

Republic of Namibia  
Ministry of Environment & Tourism

WASTE MANAGEMENT IMPLEMENTATION PLAN FOR  
**MUDUMU LANDSCAPE**





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## WASTE MANAGEMENT IMPLEMENTATION PLAN FOR THE MUDUMU LANDSCAPE

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# CONTENTS

<b>CHAPTER 1</b>	<b>INTRODUCTION</b>	<b>4</b>
<b>CHAPTER 2</b>	<b>OBJECTIVE OF THE WASTE MANAGEMENT IMPLEMENTATION PLAN</b>	<b>5</b>
<b>CHAPTER 3</b>	<b>CONSULTATION AND PLANNING PROCESS</b>	<b>5</b>
<b>CHAPTER 4</b>	<b>LEGAL FRAMEWORK</b>	<b>6</b>
<b>CHAPTER 5</b>	<b>CURRENT WASTE MANAGEMENT PRACTICES</b>	<b>7</b>
	5.1 COLLECTION, TRANSPORTATION AND DISPOSAL	7
	5.2 WASTE INVENTORY	7
<b>CHAPTER 6</b>	<b>RECOMMENDED IMPROVEMENTS TO CURRENT WASTE MANAGEMENT PRACTICES</b>	<b>8</b>
	6.1 INTEGRATED WASTE MANAGEMENT HIERARCHY	8
	6.2 STORAGE	9
	6.3 TRANSPORTATION	9
	6.4 RECYCLING	10
	6.5 DISPOSAL	11
	6.6 AWARENESS RAISING	11
<b>CHAPTER 7</b>	<b>FUNDING</b>	<b>11</b>
<b>CHAPTER 8</b>	<b>STAKEHOLDERS AND RESPONSIBILITIES</b>	<b>12</b>
<b>CHAPTER 9</b>	<b>BIBLIOGRAPHY</b>	<b>14</b>

# CHAPTER 1

## INTRODUCTION



The Mudumu Landscape (ML) is one of the five pilot landscapes of the Namibia Protected Landscapes Conservation Areas (NAM-PLACE) project. The project is undertaken by the Ministry of Environment and Tourism (MET) with support from the Global Environment Facility (GEF) through the United Nations Development Programme (UNDP).

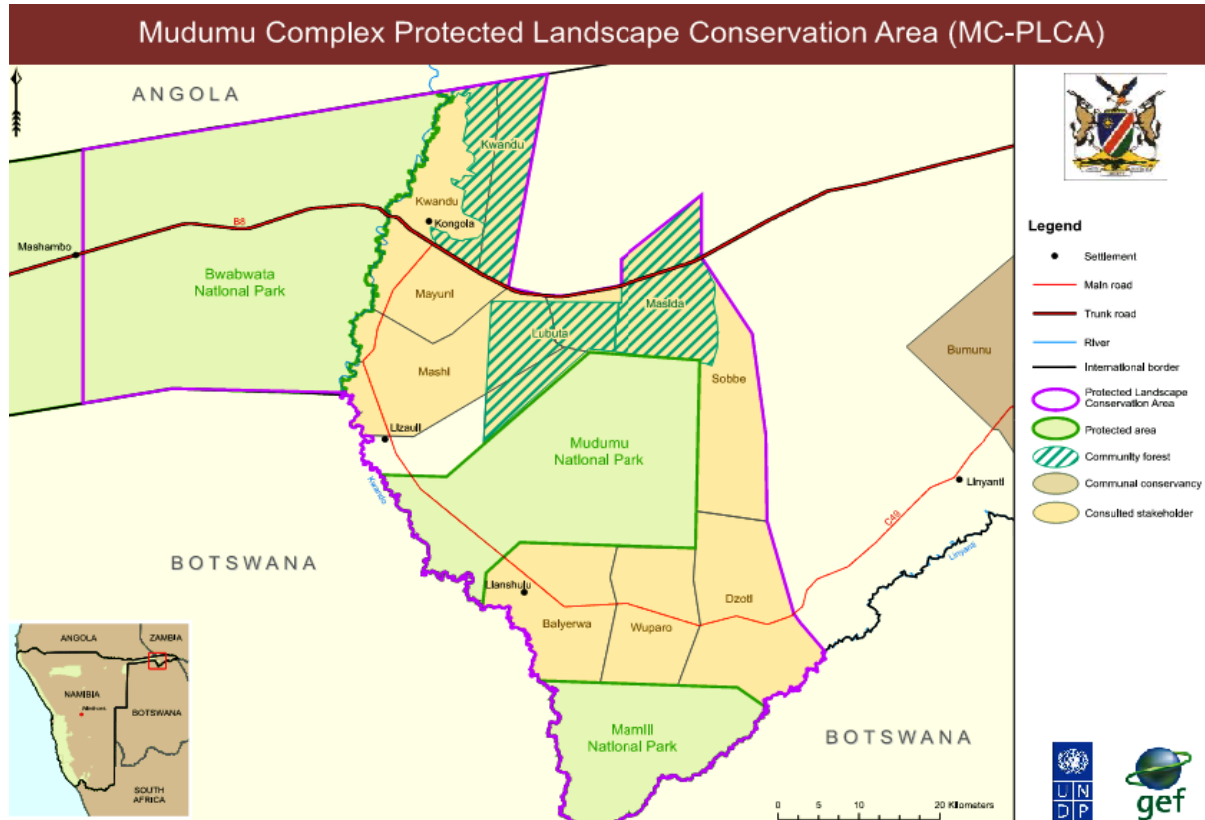
As indicated on the Landscape map below, the ML comprises of seven communal conservancies (Kwandu, Mayuni, Mashi, Sobbe, Wuparo, Balyerwa and Dzoti), three national parks (Mudumu, Nkasa Rupara and eastern part of Bwabwata National Park) and three community forests (Kwandu, Masida and Lubuta).

Waste management has been identified as one of the problems in the landscape that need urgent attention. Uncontrolled dumping of waste is common in the landscape. This is mainly due to the fact that there is no designated central waste disposal site. The NAM-PLACE Project has therefore appointed SED Consultancy to assist the ML with the design of a new waste disposal site and the development of a Waste Management Implementation Plan.

This plan provides a synopsis of the current waste management practices in the ML and presents recommended initiatives to promote sustainable and integrated waste management in the landscape. The plan also promotes the effective use of the proposed waste disposal site and allocates responsibilities to all stakeholders in the action plan.

## CHAPTER 2

## OBJECTIVE OF THE WASTE MANAGEMENT IMPLEMENTATION PLAN



**Figure 1: Map of the Mudumu Landscape.**

An integrated planning approach is required to ensure that all spheres of waste management are addressed, and thus to improve waste management in the Mudumu Landscape. It is also very crucial to ensure that all the initiatives and plans are self-sustaining. This plan's overarching objective is to improve on the current waste management practices in the Mudumu Landscape by promoting a holistic approach to waste management in line with the "*Waste Management Policy*" as contained in the *Mudumu Landscape Strategic Management Plan: 2012 - 2015*.

# CHAPTER 3

## CONSULTATION AND PLANNING PROCESS

This plan was prepared with input from a number of relevant Interested and Affected Parties (I&APs) pre- during and post the waste audit that was conducted in the landscape on the 08 June 2013, and through meetings with the NAM-PLACE Project Coordination Unit on the 06 June 2013 as well as with the Mudumu Landscape Committee on the 10 and 24 June 2013. I&APs showed interest and raised respective concerns and suggestions on the current and proposed waste management practices and disposal site design.

Figure 2 summarises the process that was followed in the development of this plan, highlighting the importance of monitoring performance for continuous improvement purposes.

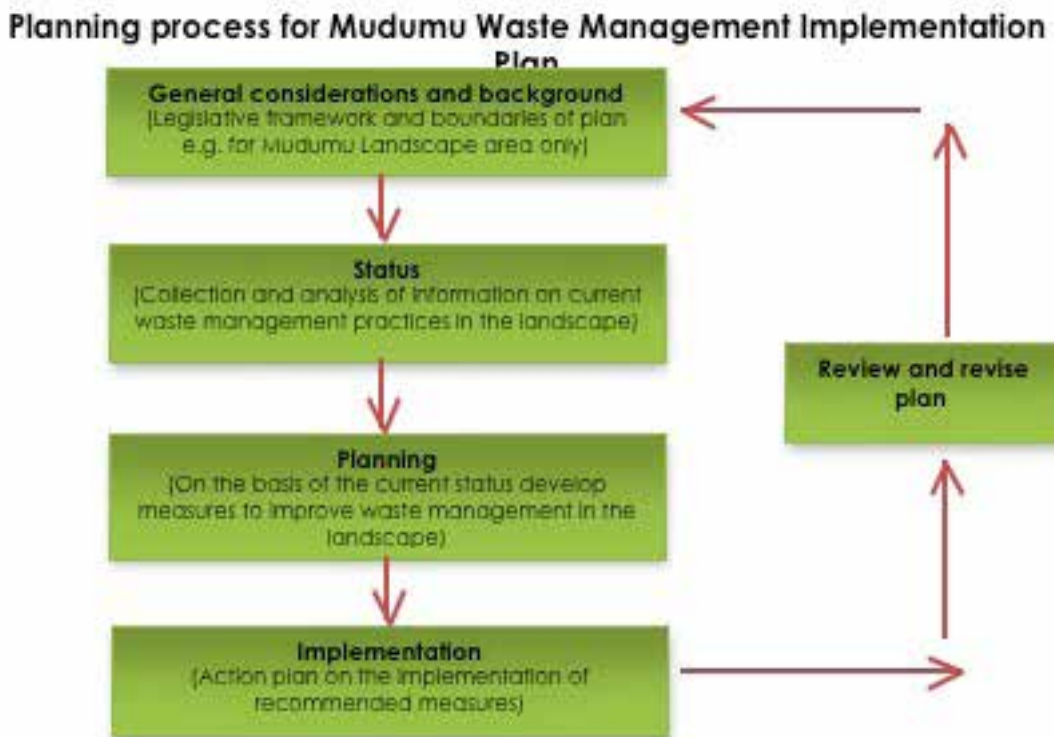


Figure 2: The Plan Planning Process.

Various Namibian legislations require that waste is properly managed to avoid harmful effects on the environment and people. These legislations should be taken into consideration during the development of future waste management strategies and the implementation of this plan. The most important ones for the Mudumu Landscape include:

### **Environmental Management Act No.7 of 2007:**

One of the objectives of this Act as stated in Section 2 (i) is the promotion of waste reduction, re-use and recycling. The Act also promotes the polluter pay principle which states that whoever is responsible for the pollution of the environment must bear the responsibility and costs associated with the clean-up of the environment.

The Water Act No. 54 of 1956 and Water Resources and Management Act No.27 of 2007:

Both these Acts deal with the management of water resources and controls the pollution of both surface and underground water resources. These Acts thus control the indiscriminate dumping of waste in undesignated waste disposal sites to minimise the potential pollution threats to water resources.

### **Communal Land Reform Act No.5 of 2002:**

This Act provides for the allocation and administration of all communal land and makes provision for the mitigation of impacts on the natural environment such as littering.

### **The Public Health Act 36 of 1919 and subsequent amendments:**

This Act controls the existence nuisances such as litter that can cause a threat to the environment and public health.

### **Pollution Control and Waste Management Bill:**

This bill aims to promote sustainable development and to prevent and regulate the discharge of pollutants into the environment. Once this bill is enacted it will make provision for the establishment of an appropriate framework for integrated pollution prevention and control.

### **Customary Law:**

A large number of Namibians live under indigenous customary law. The Mudumu Landscape is no exception. Customary Law is recognised by the Namibian constitution under Article 66.

Section 3 of the *Traditional Authorities Act No.25 of 2000*, gives certain powers to traditional authorities. One of the duties of the traditional authorities is to ensure that members of the traditional community use the environment and its resources in a sustainable manner. Thus the traditional authorities in the Mudumu Landscape can institute measures to promote good waste management practices.



# CHAPTER 5

# CURRENT WASTE MANAGEMENT PRACTICES

## 5.1 Collection, Transportation and Disposal

Currently there is no dedicated waste disposal site in the Mudumu Landscape (ML). It is a common practice in the landscape to dig holes for waste disposal. Once the hole is full it is covered and a new one is excavated. To reduce the rate at which the hole is filled and to prevent the waste from being blown by the wind, most residents and institutions in the landscape burn waste such as paper and plastic. Some institutions such as the (IRDNC Centre) compost their organic waste. Establishments such as bars dump their waste indiscriminately behind their businesses.

Some institutions such as lodges have a relatively organized waste management system. They store the waste generated at the lodge on site in dedicated drums. Once the drums are full the waste is transported to a dedicated area where it is buried. Some lodges in the landscape collect recyclables and transport them to Katima Mulilo where it is delivered to recycling companies.

## 5.2 Waste Inventory

It is difficult to develop a sound integrated “municipal” solid waste management plan without good data such as in this Mudumu Landscape (ML) case. It is even more difficult to engage the ML stakeholders in this early dialogue about the choice of an optimal plan without these data. The data and information collected during the audit with the Mwitati Petrevious of Kawina Bar; Julia Pelekelo of the Ngonga Primary School; Timothy Sikwanya at a Community Settlement; Manni Goldberg and Titus Mundinda of Namushasha River Lodge; Marba at Mayuni Secondary School; Le Roux at the Syiwa Environmental Centre and Riaan at Camp Kwando is still weaker than they should be due to the survey-time constraint and lack of past waste recordkeeping.

The snap-shot survey however revealed that waste generated in the landscape mainly consists of the following estimated waste ratio types:

**10% Tins and Cans** – both brewery and food cans.

**30% Plastic (bags & bottles)** – mainly carry bags and packaging material.

**20% Glass Bottles** – mainly alcoholic bottles from liquor outlets.

**10% Paper & Board** – mainly packaging material.

**15% Putrescible** - organic waste mainly leftover food from establishments such as lodges and school hostel.

**Others** – negligible amounts of other waste types as listed in the “*The Mudumu Landscape Semi-Controlled Landfill Site Design*” report.

It is almost impossible to formulate general statements concerning present and future trends in a setup such as the ML due to many contributing factors. The ML has a population of  $\pm 9,000$  inhabitants and the waste disposal site can be utilized by the  $\pm 29,000$  people in the surrounding constituencies. Intensive analysis of domestic solid waste production in developing countries revealed that the per capita waste generation rates are typically 0.4 – 0.6 kg per day. Nonetheless, the recordkeeping

recommendation made in the *"The Mudumu Landscape Semi-Controlled Landfill Site Design"* report will, in the long-term, result in quality data that will aid in drafting cost-effective and environmentally sound strategies in future.



**Pictures:** Littering, dumping and disposal of waste in the Mudumu Landscape

*(Photos by Metha Uushona)*

# CHAPTER 6

## RECOMMENDED IMPROVEMENTS TO CURRENT WASTE MANAGEMENT PRACTICES

### 6.1 Integrated Waste Management Hierarchy

The storage, transportation, treatment and disposal of waste can be a very expensive exercise that requires a lot of input from all stakeholders. However, there is a call to reduce the costs associated with the management of waste. This can be done by implementing the Integrated Waste Management Hierarchy as shown on Figure 3 below, which encourages members of the landscape to first avoid the production of waste; were the avoidance of waste is not possible the amount of waste produced be minimized, and to reuse and recycle waste before disposal is contemplated.



Figure 3: Integrated Waste Management Hierarchy

### 6.2 Storage

It is recommended that all producers of waste in the landscape store their waste in appropriate storage facilities such as 200l drums, wheelie bins and or cages until removed for disposal. Since local residents cannot afford to pay for waste storage and transportation services, it is recommended that a number of two-to-three fold mounted waste drums be erected strategically in the landscape along main routes where communities reside to deposit their waste. Institutions (such as schools, hostels, clinics and etc.) as well as commercial units (such as lodges, bars, coca-shops and etc.) can also be provided with such waste storage facilities free of charge or at cost where possible. Waste from the drums would then be transported to the waste disposal site for emplacement or recycling purposes.

The drums to be used should properly be enclosed and secured to avoid theft, damage, access by wildlife and wind-blown littering. The drums can be mounted as shown on Figure 4 below. This makes it cost-effective and easier to be emptied by the waste transporters and difficult to be removed by thieves or damaged by the animals.



**Figure 4: Waste storage drums that could be used in the landscape.**

### **6.3 Transportation**

It is good to have a well-designed and functional waste disposal site, but if the residents are unable to bring their waste to such a site, the waste management problems currently been experienced in the landscape will still prevail. It is therefore very important to ensure that the waste generated in the Mudumu Landscape and surrounding communities reaches the waste disposal site. Transportation of the waste to the waste disposal site will be a major challenge as most residents don't own vehicles and any other form of transport. In the same vein, the majority of residents cannot even afford to pay for their waste to be transported to the waste disposal site.

It is against this background that a centralized transportation service is recommended. This will be in the form of a common vehicle that will collect waste from the drums located at strategic locations and transport it to the waste disposal site. The Landscape Committee need to decide which option will work best. In choosing the best option the Landscape Committee should take affordability, reliability, sustainability and other important factors into consideration. The following transportation options are recommended:

#### **Option 1:**

Two local SMEs should be appointed to collect waste from all generators in the landscape and transport to the waste disposal site. The lodge owners, businesses and other establishments such as government institutions (schools, police and hospital) will pay for the removal of their waste by the SMEs. This will in a way subsidize community members who cannot afford to pay for the services. This can be a viable option but buy-in and commitment from all stakeholders is required to ensure that the contractor operate profitably. For instance all the about 7 lodges in the landscape, the conservancies and government institutions need to commit to this arrangement.

#### **Option 2:**

The second option is to allow all establishments to transport their waste to the waste disposal site and responsible authorities such as the MET, Regional Council, conservancies and others will provide transportation for local communities to take their waste to the waste disposal site.

Although Option 1 seems to be the most viable and recommended one, further consultations must be facilitated by the NAMP-LACE project to determine the option that will work best for the landscape.



**Figure 5: Example of a Recycling Station.**

Residents who produce bulky waste and have their own transportation such as local businesses are encouraged to transport the waste to the waste disposal site themselves. This will reduce the pressure on the two options discussed above.

## 6.4 Recycling

The landscape has a lot of potential to engage in profitable recycling ventures. For recycling to be a viable option of waste management in the landscape, concerted effort is required to ensure that all recyclables are deposited at a central place, the proposed new waste disposal site in this case. Big recycling companies in Namibia such as “*Rent-A-Drum*” and “*Scrap & Skins*” as well as conservancies have indicated their willingness to collect and buy recyclables if the landscape residents become organized and accumulate viable quantities.

As such, it is recommended that the proposed recycling stalls at the waste disposal site become the centre of the landscape recycling activities. Residents who want to recover recyclables from the waste that will be delivered at the waste disposal site will be allocated stalls and they will be required to comply with the waste disposal site operational guidelines to avoid disorder.

Lodges and other institutions such as schools are encouraged to sort their waste at source were possible to make recycling easier. A recycling station such as the one shown on Figure 5 can be a cost effective way to encourage recycling at source. This station is operated by depositing waste in the corresponding bags and once the bags are full, the recyclers are than called to empty them. This makes it cost effective as the costs of transportation and sorting at the waste disposal site are eliminated.

## 6.5 Disposal

It is recommended that all waste generated in the landscape and surrounding areas that cannot be recycled must be disposed off at the proposed new waste disposal site to avoid negative impacts on the environment and public health. This will minimise littering and dumping at undesigned sites. Detailed information on the design and disposal at the new waste disposal site is contained in “*The Mudumu Landscape Semi-Controlled Landfill Site Design*” Report.

## 6.6 Awareness Raising

Awareness raising campaigns are a key component of this plan that needs to be embarked upon through a *properly designed outreach programme*. There is a strong need to ensure that the content and objective of this plan are fully communicated to the residents of the Mudumu Landscape, Taxi Drivers and Tour Guides. It is recommended that awareness campaigns are carried out by all relevant stakeholders. The initial campaigns should be carried out concurrently with clean-up campaigns. Existing community gatherings should also be used to raise awareness on waste management in the landscape. Information to be communicated to the residents should amongst others include the promotion of the use of the new waste disposal site, the importance of disposing waste in the provided storage facilities and promote reduction, reuse and recycling of waste.

## CHAPTER 7 *FUNDING*

Various levels of funding will be required to ensure the realisation and successful implementation of this plan. Initial funding for the design, Environmental Impact Assessment (EIA) and construction of the site will be provided by the NAM-PLACE Project. It is also recommended that the NAM-PLACE Project also pay for the waste storage facilities or drums that will be strategically located at different places and along main roads in the landscape for use by the community members and other stakeholders.

After the establishment of the new waste disposal site other sources of funding will be required to cover operational expenses mainly salaries of staff working at the site. Other funds will be used for ad hoc maintenance of the waste disposal site such as fixing of the fence and removal of vegetation along the periphery fence to reduce fire risk. Various funding options are proposed for thorough consideration by the Mudumu Landscape Committee. One or a combination of the following options can be pursued to cover the operational expenses of the waste disposal site.

- ◇ **Caprivi Regional Council to resume responsibilities of the waste disposal site:** this option should be seriously looked as it is the most sustainable in the long run. Since Kongola is experiencing a fast growing rate there is a possibility of it been declared as a Settlement or Village Council in the near future. A proclaimed settlement will require a dedicated waste disposal site. It will therefore be viable for the Caprivi Regional Council to assume responsibility of managing this waste disposal site than to develop another one for the settlement.
- ◇ **Allocation of funds by the conservancies:** the conservancies that make use of the waste disposal site can allocate funds from their income for the management of the waste disposal site.
- ◇ **Ministry of Environment and Tourism:** This waste disposal site will significantly contribute to the improvement of tourism in the area as it will lead to a reduction of littering in the area. It will therefore make sense for the ministry to contribute some funds towards the operation of the site.
- ◇ **Income from recycling stalls:** recycling stalls to be constructed at the waste disposal site can be rented out to recyclers at a minimal fee and the funds can be used for operational costs. This will however only be used to supplement the main source of funding.
- ◇ **Advertisements:** Lodges and other business can display or advertise their respective ventures on the waste storage drums and or facilities at a minimal fee and the funds can also be used for operational costs. This will however also only be used to supplement the main source of funding.

## CHAPTER 8

## STAKEHOLDERS AND RESPONSIBILITIES

All relevant Interested and Affected Parties (I&APs) need to formally (have agreements in place where necessary) commit to this plan to ensure that the responsibilities allocated to them are fully implemented. However, there is a need to have one dedicated stakeholder that will have the overall responsibility of ensuring that this plan is fully implemented. It is recommended that the Mudumu Landscape Committee is the responsible stakeholder who will also be responsible for monitoring and evaluation of the implementation of the plan. This can be done with guidance of the NAM-PLACE Project.

It is further recommended to adhere to both the *Collaborative Management* and *Partnership Policy Statements* and the *Strategic Management Approaches* as outlined in the "*Mudumu Landscape Strategic Management Plan: 2012 – 2015*".

The Table below lists the various actions that need to be implemented to successfully achieve the recommended improvements on the waste management practices of the landscape. The plan also lists stakeholders that are responsible for the implementation of the specific action. It is very important to set dates by when the specific tasks will be completed during the suggested "*Main Brainstorming Workshop*", which serves as a tool to monitor progress in the implementation of recommendations.



ACTION	DESCRIPTION	RESPONSIBLE	TIMEFRAME
Design, EIA and construction of waste disposal site	Appoint consultants to design the waste disposal site, conduct EIA and construct the waste disposal site.	NAM-PLACE	May – Aug 2013
Determine waste transportation options	Organise a “Main Brainstorming Workshop” to determine the most appropriate option for waste transportation from the recommended options.	NAM-PLACE	September 2013
	Lobby with relevant government departments to play a role in the transportation of waste and management of the waste disposal site.	ML Committee with assistance from NAM-PLACE	
	Appoint transportation contractors if this is the best option.	CHIEF in consultation with the ML Committee	
	Allocate dedicated vehicle for waste transportation if this is the best option.	Relevant Stakeholders	
Install waste drums for the storage of waste from the community.	Organise a survey to determine the location and number of drums to be placed in the landscape.	NAMP-LACE	August 2013
	Determine financial implications and source funding.	NAM-PLACE	
	Procure, distribute and install drums at the selected locations.	NAM-PLACE	
Raise awareness on waste management in the landscape	Source and appoint an Outreach consultant that will develop and facilitate the entire awareness programme that will include among others the activities below.	NAM-PLACE	August 2013
	Organise community meetings to inform them about this plan and the proposed waste management practices (including the new waste disposal site).	Outreach Consultant with assistance from ML Committee	
	Develop radio programmes, posters and leaflets on good waste management practices in the landscape, translate into local languages and disseminate in the landscape.	NAM-PLACE	
	Organise corporate social contributing clean-up campaigns in littering hotspots such as Kongola and inform residents on best waste management practices.	NAM-PLACE	
Appointment of waste disposal site operators	Identify, appoint and train community members who will operate the waste disposal site.	CHIEF in collaboration with ML Committee.	
	Secure an exchange program with institutions (e.g. municipalities) that operate a similar waste disposal site for in-service training of the operators.	NAM-PLACE	
Funding for operations of waste disposal site	Secure sustainable source funding to pay for operational expenses of the waste disposal site.	ML Committee	
	Approach all relevant stakeholders to see how they can contribute to the operations of waste disposal site.	ML Committee	
Select waste collectors	Select community members who will be allocated recycling stalls at the waste disposal site. Preference should be given to women, previously disadvantaged individual and those communities in which the waste disposal site is located.	CHIEF in consultation with the ML Committee	
	Link waste collectors with recycling companies that will buy and transport their recyclables.	NAM-PLACE	
Promote recycling in the landscape	Provide name and contact details of interested Recycling Companies to NAM-PLACE & the ML Committee.	SED Consultancy	July 2013
	Enter into agreements with companies that will buy and transport recyclables from waste collectors at the waste disposal site and from source. Follow up on companies that have indicated willingness to collect and transport recyclables from the landscape.	ML Committee and all interested stakeholders.	
	Install recycling stations at strategic spots (e.g. lodges, shops and institutions) to promote separation of waste on site.	Recycling companies	

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