and rights of the less influential stakeholders, and in particular the poor and marginalised rural households, is now being challenged not only in terms of equity but also from a conservation perspective. It is well documented that forests provide a variety of livelihood options in terms of key safety net functions, subsidy and marketed forest goods (Cavendish 1999). Experience from a growing number of successful examples supports the assertion that increasing the level of control of rural communities over natural resources within their

¹ A detailed description of the PEMA programme can be obtained at the website <http://www.pema-eastafrika.org/index.htm>

environment and promoting more equitable sharing of the costs and benefits related to the management of these resources are pre-requisites for effective conservation of natural forest in poor countries.

In the PEMA programme point of departure is taken in an understanding of protected area management work as characterised by multiple and conflicting interests among the different stakeholders. To balance such diverging interest requires: *a)* Sufficient transfers of powers to local institutions (under tight central-government oversight) and the enhancement of their capacity to manage them sustainably. *b)* ensuring that local people are fairly rewarded for their role as stewards of environmental functions/services that benefit their country and the world at large.

The present working paper deals with the roles and interests of the local inhabitants in the use and management of the two eco-regions with global biodiversity values: Kasyoha-Kitomi Forest Reserve, Uganda and Nguru South, Kanga and Mkindo Forest Reserves, Tanzania (National Forest Authority 1999; Myers et al. 2000; PEMA 2003). The objectives of the action research carried out in the two sites were two-fold. Firstly, the investigations should unveil what goods and services are used by the local inhabitants, how and by whom. These data contribute to the contextual background for a participatory process of negotiating different stakeholders' interests that lead to Forest Landscape Strategic Action Plans in the PEMA programme. Secondly, the investigations are expected to contribute to a better understanding of the high diversity of interests among local inhabitants that are central for the establishment or improvement of collective action in forest management and help put focus on the relevance of carrying out stakeholder analysis on a forest landscape level.

The investigations have been done by applying the methodology of stakeholder analysis that provides tools for understanding the interests of the poor and other local resource users and the social and biophysical interdependencies among them (Ravnborg et al. 1999; Ravnborg et al. 2002).

The present paper presents the insights gained from the process of local stakeholder identification by shedding light on the complexity of interests attached to the forests and the role that the poor play in the use and management. This brings about a better analytical basis for understanding local stakeholders, and allows for influence and facilitation of relations and dynamics in multiple stakeholder group negotiations. Ultimately, negotiations can be used to coordinate management decisions of natural resources in the form of management plans with stakeholders among whom interdependencies exist and thereby improve interventions, predict and mitigate conflicts and engage the poor in the natural resource management.

The rest of the working paper is set out as follows. The next section presents the practical background of the research; how the stakeholder analysis forms part of the action research taking place in the PEMA programme. Section 3 describes the methodological framework for identifying stakeholders' interests. Section 4 presents the process of fieldwork. Section 5 and 6 examine the stakeholder analysis from Ugandan respectively Tanzanian forest landscapes. Finally, conclusions are drawn, with particular emphasis on the role of the poor in the management of tropical forests.

2.0 Methodology

A stakeholder analysis is empirical; it is concerned with actors who have a stake in the object of inquiry and is not led by any presumptions on the type of actor to be in- or excluded from having a stake. According to (Gimble et al. 1995), the term stakeholder refers to “*all those who affect, and/or are affected by the policies, decisions and actions of the system. They can be individuals, communities, social groups or institutions of any size, aggregation or level in society*”. Accordingly, the approach recognises that local interests as well as stakeholders at regional, national and international levels may be stakeholders in relation to the system in question – in this case the forest reserves in the two forest landscapes defined by the PEMA programme. I.e. those actors that have stakes in the goods and ecological services provided by the forest reserves. Such interests may come directly from production, extraction, transformation of products, exchange, distribution or consumption of natural resources; i.e. interests found along the lifetime trajectory of goods provided by the forest (see Ribot et al. 2003 for this distinction). Stakeholders can also have an interest because they indirectly benefit from the ecological services supplied by an ecosystem (Landell-Mills et al. 2002).

Stakeholders may not necessarily be physically present in the landscape; e.g. the buyers of oil seeds or timber. In this study an in-depth study of local inhabitants' interests rather than a broader analysis of all stakeholders have been conducted. Hence, regional, national and supranational stakeholders have been identified using other methods and will only be presented to the extent that they have been perceived by the local inhabitants as having a stake or affecting their won stakes in the forest reserve.

A methodological implication of the stakeholder definition is that the understanding of ‘community’ as made up by people with a common identity and common interests is deconstructed. Common interests may seldom coincide with a community of clear geographical boundaries that is made up by local inhabitants sharing goals and values. On the contrary, communities are heterogeneous and made up by multiple actors with multiple interests (Agrawal et al. 1999; Mehta et al. 1999). Moreover, an actor, e.g. an individual or a group of people may have complex and flexible social identities (Clever 2001:30), which implies that an actor may be forming part of several stakeholder groups even if these have conflicting interests. Stakeholder analysis is a methodology for exploring these different interests.

The stakeholder identification methodology follows a number of steps (Ravnborg et al. 2002). In this study a modified version consisting of two steps is applied in order to fit the context of forest landscapes. These steps are: To define the contiguous area in relation to the natural resource(s) in question and select research sites (Step1); and identify stakeholders and the interdependencies among them based on individual interviews (Step 2).²

In this study the forest landscape – a contiguous area that comprises a primary conservation area, a forest ecosystem area, a core landscape and an extended landscape – was identified in the two sites by the PEMA programme in an initial phase of the program formulation. After having defined the landscape and made a first approximation of its outer boundaries, an examination of the context of the forest landscape was made through the elaboration of

² Based on the identified stakeholders, three steps aiming at improved collective natural resource management follows as proposed by Ravnborg et al. (2002): *i)* Bringing conflicts and interdependencies into the open and negotiating options for improved natural resource management; *ii)* Develop coordinated actions through the development of natural resource management plans; and *iii)* Implementing and adjusting the natural resource management plans.

landscape, forest and institutional inventories.³ Drawing on parish (Uganda) and ward (Tanzania) profiles, respectively 30 parishes, (approximately 300 villages) in the Kasyoha-Kitomi landscape and nine wards (comprising 56 villages) in the South Nguru landscape, six research sites were purposively selected in each landscape.⁴ The sites were chosen on criteria of maximum variation that should reflect differing circumstances with respect to livelihood sources, proximity to forest reserve, access to land (i.e. the most important local means of production), agro-ecological conditions, and dependency on ecological services from the forest ecosystem. In addition, access to markets were used in the South Nguru landscape while ethnicity and prevalence of social groups were added as criteria at the Ugandan site. Because of the different scales of administrative units in the two landscapes, the pilot sites were selected to comprise a village in Tanzania (roughly just under 2000 inhabitants on average) and a parish in Uganda (3000-4000 inhabitants on average). The methodology was applied in Bitooma, Butoha, Mwongyera, Kicuzi, Rwajere and Ndangaro parishes in the Ugandan site. In the Tanzanian landscape the villages Pemba, Maskati, Mkindo, Ubiri, Kwadori and Kilimanjaro were included.

After having defined and selected research sites, interviews were carried out in order to understand the multiple interests that stakeholders have in the landscape and how these perceptions diverge and/or conflict (Step 2). As emphasised by Ravnborg et al. (2002), it is a common perception that seeking information from groups or a community is participatory, while seeking information with individuals is not, however it is argued that “public” events tend to emphasise the general rather than the particular; what ought to be rather than what is, and to reveal unitary views of interests rather than expose difference. As this methodology is after the *particular*, the stakeholder identification process is based on individual interviews rather than focus group interviews. In the context of forest landscape management, this is a process by which the stakeholders state their opinions, perspectives, fears and anxieties; that is their interpretations related to the forest landscape and to the natural resources therein. For this specific field work a number of guiding questions that take point of departure in the individuals’ resource uses and perceptions has been developed Table 1.

Table 1. Guiding questions

<p>Guiding questions: Present access to the forest/natural resources Previous access and access rights to the forest/natural resources Goods and services used from the forest Goods and services previously used from the forest How to authorise access to the forest or use of forest goods and services Threats or difficulties associated with own forest use Conflicts or disagreements over forest access and use among stakeholders Introducing ideas obtained in previous interviews; i.e. <i>“From other people in the area, we have heard that ... is that something you recognise?”</i></p>
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As the objective of the interviews is to identify the totality of interests relating to access,

³ Landscape, institutional and forest inventories were developed in each site by national partner organisations. Inventories identified, among other things, location of communities, predominant ethnic groups, main livelihood sources, settlement history, forest policies and regulatory frameworks, the history of the forest reserve, threats to the forest and the presence of local and national authorities and other institutions influencing the management of the forest reserve.

⁴ In Tanzania fieldwork was conducted in villages around the Mkindo Forest Reserve and the Nguru South Forest Reserve.

management and use of the natural resources in question, the stakeholder methodology is based on variation and contrast sampling to create circles of interviews (Guba et al. 1989; Ravnborg et al. 2002). This is done by asking the respondent to provide nominations, i.e. names of persons, who would have different – or contrasting – views and interests with respect to the natural resources. This process of interviewing and asking for nomination is continued until no new ideas or interests are introduced, eventually creating circles of interviews. To exemplify, in one of the selected research sites the first informant interviewed, a sub-village chairperson, was selected because of his key position in the village. During the interview the respondent as both a local authority and farmer, was asked to explain his access and use of the forest. In the end of the interview he was asked to nominate users of the forest with potentially divergent experiences. This led the interviewers to an old woman concerned with the loss of the traditional forest. After having explained her situation in relation to the forest goods in the surroundings, the old woman nominated some of the young men in the village that were said to be clearing the traditional forest in the village. If no nominations occur one may simply chose another informant that differ from the previous ones.⁵ In the Ugandan site, 87 informants were interviewed using the variation and contrast sampling to create circles of interviews. In the Tanzanian landscape a total number of 111 interviews were conducted.

As proposed by (Guba et al. 1989), the identification and analysis of stakeholders was done as a constructivist open investigation. This is done by analysing the central topics, concepts, ideas, values and fears presented by the informant after each interview. Based on the analysis an initial formulation of an interpretation can be elaborated by the interviewer. After the subsequent informant has formulated his/her own perceptions, the topics suggested by the previous informant are introduced as interview material and the new informant can comment on these topics. The continual comparison and the analysis of contrasting and divergent points of views is one of the essential characteristics of a 'constructivist' process of inquiry (Guba et al. 1989), and is a key factor when the aim is to identify the existence of conflicting interests and the power relations in which these are embedded. In other words, an interpretation – or construction – is an analysis that recognises and builds upon stakeholders' own experiences and perceptions of their social reality in order to "... *tease out the construction that various actors in a setting hold and, so far as possible, to bring them into conjunction – a joining – with one another and with whatever other information can be brought to bear on the issues involved*" (Guba et al. 1989:142).

Taking point of departure in the themes mentioned in BOX X, the aim of the stakeholder identification is to explore who has what access to the forest goods and services and what conflicts or disagreements take place over the access among the stakeholders. A crucial point, when analysing the data, is to recognise that natural resource management takes place at multiple and often overlapping levels that are defined by biophysical as well as social interdependencies.

After the interviewing phase was finished in the sites, the external 'constructions' or understandings of stakeholders, as perceived by the researchers, were presented to the people in the selected research sites in order to jointly revise and refine the identified

⁵ In several of the Ugandan sites selected for interviews, the circles were difficult to continue as tensions between the National Forest Authorities and the local inhabitants made people fear talking about uses of the forest (see below). In general, interviewing on sensitive topics such as posing question about intra-village conflicts over access, illegal entrance to the forest reserves required some creativity in the fieldwork process. The researchers tried to deal with that by guaranteeing anonymity to informants, use of feigned ignorance etc.

stakeholders and develop a shared 'construction' of who the stakeholders were and what their associated interests were.⁶

⁶ It should be emphasised that working with stakeholders at multiple levels but only identifying them in the selected research sites means that the identification of stakeholders not present in the research sites is only done through the descriptions and perceptions stated by the locally based informants.

3.0 Kasyoha-Kitomi Landscape, Uganda

Kasyoha-Kitomi Forest Reserve is located in western Uganda, and covers an area of 399 km² and is situated south of Lake George and the Kazinga Channel in the Albertine Rift. Kasyoha-Kitomi Forest Reserve and the surrounding rural landscape covers an area of approximately 1000 km². The forest lies within the counties of Bunyaruguru, Igara and Buhweju in the administrative districts of Bushenyi, Ibanda County in Mbarara and Kibale County in Kamwenge District. The Kasyoha-Kitomi landscape comprises 56 parishes of which 21 are bordering the forest reserve (National Forest Authority 1999; PEMA 2003).

The forest is a medium-altitude moist forest that contains a high number of endemic plants and animals. The altitude ranges from 975-2,136 metres above sea level. Most of the forest reserve is found along the valleys of the western ranges. The rainfall is bimodal with a quantity of 1250mm-1400mm per year. In addition to multiple ecological services and goods provided to the local inhabitants, the Kasyoha-Kitomi landscape has great importance for stakeholders at the regional, the national and the international levels. At regional and national level, the Kasyoha-Kitomi forest reserve being a key watershed provides ecological services for Lake George which has one of the most productive fishery in the country (PEMA 2003). Many thousands fishing families depend on this fishery resource. The Kasyoha-Kitomi landscape lies within the Albertine Rift eco-region characterised by a high number of endemic species. Recent assessments by international conservation agencies classify the eco-region as one of international importance in terms of global biodiversity values (National Forest Authority 1999; PEMA 2003).

In terms of ethnic composition, the landscape is dominated by Banyankole and Bakiga tribes; however, many other ethnic groups have immigrated to the area, especially the Banyarwanda, Bakonjo and Bafumbira. The villages adjacent to the forest are mainly occupied by immigrants. The area surrounding Kasyoha-Kitomi Forest Reserve is densely populated ranging from 150-200 persons/km². Approximately 150,000-200,000 persons reside in the Kasyoha-Kitomi landscape of which approximately 50,000 live in villages adjacent to the forest (PEMA 2003).

The high population densities, in-migration and the lack of fertile land cause a general trend of land shortage in Kasyoha-Kitomi landscape. Furthermore, the land shortage negatively affects the poorest inhabitants of the villages, as landownership of the areas with better fertility are mostly owned by the better-off. The land scarcity has not only left soils infertile but also increased the pressure on the forest reserve for fertile land and fuel wood. Currently, only small short shrubs and reeds are common outside the forest reserve. The majority of the bigger trees, that were used for both fuel wood and timber has been exploited.

The western side of the forest reserve, which includes Mwongyera and Butoha among other parishes, is adjacent to the Queen Elizabeth National Park and the Kyambula Game Reserve. The area acts as a biodiversity corridor connecting the national park with the Kasyoha-Kitomi Forest Reserve. Frequently animal movements along this corridor create incidents of crop raids in the local people's fields. Being a game corridor, the place often experiences exoduses of animals as they move either from the national park to the forest reserve or the reverse. Most inhabitants have taken the opportunity to hunt down the animals for the meat. This area is also adjacent to the western rift valley which is drier and flatter. The area also borders with the Kazinga channel which connects the two water bodies of Lake Albert and Lake George. The lakes function as the source of River Kyambula which traverses the whole forest reserve providing hydrological and socio-economic benefits to a great number of the inhabitants. The river also supplies water for irrigation. These prominent physical natural features have greatly dictated the livelihoods of most inhabitants of this section of the forest reserve. The major economic activities of most inhabitants include cultivation of cotton, brewing of the local brew – waragi, fishing and hunting. The flat nature

of the land and drier climatic conditions characteristic of the rift valley, has enabled a great number of households to cultivate cotton. The presence of many water bodies, including rivers and lakes, has enabled many inhabitants to survive on fishing as a source of livelihood.

The southern part of the forest reserve, which includes Bitooma and Ndangaro among other parishes, is hilly compared to the western side. The hilly nature and cooler climatic conditions have favoured the production of tea and the rearing of exotic cattle breeds. Cultivation is mainly done along the hill slopes, while the rocky and infertile hill tops are suitable for livestock production carried out by the better-off households. It is dominated with non-fresh crater lakes and therefore not ideal for fishing. The southern part of the reserve is characterized by high economic activity due to its proximity with the main road connecting Bushenyi town and Kasese town. The area is easily accessed and therefore many economic activities take place. Activities include small- and large-scale tea growing and processing. The urban centres (including Ndekye and Lutoto) provide markets for the forest products (timber, fuel wood and others). The road also demarcates the adjacent Kalinju Forest Reserve and Kasyoha-Kitomi Forest Reserve. Down south and also bordering the Kalinju Forest Reserve, is the large-scale Kyamuhunga Tea Estate. The tea estate has provided a market to a large number of tea-out growers throughout Bushenyi district. Rich land owners and the tea estate own large areas of land, having bought the poor off leaving them in small areas (e.g. the parishes Bitoma, Igara and Kitojo). The tea estate uses a lot of fuel wood to cure tea. However, evidence indicates that most of the fuel wood used by this factory is acquired from the adjacent Kalinju Forest Reserve (Maramagambo forest) where tree logging continues legally. In addition, the factory has also established private forests to supply the factory with fuel wood.

The eastern and south eastern parts (Rwanjere) and northern parts (Kanywambogo) are hilly and less accessible compared to the southern side. These areas are located far away from the major economic centres. Access to important social services is poor and households are generally poorer than those in the southern and western parts. Most households derive their livelihood from activities related to agricultural. The hilly nature of the terrain, especially in areas adjacent to the forest, constrains the farmers' access to the market as well as access to social services such as health and education. In areas in the south eastern part of landscape, including Rwajere, many households are engaged in tea growing for the Kayamuhunga Tea Estate.

Kasyoha-Kitomi is classified as a central forest reserve Table 2. The implementation of the forest legislation i.e. the regulation of local inhabitants' access to the forest has, however, been "relaxed" or even non-existent under the former management by the Forestry Department that showed poor ability in implementing and upholding the forest management and conservation. At national level forest degradation was happening at an alarming rate and institutional deficiencies within the forest department were considered to greatly contribute to this. A restructuring process was therefore initiated which led to the establishment of the National Forest Authority (NFA) in 2002. Some gazetted forests, among which were the Kasyoha-Kitomi forest, were retained and recoded as central forest reserves which the national forest authority was mandated to manage as economically viable assets and at the same time ensure their sustainable conservation. With the establishment of NFA, a radical change in the enforcement of legislation occurred. The management of the forest reserve changed from an "open access" situation to an almost complete ban of any legal access. The most important adjustment has been that forest activities in the forest reserves have, with the exception of a few goods in certain parts of the forest, been declared illegal. This has meant a halt to local inhabitants' access to goods and services that used to form part of their daily livelihood activities. As one informant described the change: "Before restrictions were also there but they were not as tough. We would enter the forest and do extract what ever we wanted. I would get firewood, poles for building my house. Others would collect materials for

making rope, do some hunting or cutting grass to thatch their house. Nowadays the forest officers are always nearby. They will hear the noise when people are cutting the big trees and then they will come and arrest you. They are able to see whoever that goes into the reserve". Extraction of forest resources continues today but at much slower pace. Different illegal practices take place in order for local villagers to bypass forest guards from NFA. In a few villages, some activities continue under some form of locally organised rights.

Table 2. Ugandan forest policy

<p>Ugandan forest policy</p> <p>In Uganda a new forest policy and a new forest act is due for approval by the parliament. The goal of the national forest policy is "an integrated forest sector that achieves sustainable increases in the economic, social and environmental benefits of forest and trees for all the people of Uganda especially the poor and vulnerable" (SOURCE). In central forest reserves, NFA will be responsible for the management. Particularly relevant in relation to Kasyoha-Kitomi Forest Reserve are the following policy statements: <i>a)</i> Collaborative partnerships with rural communities will be developed for the sustainable management of forests; <i>b)</i> Uganda's forest biodiversity will be conserved and managed in support of local and national socio-economic development and international obligations (source).</p> <p>Central to this new policy is the concept of Collaborative Forest Management (CFM) which is defined as follows: "Communities are genuinely involved in the management of the forest resources through a negotiated process in which rights, roles, responsibilities and returns for sustainable management of such forest resources are shared" (source). In the Uganda forest policy sharing of benefits and return to local communities are exemplified to include provisions to share the income derived from timber harvesting as well as rights to harvest fuel wood and non-timber forest products. The main characteristic of Ugandan forest policy is its emphasis on management and benefits rather than full devolution of authority to local communities (source). The CFM approach is comparable to the JFM approach of Tanzanian forest policy.</p>

3.1 Local stakeholders' interests in Kasyoha-Kitomi Forest Reserve

Based on the individual interviews a range of stakeholders were identified during fieldwork. The characteristics of the stakeholders, their previous and current use of goods and services from the forest reserve, are described in detail in the following. The interests of the poor among the local inhabitants are emphasised to the extent that these differ from those of the other local stakeholders.

3.1.1 Cultivation within the forest reserve

Before NFA declared most activities in the forest reserve illegal, a number of agricultural activities took place. In parishes researched (with the exception of Kicuzi), the Forestry Department had introduced the practice of tendering out the depleted areas within the reserve to individuals to plant trees. The arrangement is based on the idea that the open patches or grasslands within the forest cannot revert to forest if not done through a replanting. A central reason for cultivating within the forest reserve is the land scarcity. Accordingly, the majority of the local inhabitants entering into this kind of arrangement were landless or people owning little land - the poor local inhabitants. At the same time informants claim that soil fertility is high within the forest reserve, while continuously declining in their fields in the villages adjacent to the forest. In Rwanjere, for instance, the forest boundary was demarcated in 1989 and the local inhabitants were permitted to cultivate in the open patches. The individual who got the tender, normally non-local people, would then sublet to local inhabitants who are expected to look after the trees and intercrop for their own household. In

some areas the Forestry Department would provide the tree seedlings, mainly pine and eucalyptus. After about three to four seasons the farmers would be allocated other areas where the same procedure would be repeated. In some parishes the arrangement would only allow annual crops in order not to interfere with the growth of the replanted trees.

The replanting arrangements faced a number of problems, including nepotism pertaining to the award of the tenders and farmers uprooting the trees in order to extend the cropping period before being reallocated to new areas. One female participant in the replanting arrangements described the situation the following way: "The brother of the LC3 chairman was assigned the license and now he is renting it out to us, the local people. But we are paying money for renting the plots and at the same time we are to plant trees and have to look after them. They collect a lot of money from us. But on the other hand; right now the arrangement is very good because this is the only way we benefit from the reserve and get food from it". The fact that the local inhabitants did not have access to the use of the replanted trees has meant a lack of incentives to invest labour in replanting. In most parishes the tender arrangement has broken down, however, in Butoha and Munyoyi-Mwongyera parishes the arrangement continues.

Clearing of forest land for finger millet cultivation is another agricultural activity taking place in the reserve but this is not related to open patches. The finger millet production requires a clean and virgin seed bed. The agricultural land, is hard to prepare in many areas of the landscape outside the forest reserve, i.e. it needs to be prepared twice before planting, whereas the land in the forest reserve only need one tilling. Therefore slash and burn within the forest has been widely practiced. As explained by a farmer: "The land around the village is hard to dig and the land in the forest is soft. When you prepare the land you first come and dig there. Then you return and dig second time. But when you go to the forest you simply cut, burn and plant which is much easier. So to avoid all those processes, you would prefer going to the forest reserve".

Mostly the poor in need of agricultural land have been engaged in this activity. Yet, in the view of many informants, every farmer would be interested in cultivating the fertile land. In some parishes (Bitooma and Munyonyi Parish), the cultivation of finger millet has, according to the informants, created a high food security for households which opened up land in the forest reserve. The strict law enforcement carried out by NFA, means that currently only very few people continue the illegal clearing of land for growing finger millet in the forest reserve.

3.1.2 Stakes in wood forest products

A large number of uses are related to wood forest products. Before NFA came into power, legal and illegal *timber-logging* was widely practiced. At that time a licence to harvest timber was attainable. Timber harvesting is an expensive business and the cost of acquiring a license is unaffordable for most of the local inhabitants (about 1 million USh/561 USD). Only a few better-off people from within the parishes have had a license as well as the equipment required. This meant that stakeholders from outside the parishes, i.e. people from the district headquarters or outside the districts have acquired the majority of licenses and the timber mainly was sold in non-local markets. Still, local inhabitants used to get substantial income from the logging as people hired out their labour for activities such as logging and carrying timber to the roadsides in the hilly terrain. These activities have mostly been done by men and boys among whom many can be described as poor. The complete ban of logging by NFA and the decrease in the timber business have had negative impact on local inhabitants' income. Due to its good qualities, timber has traditionally been used as building material, for doors, windows and coffins as well as for containers for brewing which is an important activity in the local economy. The current complete ban of logging in the forest has caused a lack of timber, not least timber for coffins is claimed to be in short supply. A carpenter presented the situation the following way: "The problem is timber. We carpenters have lacked timber since the day that they stopped us from going there. No I use eucalyptus and

old stocks of good timber from the forest. I think the government should provide seedlings because we need other types of trees than the eucalyptus. We need mahogany, enkoba, enkaago and ensambya". Former timber harvesters claimed that highly demanded species e.g. *Mahogany*, *Gravelia* and *Makhamia* were already close to getting extinct before the restrictions on the access to the forest reserve were implemented.

The local inhabitants have followed a number of alternative strategies. E.g. carpenters and timber harvesters have shifted their activities to areas where licensed activities take place such as the adjacent Kalinju Forest. In some parishes people have substituted with eucalyptus trees. For instance the better-off among the local inhabitants in Bitooma Parish explained that they had turned to establishing private forests, but even these have not been adequate to satisfy the high demand for timber and fuel wood. The land scarcity in the landscape complicates the strategy as private forests have competed with land allocated for crop production. In addition, in some parishes the use of "alternative" timber from private lots is constrained by the fact that the parish council requires a permission if people intend to log their private trees and forests. Finally, it can also be a strategy to (continue) illegal logging. Some village councils have applied by-laws restricting people from entering the forest with any tool in order to stop the illegal harvesting that is currently taking place.

Besides from logging larger trees a sizable number of households collect *poles* used in the construction of houses. Also the collecting, making and selling of *walking sticks* is a common activity as this is a valued commodity used to prevent sliding in a terrain that is hilly and rough. The producers of these sticks insist that straight and hard sticks can only be found in the forest. This also applies to hand hoe handles.

Fuel wood collection is the activity within the forest reserve that most local inhabitants have had a stake in. Women collect fuel wood mostly for cooking. Male youths, often poor with few alternative income generating activities, derive an income from the sale of collected fuel wood. Access to fuel wood has decreased tremendously after the appearance of NFA and their. According to some local inhabitants interviewed, some families now spend nights without food because they have no firewood for the preparation of the food. The local authorities have responded in different ways to this new situation. In some of the places, for instance in Mwingyera Parish, the parish councils have relaxed the strong position taken by the NFA. By-laws have allowed villages to enter the forest legally for collecting fuel wood on one or two special days per week. However, not everybody was aware of the arrangements. In other parishes people have been completely prohibited from using the forest reserve for fuel wood collection. This has caused an increase in the pressure on the surrounding landscape as local inhabitants have sought alternative sources of fuel wood. In some villages people have turned to their own tree plots for fuel wood, but in most cases the amount has been too small to substitute the previous source from the forest. Households have then turned to the small available shrubs or, of necessity, turned to the use of banana fibres.

Waragi brewing (a local gin) is a major source of income for a great number of households in some parishes. Both men and women undertake this activity. The production involves distilling the raw materials (bananas) which demand a lot of water and firewood. It is most likely that the fuel wood used is gathered from the forest reserve. As one brewer explained: "You are asking me about the benefits from the forest; the most important thing is the firewood. Now it is not allowed to collect firewood but I used to go to the forest and collect when I should distill the waragi". Furthermore, waragi brewing has to be located next to a stream. The distillers have been blamed for disposing the residue in streams that have also happened to be sources of water for domestic use.

Burners of charcoal used to have a big stake in the forest reserve as it used to form a major source of income, especially for the male youth. In some areas people used to buy a license to cut and burn charcoal for a year. According to some charcoal burners, their activity has led

to the overuse of the best quality timber for charcoal production such as *omurama* and *murenje*. Despite the current restriction on the access to the forest reserve, illegal charcoal burning still exists. The burners normally do it at night when they cannot easily be detected. According to informants the production takes place at small scale for sale in the local trading centres. Accordingly, the distance to such a market is a determinant for the relevance of the activity. Also the private forests can provide charcoal burned from eucalyptus, although the amounts are said not to be sufficient.

3.1.3 Wild honey collection and honey production

The local inhabitants have traditionally spent time on wild honey collection which is considered as a good business if access to the market is there. Especially the youth have derived an income from this activity. Due to the strict regulation of access to the forest, this activity is now mostly done at night. The collection involves setting fire at the beehives to scare off the bees and then cut the tree to harvest the honey. Some people indicate that this causes damage as the trees die from the wounds and fire. Production of honey by putting up beehives is not very common in the surroundings of the forest reserve and was only found in Kanywambogo and Ndangaro parishes.

3.1.4 Collection of medicinal plants

Local medicine collection is perceived as an important forest activity in all the visited parishes. Traditional medicinal practitioners play an important role in the primary health care for the local inhabitants in the Kasyoha-Kitomi landscape. In the parishes which do not have a local health centre, the only access to treatment is to attend the local healers which base their treatment on medicinal plants from the forest reserve. The traditional medicinal practitioners harvest roots, leaves, climbers and tree barks in the forest reserve. Some traditional healers emphasised their specific interest in mature trees to produce a good powder for medicine. Elderly men and women largely dominate this stakeholder group. The women mostly process the medicinal plants while the men are the ones who enter the forest to look for the specific trees or plants. No cultivation of medicinal plants takes place and the traditional healers claim that the main source for collection of medicinal plants, of which some are very rare, is the forest reserve. Currently, no legal harvesting of medicinal plants takes place.

3.1.5 Hunting and fishing

Hunting and game trapping have traditionally been activities in the villages surrounding the forest reserve. Before the forest came under supervision by NFA, hunters would kill wild pigs, Uganda cobs, antelopes and monkeys. Hunters would burn the open grasslands in the dry season to prepare them for greener pasture in the next season. The greener pastures would then function as bait while hunting. Currently, no legal hunting takes place in the forest reserve. Yet, in Bitooma Parish people are not aware of the restrictions set-up. In some parishes the practice continues, as people insist that 'they cannot prevent us from entering the forest for hunting'. Hunting has a direct and indirect purpose. The direct is the provision of bush meat, although the baboons and other monkeys are perceived as inedible. In some cases a market for bush meat has existed. As one hunter explained: "I used to go to the forest to hunt pigs and antelopes and often I would get a good income from selling the meat". Indirectly, the hunters have played a central role as controllers of problem animals. People fear that the current restriction on hunting has meant that crop-raiding by wild animals in fields adjacent to the forest will increase. Rough estimations made by informants are that fields adjacent to the forest must be guarded at least seven hours a day. Due to the pressure on the forest reserve it is a widespread belief that the animals have been driven deeper into the forest the last ten years. Hunters are mainly young males and at times aged men.

Fishing traditionally has been a resource of great importance among the villages. While fishing is currently not allowed in the forest reserve it continues within and at the border of the reserve as well as in the wider landscape.

3.1.6 Grazing cattle in the forest reserve

Before the restrictions on the access to the forest reserve were introduced, livestock owners would send their cattle and goats to graze at the boundary of the forest and within the reserve. When the above mentioned tender arrangement was introduced the livestock owners' interests were conflicting with those of the local inhabitants cultivating the depleted areas. As told by a livestock owner: "We used to go to the forest reserve to graze our cattle. We set fire to prepare the land for pasture in the coming season. The open patches were also of interest for the poor who wanted to cultivate there. So there has been competition". Another livestock owner explained that when they were restricted from grazing there, some livestock owners had to sell their cattle or use some of their agricultural land for pasture. Currently, livestock owners do not see any possible solution to these conflicting interests. On their side, the people cultivating in the open patches found that livestock owners were unhappy about not having access but that they had to accept the situation.

Grazing livestock in the forest reserve is an activity that has mainly been done by the better-off or less poor people in the villages, as they are the owners of cattle and goats, whereas the poor do not have such possessions (PEMA 2005).⁷ Within the household it is mostly boys and men that graze cattle, however, women and girls at times help with smaller animals such as goats and sheep.

3.1.7 Materials for weaving and thatch

The open grasslands in the forest harbour very good thatching grass. Many households have depended on this grass for thatching their houses. Especially the poor roof their houses with banana leaves and thatch as they cannot afford to buy iron sheets (PEMA 2005). As fishing and tea growing are some of the major income generating activities for some of the areas in the landscape, weaving baskets and fish traps is a central activity. Weaving materials are to a large extent harvested within the forest reserve. The customers of these baskets are also to a great extent people from neighbouring trading centres. Accordingly, basket making for fishing and harvesting forms a central contribution to people's livelihood. In some villages, for instance Mwongyera parish, rough estimates indicate that 10% of the local inhabitants are involved in this activity. Mostly elderly and young men go to the forest to look for the weaving and thatching materials. Largely women weave the mats and baskets, but men take part in the making of fishing traps. Also mats and ropes are produced for home consumption and local markets.

3.1.8 Ecological services from the forest ecosystem

Besides the goods provided by the forest, stakeholders benefit from diverse services produced by the ecosystem. The following listing of ecological services indicates the biophysical processes that the local inhabitants consider as benefits from the forest reserve. The forest ecosystem provides ecological services in the form of water quantity and quality. The local inhabitants fetch water from the nearby streams. It is claimed that these streams have started drying up in the dry season the recent years. As an aquatic habitat the streams and rivers form the habitat for fish which is a central source of income and food opportunity. At the western side of the forest reserve irrigation of fields is made from water bodies coming from the watershed. Among other important ecological services provided by the forest ecosystem, the local inhabitants mention climate regulation and rain formation. It is a widespread belief that the local climate has become drier and more unstable the past decade due to the destruction of the forest. Local inhabitants, especially among the elders, mentioned their appreciation of the forest reserve as a provider of cultural and religious services.

⁷ The better-off will often have more than five cattle and the less poor will one to five cattle.

3.2 Summing up

The pressure on the forest reserve results from inter-related demographic and socio-economic processes that influence patterns of resource use and determine (and change) local inhabitants' interests in and use of the forest (and the surrounding landscape). While no simple causal explanations between expanding human population, degradation, and overexploitation should be made, a number of demographic and socio-economic characteristics may form central parts of the underlying causes. These are: Land shortage, due to declining soil fertility and increasing population density; a long distance to markets and poor roads; few alternative employment opportunities apart from agriculture, and mistrust to the local leadership and elite within the villages.

A number of interdependencies can be identified in relation to the forest reserve:

The open patches within the forest reserve are contested between the people who have an interest in grazing the livestock and the wealthy and local and non-local people to whom the Forestry Department had tendered out the tree planting. Currently, both types of activities have "broken down" due to the current restriction on the use of the forest reserve.

The traditional medicinal practitioners, charcoal burners and timber harvesters are all looking for the mature tree, which they use for good powder for medicine, for quality tree for charcoal making or building material. This well recognised problem was widely perceived as related to the decreasing amount of quality timber as well as the increasing number of users. While these stakeholders conflict over the same resource they all agree that they conflict with those interests groups that creates fire in the forest reserve. The clearing of forest land for finger millet cultivation is claimed to destroy not yet germinated tree seeds and some mature trees. Also hunters, that burn areas to scare up the wild animals and bushfires caused by people grazing their animals, are claimed to be a major threat to medicinal practitioners, charcoal burners and timber harvesters.

As the streams and rivers provide water for the majority of the local inhabitants, the contamination of the water by the Waragi brewers is a source for local conflicts.

The following interdependencies can be identified in the broader landscape:

Within the landscape and related to the denial of access rights to the forest reserve, the establishment of more private forests has meant an increasing competition with farmers who need agricultural land. This interdependency is mostly a conflict between the better-off/less poor and the poor who are either landless or cultivate on the least fertile land.

Finally, the users of the forest, that are currently "labelled" as illegal according to state law, conflict with the forest authorities from NFA that are implementing the current policy.

Among the poor people in the Kasyoha-Kitomi landscape the following activities stand out as the most important stakes in the forest reserve:

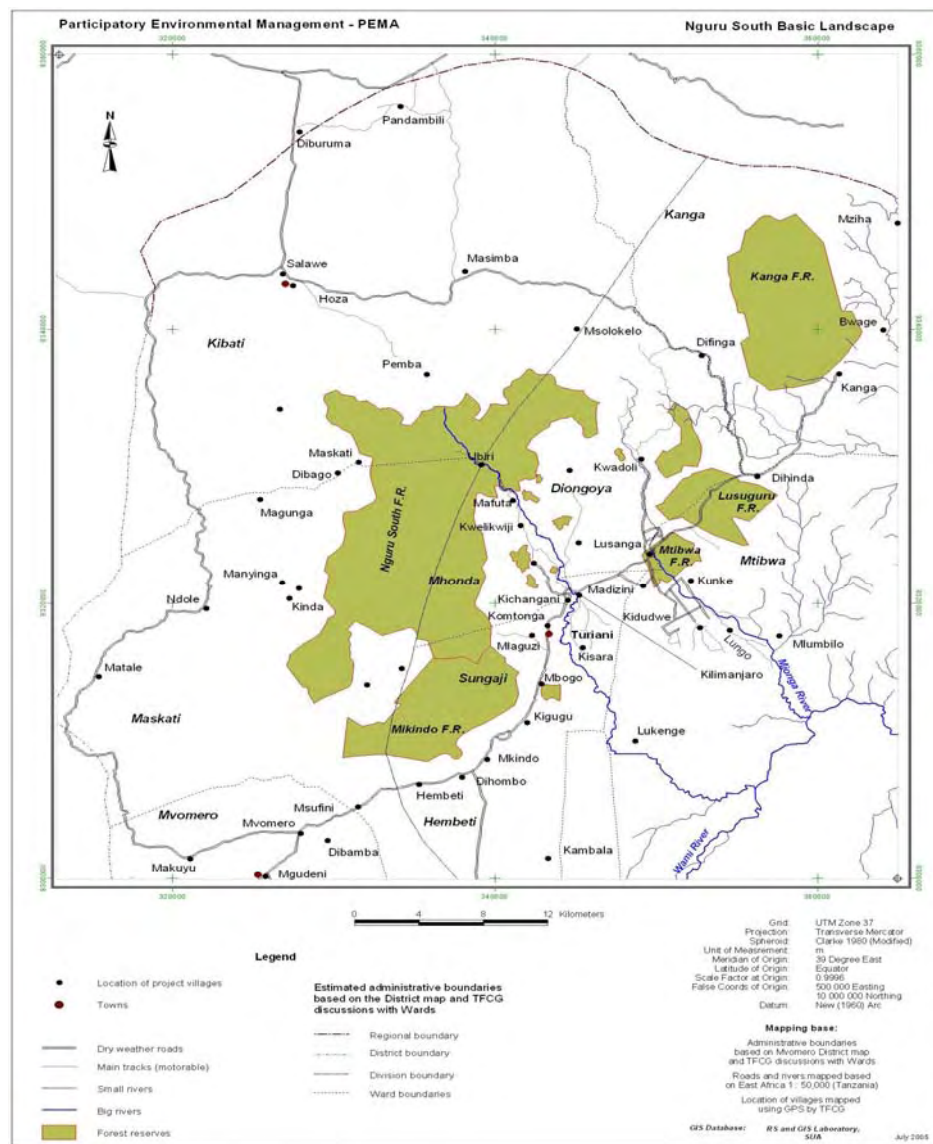
It is difficult to get arable land in many parts of the Kasyoha-Kitomi forest landscape if you are poor. It has been a widespread practice to access agricultural land through cultivation in the forest reserve. One of the options has been to engage in the tender arrangements aiming at (re-)planting the open patches within the reserve with trees. Although a number of problems have affected the possible benefits from intercropping it has been one of the few options available. Another way to access land has been to clear forest land for finger millet cultivation. The fertile land has provided a high food security for people involved in this activity. Although everybody was aware that the activity was illegal according to forest legislation, no authorities at any level have posed any sanctions on people clearing land in the forest. The cost of the current closure of the forest reserve, in terms of lack of land for agricultural land, has to a great extent fallen on the poor.

The extraction of any kind of wood forest products from the reserve has caused short supplies of fuel wood, timber, building poles, walking sticks etc. Supplies of timber for construction, coffins etc. is a need for everyone in the villages, yet for the poor the situation has been more severe. The poor do not possess such things as land, technology or capital that can make them able to follow alternative strategies.

Activities such as logging and carrying of timber, hunting and collecting of weaving materials are especially related to the male youth. While young men cannot be described as a common group of poor people, they can be characterised as being at a stage in their life where they momentarily face poverty before they are provided with (or buy) agricultural land. Therefore the mentioned activities seem to form a central part livelihood at a stage in people's life where few other activities are possible.

See Table 4 in section five for a summary of the ecological goods and services provided by the forest to the local inhabitants in Kasyoha-Kitomi Landscape.

4.0 South Nguru Landscape, Tanzania



The South Nguru landscape (approximately 1700 km²), located in the South Nguru Mountains, comprises the Nguru South Forest Reserve (18729 ha), Mkindo Forest Reserve (9086 ha), the Kanga Forest Reserve (6664 ha) and the Lusuguru Forest Reserve (1169 ha) at an altitude of 760 to 2,300 metres above sea level. Located in the Mvomero district, Morogoro region, the landscape comprises 56 villages in nine wards. The South Nguru Landscape is inhabited by approximately 60,000 people of whom 20,000 are estimated to live in villages adjacent to the forest. Population density is 75-125 people per km² (PEMA 2003). In terms of ethnic composition, the South Nguru Landscape is inhabited by the ethnic groups of Wanguu and Wakaguru whom are native inhabitants in the area and the Wazigua, Wamaasai, Waluguru, Wachagga, Wapare, Wabena, Wasukuma, Wakinga and Wahehe, Wanguni, and Wanyakyusa whom are more recent in-migrants.

The forest reserves cover 11 vegetation types which include lowland rainforest, dry semi-evergreen forest, miombo woodland, submontane rainforest, evergreen montane rainforest, mossy montane rainforest, montane rainforest, mesic montane evergreen forest, elfin forests and ericaceous heaths, bamboo forests and thickets and edaphic communities (Monela 1995). Being part of the Eastern Arc eco-region, the South Nguru landscape provides ecological goods and services to stakeholders from local to international level. As part of one of the largest and richest intact rainforest areas of the Eastern Arc with high levels of plant and animal endemism, the landscape is part of an eco-region identified as a biodiversity hotspot, i.e. an area featuring an exceptional concentration of endemic species and experiencing an exceptional loss of habitat (Myers et al. 2000:853). At local level, the forest reserves provide ecological services and goods in terms of timber and non-timber products, agricultural land and water resources. Vegetation types within the forest reserves range from lowland rainforest to submontane and montane rainforests. Rainfall is bimodal with a quantity of 1200-4000 mm on the eastern and south eastern side while the western and north western part is slightly drier with 800-2100 mm per year (PEMA 2003).

At regional level the water catchment of the South Nguru Mountains supplies the largest sugar cane plantation in Tanzania in addition to a number of towns within the region (PEMA 2003). Wami River is the outlet for the water from the Nguru Mountains. The Wami River on the way to the Indian Ocean provides villages with water and is an aquatic habitat for fish. The importance of the Wami River as a water source is increasing as a project develop a piped water supply to Chalinze township and environs at some 110 km from Dar Es Salaam with a longstanding water shortage problem. A local irrigation project was initiated in 1982, using water from the Mkindo River that originates in the Nguru South Forest Reserve. Other streams flowing from the mountain include the Mvaji that supplies piped water for domestic use in Turiani town and Mhonda village.

The pressure on the forest reserves should be understood in relation to a number of factors: The increasing population in most of the areas in the landscape causes an increasing pressure on agricultural land, declining soil fertility and expansion of the agricultural frontier into the forest reserve, the Miombo woodland, the traditional woodlots and clan forest. At the same time the usability of land for farming drops quickly as one moves away from the mountainous areas. The relative aridity of the surrounding landscape (especially on the western and north western sides) limits the population movements in the landscape. Lack of alternatives for deriving a livelihood means that people rely on agricultural activities and extraction from the forest reserve. At the same time non-local stakeholders have had and continue to have great interests in timber and other commodities that they extract, process and distribute to markets outside the South Nguru landscape. Poor village governance and law enforcement by the forest authorities and to a certain extent the involvement of local and central authorities in the illegal activities characterises the management of the forest goods. In sum, a number of activities cause the degradation of the forest reserve: These are: the population growth and its associated activities such as conversion to agricultural land, settlement, logging, collection of non-timber products, bush fires etc. These are the main causes but are embedded in various activities and dynamics within the landscape. According to forest disturbance estimations agricultural encroachment is the most significant threat to the forest followed by logging and cutting of poles (PEMA 2005b).

Livelihoods are centred on agriculture. The main agricultural activities taking place in the landscape are production of sorghum, maize, sweet potato, cassava, yam, sugar and rice. On the western side of the Nguru South and Mkindo forest reserves beans and maize are staple crops that are traded in the main trading centre of the landscape (Turiani area) on the eastern side. On the eastern/south eastern side, the Mkindo River, a stream from the catchment, provides irrigation for bi-annual rice paddy cultivation. Sugarcane is extensively cultivated in the areas around the Mtibwa Sugar Factory located on the eastern side of the forest reserve. In areas adjacent to the forest reserve, mainly on the eastern side, and within

the reserves banana, coffee, yam and cardamom are the main agricultural activities. This part of the landscape on the edge of the Nguru Mountains is densely populated and functions as providers of agricultural products for the areas of the trading centre and for the larger towns in the region.

The southern, western and north western sides of the forest landscape are characterised by poor accessibility, isolation from markets and poor basic social facilities. Due to these conditions, a low level of extraction and trade with forest products takes place compared to the eastern side. The population in this area has low levels of well-being as compared to the eastern side.

The eastern side of the landscape is characterised by accessible roads, markets and is the trading centre within the landscape. The main activity that attracts people to that area is the Mtibwa Sugar Factory which provides labour opportunities in the processing of sugarcane in addition to growing sugar cane. Besides from the fact that the sugarcane production relies on water sources from Nguru Forest Reserve, the production has had a significant impact on the South Nguru landscape in a number of ways. An increasing number of local inhabitants turn to smallholder sugarcane production as a preferable income-generating activity. As an indicator of the positive economic influence from the cane production an increasing number of houses are constructed with burned bricks instead of the cheaper mud constructed houses. As firewood is needed for the brick production the demand has increased dramatically. This has caused the depletion of the remaining trees in the area of which mango trees are currently cut down. Furthermore, the Mtibwa Sugar Factory uses a substantial amount of fuel wood for starting up the boilers in the processing of sugar cane, of which some are suspected to be extracted from the forest reserve. In woodlands on the western side of the forest reserve, trees have already been exhausted and the situation of fuel wood and timber may create local conflicts in the future. The increasing population and the interest in sugarcane cultivation create a growing demand for agricultural land. In the longer term this could create an increasing pressure on agricultural land in the core conservation area. In one case (Mjonga River) the growing of sugarcane has made the Mtibwa Sugar Company to divert the river in order to increase sugar production. This has caused a forced relocation of a sub-village and increased pressure on Miombo woodland.

Other dynamics in the landscape are the diversity of tribes in the landscape. Due to the high level of unemployment that was caused by the privatisation policy of the company, many workers who were initially attracted to the Mtibwa Sugar Company have now turned to other activities, notably pit sawing. A number of villages have now absorbed these migrants adding to the pressure on the agricultural land. In some areas close to the Mtibwa Sugar Company land has been claimed as the company's property and pushed villagers to Miombo woodland in other areas of the landscape. At the same time the declaration of the Wami Mbiki game reserve has pushed people away from the south eastern edge of the landscape.

Currently, legal activities in the forest reserves are limited to the extraction of sambu oil seeds and the use of the path that goes from the western side of the Nguru South Forest reserve (Maskati village) to the eastern side (Ubiri village). Apart from the sambu oil seed extraction, no joint forest management agreements have been established between Forestry and Beekeeping Division (FBD) and villages (see Table 3 for a description of the forest legislation). The control of the resource use in the forest reserves carried out by FBD, village authorities and the village environmental committees (VEC) can be characterised as "relaxed". A kind of "open access" situation occurs relating to most forest goods in the majority of the villages adjacent to the forest reserve. A local inhabitant explained the "open access" situation as "Nguru is open for everyone but sometimes you have to pay somebody if you want to enter". Especially in the south eastern, western and north eastern part of the landscape local inhabitants are accustomed to a very limited vigilance by FBD who are exercising control every second or third year. This should also be understood in relation to

the increasing inspection by FBD in Dunduma Forest Reserve and the Mtibwa Teak Plantation which, according to local pit-sawyers, make illegal extraction of timber and other forest goods more difficult in these forests. Hence Nguru South Forest Reserve, Mkindo Forest Reserve and Kanga Forest Reserve become more preferred places for illegal extraction.

4.1 Local stakeholders' interests in the forest reserves in the South Nguru Landscape

Table 3. Forest legislation in Tanzania

Forest legislation in Tanzania

The central forest reserves in the South Nguru Landscape are under the jurisdiction of the Forestry and Beekeeping Division (FBD). With the passing of the National Forest Policy of 1998 and the New Forest Act of 2002 a process of devolution of aspects of the management over the forest resources was initiated. The overall goal for the forest sector is "to enhance the contribution of the forest sector to the sustainable development of Tanzania, and the conservation and management of her natural resources for the benefit of present and future generations" (RoU 2002). Through the national forest policy and legislation a new framework for forest management in Tanzania has been created which emphasises "Joint Forest Management" (JFM) and "Community-based Forest Management" (CBFM) (Wily and Dewees 2001). JFM is defined as "involvement of local communities or non-governmental organisations in the management and conservation of forests and forest lands with appropriate user rights as incentives" (RoU 2002) and is the approach being promoted for centrally managed forest reserves. JFM has not yet been introduced in the South Nguru landscape.

The following interests connected to the forest reserves were identified by the local inhabitants in the six site researched:

4.1.1 Cultivation within the forest reserve

Cultivation within the forest reserves is an important activity among the local inhabitants. Especially cardamom, cocoa, coffee, plantain and yam are grown in villages adjacent to the forest reserve. Ubiri village constitutes a centre of cardamom production in the landscape with large areas of under-wood under cultivation.⁸ Cardamom growers complained that no other options than illegally clearing for cardamom growing would derive a reasonable income. While cardamom cultivation mainly takes place on the eastern side of the forest reserve, the crop is slowly being introduced on the western and north western side as the word spread that no sanctions are made against people opening up the forest for cultivation. Cardamom provides an important income-generating activity and is sold to markets in Zanzibar, Dar es Salaam and other centres at prices between 1000 and 2000 TSh/ 0.9 and 1.8 USD.

Villages on the eastern side of the landscape provide agricultural products for the trading centre. Informants mention that it is a normal practice that people from villages distant from the mountain and the Nguru South and Mkindo forest reserves will go there to buy food in the hunger period and during the Ramadan holy month. The fact that the central government does not provide food to the eastern and southern side of the landscape in times of famine is underscores the food production in the areas adjacent to the forest. This production, especially of yam and plantain takes place outside and inside the forest reserve.

⁸ Cardamom requires partial shade and cool temperatures and for these reasons farmers utilise montane forest for its cultivation.

In some villages adjacent to the forest it is a common practice for those who have farms bordering the reserves to extend their farm inside the forest reserve. This is done by moving the cement beacons that demarcate the forest reserves some meters further into the forest in order to enlarge their fields. Others who do not have this opportunity clear the land within the forest, which provides them with fertile soil. A side effect of this practice is uncontrolled fires. In some areas (e.g. Maskati) it was found that the village authorities do not prohibit people from cultivating inside the reserve. In some cases they benefit themselves in the form of a “permit” fee.

4.1.2 *Grazing livestock in the forest reserves*

Wamaasai pastoralists using grazing areas within the South Nguru landscape. The Wamaasai graze in the wider landscape, at the forest boundary and sometimes within the forest reserves. The grazing patterns sometimes conflict with the interests of the local farmers.

4.1.3 *Stakes in wood forest products*

Extraction of wood forest products is not legal in Kanga, South Nguru or Mkindo Forest Reserves. Still, a large number of uses are related to wood forest products from the forest reserve. Illegal *timber-logging* is widely practiced but the distance from the forest reserves influences the activity of the local inhabitants in the commodity chain or trajectory related to timber. Timber from the forest reserves is considered as quality timber compared with the locally grown eucalyptus and is therefore preferred for use in the construction of houses and for furniture. Another part is meant for sale outside the villages in central markets. A number of tree species are mostly found in Nguru South Forest Reserve and cannot be found in other areas within the landscape. According to pit-sawyers and carpenters these species with special qualities are *Mninga*, *Mkomba* and *Mkangazi*. On the eastern side of the forest reserve, pit sawyers are mainly in-migrants, Wahehe, Wakinga and Wabena ethnic groups and some local inhabitants who possess the skills and assets needed for the logging. If pit sawyers do not possess the required capital or assets (e.g. chain saws), timber dealers from the Turiani centre, Morogoro or Dar Es Salaam will meet the costs, including money, for paying in negotiations with local leaders and other related “gate” costs. They will also pay for the replacement of confiscated equipments. On the western/north-western side of the forest reserve, the extraction of timber takes place at a lower rate due to the lack of accessible roads although the extraction is currently increasing. On that side of the reserve, pit sawyers are local inhabitants as well as Wachagga and Wazigua ethnic groups entering from other areas.

A common practice among local inhabitants in need of timber is to go to the forest boundary and buy two to five pieces of timber from the pit sawyers and carry them to the village on foot. If no timber is available, agreements will be made and the timber will be collected later on. A carpenter explained that it was difficult to buy timber in the village. One had to send a message to the forest and the loggers would send somebody to your house and arrange the number of unstamped pieces. He added that legal timber with official stamp was too expensive to buy compared to the market for black timber. Another practice is to go straight to the village authorities, and get a permit (in the form of minutes) to buy or extract a certain amount. This practice is illegal as regards timber from within the reserve, but is a practice used for extraction from village land. Accordingly, *de facto*, village leaders in villages adjacent to the forest reserves control and give permission to enter and extract from the forest reserve.

Another common practice is to buy the “permit” if you are caught. If the amount is little (less than 5 pieces) you can “negotiate” on the spot. Apparently forest officers as well as village authorities (who have no legal role in the vigilance of the reserve) are involved in these “negotiations”. Local authorities mostly use their authority to control ‘when they are hungry’.

In Kanga F.R. this has created incidences of conflicts between the police and the mandated authorities, the forest officers.

The better-off inhabitants employ pit sawyers and arrange with village government in the villages adjacent to the forest for timber extraction. These traders also maintain timber stocks in their houses.

In Pemba, two practices for extracting timber were identified. One practice is that timber dealers will bring a permit from the district council and the village authorities will decide if the required amount of trees can be identified. Another practice is how a local carpenter makes an application for a certain amount of timber in the village and a local committee will decide on the application. Although the permit is for extraction in the Miombo woodlands, *de facto*, it applies for both Miombo woodlands and Nguru South Forest Reserve.

Young men in villages adjacent to the forest are employed as carriers of timber from the core conservation area. They normally use bicycles up to the point where it fits and otherwise carry it on their shoulders and heads. The timber is deposited at trader's houses and is ready for selling within and outside the village. A young man will be paid up to 5,000 TSh/4 USD for carrying the timber to villages at the main road on the eastern side. As the job as timber carrier is a physically hard job it is seen as a last option among the young men. In one site (Mkindo Village) the Village Environmental Committee (VEC) has been patrolling and managed to confiscate some timber and working equipment.⁹ As a member of a VEC explained: "We patrol the boundary of the reserve as required but we often get a lot of problems because of the pit sawyers. Sometimes the pit sawyers threaten us so that we have to withdraw. In these cases the only thing we can do is to report the case to the police. Other times we confiscate the timber. Then we can use it for projects in the village like school desks and building materials".¹⁰

In the majority of households, *fuel wood* is the central source of fuel energy. Fuel wood is mainly collected by women in the farmland, traditional woodlots and Miombo woodlands. Informants in the different parts of the landscape repeatedly mentioned fuel wood as a natural resource in great scarcity. The exception was Ubiri located within the Nguru South Forest Reserve. Women living in villages adjacent to the forest would often collect fuel wood in the forest reserves when distance to other sources of fuel wood become too long. In some villages, the village authorities issue a permit for fuel wood collection in the miombo woodlands. Also smaller markets for local sale can be identified. This activity is mainly done by young men. Another stakeholder group is the brewers of local alcohol as the production process requires a lot of fire wood. Also burners of *charcoal* engage a number of local inhabitants in the villages as a source of income (a sack of charcoal is about 2000 TSh/1.8 USD). Where this takes place in villages adjacent to the forest reserve, the wood is partly collected from within the forest reserve.

The increasing pressure on Miombo woodlands and public forests in the landscape has meant that collection of *poles* to an increasing extent takes place within the forest reserve. As a farmer explained with reference to the sources of poles: "If you see a long and straight pole as part of the house it is from South Nguru Forest Reserve, as they are no longer available in Miombo woodland. When I was building my house a few years ago, I bought one for 60 shillings; I bought 100 pieces for 6000 shillings but now you can buy one for 500-700

⁹ A VEC is among the standing committees formed at village level.

¹⁰ An example from the records of the VEC in Mkindo showed that between April and May 2004 4 cases of confiscation took place. The number of pieces was between 18 and 58. However, that VECs - without a JFM agreement - confiscate timber and tools does not comply with the forest legislation.

or even 1200 if it is a bigger one". Often young boys derive an income from collection of poles, walking sticks and handles for hoes within the forest reserve. For instance in Mkindo village pole collection employs a minimum of ten youth. The poles are traded locally at a range of 50-200 TSh/0.04-0.16\$. Lack of money to invest in brick housing is a decisive factor for using grasses and poles for house construction. While many poles are coming from Miombo woodland where available, some types are only found in Nguru South Forest Reserve. A general perception among the informants is that the pressure on Miombo woodland and the related scarcity on building poles cause an increased pressure on the forest reserve.

4.1.4 Collection of plants

The most important collection of plants in the forest reserves is the extraction of sambu oil seed collected from *allanblachia stulimanii* and the wild black pepper (*piper capansi*). These can only be found in the forest reserve. This study found that the collection of oil seeds provides local inhabitants with not only a source of cooking oil for their households but is also a source of income. In various villages (e.g. Pemba, Mafuta, Kwadoli, Ubiri and Mhonda) groups of sambu farmers have been formed. These groups have sold sambu oil seeds to an international company through an NGO initiated project. The majority of the participants are poor farmers. According to informants, there exist no restrictions regarding the collection of sambu oil seeds within the forest reserve.

The wild black pepper is used for medicine and as a spice. As for the sambu oil seeds, local informants claim that no restriction or need of permit is necessary for entering the activity. The black pepper is famous in towns like Zanzibar, Tanga, Dodoma and Arusha, especially during the holy month of Ramadan. For instance Arabic and other traders will come to Pemba village to buy the commodity and also local inhabitants will bring the pepper to markets for sale. For instance in Pemba village in 2004, it was estimated that fifty people were engaged in the pepper business during its season. The pepper is collected by mixed groups of youth, women and men.

Bamboo is another important plant collected from the reserve. It is harvested at higher altitudes within the western part of the forest reserve. With their qualities as light building material they are used for specific purposes in the construction of houses. Mushrooms are collected in small amounts by the local inhabitants. Medicinal plants are collected to a limited extent by traditional medicinal practitioners. These activities are clearly related to location, and only a few people living further away from the reserves would go there to collect the plant material. Tree species for medicinal purposes include *mkwizingwi*, *mviru*, *mdaha*, *mwesele* and *mkumba*.

4.1.5 Honey production

Local honey production is not a widespread activity in South Nguru Landscape. At the boundary of the Nguru South Forest Reserve and Mkindo Forest Reserve a small number of honey producers were identified in some of the sites visited.

4.1.6 Hunting

Hunting does not seem to be widespread any longer in the forest reserves. Some informants ascribe this to hunting in the previous decades which have driven the animals deeper into the forests. This statement was supported by informants living adjacent to the forests that claimed from people that they were not suffering from crop raiding animals. A single case of commercial bird trapping (*Kulukulu* bird) was identified. Birds are sold to an agent in the Dumial area for trade in Dar Es Salaam. It is not clear at what level and intensity the bird hunting takes place. The forest gate price is 2000 TSh/1.6\$ per bird.

4.1.7 Materials for weaving and thatch

Local inhabitants rely on ropes made from climbers and bark fibre collected in the forest reserves as tying material for house construction. In villages distant to the forest reserves traditional tying materials can also be collected in nearby forests or woodlands, whereas the better-off villagers can substitute with more expensive sisal rope. Some local inhabitants still prefer the natural ropes as they are said to be stronger. In the process of extracting coconut juice (tembo) only natural ropes can be used to hold the container in the coconut tree as sisal rope does not tolerate change in the weather.

4.1.8 Ecological services from the forest reserve

Throughout the landscape, local inhabitants rely on the *water sources* proceeding through the rivers. Activities include brick making in river bank areas, providing drinking water (the majority of households in the landscape). In some areas, especially around Mkindo, irrigation schemes make it possible to cultivate twice a year (including widespread paddy cultivation). The sugar-cane growing part of the landscape is another area benefiting from irrigation.

Sacred forest and places are used in traditional rituals such as prayers and rainmaking performed by certain clans among the Wanguu. The rituals are performed in traditional forests and clan forests, although the tradition seems to be eroding.

In villages on the western side of the landscape characterised by a lack of access to markets and poor roads, the *path* going through the South Nguru Forest reserve forms a vital connection to access central markets (Ubiri and Turiani areas). For instance, the bean and maize production in Maskati form a central income generating activity that can be traded by accessing the path to Ubiri and Turiani areas.

Other ecological services mentioned by the informants are climate regulation and rainfall.

4.2 Summing up

In the Nguru South Forest reserve the following inter-related demographic and socio-economic processes influence the patterns of resource use and pressure on the forest. The low prices and poor market access for products in many part of the South Nguru landscape; the increasing population, especially in the areas of sugarcane farm expansion; few alternative employment opportunities apart from agriculture; poverty, that in some areas especially on the south western, western and north western sides, is estimated to cause hunger in up to 50% of the households and; unequal power relations between the better-off among the local inhabitants and the village authorities as compared to the poor. This study found a number of interdependencies among stakeholders in relation to the use of goods and services from the forest reserves as well as natural resource management in the broader landscape. Informants were explicitly aware of such dynamics, processes and interdependencies present in the landscape in relation to the use and management of natural resources. Interdependencies identified in relation to the forest reserve:

Timber from the forest reserves has become unavailable or difficult to access due to the increasing control (especially on the eastern side), declining amounts and lack of alternative sources of (quality) timber. Carpenters drew attention to a number of interdependencies where other stakeholders' decisions and activities influence negatively on their stake in the forest reserve. As their interest is timber, their concerns are associated with the sustainable management of the forest reserves and the conservation of hardwood timber species therein. The carpenters express their dissatisfaction with the hunters and agriculturalists as these stakeholders create fires when clearing the land for cultivation or burn open patches in order to access wild animal. As forest fires often get out of control, large areas with valuable timber are lost. This ultimately destroys their source of livelihood. Their dissatisfaction also aims at the village governments in villages adjacent to the forest reserve, as authorities are not

managing the forest in a sustainable manner. Furthermore, the carpenters find that accessing (illegal) timber takes place in competition with the timber dealers from towns in the region whom are said to be more powerful and better organised. Hence, non-local timber dealers are accused of having created scarcity in the local markets.

Traditional healers blame the pit sawyers for cutting trees that host essential herbs for their profession.

In the surroundings of the Ubiri village and sub-villages where cardamom is extensively grown, the wild pepper collectors blame cardamom cultivators for cutting down the under-wood including the wild pepper trees.

The cardamom growers on their side believe that the local authorities and the forest officers should be hold responsible for restricting their access to (more) land in the forest reserves (and at the forest boundary). This hinders them from responding to the increasing demand for their product in the towns.

The VECs accuse local inhabitants for obstructing their boundary control and thereby preventing them from confiscating timber and assets used for illegal timber extraction. In general, the VECs complain about the lack of support to their patrolling at the boundary of the reserve. Some local inhabitants indicate that any authority hindering their access to the forest reserves causes hunger in their households. All in all a great mistrust exists regarding the environmental governance exists. Some of the underlying causes are: Under-resourced forestry authorities and lack of effective institutional mechanisms to deal with the trade and extraction of timber have created tensions between VEC, the police and NFA as these compete for controlling the illegal timber business.

Interdependencies identified in the broader landscape are:

Herb collectors, hoe handle makers, and weavers all blame farmers for being responsible for increased distance to areas for collection of materials because of the fact that increasing areas of land have been cleared for agricultural activities.

Women collecting fuel wood in the landscape complain that local brew makers use up the fuel wood. In the eastern sugar-growing area, fuel wood has become unavailable or expensive due to the cutting down of trees in Miombo woodlands and in the fields of the agriculturalists as these are converted to sugarcane production. This has caused fuel wood to increase in prices from 500 TSh/0.4 USD to 3000 TSh/2.7 USD per bundle in the recent years. In addition, women complain that Mtibwa Sugar Factory has caused a scarcity in water (especially in relation to the deviating of the Kjongga River).

Women cutting grasses for thatching within Miombo woodlands claim that these grasses have become scarce as cultivation increases, but also hunters that burn to catch animals are mentioned.

Performers of religious rituals claim that young men destroy sacred forests, clan forests and sacred places within the forest reserves as they open up new land for agricultural actives.

Agriculturalists claim that pastoralists compete with them over water resources.

From the perspective of the poor among the stakeholders, some activities are of particular importance:

In many parts of the landscape it is difficult to acquire farming land, especially if you are poor. Therefore poor people, including young men that have not yet bought or inherited land, clear land in the forest reserves.

If you are poor it is impossible to enter into the timber-logging business yourself as you will not have the capital necessary for "buying your way through". Yet, the poor benefit from

labouring for others in logging and transport activities and these income-generating activities are some of the only options they have.

In many parts of the South Nguru landscape, fuel wood is in scarcity. If you do not have trees on your land, if you are landless, or if you do not have money to buy fuel wood you might face great difficulties to obtain sufficient quantities of fuel wood. This means that if you are poor and live in villages adjacent to the forest reserve, your only option might be to collect wood within the forest reserve. The collection of fuel wood, walking sticks, and building poles for sale may be a central income-generating activity for young (poor) men.

For the poor, materials for weaving and thatch are important things in the households that can hardly be substituted with alternatives.

A summary of the total ecological goods and services provided by the forest reserves are found in Table 5 in section five.

5.0 Discussion of the Findings and Implications

The stakeholder identification process in the two biodiversity rich forest sites in Uganda and Tanzania has revealed a large number of benefits provided from the forests to the local inhabitants (refer to Table 4 and Table 5 for a summary of the interests).

Poverty is now widely viewed as including a great number of different dimensions (such as lack of voice in the political process, health, education, lack of income and other material means). The stakeholder analysis emphasises the dynamic and context specific nature of poverty. Local inhabitants' stakes in the forest reserves are determined by their access to technology, capital, markets, skills, as well as their locality, gender, age, ethnicity and (lack of) alternative livelihood strategies. In the two landscapes some benefits can be described as mainly interests of the poor local inhabitants. These are: cultivation within the forest reserves whether in tender agreement or finger millet cultivation, labouring in logging activities, collection of material for thatch and sambu oil seeds. A number of other activities are often related to young men who can be regarded as temporally poor as they have often not started to benefit from cultivating their own land. Activities that are often related to the young men are: collection of walking sticks, wild honey and fuel wood for the market or for the production of charcoal.

As has been shown local stakeholders' relations with the forest are highly dynamic. In Uganda the enforcement of the forest legislation has meant a changing relationship with the forest as most activities have been declared illegal as measures have been taken by NFA to stop the extraction. On the other hand in Tanzania some activities (such as timber and fire wood extraction) seem to take place at a slower pace. Other activities such as the clearing of land in the forest reserves for cardamom cultivation is currently an economically important activity that is not only taking place in the areas around Ubiri but spread further south as well as to the western and north western sides of Nguru South Forest Reserve.

Table 4. Local stakeholders involved in resource use in Kasyoha-Kitomi Landscape

Ecological good or service of interest for the stakeholder	Categorising the stakeholders (access provided by/what drives their interests?)
Cultivating within the forest reserve. Access to farming land.	Mainly poor local inhabitants with little or no land. Characterised by lack of alternative income/livelihood possibilities.
Benefits from controlling tender license for replanting the open patches in the forest.	A few better-off local inhabitants administrating the tender licenses. Characterised by access to capital and/or relevant authorities.
Clearing of land in the forest reserve for finger millet cultivation.	Mostly the poor among the local inhabitants.
Grazing of livestock in the open patches where good pasture is found.	Livestock owners, mostly the better-off or less poor local inhabitants.
Logging and trade in timber	A few better-off local inhabitants possessing sufficient capital to buy a license with capital and technology.
Income generating activity from labouring in logging activities.	Young men and boys, providing labour and to a certain extent possessing the required technology (ownership of chain- or long-saw), location in the hilly terrain that is non-accessible for lorries.
Logging timber as an income-generating activity for the local market or for own use.	Male local inhabitants with the required skills, operate <i>ad hoc</i> and often illegally.
Timber as building material for construction of houses.	Male local inhabitants with certain professions (carpenters, carvers).
Income from collecting, processing and selling of walking sticks, hand hoes etc.	Local inhabitants with the required knowledge and technology, mainly young men and elders.
Fuel wood as an income generating activity and for home consumption.	Women for home consumption, young men for sale. Lack of alternative strategies drives the interest of the latter.
Charcoal burning as an income generating activity.	Require certain skills. Proximity to market (trading centres) and proximity to the forest reserve.
Collection of wild honey for sale and home consumption.	Young men and boys possessing the required skills and knowledge.
Collection of medicinal plants used for traditional treatment.	Traditional medicinal practioners, mostly elderly men and women, that provide primary health care. Especially, in areas close to the forest reserve in parishes with no local health centre.
Hunting bush meat for consumption and sale. Indirectly as a mechanism for protection from problem animals.	Mainly young males and some aged men with required skills and knowledge, located close to the forest reserve.
Fishing	Requires certain skills and proximity to the streams that are ideal as aquatic habitat.
Materials for weaving and thatch used for thatching houses, weaving mats, baskets and fish traps.	Mainly elder and young men in villages adjacent to the forest are engaged in the collection. Women are weaving. Also proximity to trading centres determines the interest.
Water for waragi brewing	Local inhabitants possessing the required knowledge, water and sufficient amounts of firewood.
Water used for drinking. As an aquatic habitat for fish.	General ecological services among the local inhabitants
Climate regulation	An ecological service mentioned by many informants.
Spiritual and cultural services	Mainly elder people in villages adjacent to the forest perform religious ceremonies.

Table 5. Local stakeholders involved in resources use in Nguru South Forest Reserve, Mkindo Forest Reserve and Kanga Forest Reserve

Ecological good or service of interest for the stakeholder	Categorising the stakeholders (access provided by/what drives their interests?)
Access to farming land within the forest reserve Cultivation of cardamom, cocoa, coffee, plantain and yam.	Local inhabitants engaged in cardamom cultivation are located close to the forest providing the shaded growing conditions. Young men without land are part of the stakeholder group. These are driven by lack of land. Other engages due to the fact that cardamom production is the best option in terms of income-generating activity. Local inhabitants engaged in the cultivation of cocoa, coffee, plantain and yam are driven by the agro-ecological conditions provided by the forest and the availability of land.
Income from transport and distribution of the cardamom (and other products) to non-local markets.	Local and non-local traders.
Grazing cattle in the forest reserves.	Local inhabitants characterised by their ethnic group (Wamaasai).
Trade in timber.	A few better-off local inhabitants (together with non-local loggers or traders) possessing sufficient capital to buy a license.
Income-generating activity from labouring for other in logging and transport activities.	Young men and boys, often poor, providing labour and to a certain extent possessing the required technology. Location in the hilly terrain that is non-accessible for lorries. Migrants, Wahehe, Wabena, Wakinga, Wachagga and Wazigua, i.e. social identity and technology (e.g. ownership of chainsaw or long saw).
Individual timber logging business as income generating activity or for own use.	Male local inhabitants with the required skills, operate <i>ad hoc</i> and illegally. Driven by local demands
Timber as building material.	Carpenters by profession.
Income from the collection, making and selling of poles, walking sticks etc. for local trade and own consumption.	Local inhabitants, often young men, driven by livelihood needs and lack of alternative income-generating possibilities.
Fuel wood collection and charcoal production for home consumption and as an income-generating activity.	Women, mostly for home consumption. , Young men, mostly for sale. Charcoal production requires certain skills.
Extraction of plants for income and home consumption.	Traditional medicinal practioners, mostly elderly men and women, that provide primary health care. Sambu oil seeds and wild black pepper collection is determined by proximity to the forest, skills and access to markets. Mostly poor people perform this activity.
Bush meat for consumption and sale and protection from problem animals.	Mainly young males and some aged men with required skills and knowledge close to the forest reserve.
Materials used for weaving, thatch and ropes.	Especially the poor rely on weaving material. Coconut juice extractors are determined by their profession.
Honey for production and home consumption	Men possessing the required skills.
Water for drinking, brewing and as a habitat for fish.	Central livelihood activities among the local inhabitants.
Sacred forests and places for religious purposes	Especially local inhabitants from the Wanguu tribe.
Path through the forest reserve. Access to central markets	Ordinary local inhabitants and local traders from the western and north western side.

At the end of the interviews informants were asked to set their vision for their future access to and use of the forest. The local stakeholders' visions were, not surprisingly, often identical with the former benefits derived from the forest reserves. One poor farmer from the Kasyoha-Kitomi landscape explained: "If I am to advise about the management of the forest. I think the first thing to do is to reduce the amount of money we have to pay in order to enter. For us poor people the licenses and fees are not affordable". A village leader from Mwongyera recommended that people were allowed to go to the forest reserve to cut wood for the production of charcoal so that the charcoal business in the local trading centre could be revitalised. A farmer living close to Mkindo Forest Reserve summed up the local farmers' interest in going back to cultivate in the reserve: "We farmers want agricultural land of a better quality. This land is a bit barren. For example when we plant Irish potato it does not come up the way it used to come up. We prefer to grow in the forest". According to local stakeholders' perceptions, fuel wood, timber and agricultural land were most frequently mentioned but due to different individual interests and differences in needs others would emphasise herbs, game meat, bamboos, pasture or access routes¹¹. Many resources had both commercial value and were also important around the home. The agreements between national authorities and the local inhabitants in Uganda and Tanzania will frame the local inhabitants' future access to resources. Experiences from PFM in Uganda shows that even when access is allowed to certain resources, local inhabitants might still rank these as resources missing compared to their former access to and use of these resources (Namara 1999).

This paper has demonstrated the local inhabitants' interests in the forests. When these interests are combined with the interest of regional, national and international stakeholders, the complexity and conflicting interests increase. This can be illustrated by a simple example. International and national interests of preserving the forest reserves due to their unique richness of biodiversity and/or potential as ecotourism sites are not necessarily identical with the interests of the local inhabitants. As explained by a woman from Kasyoha-Kitomi Forest reserve: "That forest was a very bad place filled with buffalos and elephants. It was thick and fierce. When the population increased and hunting began the animals ran away or got killed. Now it is a better place to live. If they allow us to cut the trees and clear the whole place, the wild animals that destroy our crops can disappear then we could grow a lot of different things in our gardens". In other words, the criteria of a well-managed forest depend on the interests of the person you ask.

Local inhabitant interests in the forest reserves show clearly that these forests indeed are at the mercy of local communities living in the forest landscape. The role of adjacent communities in successful forest conservation and management is indispensable. It is also required that potential trade-offs are negotiated between different stakeholders with different interests and visions.

¹¹ This refers to the path going from Maskati village to Ubiri in the Nguru South Forest Reserve.

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