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LIST OF ACRONYMS

AET          Agricultural Extension Technician
AIDS         Acquired Immune Deficiency Syndrome
DED          German Development Service
DoF          Directorate of Forestry
FF           Farm Forester
FMC          Forest Management Committee
FMPU         Forest Management Planning Unit
HF           Honorary Forester
HIV          Human Immune Virus
IRDNC        Integrated Rural Development and Nature Conservation
MAWRD        Ministry of Agriculture, Water and Rural Development
MET          Ministry of Environment and Tourism
MS           Meteorological Service
MWTC         Ministry of Works, Transport and Communication
NFFP         Namibia Finland Forest Programme
NOLIDEP      Northern Livestock Development Project
PIFM         Participatory Integrated Forest Management
VDC          Village Development Committee
Acknowledgement

The writers of this Integrated Forest Management would like register their appreciation to the community of Sikanjabuka for their invaluable contribution in the drafting and finalization of this plan. The Honorary Foresters and some of the committee members worked tirelessly in the setting of the management objectives and defining the activities to be done.

The team is also indebted to the Induna and his councilors who were helpful in the zoning and boundary marking of the forest. The District Forest Office staff particularly Dennis Sikabongo, for the logistical support; Christopher Buchane and Martin Tubalele in marking of the boundary.

Risto the advisor to the Information and Planning Unit of the NFFP in the Directorate for reviewing the draft. The National Remote Sensing staff and Nathaniel Amadhila who assisted with the production of the map.

Finally to the Namibia-Finland Forestry Programme for the support of Participatory Integrated Forest Management.
Executive Summary

As the Forest Act (2001), a Forest Management Plan is a prerequisite for the communities to have control over any proposed community forest. To get maximum benefit from their forest and to meet the requirement for an establishment of a community forest, the community of Sikanjabuka, in cooperation with The Directorate of Forestry (DoF) has prepared this plan.

The Sikanjabuka community forest is located 40 km east of Katima Mulilo and about 4 km south of Bukalo, the headquarter of the Masubia tribe in the Caprivi region. Approximately 500 people live around the forest and enjoy benefits of the various forest products available in the area. These include fire wood, poles for construction and fencing, fruits, traditional medicines, ropes, thatching grass, grazing resources and various items for craft making. Adjacent to the forest there is a vast valley with rich alluvial soils (the Bukalo channel) and that is where the community members normally grow maize. People living in and around Bukalo area depend mainly on Sikanjabuka and Silumbi for maize supply (Mwenda, Agricultural Extension Officer (AET), 2002).

This forest management plan has been drawn jointly with the community of Sikanjabuka and DoF staff. The community was represented by the Forest Management Committee (FMC), the Village Development Committee (VDC), Honorary Foresters (HF), and Farm Foresters (FF) whose specific tasks are defined in details at a later stage. In the future, the Directorate of Forestry (DoF) will provide technical assistance whenever possible during the implementation of this plan.

The main goal of the plan is to obtain materials of benefit to the community, through harvesting of woody and non woody products both for domestic use and for sale; the main objectives include management of grazing resources, utilization of dead wood, protection of indigenous fruit trees, re-introduction of disappearing medicinal plants, management of valuable trees such as *Colophospermum mopane* and *Terminalia sericea*; afforestation and reforestation programme, thatch grass production and protection of cultural sites.

The community would like to keep their forest well stocked in the future as well and in that regard, the community has stated that only 50% of the allowable cut will be harvested and utilized annually. However, due to logistical problems, during the first year of implementation (2003), only 45% of the allowable cut disregarding the community’s desire to utilize just 50% of the allowable cut. The number of 500 poles to be harvested for commercial purposes during the year 2003 will increase gradually and reach 11000 by the year 2007.

Seeds of the medicinal plants which have disappeared will be sourced from Zambia and be re-introduced within the forest after the domestication at homestead level. Fruit trees will be planted across the villages and this will be facilitated by the community nursery that is already operational.

Fire protection will be taken care off through the creation of the cut lines by the community based fire unit. The restoration of grazing resources will be improved by the seasonal grazing measures set aside by the community. No animals will be allowed inside the forest during the growing season that is from January to June.

A market survey for thatching grass will be conducted and proper pricing policies will be put in place in order to generate some income from these valuable resources. This management plan will address the livelihood strategies of the Sikanjabuka community members by providing needs and services required by the same community. At the same time the community will ensure the sustainable utilization of the forest for the present and future generations.
Name of the Area: Sikanjabuka Community Forest

The Sikanjabuka community forest is situated 45 kilometers east of Katima Mulilo in the Caprivi region (see location map and coordinates in figures 1 and 2 respectively). The proposed Sikanjabuka community forest covers an area of 4,927 hectares (Kamwi and Laamanen, 2002). There are 6 villages currently with a population of about 850 people who are directly using the forest with different levels of intensity. There are 450 households (Omoro, 2002). This plan has been drawn to cover a period of five years. However, this plan will only specify in detail the activities to be implemented during the first year. The management plan period is over ten years. The management plan was prepared by the forest management committee and the Directorate of Forestry (DoF).

Management body and institutional arrangements

The Sikanjabuka community forest is communal under the jurisdiction of Chinchimane Khuta. All the administrative requirements for the area are undertaken by the Silalo Induna on behalf of the Chief. The forest belongs to all the members of Sikanjabuka and the FMC are elected members of the community who manage and make decisions about the forest on behalf of the community. The duties of forest management committee include routine administration of community forestry activities in the area. They are answerable to the Chief. The Directorate of Forestry plays facilitating role during the drafting of plan as well as in implementation phase.

Management objectives

The specific objectives for this management plan were derived from the discussion with the communities. The following objectives were identified.

- To harvest poles for domestic use and sales,
- To harvest thatching-grass for domestic use and sales,
- To graze livestock in the forest,
- To re-introduce disappearing plants in the forest,
- To protect indigenous fruit trees and cultural sites,
- To utilize deadwood for fuel,

Forest resources

This area comprises of mopane-terminalia woodlands with very good stand structure. Altogether 25 tree species were identified in the inventory with a total of 2,182,000 stems in the inventory area that is 443 stems per hectare. The total volume of all live trees is 256,309 cubic meters. The mean volume of all species is 52.0 cubic meters per hectare (Kamwi and Laamanen, 2002). Currently about 12,000 poles are harvested both for domestic use and sales (Omoro et al., 2002). However, annual sustained yield is 22,000 poles.

Planned forest resource uses and expected benefits

The community of Sikanjabuka harvest wood and non-wood forest products from the forest for domestic consumption as well as for sales. They also benefit indirectly from the forest through grazing of livestock, conservation of forest and amenity. The community generates income through selling of poles. The forest management committee uses the money for forest management activities such as forest patrolling, fire protection and various silvicultural practices.

Management and arrangements/distribution of revenue and benefits

The forest management committee is responsible for sourcing of resources required by the community; and also to eventually distribute the accruals from the community forest. The Honorary Foresters carry out forest patrols, training and working with the male members of the
community on forest management activities e.g., silvicultural operations. For the on-farm activities, there are village committees who supervise activities on-going in the villages e.g., orchards and other on-farm planting. The on-farm activities are confined to homestead tree planting in most cases because the animals freely graze therefore, this can affect tree survival on farms.

Management plan development

Directorate of Forestry is responsible to provide technical support to forest management committee and give guidance required to develop and incorporate the forest management and monitoring activities into the duties of the Sikanjabuka community forest committee. The Honorary Foresters carry out forest patrols, training and working with the male members of the community on forest management activities e.g., silvicultural operations.

The forest belongs to all the members of Sikanjabuka and the FMC are elected members of the community who manage and make decisions about the forest on behalf of the community. Their duties include routine administration of community forestry activities in the area. They are answerable to the Chief. They supervise the Honorary Foresters in order to ensure that activities in the forest are done according to the plan. They are also responsible for sourcing of resources required by the community; and also to eventually distribute the accruals from the community forest.

Introduction

This forest management plan will facilitate a more organized and economical utilization of both wood and non wood forest resources in the Sikanjabuka community forest, while taking into account the need for sustaining these resources for future generations. The proposed Sikanjabuka community forest covers an area of 4,927 hectares. It is mainly dominated by Colophospermum mopane and Terminalia sericea tree species. In this plan therefore, more attention will be given to the above two mentioned woody resources with respect to use and
management of the forest in question. Special attention will also be given to grazing resources, thatching grass, medicinal plants and cultural sites as these were some of the objectives the community outlined.

The formulation of a forest management plan is a new concept to the Sikanjabuka community; therefore, facilitation by the Directorate of Forestry will be critical during the implementation particularly in monitoring of some specific activities in the plan in order to help the community to understand the various steps for the implementation of the plan. The partnership agreement between the DoF and Forest management committee (FMC), has outlined the role each party plays to ensure smooth running of the activities. This plan was jointly put together by the community of Sikanjabuka and DoF staff with the support of the component of Forest Management Plan Unit (FMPU) of Namibia Finland Forest Programme (NFFP) using the guidelines produced by the unit. Apart from drawing the plan to enable the community to manage their forest resources in a sustainable way, the exercise was also used as part of capacity building of the DoF staff to in future be able to draft such a management plan for any community forest.

This plan has been drawn to cover a period of five years. However, this plan will only specify in detail the activities to be implemented during the first year. After the first year, a detailed programme covering the remaining four years will be developed according to the experience gained during the first year and the availability of resources.

It is equally important to mention that the German Development Service (DED) is also operating in the same area in establishing orchards. The approach used by DED is however different from the community-based approach by NFFP. The DED approach advocates for the establishments of orchards on individual basis, whereas the NFFP has introduced the orchards on both communal and individual basis.

The Ministry of Agriculture, Water and Rural Development (MAWRD) is another stakeholder working in the same area. It has plans to introduce new crops such as cotton, sorghum and millet through trials in the Bukalo channel. This is a bid to address the drought problem (Mwenda, AET2002). In the same Ministry through The Northern Livestock Development Project (NOLIDEP) plans are under way to dig an earth dam during the year 2003 in the same area in order to ensure there is permanent water supply for animals (Mary Kabuku, AET 2002).

This plan embraces different activities as were identified by the community and it is therefore, an Integrated Forest Management Plan. The role played by various community members at different levels of the planning process (inventory, planning meetings) thus forms a pillar of this management plan.

2.0. Ownership and management of the area

The Sikanjabuka community forest is communal under the jurisdiction of Chinchimane Khuta. All the administrative requirements for the area are undertaken by the Silalo Induna on behalf of the Chief. There are 6 villages currently with a population of about 850 people who are directly using the forest with different levels of intensity. There are 450 households (Omoro, 2002).

When the Participatory Integrated Forest Management (PIFM) activities were initiated by NFFP, a management structure for the management of the proposed community forest was established. Fig.1 shows this structure which consists of a Forest Management Committee (FMC) as provided for in the Forest Act (2001) as the main player. Each of the institutions in the structure has their specific roles.

**Organogram of community Institutions**

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Chief and his Council of Elders
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Fig. 1 The Management Structure within the Sikanjabuka community forest.

The forest belongs to all the members of Sikanjabuka and the FMC are elected members of the community who manage and make decisions about the forest on behalf of the community. Their duties include routine administration of community forestry activities in the area. They are answerable to the Chief. They supervise the Honorary Foresters in order to ensure that activities in the forest are done according to the plan. They are also responsible for sourcing of resources required by the community; and also to eventually distribute the accruals from the community forest.

The Honorary Foresters carry out forest patrols, training and working with the male members of the community on forest management activities e.g., silvicultural operations.

For the on-farm activities, there are village committees who supervise activities on-going in the villages e.g., orchards and other on-farm planting. The on-farm activities are confined to homestead tree planting in most cases because the animals freely graze therefore, this can affect tree survival on farms.

The Farm Foresters work with the village members as trainers on their on-farm activities. The participation by members in these on-farm activities are at times on individual basis or in groups particularly for the nursery and therefore benefit accruals are for these individuals as opposed to the activities and benefits from the forest.

A resolution from a community meeting clarified the roles to be played by women and men in the community as: on-farm and nursery by women and the forest for the men.
3.0 Overall goal

The main goal of the plan is to produce material benefits to the community by harvesting woody and non-woody products for domestic use and for selling.

4.0 Physical description of the area

4.1 Location

Sikanjabuka forest lies within latitude 17°30'06"S and 17°50'02"S and Longitudes 24°19'56" E and 24°29'54"E. It falls within Katima Mulilo Constituency of Caprivi region. It is 45km south East of Katima Mulilo.

4.2 Climate, hydrology, vegetation and soils

The area receives unimodal rainfall between October and April. The average annual rainfall is 700mm (Mendelhson and Robertson,1997). Over the years however, the rains have become erratic and the amounts received over the last fifteen years have been clearly less with an average of 565.4mm. The figure below shows the total annual rainfall and the rainfall averages over the last fifteen years.
The daily temperature range during summer is from 29°C in July to 36°C in January. In October the temperature may rise to a maximum of 39°C (Namibia Bureau of Meteorology, 2002). During the summer daily minimum temperatures vary between 14°C and 19°C and in winter 5°C and 10°C (Namibia Bureau of Meteorology, 2002). The occurrence of frost is however, rare.

A flood plain stretching from River Zambezi to Lake Liambezi (the Bukalo channel) runs across the area separating the forest from many of the villages. There are no rivers per se flowing in the area. However, there are wells sank in the flood plains which provide seasonal water used by the community.

The soils are mainly sandy, remnants of Kalahari sands. The flood plains mainly consist of silty clay loams where agriculture is dominant. The forest has different soil associations that include sands and patches of clay. During a land-unit classification exercise with the communities six distinct land units were identified with different soils types and use (Kazapua, 2002).

The forest lies within the Mopane-Terminalia Woodlands (Mendelsohn and Roberts 1997). The vegetation is mainly dominated by Colophospermum mopane and some Terminalia sericea.

5.0 Forest resources
5.1. Trees

Altogether 25 tree species were identified in the inventory with a total of 2,182,000 stems in the inventory area that is 443 stems per hectare. The most frequent species is Colophospermum mopane with 1,783,620 trees growing in the inventory area. The second most frequent species is Terminalia sericea, with only 193,000 stems. All other trees have a significantly smaller number of stems (see Table 6a in annex 1)
Figure 3. Diameter distribution of the three most frequent tree species

The diameter distribution of mopane is good, there is a large number of small trees, however very few big trees. About 58 % of all *Colophospermum mopane* stems are less than 15 cm at breast height. This gives a potential for harvesting some poles and rafters without risking the future of the forest structure. The distribution of *Terminalia sericea* is not as good even though it has got more small trees than big ones. *Burkea africana* has got similar trend, however it has much lesser stems compared to the other two species. The possibilities for sustainable utilization of trees in the inventory area (community forest area) are mainly related to *Colophospermum mopane* and *Terminalia sericea*.

The total volume of all live trees is 256,309 cubic meters. The total volume of *Colophospermum mopane* is 169,752 cubic meters and the volume for *Terminalia sericea* is 39,289 cubic meters. The mean volume of all species is 52.0 cubic meters per hectare (Kamwi and Laamanen, 2002).

5.2 Shrubs and regeneration

All together 5672 shrubs and saplings per hectare were enumerated growing in the inventory area. 14 different species were identified. *Colophospermum mopane* has got a very vigorous regeneration with 5316 saplings per hectare. *Terminalia sericea* has a good regeneration as well of 176 saplings per hectare but much less than former. Part of these saplings will grow to become trees first in the smaller diameter classes and replacing trees which will grow into bigger classes or which might be harvested.

5.3 Estimation of sustainable yield (allowable cut)
The tables of the calculations for the allowable harvest of *Colophospermum mopane* and *Terminalia sericea* are presented below. The calculation is based on the growth of the trees and the movement of stems from smaller diameter classes into bigger diameter classes. The main objective in the calculation is that the diameter distribution during the ten years period of the implementation of the plan will remain constant. This implies that the structure of the forest would remain the same in the future too.

Harvesting is proposed to be done only in the three smallest diameter classes as the inventory showed that the number of big trees is not enough. Also, it has been suggested that the wildlife specifically benefits of larger trees. A mortality rate of 20 % has been used in the calculations. In practice, portion of these dying trees can be harvested too. However, in the following calculation this has not been taken into account.

### Table 1. Calculation of allowable cut of *Colophospermum mopane* (for an area of 4927 hectares)

<table>
<thead>
<tr>
<th>Diameter class</th>
<th>Nr of stems/ha standing</th>
<th>Nr of stems/ha after 10 years</th>
<th>Nr of stems to be thinned/ha</th>
<th>Total stems in area to be thinned</th>
<th>Annual cuts (for 10 years), nr of stems</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-25</td>
<td>69</td>
<td>87</td>
<td>18</td>
<td>87000</td>
<td>8700</td>
</tr>
<tr>
<td>25-35</td>
<td>16</td>
<td>21</td>
<td>5</td>
<td>24600</td>
<td>2460</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11160</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>11160</strong></td>
</tr>
</tbody>
</table>

The calculation above results in the following proposal of annual harvest of *Colophospermum mopane*, which is about 8700 stems with a diameter of 25 cm, 2500 stems of average diameter between 25 and 35 cm. There are not enough big trees (diameter > 35 cm) for harvesting currently.

Similarly, the calculation of the allowable cut for *Terminalia sericea* is presented in table 6.2. According to calculation, there are not enough trees for harvesting in the classes over 15 cm. Hence, no cutting is proposed in these classes.

### Table 2. Calculation of allowable cut of *Terminalia sericea* (for an area of 4927 hectares)

<table>
<thead>
<tr>
<th>Diameter class</th>
<th>Nr of stems/ha standing</th>
<th>Nr of stems/ha after 10 years</th>
<th>Nr of stems to be thinned/ha</th>
<th>Total stems in area to be thinned</th>
<th>Annual cuts (for 10 years), nr of poles</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-15</td>
<td>18</td>
<td>40</td>
<td>22</td>
<td>108400</td>
<td>10840</td>
</tr>
</tbody>
</table>

It is proposed from the results in table 6.2 that 10800 stems with average diameter of 10 cm can be harvested annually.

In the case of *Burkea africana*, there are no harvesting possibilities currently.

The total harvesting potential is about 22,000 poles annually from the two tree species. However, the Sikanjabuka community would like only to harvest 50% of the annual allowable cut, which means only 11,000 poles would be harvested annually. Due to constraints of manpower, market availability and transport, they intend only to harvest 500 poles for the first year and then increase the cuts gradually.

It must be noted that the calculation of allowable cut here is very sensitive to the estimate for the natural mortality of 20 per cent used for the diameter classes. If it would for example be doubled of the one used, the allowable cut would be only half as much as amount given here.

### 6.0. Current use of the resources

A PRA study was carried out in order to find out facts about the current use of the resources (Omoro 2002). Apart from the 500 poles that will be harvested for commercial purposes, additional 2,950 big poles and about 1350 small size poles and 5000 rafters will be used for
construction of huts, courtyards and kraals. However, it is not clear how much is harvested from the proposed community forestry or just outside the proposed area. The figures indicated above do not include illegal tree cutting that may approximately take up to 2000 poles per year. However, both legal and illegal harvest of various forest products from the Sikanjabuka community forest will not seriously affect the sustainable use of the forest since the annual harvest is by far below the annual allowable cut (22,000 poles/year). Other valuable forest resources used by the community members include medicinal plants and fruits, most of which are extracted from the villages (Omoro, 2002). The community has expressed fears that some of the forest resources are getting depleted. It is therefore of vital importance to consider some management techniques in this specific area in the near future. The same area is used to provide non-timber products and other forest services. Adjacent to the forest there is a vast valley with rich alluvial soil; the Bukalo channel, and that where the community members normally grow maize. The Bukalo channel serves as a potential grazing area especially after harvesting.

7.0 Specific objectives for forest management

The specific objectives for this management plan were derived from the discussion with the communities. The following objectives were identified.

7.1 Pole extraction

The area is the main source of mopane and terminalia poles. Many people in and around the area including as far as from Katima Mulilo meet their pole requirements from Sikanjabuka. For constructions, people prefer mopane as the number one choice (Omoro, 2002), this also goes for its value as firewood. Due to its importance as mentioned, the mopane is highly at risk of being over-exploited. Therefore, as the main source for poles in the area and also for the region it is important that judicious ways of extraction are devised and implemented.

The forest thus, provides poles for use by the community and with proper organization can also provide poles and firewood that can generate income for the community. For this reason it is important to institute relevant management activities of thinning, pruning and fire control.

7.2 Grazing

Due to high demand of grazing resources in the Sikanjabuka area, caused by high population numbers of livestock coupled with the persistent drought that has been prevalent in the country lately, the Sikanjabuka community has decided to embark on activities aiming at conserving and managing the grazing resources within the proposed community forest, seen as a potential grazing area and currently used by the community members for grazing during the dry season in order to meet the present and future grazing needs.

7.3 Utilization of dead wood

There is a lot of deadwood in the forest that can generate income as well as provide employment to the community if efficiently used. Currently there are a few craftsmen within the community who are able to use these resources for making household tools and utensils. There is also one advantage, that there will be a craft shop opened in the area through the facilitation of IRDNC. This will not only provide a ready market for these items but will also use these resources as raw materials.

7.4 Protection of indigenous fruit trees

The area has several indigenous fruit trees that act as food supplement and supply of vitamins for the community’s nutritional needs. The fruits are also consumed readily as snacks by the
children. Due to the recurrent droughts in the area, these are the most likely perennial crops that can supply the additional nutritional needs. This makes their preservation and management very important.

7.5 Re-introduction of disappearing medicinal plants

The cost of conventional medication and the distances to health centres when illnesses strike at short notice have rendered the community to rely heavily on the use of medicinal plants. To this extent, many of these plants are being used while others have been overused to such level that they are threatened with extinction or are already depleted. Tree species such as *Diospyros chamaethamuu*us (Mukokoshi), *Entandrophragma caudatum* (Mubano) and Mwambo (the scientific name is yet to be identified) have been completely depleted. Therefore, the re-introduction of such valuable plants is important. According to the community members, in the early days these species were the main sources of medicines for various ailments.

7.6 Planting of fast growing species and exotic fruit trees

Aforestation and reforestation activities will be undertaken in and around the villages to introduce fast growing species and exotic fruits such as Eucalyptus spp, paw paws, guavas and mangoes. These will provide the needed nutritional values, generate income from fruit sales as well as fulfill the environmental protection roles. Poles from species as eucalyptus can be readily obtained. There are some tree species of value to the community that are getting depleted and through reforestation these can be restored.

7.7 Thatching grass production

The community mainly relies on grass for thatching due to the high cost of corrugated iron sheets. There is also high demand for grass for sale e.g., to the lodges (Omor and Otsub, 2002). The management of grass is thus crucial for the development of the community.

7.8 Protection of cultural site

Traditions are quite valuable aspects of life for most communities and Sikanjabuka is no exception. There are various sites that are valued for different reasons. In Sikanjabuka old burial sites that are now being used for conducting prayer rituals for rains are good examples. Preservation of these sites is important to this community.

8.0 Structural targets

The most important sources of livelihood for the community of Sikanjabuka in their order of importance are agriculture, livestock and forestry (Omor, 2002). The community of Sikanjabuka relies mainly on the forest for provision of poles and grass for grazing particularly during the dry season. Therefore, it is important that pole quality be improved and grazing resource management is done. The resource is currently abundant. There are good opportunities to utilize them; however, no radical changes in the structure of the forest are desired by the community. The later wants to keep the forest well stocked in the future too.

In line with community’s preferences for the utilization of forest resources, only 50% of the potential allowable cut of poles will be harvested; disappearing tree species will be re-introduced or protected and cultural sites preserved.

9.0 Forest management approach
The management approach will be integrated to cover silvicultural practices, grazing management, on-farm activities and fire management. The silvicultural practices aim at improving the quality of poles that is the main product from this forest.

Selective silvicultural and commercial thinning will be the main methods to be applied. Other silvicultural activities which will be done include pruning and coppice management.

Grazing management will entail implementation of seasonal grazing in order to allow the grazing resources to be restored. Other grazing practices such use of fire for pasture improvement and tick control will be implemented.

Fire management will include construction of firebreaks in order to reduce incidences of fire occurrence in the forest. Fire suppressions will be done whenever they occur and promotional activities to raise awareness levels of the community members.

On-farm activities will be implemented through nursery management and tree planting at homestead level. Fast growing species will be planted in order to entice the community into increasing more of these species on their farms.

9.1. Silvicultural activities

These are methods for managing the trees to improve on their quality and performances. Training in various aspects of silvicultural operations will be given to farmers in order to gear them toward sustainable management of the said forest.

Below are some of the silvicultural activities to be undertaken.

9.1.1. Harvesting of trees

The harvesting of forest resources within the Sikanjabuka forest will be based on the inventory results as well as intended products. Medium size poles with a diameter of 10 cm to 15 cm will be preferred as this is suitable size utilized for hut construction and home yard fencing. Rafter will only be harvested in overcrowded areas of the forest and also while taking care of coppicing management. Big diameter trees will be allowed to stay in order to serve as seed sources. For craft purposes only big dead diameter trees will be used. No one will be allowed to harvest fresh trees for craft business. Dead wood will also serve as the sole source of firewood. Thatching grass will be harvested for both domestic and commercial purposes. A market survey and pricing study will be done prior to the harvesting.

Selective thinning for pole improvement will be done to small diameter classes of mopane and terminalia trees. Trees of diameter of 3-5 cm will be used as rafters while those with diameters between 10-15 cm will be used for poles; this will constitute commercial thinning. The thinning in different size classes is determined by the inventory results and allowable cut.

Based on the available capacity of the community they can only harvest 500 poles for commercial purposes and 9300 for home use during the first year of the plan. This represents about 45% of the potential allowable cut. This shows clearly that abundant resources may not be fully utilized during the first year of implementation. However, there are possibilities of increasing the quantity that can be harvested when transport facilities and other infrastructure are improved.

Silvicultural thinning refers to any physical removal of trees with natural defects that may hamper their growth or affect the growth of neighboring trees. This type of thinning will be done on selective basis.

Mushove (1996) recommends that large diameter mopane trees should be cut close to the ground to facilitate the coppicing of shoots. Therefore, in this forest, large mopane trees with defects will
be harvested according to standards as opposed to current prevalent practice in the area of cutting the stems one meter above the ground. The trees to be cut at a maximum of 20-30 cm height.

9.1.2 Revenue expected from the harvest

The average price used in the calculation here for small sized pole is N$1.50 and for a large size pole it is N$3.00 (FMC pers. comm., 2002). If 500 poles are harvested annually, then annual revenue of N$ 1,125.00 (if 50% small and 50% large poles are sold) may be expected from selling the poles during a normal year. Whether selling of the poles is financially feasible, depends on the cost of labour required for felling and processing the poles, and hauling them to the markets. These cost calculations have not been included here. If felling is done by villagers, no costs are incurred.

9.1.3 Pruning

Pruning is done to ensure the protection of the stand against fire, insects and pathogens. Pruning is also done to increase the value of timber and in our case the main objective will be to protect the stand against unwanted insects and fires since there is no difference in terms of price between pruned and unpruned products at the market place.

The removal of branches will be done to the level of the main stem and appropriate tools must be used. This operation should be avoided when growth is taking place such as during rain season.

9.1.4 Enrichment planting (re-introduction of disappearing species)

The PRA carried out in the Sikanjabuka community forest revealed that some tree species are disappearing (Diospyroschemaethamuus (Mukokoshi), Entandrophragma caudatum (Mubano) and Mwambo). Considering the role these important species used to play, their re-introduction will be highly appreciated by the community members. Tree seed sources will be identified within Namibia and outside Namibia (Zambia) and studies about their propagation methods will be considered before any seeding (sowing). Homestead planting will be given first priority before re-introduction to the community forest. Protection in the forest seems to be a problem because of high demand of these resources.

9.2 Farm forestry

Homestead tree planting will be done especially fruit trees. The Directorate of forestry through its Bukalo office will provide technical support in terms of nursery techniques, tree planting and all tree tending practices.

9.3 Fire management

Fire campaigns will be conducted every year before the fire season and this will be achieved through meetings, radio announcements and drama plays. Within the forest the existing fire breaks will be maintained while new fire breaks will be created. Preferably, the different zones inside the forest will be separated by fire-breaks that will serve as roads and hence reduce the maintenance costs since if often used then the regrowth is suppressed and hence less effort is required for maintenance.

9.4. Protection

Beside the creation of firebreaks in order to protect the forest against devastating fires, forest patrols will be organized and carried out regularly in order to make sure that illegal harvesting activities are minimized or rooted out. Fines will be paid to trespassers and this will serve as a warning to the rest of the public who would like to use the forest illegally.
9.5. Grazing practices (regime/schedule).

Seasonal grazing will be practiced in order to allow enough grazing resources in the area. No animals will be allowed inside the forest during the rain season. During the grazing season (dry season) special request will be made to the Silalo Induna and allocation of grazing area will be done after the HF/FMCS have done assessments and recommendations to the Induna. No outsiders will be given access to grazing resources.

9.6. Zoning according to location and cultural sites

As indicated here below the forest is divided into different area for better management and these are Ngonde, Nebandi, Kangalanda, Kasikili, Nsasa and Chiku. There is also an area reserved for farming activities during excessive floods and this area shares borders with Kangalanda and Chiku areas. For better management and for the sake of safe control, it is advised to carry out specific activities within a specified area at a given time. Therefore, while some silvicultural activities such as fire management and law enforcement may cover the whole area of Sikanjabuka community forest, the harvesting of various forest resources will be done as indicated here below:

<table>
<thead>
<tr>
<th>Area</th>
<th>Activity</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>Kangalanda</td>
<td>Harvesting operations and other tending</td>
<td>2003-2004</td>
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<tr>
<td>Kasikili</td>
<td>Harvesting operations and other tending</td>
<td>2005</td>
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<tr>
<td>Nebandi</td>
<td>Harvesting operations and other tending</td>
<td>2006</td>
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<td>Nsasa</td>
<td>Harvesting operations</td>
<td>2007</td>
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<td>Chiku</td>
<td>Preservation and introduction of disappearing species</td>
<td>Continuous</td>
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</table>

It is important to note that the harvesting being discussed here refers to woody products. The harvesting of none wood products will be done randomly as needs arise.
The harvesting of woody resources will be done on rotational basis and hence once the whole area has been covered, the cycle will commence again. The only cultural site identified is the old grave yard and this will be protected against any tree harvesting within and around the grave yard, cleaning and fencing will be done.
### 10.0 Management prescriptions (schedule, time frame)

#### 10.1 Table for proposed forest management activities year 2003

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<thead>
<tr>
<th></th>
<th>Grazing</th>
<th>Medicinal plants &amp; cultural sites</th>
<th>Pole extraction</th>
<th>Dead wood utilization</th>
<th>Mopane &amp; Terminalia management</th>
<th>Aforestation &amp; reforestation</th>
<th>Fire mgt &amp; HIV/AIDS awareness</th>
<th>Thatching grass</th>
<th>Cultural sites</th>
<th>Aids awareness</th>
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</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Acquire information from Zambia &amp; protection of cultural sites</td>
<td>15 people trained in wood carving, market survey, harvesting and selling of fire wood, event books</td>
<td>Nursery maintenance</td>
<td>Pricing research</td>
<td>Protection of the sites</td>
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<td>Selling of fire wood, event books</td>
<td>Seed sowing</td>
<td>Identification of communities</td>
<td>Pricing research</td>
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<td>Planning, marking, Training. HF responsible</td>
<td>Selling of fire wood, event books</td>
<td>Seed sowing</td>
<td>Training and planting</td>
<td>Market survey</td>
<td>Protection</td>
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<td>Control burning To improve Grazing Resources and pest control</td>
<td>Pole harvesting and recording</td>
<td>Selling of fire wood, event books</td>
<td>Demarcation</td>
<td>Nursery maintenance</td>
<td>Fire break construction and fire suppression</td>
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<td>May</td>
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<td>Demarcation</td>
<td>Nursery maintenance</td>
<td>Fire break construction and fire suppression, community training (HIV/AIDS)</td>
<td>Grass harvesting and selling</td>
<td>Protection</td>
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<td>Protection of cultural sites</td>
<td>Selling and book keeping</td>
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<td>Nursery maintenance</td>
<td>Fire break construction and fire suppression, HIV/AIDS campaign (DRAMA)</td>
<td>Grass harvesting and selling</td>
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<td>Jul</td>
<td>Control burning and grazing</td>
<td>Protection, cleaning and demarcation of cultural sites by putting posters</td>
<td>Selling and book keeping</td>
<td>Thinning</td>
<td>Nursery maintenance</td>
<td>Fire break construction and fire suppression, HIV/AIDS campaign (leaflets &amp; condom distribution)</td>
<td>Grass harvesting and selling</td>
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11.0 Implementation

11.1 Annual plan

Every year, an annual plan of operations will be prepared (see table in 10.1). Experiences from the previous year of implementation will be used in making the annual plan. The annual plan will be prepared jointly by DoF and the community.

11.2 Cooperation with DoF and the community

The annual plan will be implemented by The Directorate of Forestry and the community members. The DoF will provide technical support through facilitation of various activities and these include training of community members in various forestry activities and other subjects relevant to integrated forest management, periodic monitoring of activities as per plan, fire and HIV/AIDS campaigns, acquisition of reproduction materials and forestry tools. The community members will carry out all physical silvicultural activities within the community forest and on farm. Such activities will include, thinning, pruning, harvesting, seedling production, tree planting and firebreak creation. Other activities to be covered by the community will include law enforcement, marketing, selling of various products and records keeping.

12.0 Monitoring the implementation of the plan

The implementation of this forest management will be mainly monitored through proper record keeping and various items will be recorded as discussed here below:

12.1 Number of poles

Total number of poles harvested will be recorded. This includes both poles for selling and for domestic use. Trees also harvested illegally will be recorded by means of counting the stumps in order to come up with total removal. The stock and the total number sold will also be recorded. On quarterly basis a field evaluation will be conducted in order to reconcile the recorded numbers and that of stumps in order to verify if there is no illegal cutting going on and also to ensure that every thing is being done according to the plan.

12.2 Grazing

Patrols will be done during the growing period (January to June) in order to ensure that there are no animals present in the forest during that particular period as agreed by the community members.

12.3 Event book

Every activity taking place during the course of the year will be registered and this will help to know exactly what happened. The table here below shows different activities and items to be recorded:

<table>
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<tr>
<th>Event type</th>
<th>Activity recorded</th>
<th>Unit of measurement</th>
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<tbody>
<tr>
<td>Fire wood</td>
<td>Cubic meters/tons harvested</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N$ sold</td>
<td></td>
</tr>
<tr>
<td>Grass</td>
<td>Cubic meters/bundles harvested</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N$ sold</td>
<td></td>
</tr>
<tr>
<td>Seedling production</td>
<td>Number of seedlings produced</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of seedlings sold</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>----------------------------------------</td>
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<tr>
<td>Seed acquisition</td>
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<td>Cleaning</td>
<td>X</td>
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</tr>
<tr>
<td>Soil collection</td>
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<tr>
<td>Manure collection</td>
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<td>Soil mixing</td>
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<tr>
<td>Pot filling</td>
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<tr>
<td>Seedbed preparation</td>
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<td>Watering of seedbed</td>
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<tr>
<td>Pricking out</td>
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<td>Seedling watering</td>
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</tr>
<tr>
<td>Nursery protection</td>
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<td>X</td>
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<tr>
<td>Seedling sale</td>
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<tr>
<td>Seedling planting</td>
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<tr>
<td>Collection of budding/grafting materials</td>
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<tr>
<td>Budding/grafting</td>
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</table>

13.0 Nursery activities

The Sikanjabuka community has already established a nursery for seedling production and various nursery activities will take place according to the need and the demand of the community. Here below is the time schedule for the nursery activities for the year 2003. It is equally important to mention that from year to another the activities will look the same apart from minor changes. For example if the community is exposed to budding skills during the year 2003 then 2004 will be suitable for grafting. Time schedule may also change depending on climatic conditions.

13.1 Nursery Activities Schedule
Root pruning | X |
Shoot pruning | X |
Nursery inventory | X X X X X X X X X X X X |

References


Those interviewed


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</table>
Annexe 2. The Sikanjabuka Community Forest by-laws

1. A member of the community has the right to harvest poles for construction of a hut up to (80) poles after three (3) years.
2. Anyone who harvests more than (10) poles as construction material will obtain a permit.
3. Anyone harvesting with a permit once completing the task, must come and report to the Headman, Honorary forester, for signature that the permit has been utilized and should comply with conditions as stipulated in the permit.
4. A community member harvesting poles, timber or firewood for a non community member and who does not have a permit is to pay a fine of N$400.
5. Any person from outside the community who is found hunting, (fishing, sand mining) without a permit will be reported to the traditional authority who will decide what course of action to take.
6. Anyone from outside the community interested in obtaining wood material from the community forest will obtain permission from the FMC and be given a permit after paying an agreed amount of money.
7. Anyone interested in harvesting products from a given village will be permitted to do so after paying an agreed amount of money to VDC.
8. The VDC will pay 10% of accruals from sale of village products to FMC.
9. The traditional Authority (Chief’s Council) will be given 5% of the accruals of the forest resources.
10. A person who is not a community member harvesting or transporting wood materials without a permit will pay a fine of N$ 500-00 and lose the harvested materials to the community.
11. Anyone setting a fire in the village forest outside a designated place should be reported to the traditional authority who will institute appropriate measures.
12. Anyone constructing huts for income purposes is to pay to the community account N$15-00 for every house constructed.
13. If the treasurer or forestry committee member misuses the collected revenue s/he should pay the money back in time agreed by community failure to which s/he is reported to traditional authority.
14. If headman allocates user rights against the management plan, the Induna will be sued and the matter will be taken to the traditional authority by the FMC.
15. Trees planted and/or managed next to somebody’s farm or household (on communal land) belongs to her/him.
16. Woodlot or fruit orchard managed in any village belongs to the members of the concerned village and is under VDC.
17. The traditional authority will remove any one without permission fencing a communal area for any purpose.

18. A forest committee member not participating in three (3) consecutive meetings will be replaced by a new member elected at a community meeting.

19. Gender balance has to be maintained in the forest committee with at least 33% representation by women.

20. Anyone dumping rubbish in the village area will clean the area concerned and pay a fine of N$20-00.

21. The headman together with an Honorary Forester on behalf of the FMC will issue harvesting and transport permits.

Annex 3. OPERATING GUIDELINES/RULES FOR SIKANJABUKA COMMUNITY FOREST MANAGEMENT

1. NAME AND ADDRESS

The name of the Community Forest shall be known as: Sikanjabuka Community Forest Sikanjabuka Area. P.O. Box 1466, NGWEZE.

2. OBJECTIVES

The general objective of the Sikanjabuka Community Forest is to protect the forest resources within the main Malila Forest as well as those resources within the Sikanjabuka area.

Specific objectives:
- To manage the forest and protect its natural resources.
- To improve the quality of poles through planting some trees in the open areas.
- To generate income for all the stakeholders involved through sales of some of the resources within the environment.
- To create job opportunities for the people.

3. MANAGEMENT OF SIKANJABUKA COMMUNITY FOREST

The Sikanjabuka Community Forest will be managed by a Forest Management Committee on behalf of the community in conjunction with 12 Village Development Committees.

- All the residents of Sikanjabuka are members of the community forest. Any community member can be called upon to serve in any capacity as elected by the Sikanjabuka community.
- The forest will guarded and protected by Honorary Foresters, who will patrol the main community forest.
- The management of the community Forest will be governed by a set of rules and regulations as set out in the bylaws annexed as 1.
- All the people who are not part of the project but live within the vicinity of the forest will not be allowed to obtain any forest product unless in conformity with the stipulated by-laws.
The management structure of the community forest will comprise of the following:
   a. Forest Management Committee.
   b. Village Development Committee.
   c. Honorary Foresters.
   d. Farm Foresters.

3.1 Forest Management Committee

Forest Management Committee, hereafter known as FMC will comprise of 16 elected members 6
of the 16 members will serve as executive members.

a). **Chairperson** - is responsible for planning, calling and chairing meetings. He is the head of the
committee. Shall call special community meetings on request of at least half the members of the
FMC. Will chair and steer the meeting when two thirds of the members are present. This will be
considered as a quorum and all decisions shall be taken by majority vote.

b). **The Vice Person**, who in the absence of the Chair person takes up the responsibilities of that
office.

c). **The Secretary** - organizes meetings, takes minutes of the meetings and read previous
minutes.

d). **The Vice Secretary**, who in the absence of the Secretary takes up the responsibilities of that
office.

e). The Treasurer- Keeps proper financial records, banks and safeguard the monies received by
the community.

f). **Vice Treasurer**, who in the absence of the Treasurer takes up the responsibilities of that
office.

The FMC will serve for one year after which an election will be called and the serving members
will be eligible. Each village will elect a representative to serve in the FMC. The FMC will conduct
its activities in a democratic, transparent and flexible manner.

3.2. Role and responsibilities of FMC will include:

   a) The FMC will hold general meetings semi annually.
   b) The FMC will report and give feedback on development related to community forestry.
   c) FMC will call meetings of VDCs every 3 months.
   d) The FMC will spearhead any surveys/activities to be done by DoF in the Sikanjabuka
      Community Forest e.g., Resource mapping, inventory and survey.
   e) FMC will manage and distribute benefits obtained from the community forest.
   f) FMC will link the communities with other stakeholders.
   g) FMC will prepare the by-laws and the constitution for Sikanjabuka Community Forest.
   h) FMC will monitor and evaluate community forestry activities.
   i) FMC will safeguard on behalf of the community any material support given to the
      community.
   j) FMC will meet as a committee on a monthly basis.
   k) FMC will oversee the activities of Honorary Foresters.

3.3. Role of Village Management Committee

- Community mobilization towards participation in programme activities.
- Will authorize the extraction of specific forest products from their specific villages.
- Supervising the Farm Foresters and those assigned to assist in the community forest.
- Compiling the village development activities and submitting to the FMC.
- Organizing and mobilizing the resources for use by the community.
- Assisting in the identification of FFs and HFs.
- Requisitioning and maintaining records for materials received.
- Monitoring and evaluating farm forestry activities.

3.4. Role of the Honorary Foresters

In order to support the implementation of Integrated Forest Management Plans the Honorary Foresters will conduct the following duties.

- Represent the community in the formulation of IFMP for Malila forest.
- Will be the technical arm of the FMC and with the assistance of the DFO, prepare annual workplans based on IFMP.
- Guide the communities to carry out activities as outlined in the annual work plan.
- Issue permits in collaboration with the Forest Management Committee in consultation with the DFO.
- Undertake surveillance and report misuse of forest resources, inspect forest permits and verify legal operations.
- Observe and report damage occurring in the Forest, livestock movement, diseases and deaths to FMC.
- Participate in awareness campaigns, education and training of community in collaboration with DFO on the importance of community forest.
- Guide and train the community on forest and range management, utilization and fire management.
- Assess and make regular reports on progress of implementation of IFMP to the FM.C.
- Serve as fire contractor for the Community forest for the fire activities to be conducted.
- Maintain a strong link with the FMC and the community.
- Conduct any other forestry related duties as identified and agreed by the FMC on behalf of the community.

3.5. Role of the Farm Foresters

- Represent the villages in the formulation of IFMP for their respective villages.
- Guide the village members to carry out forestry activities within the villages e.g. woodlot, orchard establishment and management.
- Organize and train the village members on farm forestry activities.
- Assist HF on surveillance of illegal activities within and around the villages.

4. Financial Matters

a) The community forest will be managed by the community and where possible will solicit for support from donors if available.
b) The community will provide resources from within for the development of the projects identified.
c) Misuse of funds by members of the committee will result in prosecution.
d) Any such member will refund the missing amounts and/or face charges from the committee.
e) Financial statements shall be prepared at least once a year in accordance with accepted accounting norms.
f) Principles and practices such as statements shall be credited and certified by an independent accountant.
g) The FMC shall ensure that all monies received is deposited in the bank. An account will be opened in the Name as desired by the community such as Sikanjabuka Community Forestry with a registered bank.
h) The manner in which any money received from the activities of the community forest shall be spent will be decided upon by the members at an annual general meeting or special general meeting. This will also be based on the principles and guidelines laid out by the FMC based on a benefits distribution plan in place.
i) No monies shall be paid out as cash benefits directly to individual members. Money will be given to the villages for their specified development project need at the villages.

j) Individual members may under special circumstances be given money on loan basis as a form of a revolving fund under strict regulations with proper guarantors.

k) The management committee shall ensure that the financial statements are audited by professionals on yearly basis.

5.0. Rights and obligations of members

a. All members shall have the following rights
   - To attend, speak and vote at any community meeting or general meeting whenever they are present.
   - To inspect any minutes and make other records of decision at any general meeting or whenever they are present.
   - To inspect and make copies of financial statements.
   - To inspect the membership list.

b. Absentia
   - If any of the executive committee members fails to attend three consecutive meetings s/he shall be considered to have absconded the office, therefore the FMC, the VDC or the community at large will be called upon to elect a replacement.

c. Community meetings
   - The chairman of the FMC, VDC shall call up meetings of all members resident in the community at least once a year for the FMC and monthly for the VDC respectively.
   - The chairmen may call meetings at the request of at least half of the members of the community concerned.
   - Whenever two thirds of the members are present at a meeting, there shall be a quorum and all decisions shall be taken by majority vote.
   - FMC should call for the meetings of VDCs every three months.

d. Dissolution
Sikanjabuka Forest Management Committee may only be dissolved by a two thirds majority vote of all the members in a genera meeting and the Minister for Environment and Tourism.

e. Amendments
This constitution may be amended by the vote of two thirds of the members in a general meeting of which one month’s notice shall be given to all the members.