

**COMMUNITY ACTION IN THE MANAGEMENT OF  
COMMUNITY FORESTS IN SWAZILAND:  
The case of Ngcayini and Ezikhotheni chiefdoms**

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IN SWAZILAND: The case of Ngcayini and Ezikhotheni chiefdoms**

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**Submitted in fulfillment of the requirements for the degree of Doctor of Philosophy  
(PhD) in the School of Agricultural, Earth and Environmental Sciences, College of  
Agriculture, Engineering and Science, University of KwaZulu Natal,  
Pietermaritzburg**

## DECLARATION

I, Saico Sibusiso Singwane declare that,

- The research reported in this thesis except where otherwise indicated is my original work.
- This thesis has not been submitted for any degree or examination at any other university.
- This thesis does not contain other people's data, pictures, graphs or other information unless specifically acknowledged as being sources from other persons.
- This thesis does not contain other people's writing unless specifically acknowledged as being sourced from other researchers or sources. Where other written sources have been quoted, then:
  - ✓ Their words have been re-written but the general information attributed to them has been referenced; and
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- This thesis does not consist of text, graphics or tables copied and pasted from internet unless specifically acknowledged and the source being detailed in the reference section.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

As the candidate's supervisor, I approve this thesis for submission

Professor Heinrich Beckedahl \_\_\_\_\_ Date: \_\_\_\_\_

## Preface

I, Saico Sibusiso Singwane registered as a part-time PhD candidate in the School of Agricultural, Earth and Environmental Sciences of the College of Agriculture, Engineering and Science at the University of KwaZulu-Natal, in January 2014, while working in the Department of Geography, Environmental Science and Planning, University of Eswatini (formerly known as the University of Swaziland). The interest in the human-environment interactions and specifically forest research dates back to my undergraduate research, which focussed on the effects of the Driekoppies Dam on the distribution of trees and carbon uptake in the Timphisini area, in Swaziland. During my post-graduate research, reading for the MSc degree in Environment Resource Management, research on the distribution of trees triggered further interest in forest resource management, focussing on gender issues in forest resource management in Swaziland, based on a case study of the Kukhanyeni Constituency. This research led to the following publications:

- i. Salam, A. and **Singwane, S.S.** (2004). Effects of Driekoppies dam on the distribution of trees and carbon uptake at Timphisini area, in Swaziland. In: *UNISWA Research Journal of Agriculture, Science and Technology*. Volume 7, No. 1. p. 31-39.
- ii. Singwane, S.S. (2006). Gender Issues in Forest Resource Management in Swaziland: A Case Study of Kukhanyeni Constituency. In: *UNISWA Research Journal of Agriculture, Science and Technology*. Volume 9, No. 1. p. 57-67.

In addition, I presented a paper entitled ‘Women and sustainable management of forest resources in Swaziland’ at the Environmental Education Association of Southern Africa’s 26<sup>th</sup> Annual conference held at the University of Swaziland in 2008. This paper was subsequently published in the edited conferences proceedings:

**Singwane, S.S.** (2009). Women and sustainable management of forest resources in Swaziland. In: Mlipha, M. (Editor). *Actions towards a sustainable future: Paper contributions made during EEASA’s 26<sup>th</sup> Annual conference (28<sup>th</sup> July – 1<sup>st</sup> August 2008 University of Swaziland, Kwaluseni Campus)*. Swaziland Environment Authority: Mbabane. p. 351-360).

This was followed in 2012 by the publication of two further papers on forest related issues in the *Journal of Sustainable Development in Africa* namely:

- i. Singwane, S.S. and Shabangu, N. (2012). An examination of the utilization and management of natural woodlots in Swaziland- a case of Ka-Bhudla community. In: *Journal of Sustainable Development in Africa*. Volume 14, No. 1. p. 15-31.
- ii. **Singwane, S.S.** and Malinga, P. (2012). Impacts of pine and eucalyptus plantations on soil organic matter content in Swaziland- a case of Shiselweni forests. In: *Journal of Sustainable Development in Africa*. Volume 14, No. 1. p. 137-151.

Growing up in a rural community it was possible to observe and experience the dependency of rural communities on forest resources, which has culminated in the present research. Results of this work were presented at the recent Conference of the Society of South African Geographers in Bloemfontein (1-5 October 2018), and has been submitted to the *Canadian Journal of African Studies* for publication (A copy of the submitted paper is enclosed as Appendix 5).

It should be noted that the name of the Kingdom of Swaziland has recently been changed to the Kingdom of Eswatini. As most literature cited still refers to the country as Swaziland, it was felt that, to avoid confusion, the original name 'Swaziland' be used in preference to 'Eswatini'.

## Abstract

It is evident that community action is indispensable in order to attain sustainable management of community resources in general and particularly community forests, as well as to control land degradation. In Swaziland however, the examination of factors behind fruitful community action is quite recent, hence there is a paucity of published documents on this subject. Therefore the aim of the research presented here was to assess the role of community action in the management of community forests in Swaziland using the Ngcayini and Ezikhotheni chiefdoms as case studies. The study focused on the following issues: 1) the management of community resources by internal and external stakeholders; 2) the rules governing the management of forest resources and the manner in which the derived benefits are utilized and distributed, and 3) the extent of community action in the management of community resources. The research has also provided a critical review of the opportunities and threats associated with community action in the management of community forests, the extent of community forest resource utilization, and the nature and extent of land degradation associated with such resource utilization.

Data were collected by selecting and interviewing respondents who comprised internal and external stakeholders. The internal stakeholders included 300 heads of households (100 from Ngcayini and 200 from Ezikhotheni), eight members of the community inner council, comprising the headman, three inner council members and three ward elders from each chiefdom), six Natural Resource Management Committee members (three from each chiefdom), as well as the Individual chiefdom councillors (*Bucopho*) at Ngcayini and Ezikhotheni chiefdoms as case studies. Notably, sampling was only done at Ezikhotheni where 200 out of 500 homesteads selected using simple random sampling. Regardless of the number of households in a homestead, only one head of household was interviewed. External stakeholders included four officers in the Forestry Section of the Ministry Tourism and Environmental Affairs (MTEA); four officers of the Swaziland Environment Authority (SEA); the Livelihoods Manager for *World Vision*; and the Director of Environment for *Conserve Swaziland*. Considering that the study involves the views and opinions of human beings as the key subjects, ethical clearance was solicited through the University of KwaZulu-Natal Ethics Committee (protocol reference number HSS/0729/017D).

The research findings indicate that access to forest resources is free in natural forests, yet in plantation-style community forests it is controlled by traditional authorities and Natural Resource Management Committees (NRMCS). Resources extracted from plantation-style community forests are sold to community members, and the proceeds are then used to fulfil the needs of the community concerned. For instance, at Ngcayini the proceeds fund community leaders when attending royal duties and buy a royal kraal stamp and its accessories as indicated by 37% of the heads of households and 100% of the community leaders. At Ezikhotheni they financed a water project and support neighbourhood care points according to 6% of the heads of households and 18.2% of the community leaders. In terms of the management of community forests, both internal and external stakeholders relied on a number of strategies. For instance, both males and females indiscriminately engaged in planting, pruning, mending fences, making and maintaining fire breaks and harvesting forest products. Moreover, the findings reveal that there was generally community-wide cooperation from ordinary community members to community leaders in the management of community forests. Nonetheless, such cooperation was challenged by issues such as chieftaincy disputes, prevailing poverty issues and rapid population growth.

In the management of community forests, the Ezikhotheni and Ngcayini chiefdoms collaborated with a range of Non-Governmental Organizations (NGOs), government departments and parastatals. Nevertheless, such collaborations were fraught with benefits and challenges. Furthermore, there are elaborate rules governing the management of community forests in the specific chiefdoms studied (90% Ezikhotheni and 88% at Ngcayini). The rules are formulated by all community members and enforced by community leaders. Despite the elaborate rules, there are challenges of illegal burning and harvesting of resources, as well as the theft of fence materials surrounding the forests and gullies. Nonetheless, perpetrators are generally exposed and reprimanded through levying of fines. In addition, community members indicated knowledge of national policies and legislation relating to the management of community forests. On another note, community action appeared to be embraced more extensively at the Ezikhotheni than at the Ngcayini



chiefdoms. In spite of this, community action in both chiefdoms was fraught with both opportunities and threats.

Regarding land degradation, the findings highlighted that erosion in the form of gullying was active and advancing from 2.14 hectares in 2008 to 2.59 hectares in 2017 at Ngcayini, whereas at Ezikhotheni it was diminishing from 9.78 hectares in 2008 to 9.37 hectares in 2017 due to successful rehabilitation following the planting of trees. Plantation-style community forests were generally increasing from 2008 to 2017 in both chiefdoms (4.48 to 7.15 hectares at Ezikhotheni and 0.35 to 0.48 hectares at Ngcayini), signalling the effectiveness of the afforestation intervention and a success of community action in the management of community forests. Moreover, the Normalized Difference Vegetation Index (NDVI) also depicts a general increase from 2008 to 2017 in both chiefdoms (0.34 to 0.43 at Ezikhotheni and 0.33 to 0.56 at Ngcayini); which too is indicative of the effectiveness of the afforestation intervention and the success of community action in the management of community forests.

## **Dedication**

This work is dedicated to the **Almighty God** for sustaining me physically and spiritually in the duration of this work. Blessed be the name of the Lord, Amen!

## **Acknowledgement**

My sincere appreciation goes to all those who have supported me in the course of working on this document. Special thanks to my supervisor Professor Heinrich Becketdahl for his unswerving guidance and encouragement from the inception to final stage of this work. May the Lord bless you all, Amen!

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## **List of acronyms and abbreviations**

AOPs	Annual Operational Plans
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CBD	Convention on Biodiversity
CBFM	Community Based Forest Management
CBNRM	Community-Based Natural Resource Management
CDPs	Community Development Plans
CFCs	Community Forest Councils
CFM	Community Forest Management
CITES	Convention on International Trade in Endangered Species of Flora and Fauna
EIA	Environmental Impact Assessment
EMA	Environment Management Act
FAO	Food and Agriculture Organization
FMNR	Farmer Managed Natural Regeneration
FMPs	Forest Management Plans
FPA	Flora Protection Act
GDP	Gross Domestic Product
GIS	Geographic Information System
GPS	Global Positioning System
HDI	Human Development Index
HIV and AIDS	Human Immuno Virus and Acquired Immuno Deficiency Syndrome
HPG	Holistic Planned Grazing
HRMS	Hill Resource Management Societies
IAPS	Invasive Alien Plant Species
IIED	International Institute for Environmental Development
JFM	Joint Forest Management
JICA	Japan International Cooperation Agency
JMA	Joint Management Agreement
LADA	Land Degradation Assessment in Drylands
LLPPA	Local Level Participatory Planning Approach
LMB	Land Management Board
MDGs	Millennium Development Goals
MTEA	Ministry Tourism and Environmental Affairs
NCC	Namibia's Communal Conservancies
NDVI	Normalized Difference Vegetation Index
NEF	National Environment Fund
NFP	National Forest Policy
NGOs	Non-Governmental Organizations



NRA	Natural Resources Act
NRM	Natural Resource Management
NRMCs	Natural Resource Management Committees
NTFPs	Non-Timber Forest Products
NWFPs	Non-Wood Forest Products
PELUM	Participatory Ecological Land Use Management
PFM	Participatory Forest Management
RDAs	Rural Development Areas
SACU	Southern Africa Customs Union
SADC	Southern African Development Community
SEA	Swaziland Environment Authority
SNL	Swazi Nation Land
SNTC	Swaziland National Trust Commission
SPSS	Statistical Package for Social Scientists
SWC	Soil and Water Conservation
TDL	Title Deed Land
TERI	The Energy and Resource Institute
TRMA	Timber Resources Management Act
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
UNIGEPS	University of Swaziland Geography, Environmental Science and Planning Society
WOCAT	World Overview of Conservation Approaches and Technologies

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 The Background Context and Knowledge Gaps**

This subsection of the study focuses on introducing the key concepts in the study and contextualizing them. These have been structured as subheadings which include a general background to the study, public participation, community action, Community-Based Natural Resource management (CBNRM), community forests, land degradation and invasive plant species, as well as Natural Resource Management Committees (NRMCs) and forest products.

#### **1.1.1 General background to the study**

Swaziland is located between longitudes 30° and 33° East and latitudes 25° and 28° South in the south-eastern part of Africa (Figure 1.1) (Brown, 2011; Magagula, 2003) with a population of about 1 093 238 people with annual population growth of 0.7% (Government of the Kingdom of Swaziland, 2017). The country is landlocked, covering an area of 17 364 km<sup>2</sup>, and population density of 63 inhabitants per km<sup>2</sup>. The lowest point in the country is found where the Great Usuthu River enters South Africa, at 21 meters above sea level and the highest point is found at the Bulembu Mountain, at 1,862 meters above sea level (Nations Encyclopedia, 2019).

Regardless of such a small areal extent, the country is characterized by six distinct agro-ecological regions (Figure 1.2), which are clearly distinguished on the basis of elevation, topography, climate, geology and soils (Remmelzwaal, 1993; Government of Swaziland, 2005). These zones are Highveld (33%), Upper Middleveld (14%), Lower Middleveld (14%), Western Lowveld (20%), Eastern Lowveld (11%) and Lubombo Range (8%) (Government of Swaziland, 1997).

Swaziland is characterized by a literacy rate of about 83.1%, which indicate that a majority of the population can read and write (United Nations Development Programme [UNDP], 2018). Despite the high literacy rate, the country faces a number of challenges.

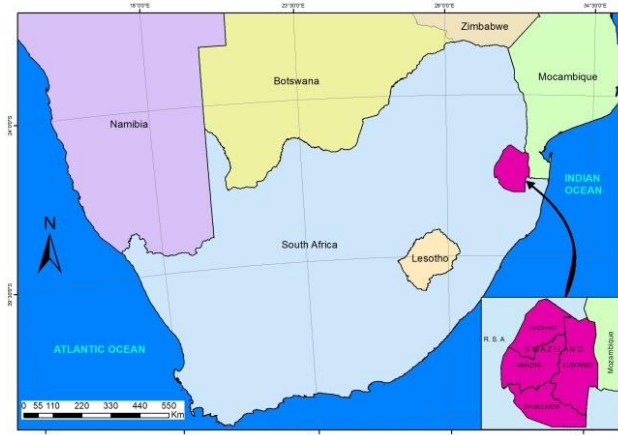


Figure 1.1: Location of Swaziland in Southern Africa

Source: University of Swaziland (UNISWA), Department of Geography, Environmental Science and Planning (GEP) (2018)

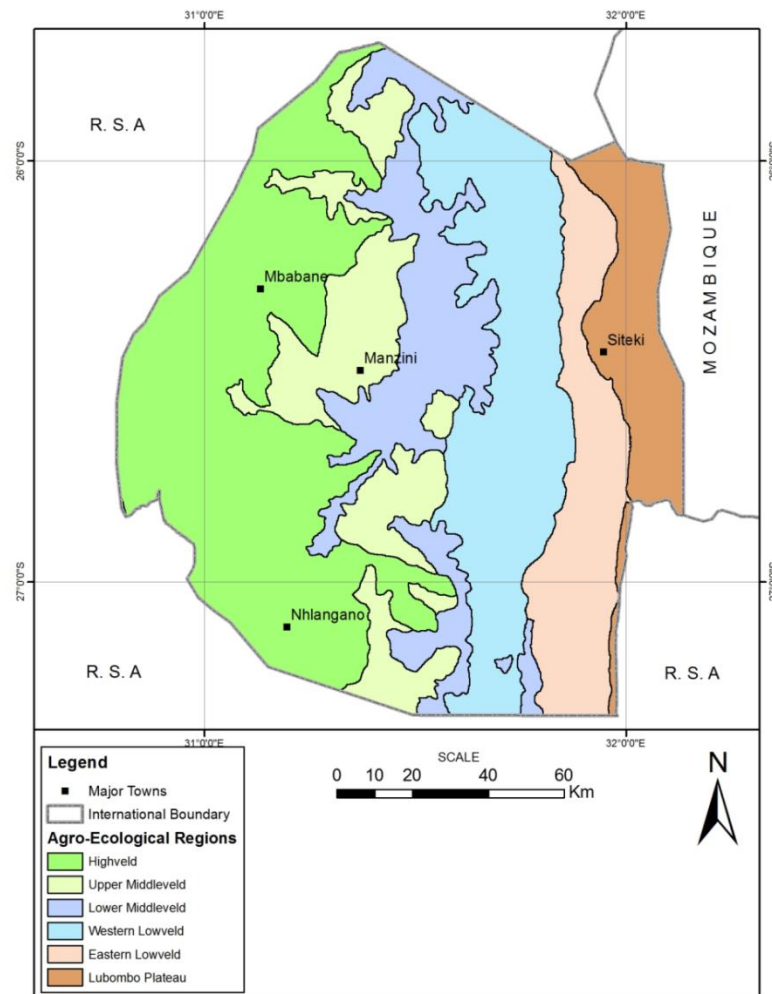


Figure 1.2: The agro-ecological regions of Swaziland

Source: University of Swaziland (UNISWA), Department of Geography, Environmental Science and Planning (GEP) (2018)

These include a lowest life expectancy in the world of about 49 years, a high proportion of the population (63%) living below the poverty line, and the highest Human Immuno Virus and Acquired Immuno Deficiency Syndrome (HIV and AIDS) adult prevalence rate (26%) in the world (World Food Programme, 2016). There are also environmental challenges such as deforestation and forest degradation (Kissinger, Herold and De Sy, 2012); excessive hunting, overgrazing, soil degradation, and limited potable water (World Population Review, 2016). While many of these challenges are probably interrelated (especially given the high level of poverty) collectively they hinder the economic growth of the country. Consequently, in the quest of fighting against poverty people rely on vegetation for a livelihood, and the vegetation itself relies on geology and soil for its survival.

With regard to geology, Swaziland is underlain by some of the oldest rocks in the world (Murdoch, 1970). The diversity in landscape, geology and climate has an effect on the distribution of forests in the country (Murdoch, 1970). For instance, while the Highveld and part of the Middleveld is conducive to the growth of forest plantations, the other regions are mainly dominated by natural forests and woodlands. Despite such a diverse distribution of forest resources in the country, the most critical issue facing them is their management. Notably, management of forest resources depends on the land tenure system under which they are found. In Swaziland, there is Swazi Nation Land (SNL) (75%) which is held in trust for the people by the King, Title Deed Land (TDL) (24%) owned privately by individuals, and Crown Land (1%) which is owned by the government (Government of Swaziland, 2001). Therefore, resources on SNL are normally communally owned but under the jurisdiction of traditional authorities (Chiefs, headmen, and inner councils), whereas on TDL they are privately owned by individuals. Finally, resources on crown land are owned by the government and this is more applicable to urban areas. At this juncture it is important to highlight key management issues pertaining to forest resources in the African continent.

Forest resources management is generally defined as the manner in which people harvest, use, take care of, propagate, and develop their forests or trees and the associated resources such as wildlife, water, and plants in order to obtain yields which are sustainable over the

long term (Messerschmidt, 1999). Forest resources play an important role in the socio-economic development of most countries (Ayivor *et al.*, 2011). Evidence shows that the African continent's forest cover has come under intense pressure due to human activities (Giliba *et al.*, 2011). For instance, from 1990 to 2005 Africa's forest cover decreased from 699.361 million hectares to 635.412 million hectares, with an annual decline rate of about 4 per cent (Food and Agriculture Organization [FAO], 2009). Such a remarkable decline in forest cover underscores the need for cooperation in the management of forest resources at all levels of society, especially communally owned resources, in order to attain sustainability. This is especially the case because often times privately owned resources are well taken care of by their owners. Communally owned resources on the other hand, normally require the entire community to join forces (public participation) in their management to achieve sustainability. The fact that this does not always happen in the communal areas of Swaziland and the challenges inherent in achieving such participation motivated for the present study on the role of community action in management of community forests in Swaziland.

### **1.1.2 Public participation**

According to Kandil (2016), public participation can be any process but not an event, that directly engages members of the public in the making of decisions and choices that concern them and also give full consideration to members' input in making that decision. This implies that all people, regardless of their economic and social status, must participate equitably in all issues relating to resource management in order to achieve sustainability. The main reason is that "policies implemented without full participation of stakeholders, particularly the poor and socially-deprived groups have proven largely unsustainable" (Topfer, 2000:17). On the same note, Chirenje, Giliba and Musamba (2013) aver that empowerment of local communities through their involvement in the decision-making processes, from top levels to low levels, is crucial for supporting pro-poor policies, programs, projects, improved service delivery, poverty reduction, and the attainment of the Millennium Development Goals (MDGs). This indicates that participation by local communities in resource management in particular is indispensable in order to achieve sustainability.

There are different types of participation and these are explained in Table 1.1. Notably, evidence suggests that in African countries there is a prevalence of three types of participation namely; passive participation, participation by consultation, and functional participation (Chirenje, Giliba and Musamba, 2013). Basically, these categories detect limited to no participation by communities in local decision-making. Ideally, the most pertinent type of participation that must be adopted by local communities is self-mobilization/active participation where people take independent initiatives without being driven by external institutions; a situation that is seldom found in African countries.

Table 1.1: Types of participation

Type of participation	Components of each type
Passive participation	People participate by being told what is going to happen or has already happened. It is a unilateral announcement by an administration or project management without any listening to people's responses. The information being shared belongs only to external professionals.
Participation in information giving	People participate by giving answers to questions posed by extractive researchers and project managers using questionnaire surveys or similar approaches. People do not have the opportunity to influence proceedings, as the findings of the research or project design are neither shared nor checked for accuracy.
Participation by consultation	People participate through consultation and external agents listen to their views. The external agents define both problems and solutions and may modify these in light of people's responses. Such a consultative process does not concede any share in decision-making and professionals are under no obligation to take on board people's views.
Participation for material incentives	People participate by providing resources, for example labour, in return for food, cash or other material incentives. It is very common to see this so called participation, yet people have no stake in prolonging activities when the incentives end.
Functional participation	People participate by forming groups to meet pre-determined objectives to the project, which can involve the development or promotion of externally initiated social organization. Such involvement does not tend to be at early stages of projects, but rather after major decisions have been made.
Interactive participation	People participate in joint analysis, which leads to action plans. It tends to involve interdisciplinary methods that seek multiple perspectives and makes use of systematic and structured learning processes.
Self-mobilization/active participation	People participate by taking initiatives independent of external institutions to change systems. Such self-initiated mobilization and collective action may or may not challenge existing distributions of wealth and power.

Source: International Institute for Environmental Development [IIED] (1994: 19)

Chirenje, Giliba and Musamba (2013) point out that experience from a number of developing countries have shown that when communities are empowered with responsibility and legally secured rights for the management of forest resources, and derive

benefits from them, the rate of degradation is substantially reduced and in many cases the forest cover improves remarkably. Chirenje, Giliba and Musamba (2013) allude to a critical issue in resource management which is secured tenure rights. Specifically, forest tenure is a comprehensive concept incorporating ownership, tenancy, rights and other measures to manage and use forest land and resources (Siry *et al.*, 2015). According to Siry *et al.* (2015), forest tenure actually determines ‘who can use what resource, for how long, and under what conditions’ in a particular society. In Swaziland for example, land tenure is a contentious issue due to a dominance of SNL where the occupants do not hold a title to the land, hence they cannot sell the land as is the case on TDL. This is due to the fact that acquisition of land on SNL is through swearing allegiance (a practice referred to in SiSwati as *kukhonta*) to a Chief whereas on TDL the land is bought and can be sold.

The main argument in the present study is that all community members must actively participate in the management of community forests in order to promote the sustainability of these resources. According to Maharjan (2005), in Nepal consequently to handing over forest management to users’ groups in 1990, community participation in forest management started regaining its importance. Since then villagers began to internalize development interventions in their own operational plans which take into consideration both past practices as well as present and future concerns.

Moreover, Maharjan (2005) indicates that in the new institutional arrangement, villagers assumed the roles of planners, implementers and beneficiaries at the same time. Notably, this set-up enabled the villagers to integrate community traditions and social norms into the management of forests. Consequently, the villagers have access to more forest resources to enhance their well-being while at the same time there is an increase in forest growing stock and crown cover (Maharjan, 2005). Sustainable forest management has been defined as the management of an area of forest in a way that maintains the ability of forest growing on that land to continue to provide a full range of products and amenities in perpetuity while retaining the forests’ natural values (Government of Swaziland, 2002a). This entails that community members must collaborate in the management of communally owned resources

(community action) such as community forests. In view of that, attention now focuses on an explanation of the concept of community action in the context of the present study.

### **1.1.3 Community action**

Community action generally refers to campaigns undertaken by people living in a particular place. In the context of the present study, community action implies community-wide collaboration of community members in activities that have to do with management of communally owned resources, particularly community forests. Ideally, community action in resource management involves decentralization such that planning and decision making is shifting from the central authority to the local people who are close to the resources. For instance, Maharjan (2005: 203) argues that “Restrictions on traditional community participation and weak institutional settings during 1957-1990 period seem to have encouraged unsustainable ways of forest resource uses in Nepal. As villagers were always dictated to by authorities and were not allowed to manage the forests, they were unable to think of future problems likely from over-exploitation of forest resources”.

Community action, therefore, requires that the natural resource agencies/decision makers must have the expertise and be actively involved in the decision making process as well as being good listeners in order to win the trust and confidence of the local people (Shindler and Neburka, 1997). This encourages the local people to take their work seriously, knowing that their recommendations are relied on and used. Those in support of decentralization contend that it is good for natural resource management, since it can incorporate local knowledge about the varying nature of the resource base. It is important to note that through bringing decision-makers physically closer to citizens public access is improved, thus promoting a greater sense of ownership of rules about communal resource use that should result in an enhanced willingness to abide by them (Resosudarmo, 2004). Distant state authorities on the other hand, normally face significant restraints in allocating resource use rights effectively, resulting in overexploitation and drawbacks for the poorest sectors (Carney and Farrington, 1998).



It is on this basis that the present study delves on the role of community action in management of community forests. The success of community action depends on a number of factors which include: the nature and attributes of the resources concerned; the nature and attributes of the resource users; nature of management and governance of the resources; distribution and utilization of the benefits derived from sale of the resources; extent of community action in the management of community resources as well as opportunities and threats of community action. This study focuses on how these factors promote or limit community action in the management of community forests in Swaziland using Ngcayini and Ezikhotheni chiefdoms as case studies. Notably, there are various forms of community action, and these are highlighted in the subsequent section.

#### **1.1.4 Community-Based Natural Resource Management (CBNRM)**

According to Wood (2008), one widely used form of community action is through Community-Based Natural Resource Management (CBNRM). CBNRM seeks to integrate local communities into the protection of their immediate environment in an endeavour to accomplish ecological and social goals on both local and global scales (Government of Swaziland, 2005; Wood, 2008). Binot *et al.* (2009) describe CBNRM as formal or informal management of resources such as land, forests, wildlife and water by communal local institutions for local and regional benefit. Chirenje, Giliba and Musamba (2013) argue that the use of CBNRM is a shift in decision-making from centre to periphery. This is largely because CBNRM takes decision-making to the local community from the formulation stages up to implementation in contrast to the traditional method of only involving the communities in the implementation of programs. It is therefore, one of the most important indications of true decentralization as it is linked to control of rural resources (Chirenje, Giliba and Musamba, 2013).

Notably, the notion of engaging the local people in the management of natural resources is a fundamental aspect of good governance. Thus, if successful, CBNRM programs can be simulations of local empowerment bestowing communities with greater authority over the use of natural resources (Chirenje, Giliba and Musamba, 2013). According to Roe and Nelson (2009), CBNRM varies from one location to another and also depends on the basis

of different socio-political and bio-physical contexts. For instance, it may either be based on commercial uses of natural resources, such as managing wildlife for local tourism or hunting enterprises; or on primarily subsistence uses of resources such as Non-Timber Forest Products (NTFPs) (Roe and Nelson, 2009).

According to Murombedzi (2003), resource conservation dates back to the early history of humans when communities developed intimate knowledge of their ecosystems and used this knowledge to combine systems of sustainable resource use and management that were suitable to these systems. To be precise, resource users evolved systems of resource use and management which combined livelihood security with resource conservation (Ghai, 1992). For instance, they used sacred groves to represent important forest conservation and sacred pools to relate to wetlands conservation. It must however, be noted that this mainly depends on population density and resource availability. Accordingly, at this point in time the population density was generally low hence also the demand for resources. For example, Virto *et al.* (2015) contend that during the 19<sup>th</sup> century in Western Europe, highest rates of deforestation occurred in an effort to expand agricultural land, particularly in France, Germany and the United Kingdom because population growth rate exceeded agricultural productivity per hectare.

On the other hand in pre-colonial Africa, indigenous knowledge on resource management was deployed and reinforced in religion and local myth to regulate resource use. For example, traditional healers developed regulations around the harvesting of medicinal plants, some of which are still in force to this day, while hunters, fishers and pastoralists all developed highly complex resource use regulatory systems based on the productive and reproductive capacities of the resources used (Murombedzi, 2003). Apart from regulating local use of resources, pre-colonial states also took steps to regulate resource use by outsiders. For example, in response to the devastation of wildlife by the early European adventurer hunter-gatherers, some African rulers introduced elementary management systems in an effort to save wildlife from extinction. Mzilikazi of Zimbabwe for instance, introduced a permit system for all European hunter-gatherers; whereby gifts and other

presents were given to the King in return for permission to hunt in his territory (Murombedzi, 2003).

A most distinctive feature of pre-colonial conservation is the unity of humanity and nature. That is to say, pre-colonial conservation did not create separate categories for conservation; instead it devised strategies for conserving nature while simultaneously guaranteeing human access to it (Murombedzi, 2003). This arrangement was in direct contrast with the colonial model of conservation, which has resulted to the establishment of nature conservation areas as areas cleared of all human influence and settlement, with highly restricted access to resources. Moreover, the colonial period also saw the expropriation of land for white settlers and for plantations, commercialization of agriculture, inappropriate macro-economic policies and ill-conceived infrastructural projects (Ghai, 1992). It is important to note that many of the inappropriate macro-economic policies were continued in the post-independence period. Consequently to such policies, rapid and accelerating population expansion in recent decades has greatly increased the pressure on resources (Ghai, 1992). It is on this basis that Marambanyika and Beckedahl (2017) argue that the capacity of indigenous institutions in natural resource management was weakened by interference and institutional disruptions introduced by colonial governments. For instance, in most developing countries, including Zimbabwe, it was discovered that a colonial legacy (that was later inherited by post-colonial governments) set up a resource governance system which largely disregarded indigenous knowledge and common practice (Marambanyika and Beckedahl, 2017).

In Africa, emergence of the CBNRM paradigm was a dramatic shift away from a strictly centralized governance of resources inherited from the colonial rule. Notably, under colonial rule ownership of land was progressively transferred from traditional local authority to the state domain in order to enable colonial authorities to potentially exploit African lands, labour, and resources (Roe and Nelson, 2009). Consequently, it was this shift in tenure which became one of the fundamental drivers of African independence movements seeking to recuperate entitlements to land and resources. The newly independent African countries which emerged starting in the late 1950's inherited

colonially-derived political structures based on centralized control and exploitation (Mamdani, 1996). Thus, in the 1980s, a community-based counter-narrative began to emerge as a result of multiple trends, ideas, and crises which led to a broad rethinking of both development and conservation arenas (Roe and Nelson, 2009). This forms the foundation of CBNRM.

CBNRM models work to strengthen locally responsible institutions for natural resource use and management, empowering local groups of people to make better decisions about the use of land and resources (Government of Swaziland, 2005; Wood, 2008; Roe, Nelson and Sandbrook, 2009). For the reason that CBNRM encompasses the decentralization of authority over natural resources to local communities, including of potentially valuable resources such as wildlife and timber, it is therefore concerned with major institutional reforms and major changes in power (Roe, Nelson and Sandbrook, 2009). Examples of CBNRM models or forms include Collective Action, Participatory Forest Management (PFM) and Joint Forest Management (JFM). Collective action is a voluntary or mandatory action taken by a group of individuals to attain common goals (Yasmi, Kelley and Enters, 2011).

Moreover, Participatory Forest Management is management or co-management of forest and woodland resources by the communities living adjacent or amongst the forest (Harrison, 2006). Furthermore, Harrison (2006) points out that Joint Forest Management is a form of CBNRM where forest-adjacent communities enter into a Joint Management Agreement (JMA) with the relevant authority to share management obligations and benefits accruing. It is important to note that, the issue of benefit-sharing needs close assessment, since it is often a source of conflict among cooperating stakeholders especially if there is inequality in the distribution.

In the late 1960s, following a series of legislative reforms, user rights over wildlife in Zimbabwe, South Africa, and Namibia were decentralized to landowners. This action greatly improved wildlife status on private lands from an economic liability to an asset, as well as contributing to profound recoveries of wildlife on freehold lands and the growth of

wildlife-based industries in all three countries (Bond, 2004). It was these reforms which laid the foundation for spreading the model of local management to communal lands after the enactment of majority rule in the three countries. This therefore, implies that a democratic political system of government is a prerequisite for local management of resources in a country. Examples of local management of resources in communal lands include; Zimbabwe's Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) launched in the 1980's, and Namibia's Communal Conservancies (NCC) developed in the 1990's (Jones and Murphree, 2001).

The aim of CAMPFIRE was to co-opt rural communities into the conservation process by sharing revenue generated from safari/tourism hunting (De Georges and Reilly, 2009). Consequently, from 1989 to 2001 CAMPFIRE generated US\$20 million in revenues for local communities and district governments, and also contributed to over 40,000 km<sup>2</sup> of communal land being managed for wildlife production (Roe, Nelson and Sandbrook, 2009). This highlights an important aspect of local management of resources, which are the benefits accrued by stakeholders. Consequently, this study centred on the role of community action in the management of community forests, where the issue of distribution and utilization of benefits has been assessed.

#### **1.1.5 Community forests**

According to Temphel and Schmidt (2010:13), "In all Community Forests, community funds are established. These funds often start as saving funds, but with the time, the proceeds from fees for the use of forest products, sales, fines for illegal activities and donations by visitors contribute to the funds". Considering the avenues of funds generation, a community forest program has the potential to actually contribute to the improvement of rural livelihoods. The most critical issue regarding benefits is how they are shared amongst the stakeholders concerned, since an inequitable distribution may trigger conflicts and ultimately jeopardize the entire exercise of local management of resources. Moreover, inequitable distribution of benefits may encourage illegal harvesting and other illicit activities because they provide instantaneous financial gains (Kuzee, 2003). Furthermore, the Government of Swaziland (2005) observes that local people only support conservation

initiatives if they see concrete benefits and improvements to the quality of their lives. Lack of information on whether such an arrangement applies to countries such as Swaziland motivated for the present study.

According to the Government of Swaziland (2002), Swaziland has 45 per cent coverage of forests and woodlands, of which natural forests cover 2.2 per cent, natural woodlands 22 per cent, natural bush lands 13.4 per cent, wattle forests 1.4 per cent as well plantation forests covering 6.4 per cent. Considering the small size of natural forests in the country and dominance of woodlands, this study focused on both natural forests and woodlands. Therefore, when referring to natural forests the study implies both natural forests and woodlands. By way of definition, a forest is a large tract of land covered with trees and underbrush; woodland with a tree canopy of more than 10 per cent and a minimum area of more than 0.5 hectares, as well as a minimum tree height of five (5) meters (FAO, 2001). It is important to note that the definition of a forest does not distinguish between natural/indigenous and planted forests. The present study addresses this by dividing the forests into either natural or plantation-style forests.

A natural forest is normally composed of naturally growing indigenous forests and woodlands (Dlamini, 1998) which are not classified as a forest plantation. This suggests that natural forests normally comprise a wide diversity of tree species. FAO (2001) avers that a forest plantation is established by planting or/and seeding in the process of afforestation or reforestation and it comprises exotic or in some cases indigenous species. In terms of ownership and governance, forest plantations in Swaziland in particular, are generally divided into three categories' namely;

- private/company (owned by companies),
- community/public (owned by the entire community) and
- individual (owned by individual households).

The private/company plantations include the then Sappi Usuthu which has been taken over by Montigny Usutu, Mondi Forests, Peak Timbers, Shiselweni Forests, and Swaziland Plantations Limited. Notably, the tree species grown in forest plantations include wattle, eucalyptus and pine.

Regarding community/public forests which are central in this study, Carter (2010) defines community forestry as an approach to forest management that actively promotes the rights of the people living in and around the forest to both participate in forest management decisions and especially to benefit both financially and/or in kind from the results of the management exercise. Moreover, Siry *et al.* (2015) point out that community forestry is based on the involvement of local people in various capacities, usually allowing them some form of access, use, enforcement, and management rights. McDermott and Schreckenberg (2009) however, contend that in as much as community forestry can alleviate social inequity, it by and large does so by making positive change at community and higher levels, instead of delivering benefits directly to poor and marginalised households.

Rath (2010) argues that involving community members in natural resource management has interesting dynamics and a great potential. Furthermore, Rath (2010) contends that it is requisite that we understand this dynamics properly and make optimum use of this potential for facing challenges like climate change. According to The National Forest Policy, community forestry refers to the participation of community members in the planning, implementation, and management of forests in the local environment (Government of Swaziland, 2002a). Community forestry also relates to homestead or farm forestry, agro-forestry, woodlots, and planting as well as use of trees in conservation, rehabilitation or other rural schemes. Furthermore, community forestry in Swaziland involves the use and management of natural forests and woodlands, as well as wattle and eucalyptus forests within the community boundaries (Government of Swaziland, 2002a). Therefore, in Swaziland community forestry comprises both plantation-style community forests, and natural forests and woodlands.

A community forest *per se* is a village level forestry activity, decided on collectively and established on communal land, where community members participate in the planning, implementation, management and harvesting of forest resources and therefore get a major share of the socio-economic and ecological benefits from the forest (Kafle, undated; Sillah, 2003). Community forests' areas provide a myriad of basic inputs; free of direct cost to

local homesteads which include both timber and NTFPs such as fuel wood and timber for construction, animal fodder, green manure and fruits, as well as medicinal products.

Literally, Non-Timber Forest Products (NTFPs) comprise all products which are extracted from forests for human use except for timber. Therefore, NTFPs are often referred to as Non-Wood Forest Products (NWFPs). Notably, ‘forests’ are natural ecosystems in which trees are a significant component. But, forest products are derived not only from trees, rather from all plants, fungi and animals (as well as fish) for which the forest ecosystem provides habitat (Belcher, 2003). As a matter of fact, various products and production environments are included or excluded depending on the objectives and interests of the author (Ahenkan and Boon, 2011). Consequently, the definition of Non-Timber Forest Products (NTFPs) has evolved over time and varies depending on the interests and objectives of their (NTFPs) users. According to Ahenkan and Boon (2011), the concept of ‘NTFPs’ has proved difficult to define amongst forest experts, conservationists, development organisations and its pioneers due to some unclear boundaries between timber and non-timber products; underlying difficulty in defining a forest; as well as evolving nature of the concept and the potential to bring together a miscellaneous set of interests and experiences to the idea of integrated forest management.

Nonetheless, a more harmonised definition refers to NTFPs as the vast array of goods and services of biological origin encompassing plant and animal products as well as small wood and fuelwood, derived from forests, other wooded land and trees outside forests (FAO, 2012). Such products may be gathered from the wild, or produced in forest plantations, agro-forestry schemes and from trees outside forests and they include wild edible mushrooms, floral and greenery products, wild berries and fruits, herb and vegetable products, medicinal and pharmaceutical products, handicrafts, landscaping products and miscellaneous botanical forest products (Dlamini, 2007).

On the other hand, timber mainly relates to wood products solely produced by industries. According to Belcher (2003), the main distinction between timber and non-timber forest products is that; timber is managed on an industrial scale for interests located outside the



forest, while NTFPs are extracted using simple technologies by people living in or near forest. Based on that, Belcher (2003) assumes that extraction and production of NTFPs is less destructive and more compatible with forest conservation than harvesting timber. For purposes of this study however, NTFPs refers to non-wood products derived from forests, wooded land and trees outside forests as well as wetlands, while timber products refers to poles, rafters and fuel wood. The main reason for this distinction is because the study focuses on natural forests and plantation-style community forests, where the products derived varies greatly. As such, plantation-style community forests provide fewer NTFPs compared to natural forests. Therefore, plantation-style community forests mainly provide timber resources such as poles, rafters and branches (*Tintfungo*) for construction purposes and sometimes fuel wood. Furthermore, in the recent past community members who own individual household forests have found an avenue of generating income through selling timber derived from wattle and eucalyptus forests. In turn, this has instigated heavy exploitation of both community and individual household forests. Consequently, when harvesting for the market the manner of extraction employed is mainly clear felling with the aid of the modern technology of power saws; which is not compatible with forest conservation. On the other hand, in natural forests resources are mainly exploited through selective harvesting, save only when there is change in land use such as clearing the forest for human settlement. Apart from the noted uses, community forests, especially natural forests, may also protect community water resources catchments such as springs and alleviate land degradation (Mol and Wiersum, 1999).

#### **1.1.6 Land degradation and invasive plant species**

Land degradation has been defined as a reduction in the capacity of land to execute ecosystem functions and services that supports society and development (LADA, 2009). According to World Overview of Conservation Approaches and Technologies (WOCAT) (2007:18), degraded land is defined “as land that, due to natural processes or human activity is no longer able to sustain properly an economic function and/or the original function”. Components of land degradation include soil degradation, vegetation degradation, water degradation and losses to urban/industrial development. Worth noting is that all these components contribute to a decline in agricultural production and other

ecosystem services (WOCAT, 2007). Manyatsi (1997) observed that about 55% of the communal land in Swaziland suffers from some form of land degradation. Manyatsi and Maseko (2010) point out that the dominant forms of land degradation in the country include; soil degradation, vegetation and biodiversity degradation, with soil erosion being the most noticeable form of soil degradation and culminating in gullies. As observed by Addis *et al.* (2015) gully is the worst stage of all forms of soil erosion and it is a highly noticeable form of erosion, which affects a number of soil functions (food and other biomass production, water storing, filtering and transformation, habitat and gene pool, physical and cultural environment for mankind, and source of raw materials) and hence soil quality.

In addition, Tfwala, Manyatsi and Wang (2012) argue that land degradation in Swaziland is also through invasion by alien plant species. For instance, wattle trees were introduced in the late 18<sup>th</sup> century for their timber and bark in the Highveld of Swaziland but they have gone out of control and invaded rangelands in many areas of the country (Tfwala, Manyatsi and Wang, 2012). Land degradation as such deprives poor people of the most critical environmental services namely; food (crops and edible wild plants), medicinal plants; forage for livestock, wood for fuel, as well as healthy and sufficient water on which they must depend (Tfwala, Manyatsi and Wang, 2012). It is therefore important that the causes and impacts of land degradation are well understood by community members in order to facilitate its control.

Due to heavy reliance on forest resources, forest lands continue to be degraded in Swaziland, while grasslands are overgrazed, and most wild animal species being exterminated with some protected in the country's conservation areas (Government of Swaziland, 2005). Consequently, the local populations who depend on natural resources are becoming poorer and poorer and their ability to redress land degradation is being hampered by poverty and the impact of HIV and AIDS that is decimating many rural communities (Government of Swaziland, 2005). For example, in some rural areas such as Ngcayini and Ezikhotheni, afforestation programs have been carried out as a form of rehabilitating degraded land and supplementing timber products' requirements. In this case, *Eucalyptus*

*spp* (gum trees) were planted on degraded areas to promote soil conservation and augment the supply of timber resources, respectively. A more striking feature regarding these forests is that their management is normally supervised by Natural Resource Management Committees (NRMCs).

It is important to point out that both plantation-style and natural forests are subjected to serious exploitation such that the latter seems to be replaced by invasive plant species due to the fact that they take a long time to regenerate. Plantation-style forests in particular, are also exploited for both subsistence and commercial purposes. Considering that the species grown in plantation-style community forests are invasive particularly wattle, eucalyptus and pine, they also spread disproportionately to open lands (Working for Water, 2007). These invasive species monopolize light and water resources so effectively that indigenous/native species are nearly completely crowded out (Working for Water, 2007).

The exploitation of both plantation-style and natural forests has serious consequences on land degradation in particular soil erosion. Despite the invasive nature of the species grown in plantation-style forests, their mismanagement contributes to furtherance of soil erosion especially those planted to control land degradation. It is on those bases that the present study focuses on the role of community action in the management of community forests in Swaziland.

#### **1.1.7 Natural Resource Management Committees (NRMCs) and forest products**

As alluded to above, community forests in Swaziland comprise forests which were planted by the community members or Non-Governmental Organizations (NGOs) to reclaim degraded land and augment the supply of forest resources. They also include individual household forests that have been left by their owners who have resettled in other areas (Singwane, 2006). Worth noting is that when community forests are established a Natural Resource Management Committee (NRMCM) is appointed in collaboration with the community concerned. The committee is mandated to select sites for the forests and oversee management activities relating to the forest namely; mobilization of people for the

establishment, protection and tending of the forests (Government of Swaziland, 2002a; Sithole, 2013).

Evidence suggests that the use of resource management committees is now a norm in management of environmental resources. For instance in Zimbabwe, Marambanyika and Beckedahl (2016) found that wetland committees are elected by wetland beneficiaries in the presence of Environmental Management Agency staff and traditional leaders (Chiefs and village heads). The committees' mandate is to monitor wetland use and prevent degrading activities. It must however, be indicated that notwithstanding appointment of the committees there is evidence of wetland draining and encroachment by farming activities, as well as desiccation of wetland fringes (Marambanyika and Beckedahl (2016). In the case of Swaziland, the effectiveness of the collaboration between NRMCS, community members and traditional authorities as well as the NGOs and other external stakeholders such as government departments in the management of community forests has been addressed in this study.

Compared to plantation-style community forests, natural forests provide more NTFPs in addition to timber/wood resources. For instance, the non-timber forest products include; herbs, ornamental flowers, resins, fruits, bush meat, mushrooms and other edibles such as honey, fodder and medicinal plants (Maharjan, 2005). Considering the serious lack of employment opportunities in Swaziland and the ever increasing rate of poverty, local people normally collect these forest products to derive either a passive or active income (Government of Swaziland, 2002a; Singwane, 2006). It is also important to indicate that timber products sourced from natural forests are normally of high quality compared to those derived from plantation-style community forests comprising exotic species.

According to Gombya-Ssembajjwe and Banana (1999), as a result of incessant degradation and deforestation, corruption among government officials, high costs of monitoring the condition of forests, a lack of funds to carry out afforestation programs, and the contemporary initiative to decentralize; the Forestry Department in Uganda, introduced schemes to involve local communities in forest management. In this case the local people

were concerned about: mismanagement of the forest; the high level of corruption among forest managers; ‘outsiders’ being given preferential access to the resource as opposed to local people; and lack of direct financial benefits to the local people. As result, there was formation of local forest committees that are involved in the management of natural forest reserves. In the context of Swaziland, natural forests are mainly overseen by traditional authorities [Chief, headman, inner council (*Bandlancane*) and ward elders (*Imisumpe*)] (Government of Swaziland, 2002a). It is however, unclear whether community members are involved or not, hence the present study has also addressed that issue.

## **1.2 Knowledge Gaps Addressed by the Research**

According to Iddi (2002) for a long time forests and woodlands in many countries in Africa have been managed without full participation of the local communities that live in the neighbourhood of the resources. This practice has resulted in unsustainability of the resources. Evidence suggests that local communities have an important role in improving forest and woodland management; therefore their collaboration can contribute considerably to the sustainability of these resources (Iddi, 2002). It is on this basis that a study on an assessment of the role of community action in the management of community forests in Swaziland stems.

The depletion of forest resources (especially natural forests) is a precarious problem, yet forests provide important socio-economic and ecological resources for the population. In response to the depletion of natural forests which heralded a serious shortage of forest resources and devastating land degradation, countries including Swaziland instituted the growing of exotic tree species particularly wattle and eucalyptus. These tree species are grown as either household or community forests. Notably, in most instances household forests/woodlots are solely meant for the supply of forest resources to the households concerned. There is however, a dearth of information regarding the effectiveness of the intervention through community forest plantation; hence the present study addresses that subject. Community forests on the other hand, are mainly grown to alleviate land degradation, as well as supply forest resources due to a shortage instigated by dwindling natural forests. Moreover, there has been a resurgence of a market for timber derived from

plantation-style forests (*Acacia mearnsii* and *Eucalyptus spp.*), something which has instigated their heavy exploitation; hence they are not spared from depletion. It is however, indistinct how the proceeds from the sale of resources from community forests are distributed; hence the present study addresses that subject.

In Swaziland in particular, natural forests are sources of forest resources not only just for individual households but also for the Chiefs' royal kraals (*Imiphakatsi*) and the King's royal kraals (*Tigodlo*). Therefore, it is common practice that Chiefs and the King will now and again commission regiments to cut logs and branches (*Emahlahla* and *Tintfungo*) from natural forests for usage in the royal kraals. Most importantly, it is not just any tree species that is submitted to the royal kraals but there are selected and special species such as *Umhlume* (*Adina spp.*), *Sihloko*, *Imbondvo* (*Combretum spp.*) *Lusekwane* (*Dichrostachys cinerea spp.*) and *Umphahla* (*Brachylaena spp.*). Despite the importance of natural forests they are by and large depleted as a result of rapid population growth, which exerts pressure on land; growing poverty; inequalities in land tenure; access and use rights; as well as lack of capacity to manage forests (Government of Swaziland, 2001). On that basis, the study also investigates on the protection of royal tree species in the case study chiefdoms.

Evidence indicates that forest degradation is more pronounced in the Lowveld and Middleveld regions of Swaziland due to heavy exploitation of fuel wood, wood carving, furniture making, and building material, respectively by local people (Government of Swaziland, 2002a; Government of Swaziland, 2001). This is evident through the piles of fuel wood and handicrafts (wooden bowls, spoons and knobkerries) sold along the roads in the Lowveld and Middleveld regions. In turn, this implies that natural forests seem to be a significant resource in cultural activities as well as in the livelihood of people in general. Therefore, for purposes of making a comparison, the present study assesses both the plantation-style community forests and natural forests. The exploitation of both natural and plantation-style community forests raises questions regarding rules which are employed in the management of forests resources in Swaziland, particularly community forests.

At this juncture, it is important to mention that in Swaziland management of natural forests as per The Swazi Administration Order, 6 of 1998 is supposed to be overseen by ward elders (*Imisumpe*) whereas that of plantation-style community forests is presumed to be led by NRMCs (Government of Swaziland, 2002a). Notably, the use of NRMCs is a novel practice in the management of resources in the country; hence there is a lack of information on their roles, thus the present study also addresses that issue. In addition, there is also a dearth of information on the role of external stakeholders such as NGOs and government departments which liaise with communities in development and management of community forests; hence the present research also covers that subject.

Under normal circumstances the ward elders, together with the NRMCs, have to collaborate with the inner council, headman and the Chief, as well as the entire community (community action) in the management activities. It is however, unclear whether such collaborations subsist. Therefore, the study also examines the extent of community action in the management of community resources in the study area in order to determine its successes and failures. Furthermore, the study assesses the opportunities and threats for community action in management of community forests in Swaziland. The assessment is based on two chiefdoms which are used as a case study.

For that reason, this study employs a case study design. Fouché (2005) states that there are three types of case studies, which have different purposes; namely intrinsic, instrumental, and collective. Intrinsic case study is mainly focused on gaining a better understanding of an individual case whereas instrumental case study is employed to elaborate on a theory or gain better understanding of a social issue as noted by Fouché (2005). Finally, there is a collective case study, whose aim is to further the understanding of a researcher about a social issue. The the present study adopted the collective case study design which involves a selection of cases for purposes of comparison so that theories can be extended and validated in accordance to Fouché, (2005).

In the present study the two chiefdoms; namely Ngcayini and Ezikhotheni have been studied and comparisons made between them on the basis of role of community action in

management of community forests. The basis for comprision includes size of the community as well as local administration, where there is a substantive Chief at Ezikhotheni and none at Ngcayini. The choice of these chiefdoms is motivated by the fact that they have badly degraded areas where interventions through establishment of community forests were undertaken between 2001 and 2003. There is however, a dearth of information on the effectiveness of the interventions made. Therefore, the present study determines the change the extent of land degradation over time at Ngcayini and Ezikhotheni in order to determine the effectiveness of the interventions in controlling land degradation. In this study effectiveness is denoted by an increase in the size of the plantation-style community forest and rehabilitating gully. On the other hand, a decrease in the size of the plantation-style community forest and non-rehabilitating gully denotes ineffectiveness of the interventions in controlling land degradation in the chiefdoms studied.

All in all, the research gaps addressed in this study include the role of internal and external stakeholders, the rules employed (governance), distribution and utilization of proceeds derived sale of forest resources, extent of community action, opportunities and threats of community action in the management of community forests as well as the effectiveness of the plantation-style community forest interventions in controlling land degradation and augmenting the supply of forest resources in the communities concerned.

### **1.3 The Aim of the Research**

The aim of the research was to assess the role of community action in the management of community forests in Swaziland using the communities of Ezikhotheni and Ngcayini as case studies. In order to realize this aim, the objectives of the study were as follows:

#### **1.3.1 Research objectives**

1. Assess the management of community forests by internal and external stakeholders and the governance arrangements employed in such management.
2. Assess how benefits from community forests are distributed and utilized within and beyond the communities.



3. Examine the extent of community action in the management of community resources in Swaziland based on Ezikhotheni and Ngcayini chiefdoms.
4. Assess the opportunities and threats for community action in the management of community forests in Swaziland.
5. Analyze the extent of community forest resource utilization and of associated land degradation.
6. Assess the extent to which insights gained from the case studies can be scaled up to Swaziland as a whole and to community resources in general.
7. Make recommendations for the improvement of CBNRM in Swaziland.

Having presented the background and motivation for the study, as well as aim and objectives the subsequent subsection details the conceptual framework that informs the implementation of the research.

#### **1.4 A Conceptual Framework for the Study**

The framework adopted in this study is on resource conflict, collective action and social-ecological resilience (Figure 1.3a). It is important to note that the framework has been modified for the purposes of aligning it with the present study. The modification comprises substituting ‘collective actions institutions’ with ‘community action institutions’, as well as excluding the ‘evaluative criteria outcomes’ and specifying the outcomes (Figure 1.3b). The modified conceptual framework on resource conflict, community action, and social-ecological resilience has four main elements namely; the initial context which influences an action arena, in which patterns of interactions are established, leading to certain outcomes (Figure 1.3b). This study concentrates on the conceptual framework cited by Ratner, Meinzen-Dick and Haglund (2013) since it is the most recent and detailed context relevant in the subject under study.

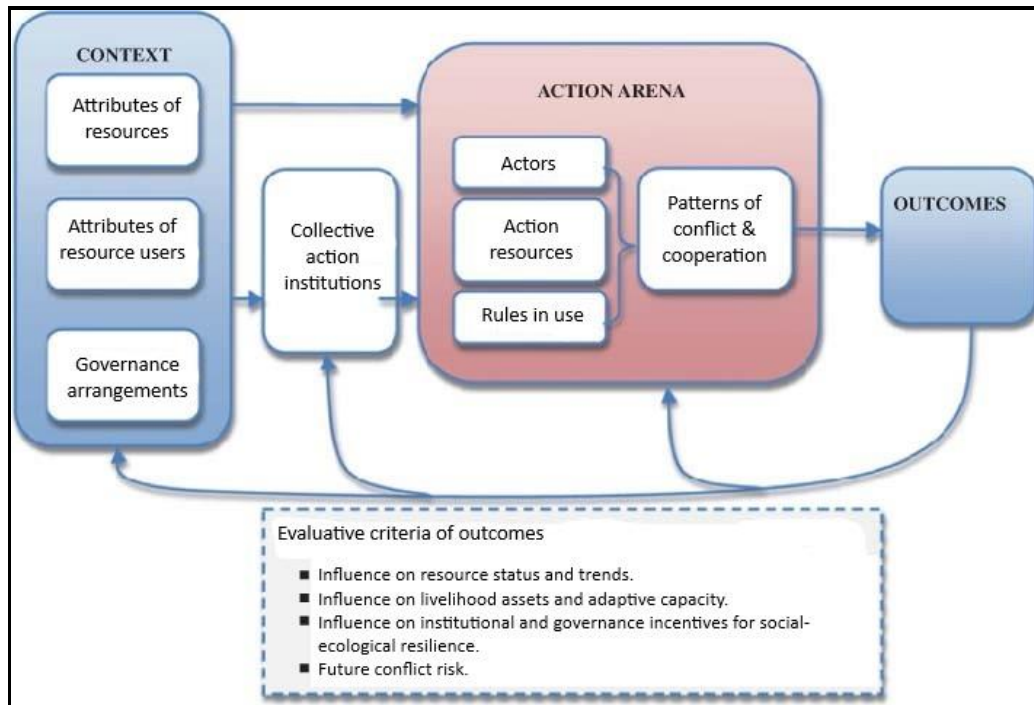


Figure 1.3a: Conceptual framework on resource conflict, **collective action**, and social-ecological resilience. Adapted from [Ostrom \(2005\)](#) and [di Gregorio \*et al.\* \(2008\)](#) cited by Ratner, Meinzen-Dick and Haglund (2013:187).

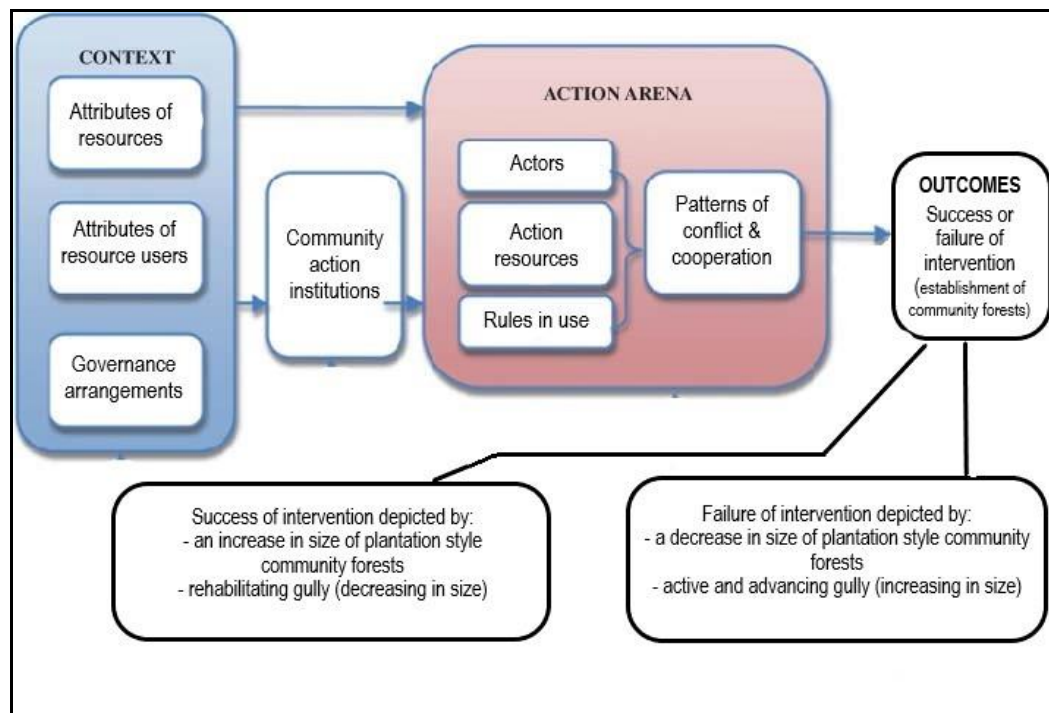


Figure 1.3b: Modified conceptual framework on resource conflict, **community action**, and social-ecological resilience. Modified from Ratner, Meinzen-Dick and Haglund (2013:187)

In the conceptual framework, the context incorporates three broad sets of factors namely; attributes of resources, attributes of resource users, and governance arrangements (Figure 1.4). Attributes of the resources, describe the biophysical conditions and trends. The key attributes of a resource include scarcity, spatial and temporal distribution, and transparency. It is important to note that scarcity of any resource, whether renewable or not, normally creates pressure on it.

Attributes of resources — Attributes of resources users — Governance arrangements
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Figure 1.4: Components of the **context** of the modified conceptual framework on resource conflict, community action, and social-ecological resilience

Regarding spatial and temporal distribution, Ratner, Meinzen-Dick and Haglund (2013) argue that dispersed resources are more difficult to control and to exclude others from using compared to those that are highly concentrated. Regarding transparency, this entails that the manner in which the resources are used must be satisfactory to everyone and be monitored in some way (for example through patrols). It is important to note that transparency depends on the size of the resource concerned and clarity of its boundaries, such that the small-size resource units with well-defined boundaries are more easily monitored (Ratner, Meinzen-Dick and Haglund, 2013).

In the present study the action resources considered are plantation-style community forests, natural forests and woodlands, as well as gullies where plantation-style community forests were established. Then the attributes of the resources comprise the size (in hectares) of the plantation-style community forests and the size of the gullies (in hectares) where the plantation-style community forests were established between 2001 and 2003. The sizes of the resources have been measured every five years from 2003. Therefore, the measurements have been made in 2008, 2013 and 2017 as determined by the (satellite) availability of images.

Attributes of resource users encompasses both local communities and extra-local users. Among attributes of resource users, socioeconomic characteristics such as ethnicity, education, and wealth (assets) are particularly pertinent for analysis as possible cleavage

lines along which cooperation and conflicts may manifest. For instance, where several types of property right institutions or claims overlap, there are more opportunities for disagreement among various social groups, particularly where each group appeals to a different type of customary or religious law as the basis for its claims (Ratner, Meinzen-Dick and Haglund, 2013).

The resource users in this study are the community members (individuals, NRMCs' members and traditional authorities). In this case attributes of resource users comprise age, gender, location of homestead in relation to community forest, distance of homestead to community forest, ownership of a homestead or household woodlot, family size and source of income.

Governance arrangements are the specific rules regulating use of the community forests (Ratner, Meinzen-Dick and Haglund, 2013). The rules relates to the patterns of decision-making on issues of public importance, including resource allocation, management, and use. Governance arrangements also include mechanisms of representation of diverse groups (gender equity) in decision-making, distribution of power and mechanisms of accountability among all stakeholders in resource management (Ratner, Meinzen-Dick and Haglund, 2013).

In the present study governance arrangements include: holding community meetings to discuss forest management issues; males and females' attendance and participation during meetings'proceedings as well as their roles in the management of community forests; community leaders/traditional authorities' attendance and participation during meetings'proceedings as well as their roles in the management of community forests; training and motivation of community members on the management of community forests; availability/existence of a Natural Resource Management Committee (NRMC) as well as its role and responsibilities in the management of community forests; training of NRMC members and their dissemination of knowledge on management of community forests; role of NGOs assisting in forest development and control of land degradation in the chiefdom; role of government departments assisting in forest development and control of land

degradation in the chiefdom; rules governing management of community forests as well as their formulation, enforcement and effectiveness; knowledge on laws and policies governing management of forest resources in the country; mode of access to timber and non-timber forest products (NTFPs) in community forests for domestic use and for sale; royal tree species and their protection in the chiefdom; distribution of benefits to individuals and the community at large from sale of resources from community forests; and importance of community forests to domestic and wild animals and to water catchments.

The conceptual framework also comprises an action arena, which is basically any platform (can be a meeting, village, *etc.*) for social bargaining on which different actors may choose to cooperate or not. The action arena encompasses the following: actors, action resources and rules in use (Figure 1.5).

Actors — Action resources — Rules in use
--

Figure 1.5: Components of the **action arena** of the modified conceptual framework on resource conflict, community action, and social-ecological resilience

Actors may be individuals or community entities/organizations, such as government departments, private companies and NGOs (Ratner, Meinzen-Dick and Haglund, 2013). The actors could be internal or/and external stakeholders. Internal actors are usually expected to follow the specific rule system that arises from institutional bargaining, while external actors can influence the bargaining procedures of institutions that define rule systems for other actors, but are not essentially bound by the outcome; and these comprise non-resident government or NGO officials (Ratner, Meinzen-Dick and Haglund, 2013). In the present study internal actors comprise community members (individuals, and NRMCS, Individual chiefdom councillors (*Bucopho*) who represent their respective chiefdoms at *Inkhundla* level (constituting the *Inkhundla* committee) as well as traditional authorities namely; headman, inner councils, and ward elders. External actors on the other hand, include the NGOs which contributed to the establishment of community forests as well as officers from government departments dealing with forestry issues, particularly Swaziland Environment Authority (SEA) and the Forestry Department in the Ministry of Tourism and Environmental Affairs (MTEA).

Action resources comprise tangible and intangible assets that give actors the capability for agency. Agency includes the ability to exercise livelihood choices, participate in community action at various levels, influence other actors, as well as get involved in political processes (Ratner, Meinzen-Dick and Haglund, 2013). Moreover, establishing associations also increases the action resources available to the actors involved in accordance to Ratner, Meinzen-Dick and Haglund (2013). It is important to note that since actors can be internal and/ or external, likewise action resources can be mobilized by insiders or outsiders to further their objectives. In terms of distribution, action resources are often unevenly distributed among actors.

In particular, gender differences in action resources are very important. According to Ratner, Meinzen-Dick and Haglund (2013) men and women have different roles and interests, in action resources available to them, socially sanctioned norms of behaviour, as well as approaches to conflict or its resolution. The niche of the action arena concept in the framework is nonetheless to invite stakeholders to reflect on what can be done, and how to shift the action resources available so that disadvantaged groups can actually influence decision-making more effectively in pursuit of equitable outcomes (Ratner, Meinzen-Dick and Haglund, 2013). Action resources in the present study are mainly the community forests together with the products derived from them, namely wood/timber and non-timber forest products (NTFPs) which ought to be utilized for the benefit of all stakeholders.

The value of action resources is not fixed but depends on the rules in use in an area. Rules in use are useful in the identification of key action resources, and how they are likely to favour some actors and outcomes over others. For instance, in some cases, social prestige is very important, whereas in others, current information or time is more important (Ratner, Meinzen-Dick and Haglund, 2013). Worth noting is that there is no single or consistent set of rules which govern an action arena. There are various forms of rules namely; international, national, customary and religious law, project regulations, local norms, as well as voluntary guidelines or corporate social responsibility standards which are supported by a different institutional framework (Ratner, Meinzen-Dick and Haglund, 2013). Therefore, different actors appeal to different sets of rules depending on those they

know, institutions they have access to, and those likely to favour their interests or justify their actions. Basically, the action arena comprises the immediate frame within which actors make choices about how to interact. In the present study it is assumed that the community forests are governed by certain rules which are formulated by the communities concerned as well as the national legislation, hence they have been assessed.

The conceptual framework also comprises patterns of interaction (Figure 1.3b), which refers to the bargaining processes among actors whereby they exchange resources, devise new rules, and demand action from other stakeholders. According to Agrawal and Gibson (1999) it is through interactions that individuals within communities negotiate the use, management and conservation of resources. Upon agreeing on the rules they implement them and attempt to resolve disputes that arise in the processes of their implementation. It is normally through interactions that cooperation and conflicts manifest, hence this element is often referred to as patterns of conflict and cooperation. Ratner, Meinzen-Dick and Haglund, (2013) argue that patterns of conflict and cooperation influence the institutional and ecosystem characteristics, which either contributes to social-ecological resilience or increase livelihood vulnerability and conflict risk. Essentially, in this element the concern is with the extent and nature of community action that characterizes patterns of interaction. Therefore, the present study has also ventured into the opportunities and threats of community action. This is primarily because often times' conflicts may arise due to threats in a management strategy. As such, the study correspondingly delves on the sources of conflicts in the management of community forests and how they are resolved.

In addition, the modified framework details the nature of outcomes which is mainly success or failure of interventions (establishment of community forests). According to the framework success is denoted by an increase in the size of the plantation-style community forests and rehabilitating gully (decreasing in size). On the other hand, failure of the intervention is depicted by a decrease in the size of the plantation-style community forests as well as an active and advancing gully (increasing in size).

## **1.5 Summary**

This chapter looked at the issues that surround community involvement in management of community forests with a view of setting the scene for the study. Moreover, the problem of the study, which is a paucity of information on the effectiveness of interventions made to supply forest resources in order to curb depletion of natural forests and control land degradation through establishment of community forests, has been unpacked. Furthermore, the aim and objectives have been stated. Finally, an effort has been made to explain the theoretical framework that is being followed in the present study. The subsequent chapter delves on a discussion of the environmental and legal context of community action in community resource management.



## **CHAPTER 2**

### **THE ENVIRONMENTAL AND LEGAL CONTEXT OF COMMUNITY ACTION IN COMMUNITY RESOURCE MANAGEMENT**

#### **2.1 Introduction**

This chapter delves on the environmental context and legislative frameworks in Swaziland. Special attention is given to the physical and socio-economic environment as well as in the study sites (Ngcayini and Ezikhotheni chiefdoms), the role of environmental law in forest resource management with specific emphasis on the Swaziland situation, as well as customary/traditional law in the management of forest resources.

#### **2.2 The Physical Environment in Swaziland and in the Study Sites**

The study sites in this case are Ngcayini and Ezikhotheni chiefdoms. In the selection of these sites purposive sampling was employed. The key characteristics required by the study include: evidence of land degradation, intervention in the form of plantation-style community forests, as well as availability of natural forests. It is worth noting that the selection was such that one site is a small chiefdom (Ngcayini – 787 hectares) and the other a large chiefdom (Ezikhotheni - 4 760 hectares). This was meant for purposes of comparison, particularly regarding the role of community action in relation to size of the community. The selected chiefdoms are in the Middleveld physiographic region which is characterized by predominant land degradation evident through gullies and dongas (Plate 2.1). In response to the predominant land degradation, plantation-style community forests have been established. Thus the present study assesses the effectiveness of community action in the management of community forests so as to establish the effectiveness of the interventions made in the selected study sites (Ngcayini and Ezikhotheni). For purposes of comparison Ngcayini is found in the Manzini administrative region/district whereas Ezikhotheni is in the Shiselweni administrative region/district of Swaziland.

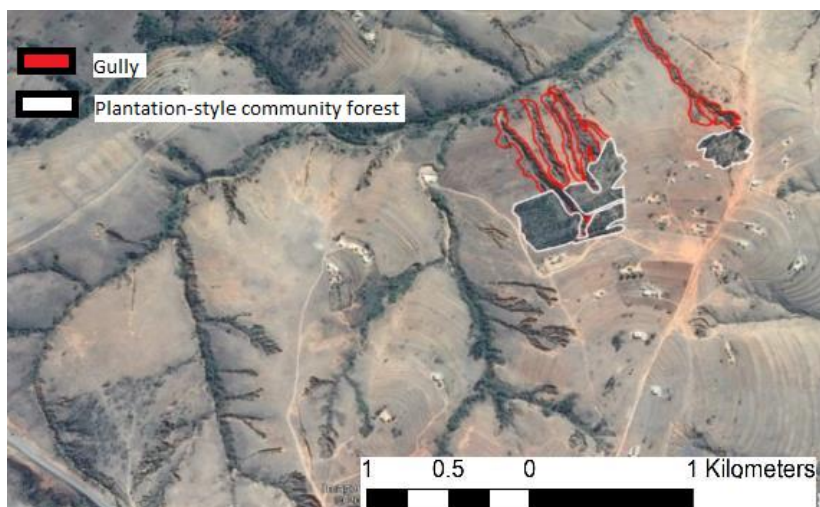


Plate 2.1: Land degradation at Ezikhotheni chiefdom

This sub-section of the study concentrates on the description of the physical environment in Swaziland in general and in the study sites in particular; with special attention on location, climate, relief and drainage, geology and soils, as well as vegetation.

### 2.2.1 Location

Ngcayini chiefdom is located in the Manzini district under Kukhanyeni constituency (Figure 2.1), while Ezikhotheni chiefdom is found in the Shiselweni district under Shiselweni one (1) constituency (Figure 2.2) in Swaziland. In terms of absolute location, Ngcayini is found between longitudes  $31^{\circ} 21' 34''\text{E}$  and  $31^{\circ} 24' 15''\text{E}$ , and latitudes  $26^{\circ} 16' 17''\text{S}$  and  $26^{\circ} 18' 31''\text{S}$  whereas Ezikhotheni lies between longitudes  $31^{\circ} 23' 09''\text{E}$  and  $31^{\circ} 29' 18''\text{E}$ , and latitudes  $27^{\circ} 09' 02''\text{S}$  and  $27^{\circ} 14' 56''\text{S}$ .

### 2.2.2 Relief and drainage

On the basis of landforms and elevations the physiographic regions of Swaziland depicts a sharp contrast from the Highveld to the Lowveld. For instance, the Highveld as the name suggests is the uppermost part of an overall escarpment, comprising a complex of steep slopes between low and high levels, dissected plateaux, plateau remnants, and associated hills, valleys and basins (Government of Swaziland, 1997). Elevations in the Highveld generally range from 1,050 to 1 500m though there are some peaks which rise up to 1,862m (Bulembu) and 1,828m (Ngwenya) (Piteau Associates Engineering Ltd., 1992).

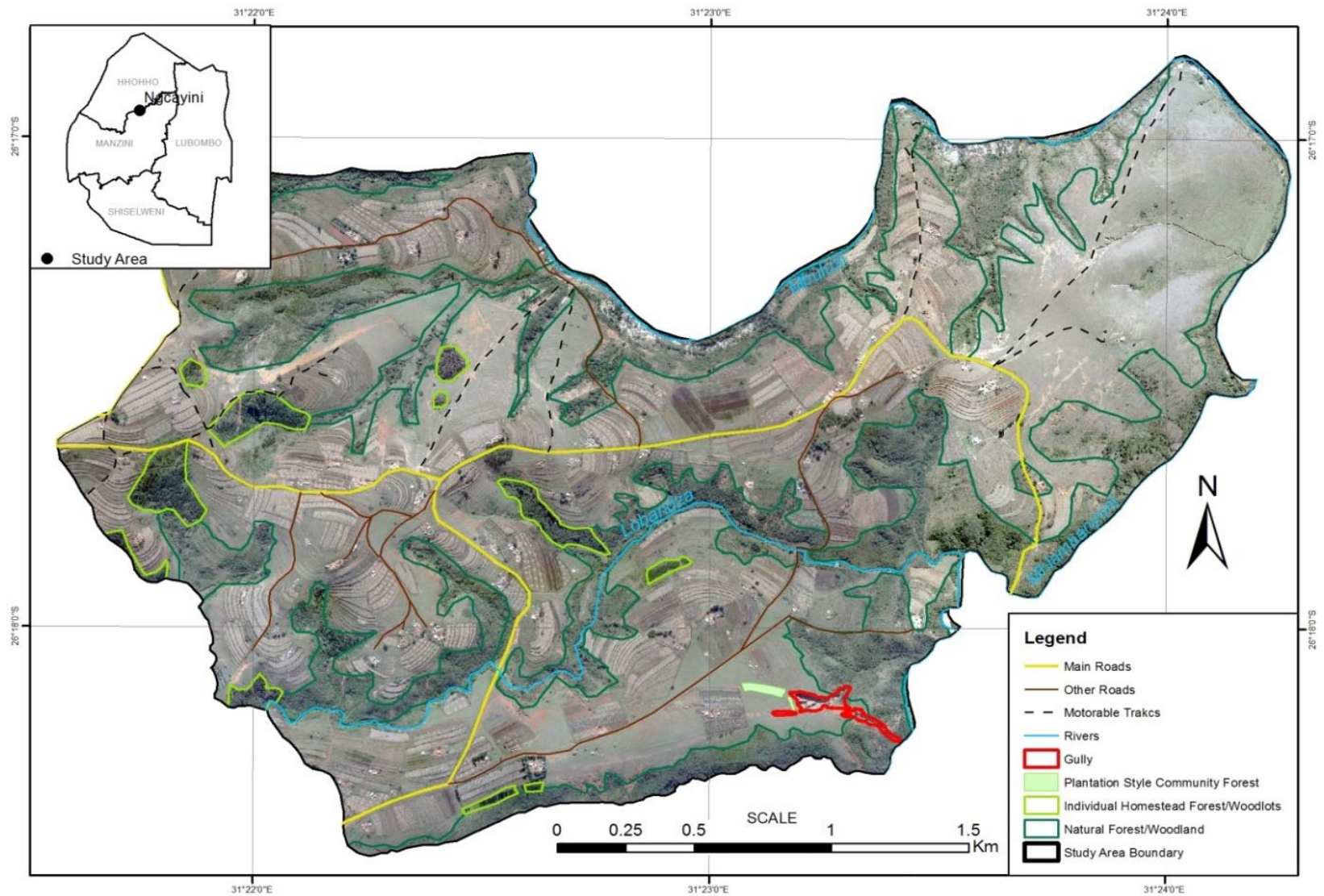


Figure 2.1: Ngcayini chiefdom



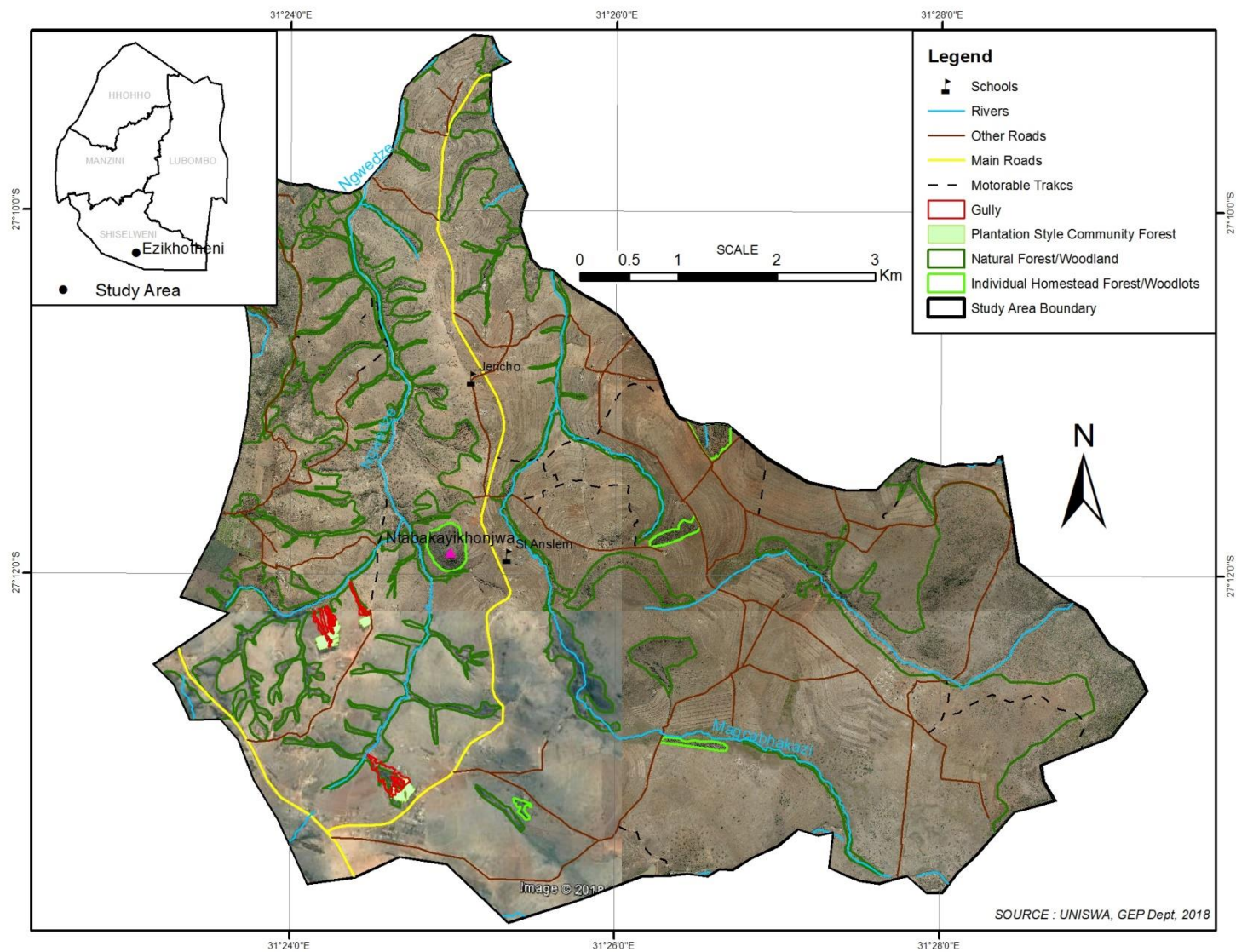


Figure 2.2: Ezikhotheni chiefdom

The Upper Middleveld mainly consists of a strongly eroded plateau remnants and hills at an intermediate level of the overall escarpment (Government of Swaziland, 1997). In this region cultivation of crops is not possible without replacing the leached minerals with chemical fertilizers (Piteau Associates Engineering Ltd., 1992). The Upper Middleveld also encloses structurally defined basins in fairly protected positions which are only weakly eroded. The Lower Middleveld is mainly the piedmont zone of the escarpment, characterized by strongly eroded foot slopes (Government of Swaziland, 1997). In general, this region has predominantly moderate slopes and is thus often classified as a plain. The elevation ranges from 500m to 1,050m (Piteau Associates Engineering Ltd., 1992).

The Lowveld is an actual plain consisting of sedimentary and volcanic Karoo beds. It is subdivided into the higher Western Lowveld on sandstone or clay stone, and the lower Eastern Lowveld on basalt (Government of Swaziland, 1997). Finally, is the Lebombo Ridge, which is a cuesta with a steep escarpment bordering the Eastern Lowveld and a gradual dip-slope of about 1:20 descending east (Government of Swaziland, 1997). The Lebombo is as a plateau. In terms of elevation the Lowveld ranges between 21m and 500m whereas the Lebombo hills rises to a maximum of 777m (Piteau Associates Engineering Ltd., 1992). From the discussion on the variations in landforms and elevation it is evident that land degradation is rife in the country, particularly in the Middleveld.

Regarding the agro-ecological zones Ngcayini and Ezikhotheni chiefdoms are in the Upper Middleveld. The Middleveld has an altitude of 600-800 meters above sea level and an average slope of 12% (Fakudze, 1999). The study sites generally have hilly areas characterized by relief features such as hills, rivers, valleys, and basins. Henceforth, the prevalence of soil erosion is also promoted by the nature of the terrain. Ezikhotheni is particularly characterized by the sacred hill referred to as Ntabakayikhonjwa, where members of the Royal family in the Shiselweni district are laid to rest (Figure 2.2). Moreover the two chiefdoms understudy are characterized by the most degraded parts of the country. The severe degradation is said to have resulted from uncontrolled grazing and deforestation of natural forests. Therefore, Ngcayini and Ezikhotheni chiefdoms have a

good history of land degradation with tangible evidence of gullies and dongas (See Figures 2.1 and 2.2).

With regard to drainage, Swaziland is traversed by five main rivers namely Mlumati/Lomati, Komati, Mbuluzi, Lusutfu and the Ngwavuma (Figure 2.3). These rivers flow from the Highveld in an eastward direction towards the Indian Ocean (FAO, 2005; Government of Swaziland, 2001; Piteau Associates Engineering Ltd., 1992). The good drainage basins of Swaziland play a significant role in large scale agricultural production such as sugar cane in the Lowveld region; hence contributing to economic development.

In terms of drainage, Ngcayini chiefdom is traversed by three rivers namely, Mbuluzi, Lobandza and Mhlambanyoni (Figure 2.1). Ezikhotheni on the other hand, is traversed by Ngwedze and Magcabhakazi rivers (Figure 2.2). Therefore, the study sites are generally well drained; hence the survival of vegetation and the areas' susceptibility to soil erosion.

### **2.2.3 Climate**

Swaziland has a subtropical climate with rains mainly received in summer. Normally about 75% of the precipitation falls from October to March save only when there is a drought (Government of Swaziland, 1997; FAO, 2005; Brown, 2011). Generally, the climatic conditions vary from sub-humid and temperate in the Highveld to semi-arid in the Lowveld. The mean annual rainfall ranges from 1,450 mm in the Highveld to 550 mm in the Lowveld (Government of Swaziland, 1997; Brown, 2011, Dlamini, 2017) with a national long-term average rainfall of 788 mm/year (FAO, 2005). Figure 2.4 depicts the distribution of mean annual rainfall in Swaziland.

There are considerable annual variations in the rainfall, something which leads to both drought and floods. Years with lower than normal rainfall occur recurrently, particularly in the Lowveld, which has a semi-arid climate leading to drought. The variation in the amount of rainfall received across the physiographic regions of the country has a bearing on the distribution of vegetation types. It must be pointed out that as much as drought has detrimental effects on vegetation distribution; floods are also a menace.

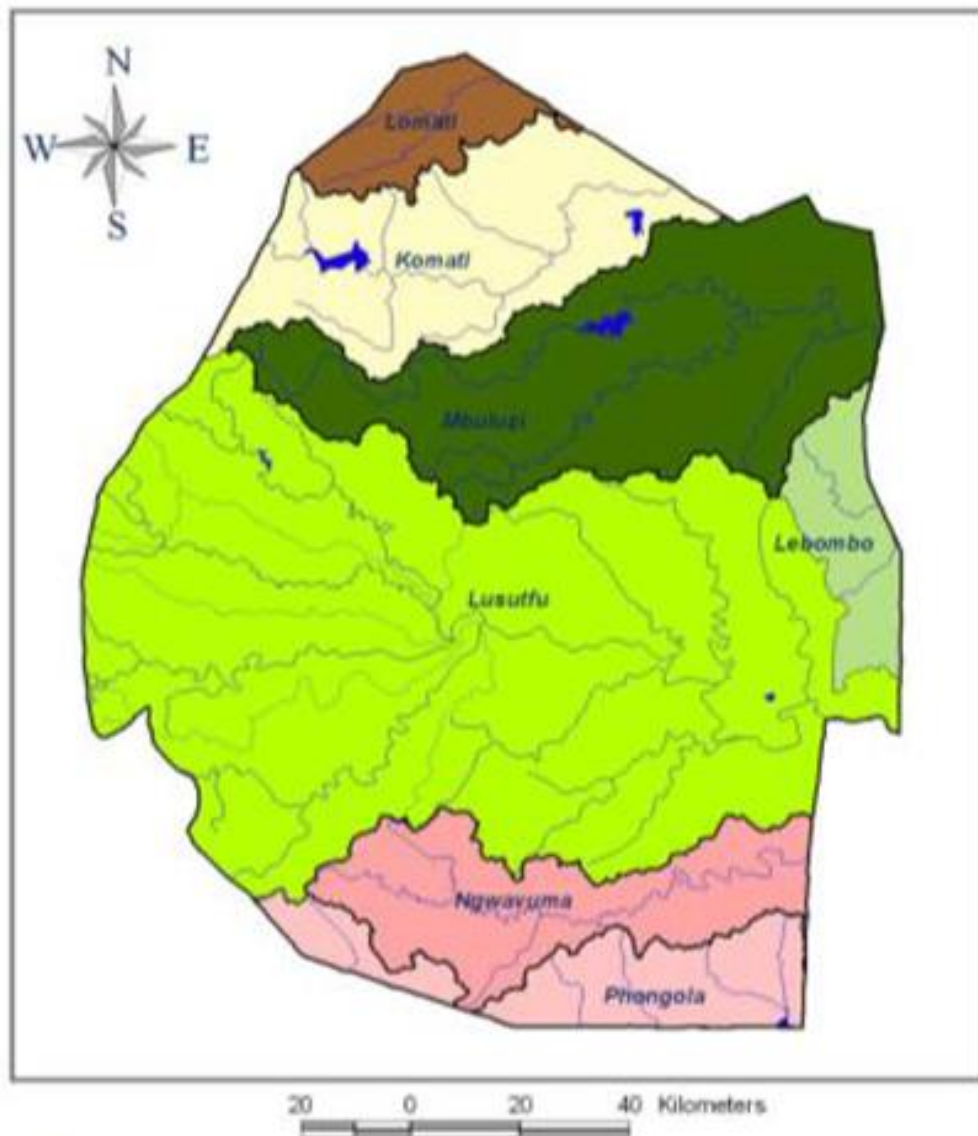


Figure 2.3: Swaziland river basins

Source: Brown (2011)

In terms of temperature conditions, they increase from the Highveld to the Lowveld region. For instance, in the Highveld temperatures vary between a maximum of 33°C in mid-summer and 0°C at night in mid-winter whereas in the Lowveld daytime temperatures may rise to 39°C (Government of Swaziland, 2001). The Mean Annual Temperature in Swaziland ranges from <16°C in the Highveld to >22 °C in the Lowveld region (Figure 2.5).

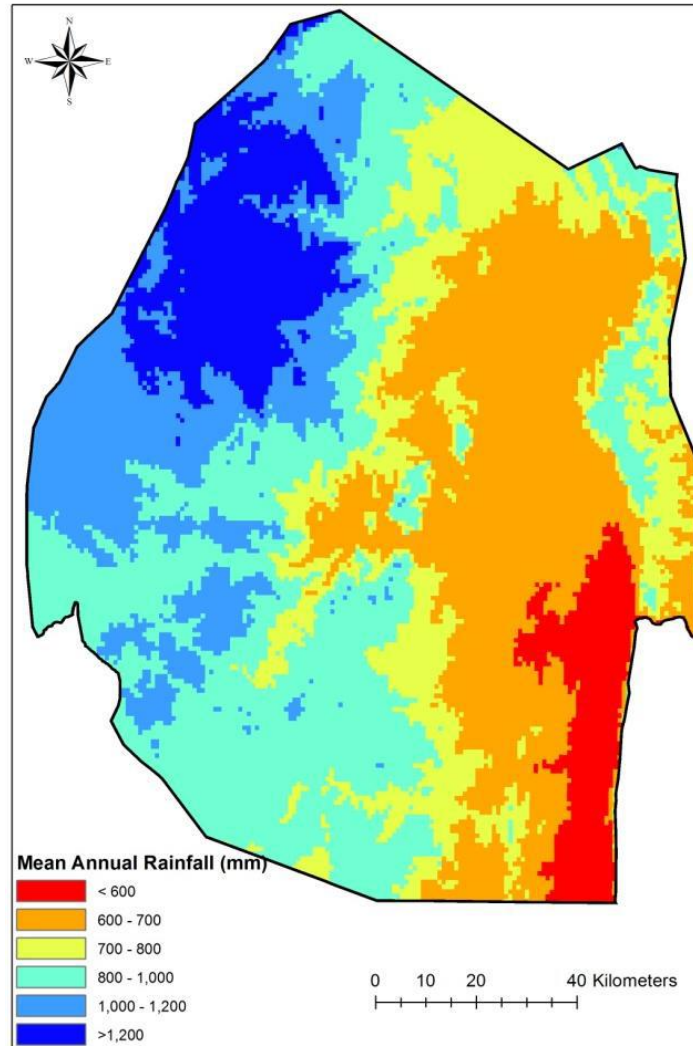


Figure 2.4: Distribution of Mean Annual Rainfall (mm) in Swaziland  
Source: Brown (2011)

Since Ngcayini and Ezikhotheni chiefdoms are located in the Upper Middleveld they are therefore generally warm and wet with rainfall ranging between 800 and 1000 mm per annum. Rainfall is normally received between September and March, with the highest amount, 106.9 mm recorded in January (Government of Swaziland, 2009). Temperature varies with season from 34.9°C in January to 8.8°C in July (Government of Swaziland, 2009). Hence, it is cold during winter and warm to hot in summer. These climatic conditions are conducive for the growth of trees especially because trees favour wet and warm conditions.



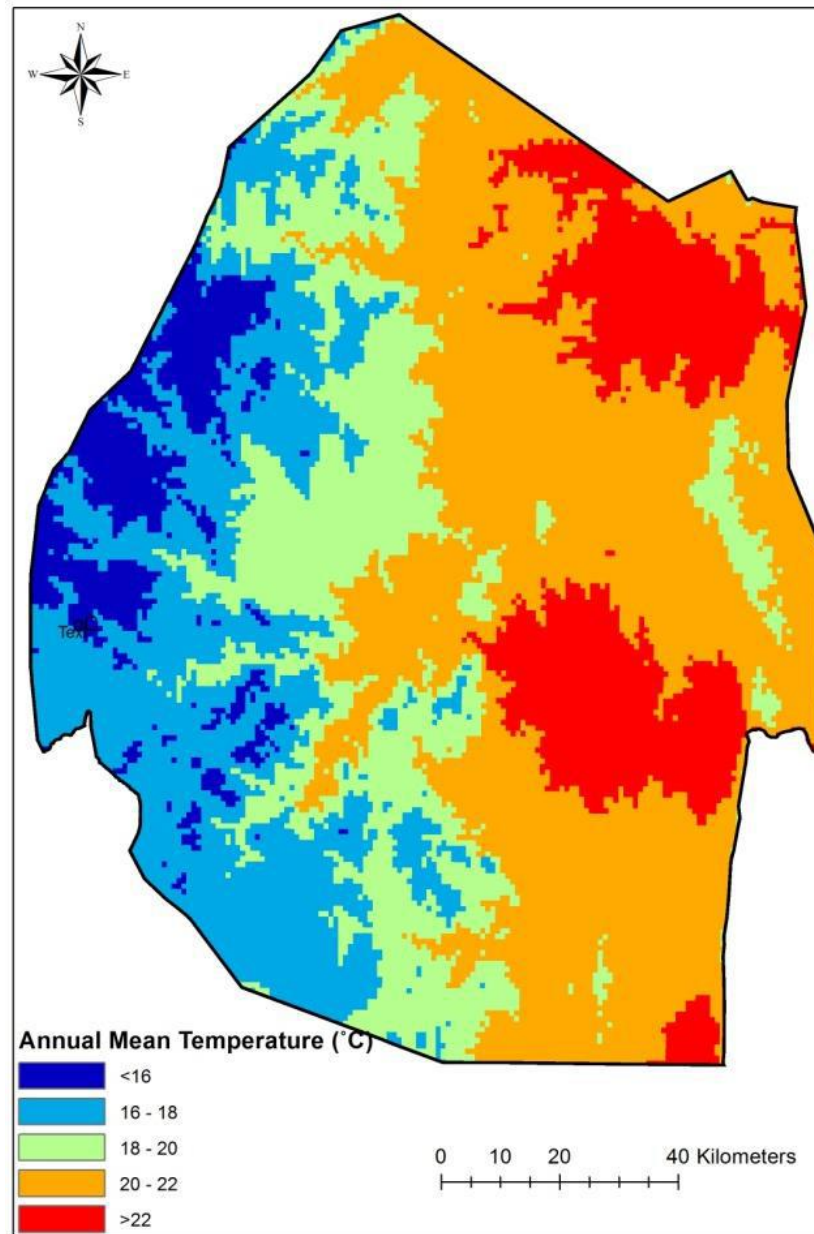


Figure 2.5: Distribution of Mean Annual Temperature (°C) in Swaziland  
Source: Brown (2011)

#### 2.2.4 Geology and soils

The variations in the agro-ecological zones are also on the basis of the dominant type of rocks and soils. For instance, the Highveld and Middleveld comprise igneous and metamorphic rocks of the Archean basement complex, while the Lowveld and Lebombo are composed of sedimentary Karoo formations (Government of Swaziland, 1997; Piteau Associates Engineering Ltd., 1992). In particular, the Highveld is characterized by granite

rocks originating from different igneous events of which the Mswati granite is the youngest magmatic phase. For example, the Mswati pluton is most remarkably outcropping as the Sibebe hills north of Mbabane (Government of Swaziland, 1997). The metamorphosed sedimentary rocks of the Onverwacht group (ocean floor volcanics, flysch and molasse) and other metamorphic rocks (gneiss and quartzite) however, occur subordinately (Government of Swaziland, 1997; Piteau Associates Engineering Ltd., 1992).

The Upper Middleveld is predominantly underlain by granodiorite (igneous rock less acidic than granite) and granite, with gneiss and shale occurring subordinately (Government of Swaziland, 1997; Piteau Associates Engineering Ltd., 1992). The most dominant rock type in the Lower Middleveld is the Ngwane gneiss, followed by granites and granodiorites (Government of Swaziland, 1997).

The Western Lowveld is underlain by sandstones, clay stones, coal and other sedimentary rocks of the Karoo Ecca series, with subordinate dolerite intrusions (Government of Swaziland, 1997). The Eastern Lowveld on the other hand, is characterized by Karoo basalts (basic volcanic rock), which may be up to 5km thick (Government of Swaziland, 1997). Finally, the Lebombo Ridge is composed of the youngest Karoo rock type of rhyolite (volcanic rock more acidic than basalt) (Government of Swaziland, 1997; Piteau Associates Engineering Ltd., 1992). The rhyolite formation is designated as ignimbrite, a deposit ensuing from glowing clouds or avalanches (Government of Swaziland, 1997).

In terms of soils, the Highveld and the Upper Middleveld are characterized by deeply weathered old soils (Government of Swaziland, 1997). It is important to note that due to the local cycle of soil formation, erosion and sedimentation, intricate patterns of deposits and soils are developed, as demonstrated by quartz stone lines, palaeosols and other relict features. The polygenetic profile structure of numerous colluviated soils is revealed by their fabric and other characteristic features resulting from processes active in the past, such as illuviation, dissolution, mineral transformation and translocation of materials (Government of Swaziland, 1997). Present soil formation is primarily characterized by ferralitization and kaolinitization; hence there are ferralitic and kaolinite soils. The Lower Middleveld, Lowveld and Lebombo are composed of younger and less weathered soils (Government of

Swaziland, 1997). This is largely because these regions have been strongly eroded by geological erosion cycles which had only little effect on the higher western part (Government of Swaziland, 1997).

The dominant rocks at Ngcayini and Ezikhotheni are Usutu Intrusive Suite and Ngwane Gneiss (Government of Swaziland, 1968). In terms of soils Ngcayini and Ezikhotheni are mainly characterized by fersialitic and pseudo-podzolic soil. Fersialitic soils are characterized by deep slightly acid red loams (Government of Swaziland, 1982). This has an effect on tree growth since their tolerance range for acidic soils varies. According to Murdoch (1970), pseudo-podzolic soils have the surface layer containing less than 20% clay or abruptly separated at 40 to 90 cm depth from a textural B with twice or more the topsoil's amount of clay and an exchange complex that is more than half base saturated. Furthermore, kaolinite and illite are the chief clay minerals and therefore mottles or iron concretions may occur when the soil is saturated with water, especially when it is raining. As such, the main agent for soil erosion in the chiefdoms studied is overland flow (runoff) and ground water flow.

### **2.2.5 Vegetation**

According to Brown (2011), there are four ecosystems that have been identified in Swaziland namely: montane grasslands, savannah-woodland mosaic, forests, and aquatic systems (Figure 2.6). These ecosystems are sub-divided into six major habitats, which comprise montane grassland, sour bushveld, Lowveld bushveld, Lebombo bushveld, forest, and aquatic (Brown 2011). Compared to the other ecosystems the savannah woodland mosaic ecosystem has the highest area under protection (5%), and harbours the highest number of species (Government of Swaziland, 2001; Brown, 2011). In the Highveld, due to high rainfall received throughout this region the soil is deficient in several minerals, hence acidic. The ensuing acidic conditions yield unpalatable grasslands which are inappropriate for intensive grazing, while at the same time cultivation of crops is not possible without application of fertilizers.

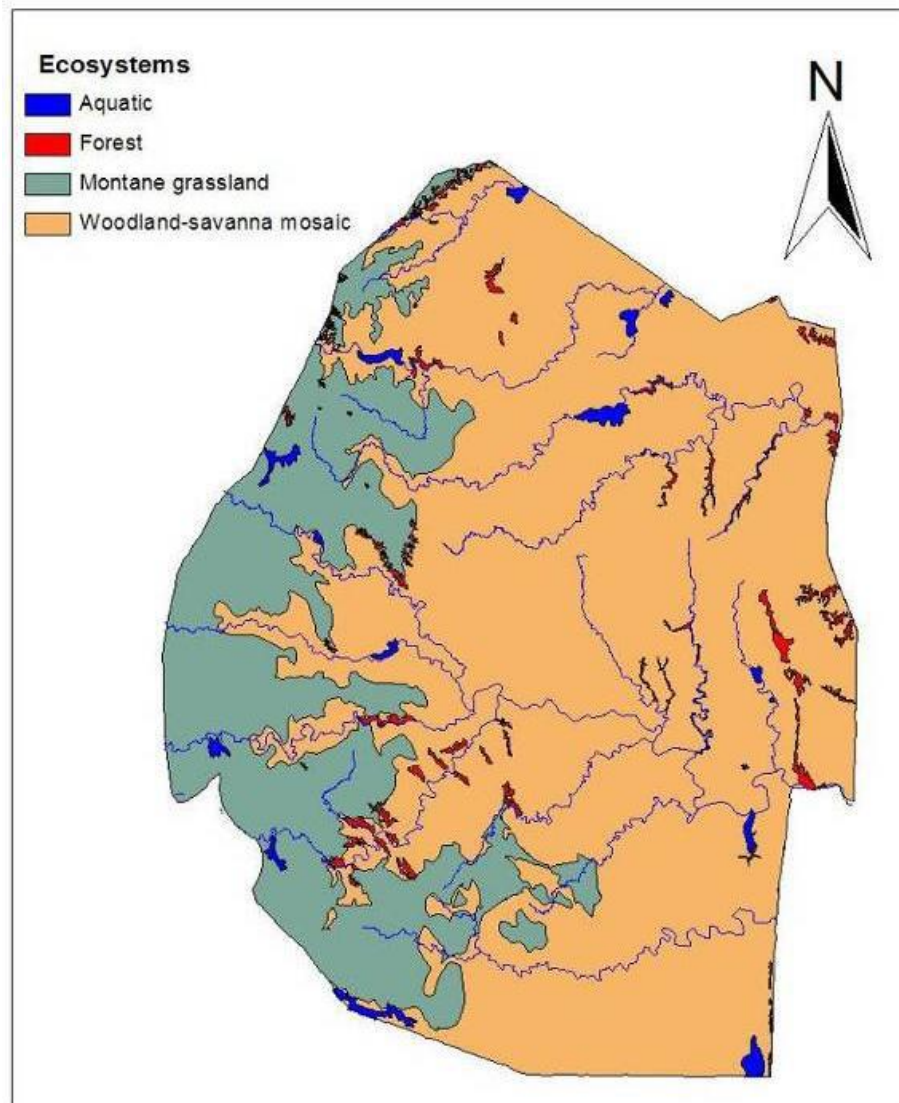


Figure 2.6: The four types of ecosystems in Swaziland

Source: Brown (2011)

Regarding the dominant vegetation to date in the Highveld, there are extensive human-made forests of pine, eucalyptus (gum), and wattle tree species. These forests are exotic, and were introduced commercially from outside Africa. To be precise, in Swaziland forest plantations started in the 1930's when wattle was introduced for the wattle bark from which vegetable tannin is extracted (Government of Swaziland, 2001). The first trees for large scale commercial production however, were planted in 1949, based on pine (predominantly *Pinus patula* but also *P. radiata* and *P. taeda*) and eucalyptus (mainly *Eucalyptus saligna*

and *E. grandis*) production with a high level of management (Government of Swaziland, 2001).

Wattle (*Acacia mearnsii*) forestry started as small scale commercial activities; however management and distribution of most wattle forests have deteriorated over the past years, resulting in wattle jungles. These plantations have increased overtime such that their coverage is now estimated to constitute about 8.1% of the land of Swaziland (Government of Swaziland, 2001). Generally, forest plantations in the country are rain-fed. A major setback of these exotic forests is that they over-utilize water especially along river courses and change the natural vegetation (Government of Swaziland, 2001).

In the Middleveld, due to the long dry season (winter) the dominant vegetation is savannah, which is characterized by tall grasslands with varying densities of trees. Owing to the amount of rainfall received; the vegetation changes from west to east such that the westerly areas tend to be more heavily wooded, particularly along rivers (Piteau Associates Engineering Ltd., 1992).

Easterly areas on the other hand, tend to have fewer trees, and these are normally trees which tolerate drought. Despite a deficiency in tree species, the Middleveld region, due to undulating nature of the terrain, fertile soils, as well as a readily available supply of water, is the most densely populated and agriculturally important region in Swaziland (Piteau Associates Engineering Ltd., 1992). As such, much of the indigenous vegetation has been replaced with crops; and Malkerns Valley is the most relevant example in this case.

In the Lowveld, the vegetation comprises a mosaic of sweet grassland with scattered deciduous and drought tolerant trees, such as *Acacia spp.* These conditions ensure due to more severe and prolonged winter drought as well as higher overall temperatures. The grasses in the Lowveld are highly nutritious because minerals in the soils are not leached by high rainfall; instead they rise to the surface through high temperatures to assist plant growth (Piteau Associates Engineering Ltd., 1992). The good pastures therefore, promote livestock farming. Despite being deficient in rainfall, the Lowveld is dominated by sugar cane plantations which are under irrigation.

The Lubombo region, in contrast to the Lowveld, attracts a higher rainfall due to its higher altitude and proximity to the Indian Ocean. Worth noting is that the east-facing slopes are wetter and heavily wooded while the west-facing slopes are in a rain shadow, and thus not capable of supporting a high density of vegetation.

Regarding vegetation at Ngcayini and Ezikhotheni, it is characterized by fairly open grassland with trees and shrubs in place. Notably, Ngcayini is dominated by *Psidium guavana* trees which seem to be occupying most of the grassland in this chiefdom. The plantation-style forests on the other hand, either consist of *Acacia mearsii* (wattle) or *Eucalyptus spp.* (gum) tree species. In terms of grass species, the two chiefdoms are mainly characterized by seasonal grasses, which are depleted during the dry season especially on the pastures. In the fields and area next to them however, there is a predominance of *Incungwane* (*Hyparrhenia*), and other seasonal grasses such as *Tjani bemakhenya* (*Themeda triandra*).

In terms of ownership, plantation-style community forests are normally under the jurisdiction of the Chief who controls them through NRMCS and the inner council in collaboration with the entire community. For instance, the National Forest Policy indicates that Chiefs in Swaziland are legitimately in charge of overall management of communal forests and woodland reserves (Government of Swaziland, 2002a). In other words, the Chief together with the inner council oversee forest resources in trust and in the interest of community members.

Ngcayini and Ezikhotheni have three categories of forests namely; individual homestead/household plantation-style woodlots/forests, plantation-style community forests, and natural forests and woodlands. Of most significance is that these chiefdoms are characterized by plantation-style community forests, which were established in an effort to alleviate land degradation particularly soil erosion between the years 2001 and 2003. In terms of species composition plantation-style community forests, are either composed of *Acacia mearsii* (wattle) or *Eucalyptus spp.* (gum) trees. Normally, these tree species

provide timber resources such as fire wood, poles, and branches, as well as NTFPs like grass for fodder, barks, and wildlife.

## **2.3 The Socio-economic Environment in Swaziland and in the Study Sites**

In this sub-section attention focuses on a description of the population and land use/socio-economic activities at the country level and also in the specific study sites.

### **2.3.1 Population**

The population of Swaziland is estimated to be 1 093 238 with an annual growth rate of 0.7% (Government of the Kingdom of Swaziland, 2017). The demographic distribution is such that 23.8% of the population lives in urban areas with 76.2% living in rural areas (Government of the Kingdom of Swaziland, 2017). The population density is 63 people per square kilometre (Government of the Kingdom of Swaziland, 2017). On a sad note, the population size and structure have been considerably affected by the rapid spread of HIV and AIDS (Brown, 2011; Government of Swaziland, 2001).

The AIDS epidemic has resulted in increased morbidity and mortality as well as an increased number of orphans. This situation has resulted in an ever increasing demand for health services, henceforth surpassing the resource capacity for health care facilities. This state of affairs is detrimental to a country's development; because investments in educating the population normally do not yield much, since the life expectancy is lowered. For instance, despite the high literacy rate of 83.1%, indicating that a majority of the population can read and write in Swaziland (United Nations Development Programme [UNDP], 2018), the life expectancy is estimated to stand at 58.3 years (United Nations Development Programme [UNDP], 2018). According to the United Nations Development Programme [UNDP] (2018) the Human Development Index (HDI) for Swaziland stands at 0.588. A Human Development Index (HDI) is a composite index measuring average achievement in three basic dimensions of human development namely; a long and healthy life, knowledge, and a decent standard of living. For instance, a HDI of one (1) indicates a most developed country. This therefore implies that Swaziland must improve on the above-mentioned dimensions in order to attain a high HDI.

Another more striking feature in the population of Swaziland is that more than a third of rural households are headed by women (Government of Swaziland, 1997). This is a setback since gender roles are very clearly defined in the Swazi society, where men are decision-makers and authority figures while women are home-makers and care-givers (Government of Swaziland, 1997). Due to this perception, females have customarily been valued less than males; hence afforded limited access to higher education, positions of authority, narrower choices of employment, and lower earnings compared to males (Government of Swaziland, 1997). For instance, despite being the main users of natural resources, women are often not part of decision-making on the management of these resources (Government of Swaziland, 1997). Evidence indicates that marginalization of females in decision making activities has been observed at all levels namely at home, within the community, and at national level (Government of Swaziland, 1997). It must be pointed out that such marginalization is normally detrimental to management of resources. Nonetheless, it is gratifying to note that the country is also making an effort to address the issue of gender equity, such that males and females are currently afforded equal opportunities in all activities.

According to the Individual chiefdom councillors (*Bucopho*) of Ngcayini and Ezikhotheni chiefdoms, there were 103 homesteads at Ngcayini and 508 at Ezikhotheni (Field reconnaissance survey, 2017). Notably out of the 103 homesteads at Ngcayini three (3) were new arrivals (that is to say they were still under construction with no inhabitants yet). At Ezikhotheni on the other hand, eight of the 508 homesteads were also new arrivals, hence without inhabitants. It must be pointed out that in the *kukhonta* system once a person has been allocated a piece of land s/he is automatically included in the list of residents even if s/he has not put up a structure on that piece of land. Therefore, in terms of a sampling frame there were 100 homesteads with occupants at Ngcayini and 500 homesteads with inhabitants at Ezikhotheni chiefdom.

Regarding plantation-style community forests, there is one (1) at Ngcayini and three (3) at Ezikhotheni. Considering the settlement pattern in the study sites it reflects that each



homestead is allocated a piece of land for cultivation (Plate 3.1), since agriculture is the mainstay of the economy of Swaziland. The size of the land owned by each homestead normally varies from approximately one to five hectares, depending on a number of factors such as year of arrival in the area, where in most cases those who arrived a long time ago own large pieces of land than late arrivals.

### 2.3.2 Land-use activities and economic development

Economically, Swaziland is largely dependent on South Africa. For example, South Africa accounts for 90 % of Swaziland's imports, 60% of its exports, and 60% of its electricity (World Population Review, 2016). At the same time, the Southern Africa Customs Union (SACU) accounts on average for 60% of total government annual revenue (World Population Review, 2016; Government of Swaziland, 1997). The major economic activities in Swaziland include mining, forestry, agriculture (livestock and crop farming) and manufacturing (Government of Swaziland, 2001). In terms of the Gross Domestic Product (GDP) the contribution by the various sectors is as detailed in Table 2.1.

Table 2.1: Sector GDP real growth from 2012 to 2015 in percentage

Sectors	2012	2013	2014	2015
<b>Primary Sector</b>	<b>4.5</b>	<b>4.8</b>	<b>-6.0</b>	<b>6.5</b>
Agriculture and forestry	3.5	3.6	-4.5	7.4
Mining and quarrying	36.3	33.0	-33.6	-14.9
<b>Secondary Sector</b>	<b>2.2</b>	<b>3.6</b>	<b>5.3</b>	<b>1.4</b>
Manufacturing	2.2	2.9	3.9	1.8
Electricity and water supply	1.5	5.3	7.4	-8.6
Construction	3.3	9.4	15.6	1.6
<b>Tertiary Sector</b>	<b>3.8</b>	<b>5.4</b>	<b>1.9</b>	<b>1.2</b>
Wholesale and retail	8.9	7.4	3.2	0.5
Financial intermediation	1.0	5.4	4.2	0.7
Transport and storage	9.0	3.7	-0.1	-18.4
Information and communication	-0.5	7.9	7.9	3.2
Government Services	-3.1	9.0	-1.0	4.5
Real estates	2.6	1.0	1.7	4.8
Taxes on Products	2.8	3.9	4.2	1.9
<b>Overall GDP</b>	<b>3.4</b>	<b>4.6</b>	<b>2.7</b>	<b>1.7</b>

Source: Central Bank of Swaziland (2016)

Worth noting is that there was instability in the GDP real growth contribution by agriculture and forestry in 2014 due to erratic weather conditions (Central Bank of Swaziland, 2016) since they are climate-sensitive sectors. GDP real growth contribution by mining and quarrying also declined significantly due to a radical fall in mineral prices particularly iron ore prices. Consequently, the production of iron ore was terminated in September 2014 in Swaziland. Further, the manufacturing sector's GDP real growth contribution declined in 2015 due to unfavourable weather conditions since it is agro-based. That is to say, the manufacturing sector is based on agricultural products such as sugar, wood pulp, and citrus canning. In addition, the decline is ushered in by a reduction in foreign investments inflow, recurring drought, high population growth rates, as well as general poor performances of economies in the Southern African Development Community (SADC) region (Government of Swaziland, 2001).

Mining and quarrying on the other hand, also depends on the size of the resource reserve such that its depletion heralds termination of the mining operations. Altogether these economic drawbacks have an effect on hiking poverty among the people, something that further worsen land degradation through increased dependence on environmental resources such as forests. Therefore, the importance of meaningful economic diversification cannot be over-emphasized if the country is to reduce its level of vulnerability due to over reliance on climate-sensitive sectors (Brown, 2011).

A closer look at agriculture and food security reveals that although maize is the most important crop in SNL and a staple crop in Swaziland, there is an emergence of farmers who are growing sugarcane on SNL especially those with irrigation facilities. This is instigated by the profitability of sugarcane cultivation compared to maize where prices have always been regulated by government rather than market conditions. Consequently, Swaziland has never been self-contained in maize production; the deficit to cover consumption needs has always been satisfied by commercial imports and food aid (FAO, 2005). Large scale sugarcane production promotes depletion of natural forests in the course of land preparation and forest clearing.

In the study sites (Ngcayini and Ezikhotheni chiefdoms), small-scale subsistence crop agriculture, extensive communal grazing, settlement constructions, and forestry are the most dominant land-use activities. Crop agriculture, grazing and settlement construction for instance, puts pressure on the land resulting in the general destruction of plant species and thus soil erosion. Crop agriculture is mainly for subsistence purposes with maize being the main crop grown in the area. Extensive communal grazing is a destructive but continuous practice, and it takes place on the pastures, which are composed of both trees and grass species. In turn some natural forests are either cleared off to extend pastures and fields or establish new settlements. This is however, an unsustainable practice in as far as forest resource management is concerned.

## **2.4 The Role of Environmental Law in Forest Resource Management**

Environmental law (sometimes known as environmental and natural resources law), deals with environmental conservation and management as well as the control of environmental pollution. According to the Environmental Science Organization (2019), environmental law refers to regulations, statutes, local, national and international legislation, and treaties designed to protect the environment from damage and the legal consequences of such damage towards governments or private entities or individuals. Notably, environmental law gained a foothold with the advent of the concept of sustainable development, and it now addresses environmental problems on a global perspective as ‘public international environmental law’. As such Barral (2012) reveals that for the most part sustainable development is referred to as an objective in conventions/treaties that contracting parties must strive to achieve, occasionally with an indication of the types of measures to be undertaken to that effect. Sustainable development and international environmental law requires international co-operation since they both address issues of the global environment such as pollution. Indeed, international co-operation is essential for environmental conservation and management, because there are common areas which fall outside state jurisdiction and where almost unrestricted freedom has thus far been exercised. An example would be the high seas, a sea zone falling outside state jurisdiction and commonly known as the common heritage of human kind.

Furthermore, it is important to mention that at the international level co-operation between states is governed by conventions (treaties), and customary law principles as well as ‘soft laws’. At national level society is governed by legislation, customary law and case law. Moreover, at the national level public participation is a pre-requisite for sustainable environmental conservation, management and control of pollution. Therefore, forest resource management *per se* is dealt with at both international and national levels. In other words, the management of resources is not just hit-or-miss but it is governed by law. The main defect of the law governing resource management however is that it is often not enforced; hence the problems of mismanagement of resources such as deforestation culminating in land degradation. The lack of enforcement often stems from insufficient involvement of stakeholders in their formulation and implementation. In other words, stakeholders are normally not aware of laws governing the resources they use. This is also common at the community level where due to failure to participate in community activities and meetings people are normally oblivious of community rules governing the use of resources.

#### **2.4.1 Public international environmental law**

Swaziland has a National Forest Policy, which is a commitment for the country to strive to achieve sustainable development in general and sustainable forest resource management in particular. The National Forest Policy in turn act as a link for the country with international environmental laws governing forest resource management and this is primarily because the country has ratified conventions such as Convention on Biodiversity (CBD) of 1992, United Nations Framework Convention on Climate Change (UNFCCC) of 1996, United Nations Convention to Combat Desertification (UNCCD) of 1994, and the Convention on International Trade in Endangered Species of Flora and Fauna (CITES) of 1973.

Consequently, all the above listed conventions address the importance of sustainable management of vegetation of which community forests are not an exception. For example, the stated overall objectives of the CBD are: to ensure the conservation of biological diversity and the sustainable use of its components; promote a fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate

access to genetic resources and by appropriate transfer of relevant technologies (taking into account all rights over those resources and technologies), and by appropriate funding (Kidd, 2000; Bond, 2009). Basically, the convention takes cognisance of the potential role of local communities (community action) in the conservation of biodiversity. For instance, it covers maintenance of traditional knowledge; benefit sharing; protection of customary rights; as well as the importance of financial incentives in biodiversity conservation (Bond, 2009). Furthermore, the CBD incorporates the ecosystem approach which comprises the principle of decentralization to the lowest appropriate level of management; a fundamental step in community action in the management of communally owned resources, since it ensures effective participation by indigenous and local communities in decision-making and policy-planning. Generally, the objectives and provisions of the CBD namely; promoting sustainable use of biodiversity, benefit-sharing, community involvement, decentralization, and an incentive-based approach to conservation are in-line with the principles and approaches of CBNRM as observed by Bond (2009). This convention is more pertinent to the study on community action in the management of community forests in Swaziland for the reasons outline above.

The goal of the UNFCCC is to alleviate greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system (Kidd, 2000; Bond, 2009). This is through advocating for conservation of trees as sources of oxygen and sinks for carbon dioxide. Removal of trees therefore increases the accumulation of carbon dioxide in the atmosphere, thus climate change which manifests as global warming. It is important to note that the nature of climate change denotes that the status of global biodiversity and the process of desertification are both inseparably connected to the speed and extent of climate change (Bond, 2009). Climate change is already considered to be one of the main drivers of biodiversity loss (Bond, 2009). Furthermore, evidence suggest that due to climate change by 2020 an estimated 75 to 220 million people in sub-Saharan Africa are likely to be exposed to increased water stress while yields from rain-fed agriculture are likely to be reduced by up to 50% (Bond, 2009). Although there are no specific provisions for CBNRM within the UNFCCC, it

addresses the importance of trees in regulating climatic conditions, hence of relevance to the study on community action in the management of community forests in Swaziland.

Furthermore, the UNCCD deals with land degradation problems in arid, semi-arid, and dry sub humid areas emanating from natural and human induced factors. Natural factors include drought, wind, and water erosion while human induced factors on the other hand; include overgrazing, forest clearing, and crop agriculture. The main objective of the UNCCD is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification of which Swaziland is not an exception through effective action at all levels, supported by international cooperation and partnership arrangements, in the framework of an integrated approach which is consistent with **Agenda 21**, with a view of contributing to the achievements of sustainable development in affected areas (Bond, 2009; Kidd, 2000). Worth noting is that the UNCCD ensures public participation in the development and implementation of plans to combat desertification - a 'bottom-up' approach (Kidd, 2000). Furthermore, the UNCCD also recognizes the significance of secure land and resource tenure, and forms of decentralization (Bond, 2009). Just like the previously discussed conventions, the UNCCD is relevant to the present study which also addresses issues of land degradation.

In addition, there is the CITES, whose objectives are to ensure through international co-operation that the international trade in species of wild fauna and flora does not threaten the conservation of the species concerned; and protect certain endangered species from over-exploitation by means of a system of import-export permits issued by a management authority under the control of a scientific authority (Kidd, 2000). The CITES endeavours to ensure that no species of wild fauna and flora becomes or remains subject to unsustainable exploitation because of international trade. It also basically controls international trade in specimens of species of wild fauna and flora (Kidd, 2000). This includes export, re-export and import of live and dead animals as well as plants. Here, countries which intend to trade in plants and animal parts and derivatives must have permits and certificates. These permits and certificates however, can only be issued if certain conditions are met. In turn, the

permits and certificates have to be presented before consignments of specimens are allowed to leave or enter a country (Kidd, 2000).

CITES is apprehensive mainly with the protection of endangered species of which tree species are a major concern, therefore it is of relevance to forest resource management in general but not to community action. CITES is particularly important in countries like Swaziland where there are species which are said to be endangered since it put restrictions on their exploitation specifically for trading purposes. However, its limitation is that the exploitation may continue at the local level without any form of control if the tree species are used locally, hence its relevance in the present study focusing on community forests.

#### **2.4.2 National environment legislation**

With respect to national legislation it is important to mention that there are a number of laws related to management of the environment, but here attention is mainly focused on the most recent Acts. These Acts include: Swazi Administration Order, 6 of 1998; Flora Protection Act, 5 of 2001; (FPA); Environment Management Act, 5 of 2002 (EMA), and the Constitution of the Kingdom of Swaziland Act of 2005.

The Swazi Administration Order, 6 of 1998 provides for the incorporation of the law governing appointment, renewal and functions of Chiefs and headmen (*Tindvuna*) into the law relating to the administration of Swazi Affairs. Under the Order, Chiefs are bestowed with administrative control over; prohibiting, restricting or regulating the cutting or destruction of trees, and burning of grass or bush, and use of fire or lights in any manner likely to ignite any grass or bush, and the extinguishing of grass or bush fires, respectively (Government of Swaziland, 2002a). The Order is vital in terms of forest resource management especially on communal lands because it provides for a form of their control through the Chiefs. This in turn helps to minimize deforestation and ensure sustainability of forest resources. For instance, in cases where there are community forests, normally the Chiefs act as the overarching authority over them to ensure that all people in that community obtain benefits. Chiefs in this respect normally prohibit unauthorized harvesting of forest resources by advising community members to seek permission from them or

individuals entrusted with the responsibility of overseeing the resources and pay a nominal fee as is the case at Mkhulamini chiefdom (Singwane, 2006) and Mahlangatsha constituency in Sibovu and Mpolonjeni community forests (Sithole, 2013). This is mainly to guarantee that the forests are not depleted and to restrict the harvesting of forests resources as a way of controlling deforestation and degradation.

The Flora Protection Act (FPA), 5 of 2001 protects indigenous flora by prohibiting any person from plucking, gathering, cutting, uprooting, injuring, breaking or destroying a plant of any species considered to be endangered or rare. The FPA requires an Environmental Impact Assessment (EIA), to be carried out in respect of any activity that would impact on indigenous flora (Government of Swaziland, 2002a). This Act is therefore relevant to forest resource management because it provides for protection and conservation of forests. Although the FPA does not address community action, it is of prime importance in terms of sustainable management of tree species.

The Environment Management Act (EMA), 5 of 2002 provides and promotes the enhancement, protection and conservation of the environment, and sustainable management of natural resources. Hence, forests being part of the environment and natural resources are protected by the EMA. In fact the EMA is an overarching Act, which provides for sustainable management of all natural resources and the environment in general. Of particular importance about the EMA compared to the other national laws is that it propounds the environmental principles of sustainable development. These include among others the stewardship principle or public trust doctrine (equity), precautionary and the polluter pays principle. Furthermore, the EMA is of paramount importance because it advocates for active participation of all citizens in resource management in general. In other words, the Act promotes decentralization of resource management as well as narrows the gap between women and men regarding resource management, since both genders are allowed to participate equitably as complementary parties.

The Constitution of the Kingdom of Swaziland Act of 2005 calls upon citizens to protect their environment. For instance, in section 210, clause (2) it states that: “In the interests of



the present and future generations, the State shall protect and make rational use of its land, mineral and water resources as well as its fauna and flora, and shall take appropriate measures to conserve and improve the environment” (The Constitution of the Kingdom of Swaziland, 2005: 132).

## **2.5 Customary Law in the Management of Community Resources**

In Swaziland, community leaders comprise the Chief, headmen, council of princes and princesses (*Bantfwabenkhozi*) inner council (*Bandlancane*), ward elders (*Imisumpe*), *Bucopho* and NRMCS. Above all, the Chief is the supreme authority in the community, who often addresses the general community assembly (*Bandlakhulu*) through the headman or princes and princesses. Therefore, the headman is the right-hand man of the Chief, who is responsible for organizing and convening meetings through the royal kraal. The council of princes and princesses in collaboration with the inner council is responsible for advising the Chief. The inner council itself is led by the headman and it comprises; a chairperson, vice chairperson, secretary, vice secretary, treasurer and members. The role of the chairperson is to preside over all community meetings with the secretary recording the proceedings. The treasurer is a custodian of community funds. Then the ward elders are mainly custodians of the history of the community, including boundaries of the community and of individual homesteads. They work hand in hand with the inner council. For instance, if there is a person swearing allegiance (*kukhonta*) to the Chief, the ward elders with some members of the inner council conduct a survey to identify a suitable piece of land. Upon identification of the land, they report back to the Chief, who then commissions the ward elders and the inner council to allocate the piece of land to the person and mark its boundaries (*kubopha lifindvo*). At the same time, in adjudicating on community matters such as civil cases and conflicts between community members, the inner council collaborates with the ward elders and council of princes and princesses.

*Bucopho* is a liaison officer for a community to the constituency (*Inkhundla*), and it is because of the importance of his/her role that s/he sits in meetings for the inner council. This is meant to facilitate a two-way mode of reporting back. In the traditional structure of the community, anyone who wants to suggest or report to the community general assembly

(*Bandlakhulu*) meeting must do so through the inner council meeting. The inner council scrutinizes the views of the person and advises accordingly where necessary to avoid destructive views being presented to the community general assembly meeting. At the same time, the inner council together with the council of princes and princesses are supposed to counsel the Chief, such that before addressing the community general assembly meeting he must address the inner council and council of princes and princesses. This is to ensure that his speech is appropriate for the community general assembly meeting to avoid misrepresentation of the royal kraal and attracting disrespect from community members. It is noteworthy that the Chief rarely addresses the community general assembly meeting, to ensure that he earns absolute respect from his subjects.

Finally, the NRMC by virtue of overseeing community resources fall in the category of community leaders. Ideally, the NRMC ought to time and again report to the community general assembly meeting about progress and challenges encountered in their day to day management of the community resources. Once again, the *modus operandi* is that they must first report to the inner council meeting to ensure that the report is palatable to the community general assembly. As a rule, for all community meetings the inner council ought to put together agenda items that will be discussed during the meeting. They do so in consultation with all relevant community structures including associations and local boards. Nonetheless, those who miss the opportunity of being slotted in the agenda are allowed to voice their concerns under ‘any other business’ agenda item of the meeting.

## **2.6 Summary**

This section of the study concentrated on the description of the physical environment in Swaziland in general and in the case study sites in particular; with special attention on location, climate, relief and drainage, geology and soils, as well as vegetation. Moreover, there has been an effort to describe population and land use/socio-economic activities at the country level and also in the specific study sites. The main reason for such a description is to justify the choice of the case study sites and contextualize the study in the country. Furthermore, in an effort to do justice on this section there was an effort to explain the role

of environmental law in resource management and specifically forest resource management at the international, national and local levels.

Having described the environmental context in Swaziland and in the study sites, as well as explained the role of environmental and customary law on management of forest resources in Swaziland attention now focuses on community action research and its application to forest resources. Such a discussion is very important in research as it assists in putting the subject under study into context.

## **CHAPTER 3**

### **COMMUNITY ACTION RESEARCH AND ITS APPLICATION TO FOREST RESOURCES**

#### **3.1 Introduction**

This section of the study focuses on providing a background to the objectives of the study and discussing the issues surrounding the problem studied. The main argument in this study is that community action is essential in order to attain sustainable management of community resources in general and particularly community forests, as well as to control land degradation. This means that all people have a role to play in management of communally owned resources, which if well executed can contribute to sustainability of those resources. It is important to acknowledge that in Swaziland the examination of factors behind fruitful community action is quite recent, hence there is a paucity of published documents on this subject. Therefore, attention is focused on what is available on community action in Swaziland and in other countries. The issues raised by this study include: change in land cover and extent of land degradation over time in case study areas; management of community forests by internal and external stakeholders and the governance determining such management; distribution and utilization of benefits from community forests; extent of community action in the management of community resources as well as opportunities and threats for community action in management of community forests.

#### **3.2 An Overview of Forest Resources and their Characteristics in Swaziland**

The distribution of natural vegetation in Swaziland varies with the four agro-ecological zones Murdoch (1970). For instance, the Highveld is characterized by mountain sourveld: with very small patches of evergreen forest. Moreover, the Middleveld comprises upland tall grassveld and upper broadleaved tree savannah. Furthermore, the Lowveld agro-ecological zone is denoted by lower broadleaved tree savannah particularly Acacia savannah. Notably, the Lowveld also referred to as the Bushveld is dominated by

xerophytic plants due to its being prone to drought. Finally, the Lubombo agro-ecological zone is characterized by mixed bush and savannah. It is important to reiterate the fact the study is mainly concerned with forests and woodlands. Figure 3.1 depicts Forest types in Swaziland.

By way of description, woodlands involve vegetation where trees are dominant but smaller and more spaced apart compared to those in a natural forest. A bush veld on the other hand, is identified as a Lowveld and Middleveld association with scattered trees not forming a definite canopy and a continuous ground flora largely composed of grasses with a few *Acacia* species (Murdoch, 1970). Notably, a savannah is mainly found in the Lowveld and dominated by *Acacia* species. Notably, it is difficult to delineate between a bush veld and a savannah. There are also plantation-style forests which include large scale forests owned by companies and small scale forests owned by communities and individual households. The plantation-style forests normally comprise either or both eucalyptus, wattle and pine tree species. Notably, pine tree species are not common in plantation-style community and individual household/homestead forests.

It is worth noting that extraction of natural forests often gives a way to development of secondary forests, which are often characterized by a dominance of alien invasive plant species (Manyatsi and Hlophe, 2010). The invasive plant species in this case include *Lantana camara*, *Psidium guavana*, *Solanum mauritianum*, and of late *Chromolaena odorata*. These species tend to out-compete indigenous species through strangling as well as colonizing an area at high density and inhibiting any undergrowth. For instance, upon establishment in an area, they reduce grazing pastures as well as inhibit people from accessing other useful trees. It is important to indicate that the species grown in plantation-style forests are also highly invasive especially *Acacia mearnsii* (wattle) and *Eucalyptus spp.* such that they are also spreading disproportionately to agricultural land, as well as depleting water resources (Working for Water, 2007; WOCAT, 2007).

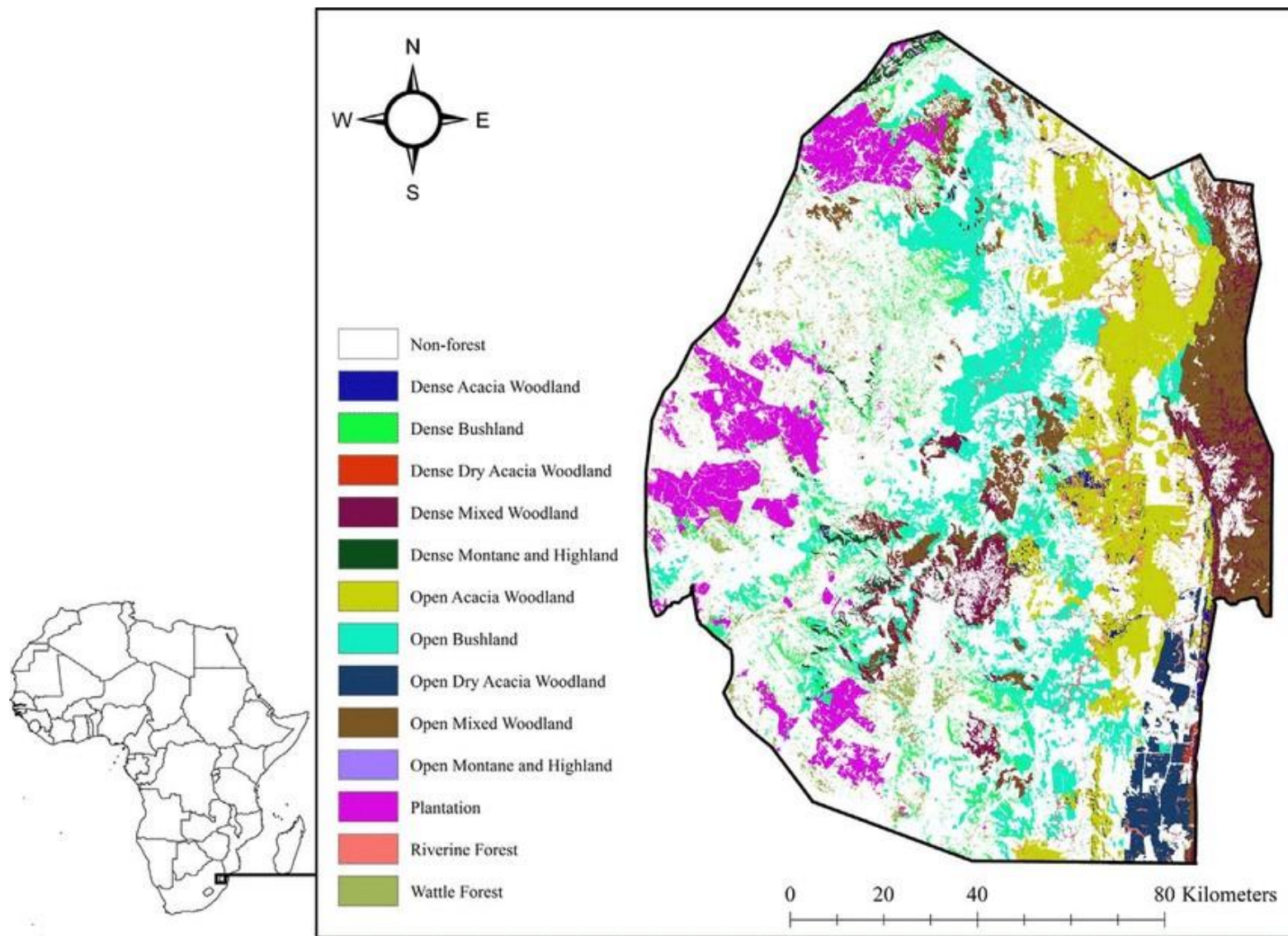


Figure 3.1: Forest types in Swaziland in 1999

Source: Thurland (2000)

Despite the noted disadvantages of wattle and eucalyptus tree species, their fast growth alleviates land degradation, particularly through stabilizing the soil in eroded areas. For instance, once planted *Eucalyptus spp.* easily propagate through re-sprouting and coppicing abilities as observed by Nakhooda and Jain (2016). It is these advantages which have resulted in the species being chosen as the best species for usage in controlling land degradation.

In addition to the usage of trees in controlling land degradation, there is a recommendation to also use grass species such as Vetiver grass (*Chrysopogon zizanioides*). Briefly about Vetiver, it is a clumping type grass, which is non-invasive and does not produce viable seeds (Cindy, 2015). Despite that the native habitat of Vetiver is in low, damp sites such as swamps and bogs; it is now being used on dry hillsides to control erosion. It is noteworthy that Vetiver is ideal for controlling soil erosion because it produces a massive root system that grows straight down rather than out from the plant, hence it does not become invasive (Cindy, 2015). Instead it creates a sort of curtain beneath the soil, which taps sediments and slows down the movement of water. The use of grass species such Vetiver grass as well as green gold and elephant grass in controlling land degradation is also supported by Addis *et al.* (2015) who observed that these grass species can develop in a shallow soil with high tolerance to drought. Nonetheless, planting grass species in rehabilitation sites does not negate the socio-economic and ecological importance of natural forests and woodlands.

In terms of management, natural forests and woodlands in particular appears to be diminishing due to a number of human activities such as settlement construction, commercial agriculture (especially sugar cane), unrestrained extraction of forest products from communal land, large livestock populations and wild veld fires. The importance and value of indigenous forests and woodlands to communities is often underrated, yet they serve as a safety net during times of scarcity (Dlamini, 2017). For instance, indigenous forests avail both timber and non-timber forest products to communities, where the latter include grazing and fodder production, wood/timber for construction and furniture, fuel wood including charcoal, bark, fruits, edible animals and plants, grass and reed for

thatching, as well as basketry and other applications (Manyatsi *et al.*, 2010). Worth noting is that these resources are exploited both for domestic usage and for sale.

Plantation-style forests on the other hand, are also exploited for both domestic uses and for sale, where the products are mainly wood/timber for construction and fuel wood (Sithole, 2013; Singwane, 2006). Notably, the commercialization of forest products from plantation-style forests seems to be responsible for their disproportionate spread, since it incites individuals to increase the sizes of their forests at the expense of the community hence a ‘tragedy of the commons’. According to Hardin (1968), a ‘tragedy of the commons’ ensures where ruin is the destination towards which all people rush, each pursuing his/her own best interest in a society that believes in the freedom of the commons. Moreover, Hardin (1968) contends that freedom of the commons normally brings ruin to all. It is also important to mention that commercialization of forest products from plantation-style forests may trigger conflicts relating to ownership of the forests, hence the need to assess the role of community action in the management of community forests in Swaziland based on case studies.

### **3.3 The Management of Forest Resources by Internal and External**

#### **Stakeholders and the Governance Determining such Management**

Community action depends on the type of activity being executed and the institutions within or through which the action is executed. At the community level there are two types of institutions that influence community action namely, formal and informal institutions (Yasmi, Kelley and Enters, 2011; Mwangi and Wardell, 2012). Formal institutions on the one hand, refer to rules and regulations that come from governments (such as laws and constitutions) that are applied by formal state apparatuses such as the police or the judiciary (Yasmi, Kelley and Enters, 2011). Informal institutions on the other hand, relate to socially shared rules, usually unwritten, that are communicated and applied through non-formal channels (Yasmi, Kelley and Enters, 2011). Normally, both formal and informal institutions coexist and influence the governance of resources like forests (Yasmi, Kelley and Enters, 2011; Mwangi and Wardell, 2012). The following sub-section of the study therefore,



focuses on the role of internal stakeholders (traditional authorities and community members) in the management of forest resources.

### **3.3.1 Management of forest resources by internal stakeholders**

In a socio-economic study of forest-adjacent communities from Nyanganje forest to Udzungwa in Tanzania it transpired that men and women recognized that they were guardians of the forest, especially through their roles in environmental committees, as well as in patrolling the forest and putting out wild fires (Harrison, 2006). Notably, those who participated in environmental committees benefited through some form of environmental education afforded by external institutions through workshops. It is however, expected that committee members who have received training will pass-on the knowledge to the rest of the community members, but often times that never happen due to a number of reasons. Amongst the reasons is unwillingness to impart knowledge in fear of losing special status as village specialists in these areas (Harrison, 2006). Worth noting is that such experiences are detrimental to sustainable management of resources, thus the present study assesses the management of community forests by internal stakeholders in Swaziland.

In Cameroon, management of forests is entrusted on management committees which are legally recognized as Community Interest Groups since associations are legally prohibited from undertaking profit-making operations (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011). These committees are composed of at least four people namely; the president, secretary, finance administrator, and a delegate of logging operations. In terms of the committees' mandate, it is responsible for all activities related to forest management; development of a forest management plan; negotiation of stumpage fee with an industrial operator or self-management of logging activities; investment of benefits in collective facilities; and activities. Likewise, in Swaziland, when community forests are established a committee is also appointed to oversee their management; however it is unclear whether the committees diligently execute their mandates or not, and how, hence the present study addresses this subject.

In Lesotho, there is no silvicultural treatment afforded to unplanted and unmanaged indigenous trees, and shrubs to ensure maximum benefits to the rural people on a fully sustainable basis (Maile, 2011). Therefore, the only system of management afforded to some of the areas of indigenous trees and shrubs is traditional control of cutting, exercised by some Chiefs (Maile, 2011). The aim is primarily to allocate cutting areas in different years to ensure sustainability.

In Swaziland, the King has installed Chiefs in almost all the 385 chiefdoms (The Government of the Kingdom of Eswatini, 2018) to monitor allocation of land and utilization of natural resources. Notably, some chiefdoms do not have Chiefs because the predecessors passed on and the community members are failing to agree on the rightful heirs. Evidence suggests that, there is normally unfairness concerning distribution of forest resources and more so where there is an acting Chief (Magagula, 2003). This therefore, authenticated the need for an assessment of the situation in order to inform policies on ownership and user rights in the country.

In Swaziland, legal instruments such as the Swazi Administration Order of 1998 vest powers of control over community resources on the Chiefs and their Councils. This therefore, entails that there must be close cooperation between the traditional authorities and the committees tasked to oversee management of community forests to ensure cooperation of the entire community. It is however, indistinct whether such cooperation subsists, yet it is critical since its absence is likely to trigger conflicts which may jeopardize the exercise of resource management.

The Swaziland National Forest Policy stipulates that overall management of communal forests and woodland reserves is the responsibility of Chiefs with the support and participation of community members (Government of Swaziland, 2002a). This is normally realized through establishment of NRMCS which work in close cooperation with the existing community traditional structures in overseeing the management of community forest resources. NRMCS have to be organized and trained in community forestry applications and selection of suitable tree species. The NRMCS is then tasked with the

responsibility of negotiating relevant forest management matters with all stakeholders, so as to establish rights and responsibilities, as well as formulate rules governing the use and management of communal forest resources (Government of Swaziland, 2002a).

### **3.3.2 Management of forest resources by external stakeholders**

Generally, the management of forests in Swaziland falls under the Forestry Department in the Ministry of Tourism and Environmental Affairs (MTEA), which is the key stakeholder. As part of its annual activities, the Forestry Department normally carries out afforestation programs as a national event whereby trees are planted on deforested or degraded areas (Magagula, 2003). Notably, the planting of trees promotes natural regeneration because other trees often start to grow afterwards. The major role played by the Forestry Department is to advise people on the importance of managing forests, which is facilitated through the media and community consultations (Magagula, 2003). For instance, on realizing the increasing market for wattle forests and people's enhanced interest in the management of these forests; a unit has been established under the Forestry Department to take care of the management of *Acacia mearnsii* (wattle) forests. Consequently, guidelines on silvicultural and harvesting procedures have been compiled for people managing *Acacia mearnsii* forests. Worth noting is that people have been cautioned on the environmental impact of *Acacia mearnsii* on grazing land, biodiversity, and stream flow. As a result, farmers are advised to restrict the trees to where they are needed. Evidence however, suggests that the resurgence of a market for *Acacia mearnsii* forests has prompted individuals to increase the sizes of their forests; hence a disproportionate spread to grazing areas and other ecosystems. This is however, likely to trigger conflicts regarding ownership of *Acacia mearnsii* forests; hence the study assesses the situation in Swaziland.

Other external stakeholders which are active in forest resource management in Swaziland include NGOs and Swaziland Environment Authority (SEA). In particular SEA's task is to oversee the enforcement of legislation governing management of the environment. The NGOs include mainly *World Vision* and *Conserve Swaziland* following that Yonge Nawe "You too must conserve." ceased its operations in the country.

### 3.3.3 Governance of forest resources

In Zambia, a Community-Based Natural Resource Management (CBNRM) program was introduced in 1984 (Nyirenda and Chansa, 2011). With the inception of CBNRM, social capital grew further largely due to strengthening of conservation legislation, rights for utilization of resources, increased sanctioned social connectedness and networks for improved community action and decision-making. CBNRM approach calls for co-management of forests and forest resources as well as participation of users in decision-making, management and use of the resources (Mogotsi *et al.*, 2016). Thus, the present study assesses the rules (formal and informal) used in the management of forest resources in Swaziland.

In Gabon, community forestry is governed by law since the year 2001, whereby Article 156 of the law states that “The community forest is a portion of the rural forest estate assigned to a village community for their activities or to engage in dynamic processes for the sustainable management of natural resources using a simplified management plan” (Quentin *et al.*, 2011: 42). Worth noting is that re-appropriation of forested lands by a community enables it to source some profit from the sale of wood and its products, profits that can be unswervingly invested to advance the living conditions of that community (Quentin *et al.*, 2011). Despite the enactment of the Gabonese law in 2001, no community forest has been created as of yet (Quentin *et al.*, 2011).

According to de Jong *et al.* (2010), where forest products are highly commercialized there is often a need for business organizations referred to as Community Forest Enterprises (CFEs). The CFEs engage in a wide array of productive and service-oriented activities, including timber and Non-Timber Forest Products (NTFPs), as well as various kinds of tourism (de Jong *et al.*, 2010). These enterprises are normally governed by a group of persons elected from among the CFE members, and who formally are controlled by the general assembly of CFE members. Nonetheless, sometimes the CFE is assisted by a full-time administrator or accountant who has had professional training (de Jong *et al.*, 2010). In the event that there is no internal support; then external support from Non-Governmental Organizations (NGOs) in the form of know-how and skills is solicited (de Jong *et al.*,

2010). This therefore, implies that such CFEs are subsidized; hence they cannot operate profitably on their own.

Notably, research on community action and management of common pool resources has enriched the debate on how institutions and contextual factors influence success of community action efforts (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011; Turner, 1999; Ostrom, 1990). For instance, in Cameroon, community forests were implemented after enactment of the Cameroonian Forestry Law of 1994, which provided for forest decentralization (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011). Decentralization under the Forestry Law of 1994 entailed a number of new forest rights which were granted to local villages through levying 40% of taxes from Forest Management Units; that is logging concessions to municipalities and 10% to local villages, and also by granting property rights of communal forests to municipalities and the rights of use of community forests to local villages (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011).

The Cameroonian Forestry Law of 1994 also divided the Cameroonian forests into two zones namely a Permanent Forest Domain (PFD) and a Non-Permanent Forest Domain (NPFD) (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011). The PFD comprises permanent forests under government ownership and managed by the Ministry of Forests. Communal forests are established in the PFD and managed by the municipality with its forests protected by law and no conversion to other land uses is allowed. The NPFD as the name implies comprises non-permanent forests, which are under the jurisdiction of the ministry of agriculture, but unlike the PFD, they can be legally converted to non-forest uses. Community forests are only allocated in NPFD with a maximum area of 5,000 hectares; under the jurisdiction, monitoring, and control of the Ministry of Forests (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011). Notably, designation of an area as a community forest was a strategy for the Ministry of Forests to monitor logging activities and capture part of the territory under the Ministry of Agriculture.

In Swaziland, utilization of natural forests and woodlands by rural communities follows a free access system on SNL (Hassan, Mbuli and Dlamini, 2002; Sithole 2013), a practice

that has been confirmed by the present study. In other words, anyone from the community and neighbourhood can utilize the forests as long as they are located on communal land. In cases where the forest is located near a Chief's home, permission is sought from a Chief runner who grants permission on behalf of the Chief (Sithole 2013). Seeking permission from community leaders to use forest resources is not only unique to Swaziland but applies in many if not all countries in the world. For instance, according to Mogotsi *et al.* (2016) in Namibia, forest resources in community forests are accessed by both men and women, either directly without requiring authorization from any authority, or through acquisition of permits or consent from local leadership. In Swaziland, where the forest is located on TDL, permission must be sought from the owner of the land. Nonetheless, it must be pointed out that in all these scenarios the utilization is mainly for domestic purposes, hence in the event that a person requires timber for sale then there is a need for a payment.

Moreover, in Swaziland, forest products (wood and NTFPs) are mainly used for subsistence purposes but evidence indicates an upsurge of their commercialization. For instance, people are seen selling fuel wood along the roads in the country and there is also a flea market in Manzini city where a wide range of forest products is sold particularly on Wednesdays and Thursdays. Due to the upsurge of a sale of forest products in Swaziland, the present study investigates how extraction and sale of resources in community forests is governed as a determinant of their sustainability.

It is important to note that, the role of traditional authorities in forest management is generally to ensure that there are effective rules and regulations pertaining to exploitation of trees in the chieftdom, as well as having effective strategies in place for enforcement of the rules. The key rules that normally apply to most chieftdoms include: using only dry wood for firewood, protection of indigenous fruit trees, and prohibited free access to commercial exploitation of trees in the communal area (Sithole, 2013). It must be noted however, that often times there are very clear and elaborate rules and regulations; which are not enforced.

In Swaziland, the policy and legislative framework that governs the use of forest resources encompasses; The Forest Preservation Act of 1910 (reviewed to The National Forest Policy of 2002); Swaziland Environment Action Plan (SEAP) of 1997; The Swazi Administration Order, 6 of 1998; National Biodiversity Strategy and Action Plan of 2001; The Flora Protection Act, 5 of 2001 (FPA); The Environment Management Act, 5 of 2002 (EMA); The Access and Benefit Sharing Bill of 2006; and The Biodiversity Management and Conservation Bill of 2007. Notably, these policies and legislations make it an offence to cut down, damage, remove, sell or purchase indigenous trees or timber on Government land and Swazi Nation Land without permission, or to cultivate within 27.4 meters of such timber, or to set fire to such timber (Magagula, 2003).

The National Forest Policy however, decries that there is generally inadequate knowledge of sustainable forest management within communities and dearth of appropriate structures within the communities to manage the community forests (Government of Swaziland, 2002a). Therefore, there is a need to empower communities to take full charge of sustainable management of their own forest resources. To that effect, it is hoped that establishment of Forest Resource Management Committees working in close co-operation with the existing community traditional structures and the Forestry Department is the most effective method of empowerment (Government of Swaziland, 2002a). It is the emphasis on Resource Management Committees, which authenticated the need for an assessment of the role of community action on management of community forests in Swaziland, especially since the quest is to attain sustainable management of resources. As much as committees are set up to oversee community forests' management activities in Swaziland, their role in the endeavour remain unknown, hence the study unearths such issues.

Notably, the need for good governance of community forests is also stirred by the socio-economic and ecological benefits they afford to community members.

### **3.4 The Socio-economic and Ecological Benefits Derived from Community Forests**

The role played by community forests in the socio-economic life of people and in the natural environment cannot be overemphasized. Despite the significant role forests play in meeting livelihood needs of people and ensuring sustenance of the ecological environment, they face numerous challenges. Therefore, this section of the study focuses on the socio-economic and ecological importance of forests as well as the distribution and utilization of benefits derived from community forests.

#### **3.4.1 Socio-economic importance of forests**

In Swaziland, rural communities live in and around the forests and woodlands where they use the following resources; fuel wood, charcoal, poles for construction, bark for tannin and pulpwood, thatching grass, medicinal plants, honey, as well as wild fruits and vegetables (Magagula, 2003). According to Ngwenya and Hassan (2005:264) there is “a very high dependence of the rural communities in Swaziland on natural forests and woodlands for their livelihoods as they derive more than 50% of the value of total household consumption expenditure from these resources”. Normally, these resources are obtained free from communally owned forests and are vital in the survival of community members. Therefore, to ensure a perpetual supply of the resources from communally owned forests and posterity, there is a need for community members to join forces in their management.

In a study conducted in Nepal, it transpired that rural people make extensive use of forest resources as part of their livelihood. Such uses include direct consumption of forest products and services (food, timber for construction, fuel wood, fodder for livestock, water, forest farming), collection of forest products for sale (hunting and collection of Non-Timber Forest Products), and the use of forest products for food security in times of seasonal shortages, drought, and economic stress (Kafle, undated). Worth mentioning is that in Nepal, the rural population mainly depends on agriculture and forests for the fulfilment of their fundamental needs and improvement of livelihoods. Furthermore, Kafle (undated) avers that immediate livelihood benefits derived by rural households such as inputs to agriculture, food security, cash incomes, bolster strong community action wherein



local communities actively and sustainably manage forest resources. Community forests in Nepal are also a source of diversified investment capital and raw material for new market-oriented livelihoods. Kafle (undated) argues that a continuing challenge is to ensure equitable distribution of benefits to women and marginalized groups. It is important to impress that gender equity is crucial in the management of community forests in particular and resources in general.

Furthermore, forests and their products are sources of various foods, which supplement and complement what is derived from agriculture, for example firewood with which to cook food, and a wide array of medicines and other products that contribute to health and hygiene (Harrison, 2006; Rosa, 2011; Makhado and Saidi, 2011). In Mexico, Wood (2008) contends that Community Forest Management (CFM) projects have had economic and social benefits for members of rural communities. For instance, CFM has created jobs for people who may have otherwise left the country to look for work elsewhere in the world. This indicates the importance of forests in ensuring a stable economy through acting as a safety net in trying times.

In a study carried out in Rwanda, Njoroge and Muli (2011) assert that, wood is the principal source of energy with forests accounting for about 84% of current main energy use. For instance, more than 60% of the urban population relies on charcoal as a source of energy. The production of charcoal is a huge business in Rwanda, with the charcoal and firewood market having a value of US\$120-150 million per year (Njoroge and Muli, 2011). Remarkable is that 50% of the revenue remains in rural areas, where it is distributed among farmers/wood growers and charcoal makers (Njoroge and Muli, 2011). Thus, it is a huge source of income for rural farmers and therefore, plays an important role in reducing poverty and ensuring sustainable management of the environment. Worth mentioning is that the Rwandan government is on the quest of reducing and substituting the use of wood and charcoal as energy sources, with modern energy sources such as liquid petrol, gas, peat, and biogas; so as to ensure protection of the environment (Njoroge and Muli, 2011).

Additionally, in Rwanda, forests generally support outdoor recreation, education, and ecotourism for both foreign and local tourists; hence contributing to the country's socio-economic development (Njoroge and Muli, 2011). For instance, there is an exceptional number of plant and wildlife species; including 12 different types of primates, which attracts an innumerable number of tourists in a year (Njoroge and Muli, 2011). Notably, there is an annual gorilla naming ceremony known as '*Kwita Izina*', which attracts a number of international celebrities, providing a good platform to promote tourism, gorilla protection, as well as the conservation of gorilla habitats (Njoroge and Muli, 2011). Therefore, since tourism is a thriving industry in Rwanda, projections of tourists arrival indicate that they will increase from about 980 000 in 2008 to over two million in 2020, thus increasing foreign exchange from about US\$ 200 million to over US\$ 600 million (Njoroge and Muli, 2011). Additionally, forests especially those within parks and protected areas in Rwanda act as a source of employment and promote income generation to local communities through working as guides, trackers, and anti-poachers (Njoroge and Muli, 2011). Overall, the forest sector contributes around 100 000 full time jobs in Rwanda (Njoroge and Muli, 2011).

The importance of forests and their products applies to all forests including mangroves. For instance in a study conducted in south eastern Nigeria, Udo *et al.* (2011) discovered that mangrove forests have a vast value for coastal communities, which derive their livelihoods from them. For example, it was found that mangrove wood is a multipurpose resource for fish stakes, fish traps, boat building, paddles, yam stakes, fencing, carvings, building timber, fuel and many other uses (Udo *et al.*, 2011).

In Cameroon, Ezzine de Blas, Ruiz-Perez and Vermeulen (2011) aver that logging offers direct and indirect benefits to community forest user groups. The direct benefits are mainly monetary and in-kind, whereas indirect benefits comprise an improvement of community services. Noteworthy, the logging rent is managed by a Management Committee of each community forest, such that community forest members are paid for participating in logging operations specifically; inventorying, transporting (carrying), and or sawing timber (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011). Conversely, in-kind benefits comprise

goods distributed to all families such as roofs for houses, whereas indirect benefits are improvement of community amenities like schools (*i.e.* building or rehabilitation of schools, payment of teachers' salaries, and grants for students), roads and water sources (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011). The degree to which benefits are significant and equitably distributed increases the motivations of people for community action in ensuring sustainable management of community forests. Ideally, the manner in which community forests are managed in Cameroon befits the expectations of community forests' management. Despite that there are community forests in Swaziland, there is a paucity of information regarding their management, and hence the present study investigates on them.

In South Africa, Makhado and Saidi (2011) point out that apart from providing forest products and availing employment opportunities; forests provide beautiful sites for tourism, recreation, spiritual healing, leisure, and religious practices. For instance the beauty of the forest, species in the forest, and waterfalls provide invaluable social benefits to a number of people. According to Ngwenya and Hassan (2005), nature-based tourism is a key economic activity and source of income and foreign exchange in Swaziland. For example, Ngwenya and Hassan (2005) highlight that the value of what tourists pay for visiting nature-based tourism sites within the country is captured as income by a number of sectors and activities servicing the tourism industry, such as hotels, restaurants and the transport sector.

On another note, natural forests and woodlands are used in many cultural and social activities in Swaziland, such as Sangoma and Inyanga initiations, funerals, weddings, the Reed Dance and the Incwala ceremonies (Ngwenya and Hassan, 2005). In particular, the Incwala and Reed Dance are annual ceremonies in which an increasing number of the youth participate. For example, the Reed Dance ceremony which takes about a week involve maidens walking to the areas designated for cutting of the reed, the actual reed cutting, walking back to the royal residence, resting day and finally the main day of the Reed Dance (Ngwenya and Hassan, 2005). On the other hand, preparations for the Incwala ceremony, involves young males walking to the area designated for cutting of the Lusekwane (*Dichrostachys cinerea* spp.) trees, cutting a branch at sunset, carrying the

branch over one night until next morning to the royal residence where it is placed in the cattle byre by mid-morning (Ngwenya and Hassan, 2005). Of utmost importance is that the Lusekwane branches are then used to build the cleansing hut during the Incwala ceremony (Ngwenya and Hassan, 2005). All in all, this indicates the significance for natural forests and woodlands in Swaziland from the individual household level to the national level.

Forests are also crucial for educational purposes, as they attract local and international students to carry out forestry research (Makhado and Saidi, 2011). Another very important benefit for communities surrounding forest plantations in South Africa is access to free grazing for livestock (Makhado and Saidi, 2011). Just like in South Africa, in Lesotho; a large number of livestock acquire fodder, shade, and shelter from the scanty indigenous woody vegetation (Maile, 2011). Notably, Lesotho has only one per cent of the total land area under forest, on which a number of rural people depend for fuel wood and other products (Maile, 2011). In Swaziland, Dlamini (2017) noted with concern that deforestation has serious implications for a majority of the population which directly and indirectly depend on forests and woodlands for their livelihoods through ecosystem services such as food, medicine and energy (firewood).

Another important forest product sourced from forests on which most people rely, especially for health reasons (preventing and curing diseases) is medicinal plants. For instance, in Rwanda, a number of plant species are used in traditional medicine and some plants species can provide important biochemical extracts (Njoroge and Muli, 2011). Similarly in South Africa, more than half of the population depends on medicinal plants (Makhado and Saidi, 2011). In Swaziland, medicinal plants are collected for either domestic use or income generation. The mostly harvested medicinal plants comprise Imphepho (*Helichrysum rugulosum*), African potato (*Hypoxis hemerocallidea*) and Gobho (*Gunnera perperna*) (Manyatsi *et al.*, 2010). For instance, according to Manyatsi *et al.* (2010), at Bethany and Dwaleni communities' monthly income from sale of medicinal plants ranged from R100 to R600 per homestead. The dependence on medicinal plants is common practice world-wide, although there is a difference in terms of their processing where in rural areas processing normally does not involve clinically testing and approval of

medicinal portions before usage. Moreover, in rural areas preparation of medicinal portions is often done by traditional healers/practitioners who normally are not conversant with the scientific ways of processing medicinal plants. Although this has been the practice since time immemorial, it jeopardizes the lives of people since the concentrations are often not known, instead they are estimated.

In addition to medicinal plants, there are also other NTFPs which include; bush meat, thatching grass, edible mushroom, wild fruits, wild honey, wild vegetables, nuts, as well as edible roots and insects (Makhado and Saidi, 2011; Njoroge and Muli, 2011; Babalola, 2011; Masuch *et al.*, 2011; Israel, 2011; Abebrese, 2003; Kuzee, 2003). According to Babalola (2011), most of the plant and animal products are consumed either directly as food or as supplements to other food products, with some eaten raw, without prior cooking, boiling or processing, while others are only edible after processing. Time and again, NTFPs act as a source of income and supplement resources to meet other household needs (Njoroge and Muli, 2011; Babalola, 2011; Masuch *et al.*, 2011). For instance, in Swaziland, Manyatsi *et al.* (2010) discovered that the monthly income generated through the sale of guavas (*Psidium guavana*), *tincozi* (*Syzigium cordatum*), wild strawberry (*Fragaria virginiana*), *emantulwa* (*Vangueria infausta*), *emakhiwa* (*Ficus spp*) and granadilla (*Passiflora edulis*) ranged from R100 to R900 per homestead. At the same time, most of the NTFPs through their ingestion have more curative roles for nourishment of teething troubles (Babalola, 2011). Therefore, it can be boldly stated that NTFPs in times of economic crises or during food shortages, serves as a safety net for both urban and rural dwellers; in ensuring food security.

In a study on valuing the services of natural forests and woodlands in Swaziland, Ngwenya and Hassan (2005) observed that there are six categories of direct uses of natural forests and woodlands. These include timber forest products which are harvested for energy (cooking and heating), construction (houses, fences, kraals) and handcraft (craft wood) purposes as well as non-timber forest products (NTFPs) harvested for thatching, direct consumption (fruits, insects), medicinal and handcraft (weaving) purposes. Considering the per capita demand for forest products by vegetation Ngwenya and Hassan (2005) observed

the highest purpose for which timber is collected from all vegetation types is that firewood at an average of 376 kg/person/annum. Notably, most of the firewood as well as timber for construction purposes are derived from Wattle Forest woodlands in the Highveld and Middleveld regions of the country. Then in the Lowveld region forest products are mainly derived from Open Acacia woodlands. As observed by Ngwenya and Hassan (2005) in addition to harvesting products of natural forests and woodlands for own use, the communities sell some of the products in the market and on the roadside.

Having seen the socio-economic importance of forests and their products, attention now shifts to the ecological significance of forests.

#### **3.4.2 Ecological importance of forests**

Forests *per se* are an important life support for people through providing habitats for a diverse number of insects, birds, and animals; protecting water catchments; regulating rainfall; providing water for irrigation; protecting soil against erosion thus making agriculture more sustainable; preventing landslides; alleviating atmospheric pollution; and playing an essential role in the global carbon cycle (Rosa, 2011; Njoroge and Muli, 2011; Makhado and Saidi, 2011). In Nigeria, mangroves are crucial to fish and invertebrate nurseries, erosion control, and water quality control (Udo *et al.*, 2011). Likewise, in Lesotho, indigenous trees and shrubs by providing vegetative cover play a critical role in protecting land from soil erosion, especially because such forests mainly occur in catchments and river valleys (Maile, 2011).

In Finland, forest animals and forest structure are used to represent the ecological components of Sustainable Forest Management (SFM). For instance, wildlife species richness and grouse abundance decreases in regions where forestry has a central role in society and forestry activity is widespread (Vierikko *et al.*, 2008). Moreover, conserving forests helps to sequester carbon, which otherwise would be released into the atmosphere in the form of carbon dioxide; hence contributing to mitigation of global warming (Manyatsi and Hlophe, 2010; Rosa, 2011; Njoroge and Muli, 2011; Makhado and Saidi, 2011; Ngwenya and Hassan, 2005; Dlamini 2017).

At this juncture it is important highlight an important concept in the study of ecological importance of resources, namely ecosystem functions. By way of definition, ecosystem functions' refers to 'the capacity of natural processes and components to directly or indirectly provide goods and services that satiate human needs (de Groot and van der Meer, 2010). It is worth noting that ecosystem functions always exist, yet ecosystem goods and services are only recognized when there are people using or benefiting from them (de Groot and van der Meer, 2010). For example, the regulation of surface water flows, which is a function of all forests, only becomes a service when there are people affected by it (de Groot and van der Meer, 2010). There are four categories of ecosystem services (See box 3.1).

**Box 3.1: Categories of ecosystem services**

1. Production functions (or provisioning services) consist of the processes that combine and change organic and inorganic substances through primary and secondary production into goods that can be directly used by mankind.
2. Regulation functions (or regulating services) relate to the capacity of natural and semi-natural ecosystems to regulate essential ecological processes and life support systems through biogeochemical cycles and other biosphere processes. In addition to maintaining ecosystem (and biosphere) health, they provide many services with direct and indirect benefits to humans such as clean air, water and soil, nutrient regulation, disturbance prevention, biological control and pollination.
3. Information functions (or cultural services) are those services that contribute to human mental well-being. Major categories of cultural services associated with forests are aesthetic and recreational use, spiritual and religious services and importance to cultural heritage.
4. Habitat functions (or supporting services) relate to the importance of ecosystems to provide habitat for various stages in the life cycles of wild plants and animals, which, in turn, maintain biological and genetic diversity and evolutionary processes. Since these species and their role in the global ecosystem maintain most of the other ecosystem functions and services, the maintenance of healthy habitats is a necessary requirement for the provision of all ecosystem goods and services, directly or indirectly.

Source: (de Groot and van der Meer, 2010:18-19)

Having seen the ecological significance of forests, attention now focuses to the distribution and utilization of benefits from community forests.

### **3.4.3 Distribution and utilization of benefits from community forests**

The Swaziland National Forest Policy in Section 2.2, subsection 2.2.5.2 states that ownership and user rights of communal forests and woodland reserves are often not clearly defined and the distribution of benefits to individuals is not always clear and satisfactory (Government of Swaziland, 2002a.) Therefore, "Detailed rules and regulations covering the rights to forest resources as well as the responsibilities of communities and their individual members towards management of communal forest resources have to be agreed to and defined" (Government of Swaziland, 2002a: 28). This further substantiated the necessity of the assessment of the situation in Swaziland considering that there are community forests which in principle are a collaborative effort.

In The Gambia, Sillah (2003) avers that as a result of the introduction of community forestry in 1991, communities which are participating have started receiving physical income directly from their forests. The products obtained from the community forests comprise wood products, fruits, grasses, sand, as well as services such as beekeeping and ecotourism. Sillah (2003) argues that services like animal grazing, tends to diminish as the trees canopy close up, since that inhibit the growth of palatable grasses on the forest floor. Hence in mitigation, the forest department advises communities with such forest stands to embark on selective thinning, where they remove old trees to allow the growth of the lower canopy and seedlings as well as grass. Considering the benefits derived from community forests coupled with a slow rate of forest degradation accomplished through extension efforts of the forestry service and rapid increase of community involvement in forest management in The Gambia, sustainable management and utilization of forests has been considered a perfect tool for fighting poverty (Sillah, 2003).

Moreover, revenues derived from the community forests, in The Gambia, are kept with the communities through local level structures like Village Savings and Credit Association and committee cashiers (Sillah, 2003). The revenues comprise a Local Forest Fund which is solely administered by the village. In terms of distribution, 15 per cent of the revenue is paid to the Forestry Department for the service, and of the residual 85 per cent, 40 per cent



must be set aside for investments in the forest, and 60 per cent is for village developments (Sillah, 2003).

### **3.5 The Extent of Community Action in the Management of Forest**

#### **Resources**

The degree of success of Community Based Natural Resource Management (CBNRM) programs depends on a number of fundamental factors. These include: maintaining biological diversity and endangered species conservation; public sector support; private tenure of land and wildlife resources; community consultation, participation, and ultimately self-management; that the benefits to involved local communities are greater than the cost of utilizing natural resources through less sustainable means; a long term potential of incoming revenue to avoid reliance on donors and outsider investment; capacity building; as well as the stability of community institutions (Harrison, 2006). CBNRM manifests in various forms which include Participatory Forest Management (PFM) and Joint Forest Management (JFM).

Participatory Forest Management (PFM) is pigeon-holed by forest adjacent communities sharing power as well as benefits, and assuming owner/user rights and management of the resources (Harrison, 2006). Joint Forest Management (JFM) on the other hand, is appropriate where there is a pre-existing local or central government forest reserve. In such instance, the forest adjacent communities enter into a Joint Management Agreement (JMA) with the relevant authority to share management obligations and benefits accruing (Harrison, 2006). Experience has however, shown that JFM tends to allow more governmental control over resources, especially where there is a lack of capacity within the community to manage the resource alone. JFM has also been criticized for not offering satisfactory benefit-sharing to collaborating communities.

In Nepal, the community forestry program was implemented in 1978 and to date there are 362 community forests covering an area of 62 304.46 hectares (Kafle, undated). Here the local communities organize themselves into community Forest User Groups (CFUG) which oversee the protection, management, and utilization of forest resources. Notably, the CFUG

have been successfully implementing different income generation activities for supporting and uplifting rural poor livelihoods and conserving forest resources simultaneously.

In a study on Local Level Participatory Planning Approach (LLPPA) in Ethiopia, it transpired that LLPPA starts with the selection of communities where soil and water conservation (SWC) projects are to be implemented based on needs and problem assessment (WOCAT, 2007). Subsequent to selection of communities, development committees are formed comprising one or two technical staff and seven to eight farmers. The selection of the development committees is done by the community through a general assembly of land users (WOCAT, 2007), an action which symbolize cooperation among community members. Terms of reference of the development committees include planning and coordinating development activities. Worth noting is that the development committees involve the community members together with community leaders in every stage of the project from inception to completion through Participatory Rural Appraisal (PRA). For instance, the beneficiaries, who are the community members actively participate in implementation, maintenance, as well as utilization of the assets created, by contributing their labour and resources (WOCAT, 2007). The inclusion of technical staff in the development committees is strategic, as they are meant to give technical advice during implementation of development activities. A most important aspect of the LLPPA is that all stakeholders are afforded an opportunity for training on techniques of soil conservation. For instance, community leaders and the development committees are trained every year, whereas two to three day awareness creation seminars are held for the community in general on an annual basis (WOCAT, 2007). It is through the awareness creation that beneficiaries are convinced to actively participate in the SWC program. At the same, time the training afforded to community leaders play a pivotal role in improving their leadership and coordination capacities (WOCAT, 2007). Finally, the training has also benefited field staff through improving their skills and thus enabling them to be proficient in implementation of the program.

In a study on Joint Forest Management (JFM) in India, WOCAT (2007) avers that JFM is an approach that leads to environmental and production benefits through community

cooperation in natural resources management. In India, JFM emerged in the 1980s from community initiatives in forest protection. Consequently, in 1990 Hill Resource Management Societies (HRMS) were established following an agreement between the Haryana State Government and The Energy and Resource Institute (TERI) with financial support from Ford Foundation (WOCAT, 2007). The notion behind establishment of HRMS was that state sponsored-village level societies are vital to the success of JFM, and their links to the State Forest Department are also important. HRMS' founding principles include; appropriate social composition, accountability, and conflict resolution. For instance, elected management committees must include at least two women (WOCAT, 2007). The HRMS' mandate includes; overseeing forest catchment management activities by villagers, arranging distribution of irrigation water (where applicable), as well as liaising with the State Forest Department and TERI (WOCAT, 2007).

Regarding benefits, the HRMS derive income from sale of non-timber forest products particularly *Bhabbar* grass (used for rope making) and from water use charges. Worth noting is that the income is managed by the HRMS and used for village development and desirable community welfare (WOCAT, 2007). In order to reap the benefits, community members provide labour for physical work in catchments' management as well as in implementing social fencing, for which they are partly paid. In addition, there is a water harvesting dam, where all community members have the right to claim an equal share of the water regardless of whether they have land to irrigate or not (WOCAT, 2007). Finally, training is afforded to community members on water harvesting structures and their maintenance. At the same time, workshops and meetings to evolve and maintain a water distribution system are held regularly (WOCAT, 2007).

In Lesotho, the social worth of forests is rated very high due to the fact that the country is almost treeless. For example, most of the people in Lesotho, think of the forests as sources of firewood other than building material due to that the country experiences very harsh winters and because alternative sources of fuel such as paraffin are expensive. Nonetheless, such a mind-set is changing slowly due to awareness campaigns launched by the government, aimed at showing that forests and trees are an integral part of the global

environment and human well-being (Maile, 2011). To spearhead the awareness campaigns, the government of Lesotho, adopted a National Forest Policy in 1997, which was translated to the Basotho language in 2008, thus marking a paradigm shift, through emphasizing the role of communities in forest management (Maile, 2011). The Policy strives to maximize, through actions consistent with other sectorial policies and development goals; the role of forests towards poverty alleviation, livelihood security, and environmental protection (Maile, 2011). Furthermore, the Policy recognizes the participation of rural communities, NGOs, the Private Sector, and the marginalized groups in forest development.

In the same vein, a Forestry Act was enacted in 1998 in Lesotho, and it recognizes the entitlement of different groups of individuals and communities in taking ownership of various types of forests (Maile, 2011). Consequently to the adoption of the National Forest Policy and enactment of the Forestry Act, the Basotho have ventured into a tree planting program. For instance in March 2011, the Basotho Nation joined hands with His Majesty King Letsie III, to plant more than 100 000 trees across the country in one day as part of the celebration of the International Year of Forests (IYF) (Maile, 2011).

In Botswana, there have been some important undertakings in the management of forests, which include establishment of village conservation committees and volunteer fire fighters around the country, as well as village boards (Trusts) mainly based on wildlife utilization and management (Bose, 2003). It is important to note that although these initiatives are insignificant at national level, they are very important strides towards empowering the local communities, thus enabling community action.

In Swaziland, Dlamini (2015) observed that in a Grazing Land Rehabilitation project at Ngcayini, an equal levy was imposed on all households, in spite of whether they had livestock or not. Therefore, all households were obliged to send representatives to work on the project, failure to which resulted in fines proffered against absconding families. Although this had an element of unfairness from the point of view of households which do not own livestock, community action implies that all community members must equally participate in community activities.

As part of community action in the management of forest resources in Swaziland, there is a need to control fire through formation of Local Fire Prevention Units; which work in close co-operation with traditional and national authorities (Government of Swaziland, 2002a). However, it is not clear whether these Local Fire Prevention Units exists in Swaziland and if they do, their effectiveness needs to be assessed to ensure protection of community forests from fire. On that basis, the FAO (2015) report recommends that there is a need to finalize and implement the fire policy, strategy and legislation in Swaziland to address the fire occurrences and their overwhelming effects.

Having noted the experiences of different countries regarding the extent of community action in the management of community resources, attention now focuses on opportunities and threats for community action in the management of forest resources.

### **3.6 Opportunities and Threats for Community Action in the Management of Forest Resources**

This section of the study concentrates on the opportunities and threats for community action in the management of forest resources.

#### **3.6.1 Opportunities for community action in the management of forest resources**

According to Wood (2008), Community Forest Management (CFM) is an approach to natural resource management that takes into consideration human communities living around or within a resource. Moreover, CFM focuses on interdependent ecological, economic, and social elements, and has therefore been categorized as one form of sustainable development. Similar to CFM is Community Based Forest Management (CBFM) which Duguma *et al.* (2018) describe as is any forest management system with a certain degree of involvement of local communities under a decentralized forest management model. This system according to Duguma *et al.* (2018) is aimed at accommodating the voices and needs of local communities living in and around forests, and thus hastens economic development, administrative efficiency, and improved natural resources management. Wood (2008) argues that despite growth in CFM projects, their

success varies considerably, due to a number of factors which include; influence by the local, national, and global context within which the projects are sited.

In the United States, for instance, there are various examples of CFM which have been more effective when NGOs work with private landowners but less effective when community groups attempt to incorporate local goals into management of national forests (Wood, 2008). Nonetheless, in Mexico, CFM has been more successful because communities have the legal backing from the Mexican Constitution of 1917 to independently manage their forests. Thus, Mexican communities have been able to implement CFM within the context of their locales and also compete in global markets (Wood, 2008). As a result, the Forest Stewardship Council (FSC) has certified 40 forests in Mexico, which ranks 7<sup>th</sup> out of 79 countries for overall number of sustainable forestry certifications. In Swaziland, there are NGOs such as *Conserve Swaziland* and *World Vision* which are active in tree planting; hence their role in facilitating community action in the management of community forests and in the control of land degradation cannot be over emphasized.

In Tanzania, the National Forest Policy of 1998 acts as a springboard for community action in forest resource management. This is because the policy advocates for a need to bring unreserved forests and woodlands under the jurisdiction of local communities as “village forest reserves” (Iddi, 2002). Moreover, the policy allows forest-adjacent communities to become co-managers of central and local government forest reserves through JFM agreements. In addition to a favourable forest policy, Tanzania has ventured into strengthening or reintroducing earlier management traditions. This involves customary practices of reserving tracts of land for rituals or for later emergency use. As a result, there are more than 46 traditionally protected forests in Babati District, which are protected by customary law (Iddi, 2002). Another key catalyst for community action in resource management is the extent of decentralization of governance attained in a country. In other words, community action is aided by the decentralization of governance of resources in a country. In Tanzania, for instance, governance has been extended to the grassroots and given a socio-legal framework (Iddi, 2002).

A high level of decentralized governance in Tanzania is also demonstrated through resolution of conflicts at the community level, where mainly customary laws are used to resolve conflicts. Here, there are reconciliation committees which are recognized by formal law and are constituted at the village level comprising the 'wise men and women of the village' (Iddi, 2002). The capability to resolve conflicts at a community level is an unusual opportunity for community action in forest resource management since unresolved conflicts are detrimental to development.

Regarding the notion of community action in the management of community resource Ostrom (2010) suggests some institutional design principles which should be applied to public, communal, and private lands. These include that boundaries for users, nonusers, and natural resource rights holder should be clear; rights should conform to local traditions; benefits and costs of use should be fair; resource users should participate in allocation decisions; and they should be involved in monitoring. Furthermore, implementation of tenure rights needs to make sense: sanctions for violating rules should start small but become stronger; local, in-expensive, and fast mechanisms should be used to resolve conflicts; governments should recognize the rights of local users to make their own rules; and systems should link local common-pool rights to higher government systems (Ostrom, 2010). This is mainly because the long-term goal for scholars of sustainability science is to recognize which combination of variables have a tendency to result in a comparatively sustainable and productive use of particular resource systems, operating at specific spatial and temporal scales and which combination have a habit of contributing to resource collapses and high costs for humanity (Ostrom (2007). Therefore, having all the institutional design principles in place is a good opportunity for community action in the management of community resources, in accordance Ostrom (2010).

### **3.6.2 Threats for community action in the management of forest resources**

Despite all the benefits accrued from forests by surrounding communities, the forests are often destroyed by fires initiated by these communities. The destruction of forests by fire is more or less a global problem that is not only detrimental to forest owners and

neighbouring communities, but to the entire ecosystem; hence the need for community cooperation in the quest of its resolution.

In Swaziland, there is lack of lucidity of ownership, tenure and rights to use natural forests, as well as *Acacia mearnsii* (wattle) forests and woodlots, including distribution of benefits (Government of Swaziland, 2002b). According to Bruce (1989), failure to comprehend existing rights in land and trees has been a major cause of failure in community forestry projects. As a result, individual incentives are normally misjudged, and the benefits of projects distributed somewhat differently than intended.

On the issue of land tenure Dlamini (2015) observed that in Swaziland, the current insecure land tenure is the main driver behind loss of biodiversity, depletion of critical ecosystems and destruction of wetlands as it perpetuates free-for-all scenarios, where no one is held responsible for unsustainable actions on the environment. The issue of tenure is also echoed by Siry *et al.* (2015) who contend that unclear and insecure property and resource rights have been singled-out as significant contributing factors to forest decline and degradation. As such, Siry *et al.* (2015) argue that when rights to forest land and resources are contested, overlap, or are not enforced, forest users and rights holders have less motivation, and may as well as lack the legal status, to invest in management and protection, which eventually counters efforts to enhance forest sustainability.

In addition to insecure tenure Dlamini (2015) observed that unregulated allocation of land to residents by traditional authorities time and again counters efforts made by SEA to protect sensitive areas. Under the current dispensation sensitive areas are apportioned by uninformed leaders instead of being protected. Further, in accordance to Dlamini (2015) the scenario of land being unregulated on SNL also means that there is no uniformity in the scale of land being allocated to land seekers. Nonetheless, with the dwindling land in most areas on SNL, some Chiefs have instituted a practice of demarcating the land allocated to ensure that land seekers obtain an equal acreage.



According to Magagula (2003), Chiefs are normally not efficient in the distribution of forest resources especially acting Chiefs. Furthermore, ownership and user rights of communal forest and woodland resources are often not clearly defined and consequently the distribution of benefits to individuals is also not always clear and satisfactory. Thus, a closer look at community forests reveals a serious lack of knowledge and experience with community based forest interventions. It is therefore, imperative that NRMCS be empowered by the traditional authorities to negotiate forest management matters with all stakeholders, in order to institute rights and responsibilities, as well as formulate rules regarding the use and management of communal forest resources (Government of Swaziland, 2002b). The regulations should spell out detailed arrangements regarding maintenance of the forest resources and extraction of forest products.

Generally, there is a serious concern regarding enforcement of environmental legislation in Swaziland. For instance, the Environment Management Act of 2002 is comprehensive on sustainable management of the environment but it is not adequately enforced. Notably, lack of enforcement of environmental legislation jeopardizes the sustainability of environmental resources such as forests, especially community forests (Hassan, Mbuli and Dlamini, 2002). It is important to note that lack of enforcement of national legislations is a bad incentive to citizens, which may encourage a violation of local rules.

Among other constraints to community action is the issue of conflicts. A conflict as defined by Ezzine de Blas, Ruiz-Perez and Vermeulen (2011) is a clash of interests in a particular process, such as in decision making, control of environmental services, information sharing, involving at least two actors with different interests and concrete goals. According to Ezzine de Blas, Ruiz-Perez and Vermeulen (2011), in Cameroon, there were both external and internal conflicts. The external conflicts related to corruption of forest administration and non-respect of a difficulty involved in setting up a logging contract with an industrial operator. Internal conflicts on the other hand, concerned the sale of undeclared timber, mismanagement of logging benefits by the Management Committees and confrontations between Management Committee and other community forest groups to control forest management decisions (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011).

The Management Committees *per se* pointed out that the most frequent conflicts they encountered were disagreement with loggers. Contrariwise, groups outside the Management Committees indicated that mismanagement and the struggle for control of management decisions were the most frequent conflicts (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011). The existence of conflicts is indicative of chronic restraints in the implementation of community forestry in Cameroon.

In general, conflicts around community forests are more common where local institutions are weak and where there is poor leadership, high potential for commercial logging and only a small percentage of the logging rent invested in community facilities (Ezzine de Blas, Ruiz-Perez and Vermeulen, 2011). Worth noting is that conflicts are a critical ill to sustainable management of resources.

According to de Jong *et al.* (2010), community forestry initiatives in all Amazonian countries, struggle to obtain legal formalization of forestry activities in accordance with pertinent regulations. For instance, obtaining legally valid documents and permits, usufruct rights in the form of forest concessions or extractive reserves, as well as constituting formal smallholder organizations involved lengthy processes with high transaction costs, even more as government norms and regulations are often relatively difficult to comply with (de Jong *et al.*, 2010).

Another serious threat for community action in the management of community forests is gaining effective control and protection against unauthorized use of the target resources by non-participating community members or outsiders, which is referred to as poaching (de Jong *et al.*, 2010). Illegal harvesting is a serious problem since it counters all efforts to improve resource management. For instance, where a donga is rehabilitated through planting trees, the removal of the trees means that the problem of land degradation will be difficult to control. Furthermore, due to lack of or inappropriate technology, efforts to generate higher added-value through post-harvest treatments or processing are normally unsuccessful. In other words, production by rural people is normally purely based on extraction of raw material without even minimal processing/value addition.

According to de Jong *et al.* (2010), in all Amazonian countries, local forestry producers must follow a set of complicated rules when undertaking forest product harvesting. For instance, they must have a formal title of their lands or register their existing rights, and develop Forest Management Plans (FMPs) and Annual Operational Plans (AOPs), as well constitute and register a formal economic organization (de Jong *et al.*, 2011.). The preparation of a FMP and an AOP do not only impose an administrative burden, but also represent a financial cost for local users, primarily because their preparation requires specialized skills that need to be hired or contracted (de Jong *et al.*, 2010). Furthermore, FMPs require carrying out of forest inventories by specialized personnel. Therefore, most communities often fall short in covering such costs; hence they rely on NGOs or forest companies for assistance. In Swaziland, the establishment of community forests intended to control land degradation and augment the supply of forest resources is mainly driven by NGOs, which later on hand over the projects to the communities to maintain.

Furthermore, de Jong *et al.* (2010), contend that commercial forest users have an additional obligation of registering a forestry enterprise under the commerce regulations. More so, a registered enterprise has to comply with tax regulations and legally subscribe formal contracts and get access to formal credit. For most communities, this is regarded as an additional requirement that provides little benefits; hence they continue operating informal forest markets (de Jong *et al.*, 2010). Conclusively, forestry regulations have a tendency to operate against the interest of communities and smallholders, through imposing legal barriers and transaction costs to them. The formation of forest enterprises is normally overseen by the NRMCS, especially if there is commercialization of forest products in the area concerned.

Forestry development projects normally suffer from inadequate funding, poorly trained technical staff, and the requirement to comply with planning and implementation regimes prescribed by funding agencies even where they are not ideal for the objectives and local conditions (de Jong *et al.*, 2010). In Swaziland, NGOs such as *World Vision* are playing a pivotal role in funding community projects.

In Ghana, a country that has experienced severe deforestation; the lack of clear land tenure and strong local institutions, as well as residual post-colonial and international paradigms related to resource management, impede the feasibility of CFM projects. In an effort to develop CFM projects, after the 1992 United Nations Earth Summit in Rio De Janeiro, Ghana began to adopt integrated local-level sustainable development policies with social, economic, and ecological goals. An example is the Forest Wildlife Policy Act of 1994, which was enacted to devolve power to local communities for resource management and resulted in the creation of Community Forest Councils (CFCs) (Wood, 2008). The CFCs however, lacked political clout and had no legal backing.

Furthermore, to reduce deforestation and initiate afforestation projects, the government of Ghana, passed the Timber Resources Management Act (TRMA) in 1997, which provided for a reduction in the number of logging firms with access to forests, dispelled chain-sawing, and required logging firms to pay taxes and restore logged areas. Just like the CFCs the TRMA lacked efficacy in reducing illegal chain-sawing. This is because the TRMA was enacted to preserve private interests rather than public ones, essentially those of private milling firms who were losing business due to excessive chainsaw operations that sold directly to domestic and foreign consumers instead of going through the milling stations (Wood, 2008). This is primarily because Ghana's environmental policies have not been institutionalized at the local or regional levels, and are widely influenced by international development paradigms and residual colonial-era thinking that does not always correspond with local circumstances (Wood, 2008). As already indicated, Swaziland has an elaborate environment legislation; particularly the Environment Management Act of 2002, which however is not enforced.

According to Evans, de Jong and Cronkleton (2008), in Bolivia municipal governments are obliged under decentralization reforms to involve communities in planning and budgeting. It must however be noted that municipal governments especially in Northern Bolivian Amazon, face serious challenges because communities are remote and there is a lack of communication infrastructure (Evans, de Jong and Cronkleton, 2008). A similar situation was observed at Ezikhotheni in Swaziland, where some of the homesteads are located away

from the community forests projects; hence they miss out in most community meetings and project activities. Moreover, Evans, de Jong and Cronkleton (2008) argue that education levels are low; hence there is high illiteracy rate in the communities.

Another precarious problem noted by Evans, de Jong and Cronkleton (2008) is failure to keep promises. For instance, the decentralization reforms of the 1990s promised that local people would receive new rights over forest lands and opportunities to take part in local decision-making. “However, in many cases, landholders reclaimed political control after decentralization and forest devolution when they became mayors and governors” (Evans, de Jong and Cronkleton, 2008:99). Therefore, communities perceived the municipal government as unresponsive, arrogant, and corrupt; hence they did not cooperate. In contrast, local government officials were frustrated with communities’ inability to co-operate and dearth of will to participate in planning processes. For instance, village leaders, if ever they attended meetings, sat silently or argued combatively for unrealistic demands (Evans, de Jong and Cronkleton, 2008).

Consequently, the government reforms were not operational because communities and the local government were deadlocked by a blend of mistrust, disdain, and inexperience with the new decision-making system (Evans, de Jong and Cronkleton, 2008). The problem of active participation seems to be an across the board constraint to sustainable resource management because ‘silence never means consent’. Therefore, there is no guarantee that people who sit silently in community meetings will consent with all decisions that are taken.

In a case study of Atewa forest reserve in Ghana, Ayivor *et al.* (2011), found out that there were serious management problems including; illegal chainsaw operations, illegal farming, poaching, and mining. For instance, chainsaw operators without licences normally walk deep into the forest and carry out their activities especially at night. Despite that there are guards on duty; they sometimes looked on helplessly, particularly when astonished by the numbers of the operators, who can be very aggressive (Ayivor *et al.*, 2011). As part of

community action in management of community forests there must be guards especially at night who, would ensure that illegal harvesters are apprehended.

Moreover, Ayivor *et al.* (2011); argue that lack of cooperation from village elders and Chiefs, is a major environmental management challenge. For instance, Chiefs usually look on unconcerned as the forest is being over exploited on a daily basis. Others on the other hand, collaborated with the unlawful operators for their own parochial interests (Ayivor *et al.*, 2011). In such instances local people continues to exploit forest resources as long as the basic issues of institutional weakness and poverty in the rural areas remain unaddressed. Therefore, habitat devastation, disturbance of ecosystem services, and erosion of biodiversity is likely to continue under the prevailing conditions (Ayivor *et al.*, 2011). It is for this reason that the present study investigates the role played by traditional authorities in the management of community forests. This is primarily because the effectiveness of NRMCS normally depends on the support they receive from traditional authorities.

Considering the challenges of managing community resources encountered under the leadership of traditional authorities; namely Chiefs, Headmen, and inner councils' scholars have provided a rationale for an external agency to take control. The agency recommended is normally either state control or privatization. State control is taken to mean a central government which will decide who can use the resources, how and when to use them (Hasan, 2002). The assumption is that these will be able governments, which possess complete and accurate information about the resources and their users. Such governments must be able to devise appropriate policies and have the ability to implement them, while at the same time be equipped with monitoring capabilities, sanctioning reliabilities and no cost of administration.

Moreover, evidence suggests that State control of resources generally results in their degradation since political decision makers and bureaucrats are not neutral in their decisions, they often seek to further their self-interests (Hardin, 1968; Ostrom, 1999; Agrawal, 2001; Hasan, 2002; Ramanathan, 2002). For instance, changes in markets and technology might prompt existing resource management regimes in a negative way. This

could be through creating different incentives about products to be harvested, technologies of harvest, as well as the rates of harvest, something that is likely to change local power relations. For example, there is a possibility for local sub-groups depending on the communal resources to manoeuvre to increase their gains at the expense of the larger community (Agrawal, 2001). In relation to that, Gibson, McKean, and Ostrom (2000: 233) argue that “When rules are imposed by outsiders without consulting those who are most affected, local users are more likely to become robbers, rather than cops, toward the resources they might otherwise have managed sustainably and try to evade apprehension by the external authorities’ cops”.

Unlike State control, privatization is ownership that internalizes costs and benefits associated with the resource; which creates an incentive for the owner to use resources more efficiently (Hasan, 2002). In other words, privatization increases individual responsibility for the environment and rational use of its resources. Privatization of resources has however, failed to conserve them, instead frequently hasten their destruction (Ostrom, 2003; Hasan, 2002). In India, for example, privatization of land not only had negative repercussions on the rural poor through disentanglement from the communal resources, but also resulted in a rapid destruction of natural vegetation (Hasan, 2002). Moreover, privatization *per se* involves parcelling out resources and handing them over to individual owners, which is a costly exercise. The costs involved include assigning, defining, and enforcing the property rights. Furthermore, privatization is likely to results in the marginalization of the poor, forcing them to use communal resources more intensively, which contribute to the shrinking potential of the communal resources themselves and their ultimate depletion (Hasan, 2002).

Regarding privatization of forest land in particular, Siry *et al.* (2015) argue that the supposed advantage to forest sustainability emanates from the long-term security it affords the land holder, which may logically be an incentive for long-term investment and management. On those bases, privatization of forest land can result in positive economic, ecological, and social outcomes as noted by Siry *et al.* (2015). Despite the noted positive outcomes of privatization of forest land, sustainable forest management generally have a

tendency of being less profitable when compared to alternative land uses. Therefore, privatization is vulnerable to market influences that can lead to forest conversion, eventually impacting ecosystem and landscape functions (Siry *et al.*, 2015). For instance, privatization of forest land has a potential of parcelization which culminates in various, uncoordinated activities, some land use change, and, in the long run forest fragmentation, as observed by Siry *et al.* (2015).

Having seen the challenges of managing community resources and the possible solutions, the study now focuses on insights from research regarding change in land cover and the extent of land degradation. It is imperative to emphasize that land degradation crops into the study solely because the establishment of plantation-style community forests in the study sites was primarily aimed at rehabilitating degraded land.

### **3.7 The Extent of Resource Utilization and of Land Degradation**

#### **Associated with Community Resources Management**

According to Darkoh (2003), degradation of the soil and vegetation in Southern Africa is intensified by over-cultivation, overgrazing, bush fires, cultivation of marginal and easily eroded land, mechanization as well as widespread use of chemicals and pesticides. Notably, planting of trees as a land reclamation strategy is normally discouraged or forbidden by landowners on the premise that it reduces soil quality, thus contributing to soil erosion and exacerbate land shortages (Adjei-Nsiah *et al.*, 2007). Moreover, forest plantations have been criticized for the creation of monotypic ‘green deserts’ which are unfavourable to most local species of fauna. At the same time, forest plantations also pose a hazard of uncontrolled fires which result in loss of habitat for fauna and the removal of forests’ litter, yet it provides cover and helps reduce run off (Government of Swaziland, 2001). Consequently, there is strong advocacy for extensive wildlife production systems which by nature are multi-species systems occupying a range of biological niches. For instance, evidence suggests that land which has relapsed to wildlife production after a period of intensive single species production systems, soon shows improvements in diversity, resilience, and ecosystem function (Binot *et al.*, 2009).



In Swaziland, environmental issues associated with the land include land degradation; biodiversity loss; and unsustainable land-use and land management. The most dominant land-use in the country is grazing land which covers 11 630 km<sup>2</sup> while crop farming covers 2 194.63 km<sup>2</sup> (Government of Swaziland, 2001). Of the grazing land, communal grazing covers 71% of which more than half of it suffers serious to very serious erosion especially in the montane grassland and aquatic ecosystems. The erosion manifests itself in the form of gullies. For instance, evidence indicate that some gullies in central Middleveld cover areas up to 5 ha and are more than 25m deep; and that in terms of total loss of land to the Nation these gullies account for a total loss of 2, 000 to 3, 000 hectares annually (Government of Swaziland, 2001).

Not only does overgrazing result into soil erosion but to also bush encroachment in the savannah woodland ecosystem. Moreover, overgrazing together with extensive tree cutting for fuel wood has led to a spread of alien invasive plant species such as guava (*Psidium guavana*), Syringia (*Melia azedorach*), *Sesbania punicea* and *Lantana camara* (Government of Swaziland, 2001). This is mainly evident in the Middleveld and Lowveld region where the savannah-woodland mosaic and aquatic ecosystems are prevalent. Another salient factor contributing immensely to land degradation is increasing human population. Ideally, increased human population normally means increased pressure on the natural resource base to provide basic necessities such as shelter and food production.

To tackle the problem of land degradation induced by overgrazing evidence indicates that there is a need to change the grazing system from continuous to rotational. A grazing system is defined as a method used to decide how grazing and non-grazing periods are organised during a grazing season within a year or beyond as observed by Morokong (2016) in the Matatiele Local Municipality in the Eastern Cape Province of South Africa. There are variations of a rotational grazing system namely; deferred, rest, high intensity and Holistic Planned Grazing (HPG) systems as indicated by Morokong (2016). These grazing systems promote resting of grazed areas for a certain period so that the pastures may regrow.

In particular, the (HPG) aims to increase forage utilisation by concentrating livestock into camps, generally with a short duration and, depending on the aim of the community, a high intensity (cattle density) as noted by Morokong (2016). Regrettably, the implementation of rotational grazing systems such as HPG requires more capital investment and higher labour inputs when compared to other systems as observed by Morokong (2016). For instance, the capital investment comprise compulsory fencing (whether permanent or movable) whereas the labour inputs include implementing agents and Eco-rangers. Morokong (2016) highlight that Eco-rangers include herders in rotational grazing systems as well as people responsible for clearing invasive alien plant species (IAPs) on the rangelands.

Regarding the fencing, a permanent fence is usually used to enclose the circumference of the farm; whereas a mobile one is normally used for single paddocks as noted by Morokong (2016). In spite of the high capital investment and labour inputs; Morokong (2016) pointed out that if well implemented and accompanied by precise management, rotational grazing systems can reduce the chance of overgrazing and consequently the degradation of natural rangelands. This is particularly the case because unlike continuous grazing which causes patches and destruction of grazing land, rotational grazing allows recovery or rest of the rangeland through controlling the rate of plant defoliation as observed by Morokong (2016). In other words, rotational grazing entail monitoring of the condition of the grazing rangeland by observing the veld condition to ensure that animals graze where there is enough grass.

In Southern Ethiopia in the Gununo watershed, to tackle the problem of soil and water conservation; a research team was established from two partner organizations namely Areka Research Center and Bloso Sore District Office of Agriculture (Mazengia *et al.*, 2007). As an initial step towards the soil and water conservation exercise; a series of meetings were regularly held with the community of Gununo in different villages and Kebeles (the lowest governmental administrative structure), to explore problems and to chart out the plan of action. The outcome of the meetings was that; farmers identified the type of soil and water conservation measure to be employed, as well as a local institution that could effectively lead the collective action exercise (Mazengia *et al.*, 2007).

Moreover, since this was a collective action exercise that has to be owned and driven by the communities; farmers also selected areas which are highly liable to erosion as a starting point in the soil and water conservation project. Then farm implements were distributed to farmers through Sub-kebele leaders; after which the actual project commenced with conservation structures namely bunds being constructed (Mazengia *et al.*, 2007). On the bunds, farmers planted seedlings of elephant grass and banana as bund-stabilizers as well as to address feed and income shortage. Furthermore, farmers also planted crops like sugarcane, cassava, and sorghum to make the bunds productive (Mazengia *et al.*, 2007). Worth noting is that; since the whole exercise was collective action, farmers were also directly involved in the resolution of the challenges of collective action. The outcome of this exercise was an improvement in soil productivity, which was observed within two years. Such an achievement then inspired farmers to construct new structures individually. All in all, farmers observed that their individual efforts were not successful as compared to collective action. This is a good demonstration of the role of collective action especially if it is implemented using a bottom-up approach. Hence, the present study also looks at how traditional authorities and community members manage community forests in Swaziland.

In a study conducted in Naivasha basin, in Kenya, Willy and Holm-Müller (2013) discovered that social influence has an effect on participation in collective action initiatives on soil conservation effort among smallholder farmers. For instance, it transpired that ownership of cattle increased the soil conservation efforts among smallholder farmers. Moreover, Willy and Holm-Müller (2013) pointed out that farmers are likely to implement soil conservation practices that have win-win benefits, such as Napier grass and filter grass strips, which provide fodder to complement those that only create long term benefits of land degradation control and improved crop productivity such as terraces. In other words, this indicates that human beings are generally rational in the sense that in whatever they do they aim at maximizing their gains. It is also transpired in the present study that traditional authorities and community members endeavour to maximize their benefits whilst ensuring sustainability of the environment.

In a study conducted in South Africa on restoration of degraded rangelands, WOCAT (2007) disclosed that the major causes of degradation of the communal rangelands were alien tree species black wattle (*Acacia mearnsii*) and over grazing. This observation is validated by Kumar and Prasad (2015) who discovered that invasive plant species encroaches large areas of land, particularly the forests where they nearly replace the forest floor vegetation and inhibit native tree regeneration. A similar situation was observed by Stafforda *et al.* (2017) in South Africa and Namibia where alien plant invasions change the composition and/or balance of species in natural ecosystems and impact biodiversity, land productivity and water availability.

In China, Liu *et al.* (2016) observed that black wattle seedlings had spread over 1800m in a period of six months with an average rate of 300m per month. In view on the high rate of spread of *Acacia mearnsii*, Liu *et al.* (2016) recommends that promoting education and awareness on the dangers of alien plant its invasion is necessary to prevent further expansion of these species. As suggested by Matsvange, Sagonda and Kaundikiza (2016), there is a hope that education and awareness on the dangers of alien plant invasions will change the attitudes and behaviour of community members, towards management of the environment. Therefore, considering the unfavourable conditions induced by invasive alien plant species, Stafforda *et al.* (2017) recommend that they should be cleared in the quest of restoring a desired state of productive land and healthy ecosystems.

In South Africa, prior to implementation of the restoration of degraded rangelands technology there were discussions between personnel of the Working for Water Programme of the South African government and community members. The objective of the meeting was to come out with the best possible ways of eradicating invasive tree species and re-vegetating the rangeland (WOCAT, 2007). This is indicative of stakeholder cooperation in project implementation which is crucial for success and sustainability of projects. After the consultative discussions it was agreed that eradication of *Acacia mearnsii* was to be done manually and then chemical biocide applied to stumps to prevent regrowth (WOCAT, 2007). Subsequent to black wattle eradication stone lines were established along the contour to control soil erosion. The planting exercise involved application of lime, cattle

dung, sowing seeds of palatable grass species, and brush packing. In particular, brush packing is the laying out of branches in strips across the slope to retard runoff, trap soil, improve the micro-climate for establishing grass seedlings and protect young plants from browsing by animals (WOCAT, 2007). The need for protection from browsing animals was solely because; the restoration areas were not fenced-off and, hence open to grazing. This therefore, poses serious constraints regarding implementation of the technology. The constraints include; the need to protect the area from grazing and trampling by animals during the establishment period, stopping removal of brushwood for fire wood, and the need for community agreement on initial protection and subsequent utilization of the restored rangeland (WOCAT, 2007).

In a case study conducted in Bolivia on gully control and protection, it transpired that gullies were continuously expanding and thus contributing to considerable loss of crop land and downstream damage to the city of Cochabamba (WOCAT, 2007). Therefore, in mitigation the affected areas were fenced-off. Then structural (stone-lined cut drains and wooden check dams) and vegetative measures (planting bushes or trees above and below the check dams) were designed and implemented (WOCAT, 2007). Application of the technologies benefited the farmers in many ways. For instance there was a reduction in soil loss, improvement in soil cover, an increase in soil moisture as well as reduction in downstream flooding and siltation (WOCAT, 2007).

In Ethiopia, WOCAT (2007) noted that due to rapid population growth, communal grazing areas were increasingly being converted into cropland. Consequently, there was increased pressure (overgrazing) on the remaining grazing land due to overstocking of dairy cows and oxen. By way of intervention into the situation, the national Soil and Water Conservation (SWC) program in Ethiopia initiated a grazing land management project (WOCAT, 2007). The initial activities in the project involve delineating of the grazing land and fencing it off to exclude open access. Subsequent to fencing there is land preparation, application of compost and inorganic fertilizers if necessary to improve soil fertility, and then planting of improved local species such as *Pennisetum spp.* and exotic fodder species such as

*Leucaena spp.* and *Sesbania spp.* (WOCAT, 2007). The plant species are maintained through weeding, manuring, and replanting to ensure proper establishment and persistence.

Worth noting is that the government provides technical assistance, close follow-ups as well as some inputs for initial establishment of the project (WOCAT, 2007). Moreover, land users are trained in compost/manure application, planting of seeds, splits, and seedlings, and general maintenance. Regarding benefits derived from the project by land users, they include cutting fodder to stall-feed livestock and cutting grass hay which is stored to feed animals during the dry season (WOCAT, 2007). On an ecological perspective the benefits include; improvement in soil cover, increase in soil fertility, reduction in soil loss, increase in soil moisture, and biodiversity enhancement. This is in agreement with the assertion made by Cindy (2015) of using trees in conjunction with grass species such as Vetiver grass (*Chrysopogon zizanioides*) in the control of land degradation. As indicated earlier on Vetiver grass (*Chrysopogon zizanioides*) is non-invasive and more effective in controlling land degradation. The use of Vetiver grass in rehabilitation is echoed by Addis *et al.* (2015) who observed that it can develop in a shallow soil with high tolerance to drought in the different agro-ecological environments of North-western Ethiopia.

From the literature it is obvious that fencing is regarded as a precondition for success in rehabilitating degraded land. For instance, Chaturvedi *et al.* (2014), emphasize that one of the preconditions for rehabilitating degraded land is to effectively protect it by fencing from biotic agencies, which will result in substantial increase in yield of grasses. Moreover, Chaturvedi *et al.* (2014) and Gebrehiwot and Veen (2014) echo that closure should go along with by soil conservation measures for example, construction of check dams and disposal of runoff. On the same note, Addis *et al.* (2015) observed that integrated vegetative management and physical measures (check dams) accompanied by an area enclosure (fencing) are the most successful gully erosion control measures so far implemented which have considerably reduced surface runoff and erosion, while improving soil fertility, forage, and fuel wood production along gully lines, in the different agro-ecological environments of North-western Ethiopia. Likewise in the case study chiefdoms (Ngcayini and Ezikhotheni), these prerequisites were met, although at Ngcayini in

particular the fence was then stolen exposing the area to further degradation as indicated by the findings.

In the quest of rehabilitation the choice of species is also paramount. In this regard, Chaturvedi *et al.* (2014) emphasize that rehabilitation of degraded areas requires a systematic and scientific approach which includes proper survey, choice of species, and techniques for establishment of plant species. For instance, planting of fuel, fodder, or multipurpose trees on degraded land can mitigate the scarcity of fuel and fodder for rural households while guaranteeing satisfactory protection to these lands against further degradation as observed by Chaturvedi *et al.* (2014). In the same vein, Reubens *et al.* (2011) contend that acceptance and success of tree planting and land rehabilitation activities depend upon the amount of attention given to local environmental and social conditions, cultural values, as well as people's needs and knowledge. In other words, involving local people in designing, implementing, and evaluating such activities often contribute to their success.

It is important to highlight that land degradation also manifest in the decline in the Normalized Difference Vegetation Index (NDVI). For instance according to Riva *et al.* (2017) low water availability and poor soil fertility by and large limit vegetation growth and hence low vegetation cover and low NDVI values. For example in a study conducted in Enderta District of Northern Ethiopia, Gebrehiwot and Veen (2014) observed an annual decline of 3.62 in the NDVI values between the period 2001 and 2009 in an unprotected area which was compared with a fenced degraded land. Here, the decline in NDVI values was attributed to the rapidly increasing population (about 3 per cent annually) and their ever-increasing demand for cropland, subsistent income and fuel wood that led to rapid vegetation clearance in the area in accordance to Gebrehiwot and Veen (2014).

A similar observation was made by Dlamini (2016) who indicate that areas that are highly vulnerable to deforestation in Swaziland are particularly those outside protected areas as well as forests that are in close proximity to major rivers, human settlements and sugarcane plantations especially in the central and eastern parts of the country. Protected (gazetted)

areas as well as areas under conservation management, were however observed to have visibly low risks of deforestation save only for those closer to existing sugarcane plantations. Furthermore, Dlamini (2017) observed that in Swaziland acacia and broadleaf savannah were being depleted at higher rates with up to 8.1% of forest area lost since the year 2000. The main drivers of deforestation were identified as the dominant land uses namely; agriculture (primarily sugarcane), human settlements and other infrastructure developments. In the present study an increase in the mean NDVI values was particularly observed at Ngcayini which corresponded with an increase in the size of the plantation-style community forest.

### **3.8 Summary**

This section of the study ties the loose ends in terms of what is known and what is not known regarding the effectiveness of community action in the management of community forests. Consequently, a summary of community action research and its application to forest resources is presented. Above all, this section explored the overview of forest resources and their characteristics in Swaziland and then proceeded to the role of internal and external stakeholders in the management of community forests. Whilst looking at the roles of stakeholders, the rules, policy and legislative framework governing management of forest resources were discussed, where the emphasis was on the need for strengthening forestry legislation. Moreover, this section has exposed the socio-economic and ecological importance of forests in a society and the world in general. Worth noting is that the distribution of benefits from community forests and woodland reserves to individuals is not always clear and satisfactory. As such, a similar observation was made in the present study.

Furthermore, there has been an effort to explore the extent of community action in the management of forest resources with an intention of determining its success or failure in the management of community forests. In addition, possible opportunities and threats for community action in the management of forest resources were also discussed with a view of determining the success or failure of community action in management of community forests. Finally, this section explored changes in land cover and the extent of land degradation as well as the implications on the NDVI; once again the intention is to



determine the success or failure of the interventions towards rehabilitating degraded land and augmenting the supply of forest resources in the case study sites.

Having seen the role of community action research and its application to forest resources, attention is now focused on the process of understanding community action in managing forest resources.

## **CHAPTER 4**

### **UNDERSTANDING COMMUNITY ACTION IN MANAGING FOREST RESOURCES**

#### **4.1 Introduction**

This chapter elaborates on the methods that have been used in executing the research, which comprise research design; ethical issues; sources of information; data collection techniques; and method of data presentation and analysis.

#### **4.2 The Research Design**

This study employed a case study research design. In executing the case study, a modified conceptual framework on resource conflict, community action, and social-ecological resilience has been used. A case study is a strategy for conducting research which involves empirical investigation of a particular phenomenon within its real life context using multiple sources of evidence in accordance to Saunders, Lewis, and Thornhill (2003). Babbie and Mouton (2001) define a case study as an intensive investigation of a single unit which may be of various natures such as families, communities, social groups or institutions. A case study research design has a potential to generate answers to questions such as: why, what and how. Methods of data collection employed in this design comprise questionnaires, interviews, observation and documentary analysis as indicated by Seyama (2014). A case study is aimed at describing and understanding a phenomenon ‘in depth’ and ‘in the round’ (completeness) in accordance to Seyama (2014).

Worth noting is that the exploration and description of cases in a case study takes place through detailed, in-depth data collection methods, involving multiple sources of information that are rich in context as noted by Fouché (2005). That means it involves multiple methods of data collection (that is triangulation) and can include quantitative data, though qualitative data are almost invariably collected in accordance to Robson (2002). Triangulation is a strategy for improving the validity and reliability of research; hence it has been applied for the same purpose even in the present study as recommended by

Golafshani (2003). Furthermore, to assess the validity of the questions, acceptability of the questionnaires, and likely reliability of the data collected; the study engaged on a pilot test of the data collection instruments. For purposes of pilot testing three (3) homesteads from Nkiliji chiefdom were selected for pilot testing. Nkiliji chiefdom was chosen because it also has community forests which were established to alleviate land degradation and augment the supply of forest resources.

Pilot testing is important in refining the questionnaire so that the respondents do not encounter problems when responding to the questions. Therefore, a pilot testing is a trial run undertaken to determine whether the questionnaire would succeed or not (Marambanyika and Beckedahl, 2016; Seyama, 2014). Questionnaires are divided into two namely; self-administered and interviewer administered. The latter is often recommended for a number of reasons which include a high response rate, ensuring responses are from the target population, as well as clarification of questions where need arises especially if the respondents are illiterate. Despite the noted advantages interviewer-administered questionnaires are costly in terms of travel, training, supervision and personnel costs especially where research assistants are involved.

At this stage it is important to highlight how the modified conceptual framework on resource conflict, community action, and social-ecological resilience (Figure 1.3b) has been used to accomplish the aim and the objectives that drive the study (Table 4.1). Notably, when using the conceptual framework the concentration is mainly on the action arena, which comprises the actor, action resources, rules in use as well as the patterns of cooperation and conflict.

### **4.3 The Ethical Issues Considered**

This study involves human beings as the key subjects. It was therefore deemed necessary to ensure that participants' rights and privacy were adequately protected. For ethical determinations, the study's research proposal as well as the data collection instruments (questionnaires for all respondents namely; heads of households and key informants) were submitted to the University of Kwa-Zulu Natal Ethics Committee for ethical clearance.

Table 4.1: Using the modified conceptual framework on resource conflict, community action and social-ecological resilience to answer the aim and the objectives of the study

Context / Action arena (Factors affecting community action)	Source of information	Method of data collection	Instrument for data collection
<p>Attributes of resources</p> <p>Determination of the change in land cover and the extent of land degradation</p> <ul style="list-style-type: none"> <li>Area of plantation-style community forests</li> <li>Area of gullies</li> <li>Land cover changes in 2008, 2013 and 2017</li> </ul>	<ul style="list-style-type: none"> <li>Field observation</li> <li>Google Earth images for 2008, 2013 and 2017</li> <li>Landsat images for 2008, 2013 and 2017</li> </ul>	<ul style="list-style-type: none"> <li>Taking coordinates of forests and gullies and calculating the area in hectares.</li> <li>Calculating the NDVI for 2008, 2013 and 2017</li> </ul>	<ul style="list-style-type: none"> <li>Global Positioning System (GPS).</li> <li>Mapping using Geographic Information Systems (GIS).</li> </ul>
<p>Attributes of resource users/actors</p> <ul style="list-style-type: none"> <li>Age, gender, location of homestead in relation to community forest, distance of homestead to community forest, ownership of a homestead or household woodlot, family size, source of income</li> </ul>	<ul style="list-style-type: none"> <li>Heads of households</li> </ul>	<ul style="list-style-type: none"> <li>Face to face interviews</li> </ul>	<ul style="list-style-type: none"> <li>Household questionnaire</li> </ul>
<p>Governance arrangements / rules in use</p> <p>Assessment of rules governing community forests</p> <ul style="list-style-type: none"> <li>Rules governing management of community forests, formulation of rules, enforcement of rules, effectiveness of the rules in management of community forests, laws and policies governing management of forest resources in the country, source of information on the laws and policies</li> </ul>	<ul style="list-style-type: none"> <li>Heads of households</li> <li>Key informants (community leaders and officers)</li> </ul>	<ul style="list-style-type: none"> <li>Face to face interviews</li> </ul>	<ul style="list-style-type: none"> <li>Household questionnaire</li> <li>Questionnaire for community leaders</li> <li>Questionnaire for officers</li> </ul>
<p>Patterns of cooperation and conflict</p> <p>Assessment of management of community forests by internal and external stakeholders</p> <ul style="list-style-type: none"> <li>Holding community meetings to discuss forest management issues, roles of males and females in management of community forests, training of community members on management of community forests, availability/existence of a Natural Resource Management Committee (NRMC), roles and responsibilities of the NRMC members in management of community forests, roles and responsibilities of traditional authorities in management of community forests, role of NGOs in forest development and control of land degradation in the chiefdom, role of government department in forest development and control of land degradation in the chiefdom, access to timber and non-timber forest products (NTFPs) in community forests for domestic use and for sale,</li> </ul> <p>Assessment of distribution and utilization of benefits</p> <ul style="list-style-type: none"> <li>distribution of benefits to individuals and the community at large from sale of resources from community forests, royal tree species and their protection in the chiefdom,</li> </ul> <p>Examination of the extent of community action</p> <ul style="list-style-type: none"> <li>existence of community action in the chiefdom, ,</li> </ul> <p>Assessment of opportunities and threats</p> <ul style="list-style-type: none"> <li>opportunities and threats for community action, conflicts pertaining to management of community forests in the chiefdom</li> </ul>	<ul style="list-style-type: none"> <li>Heads of households</li> <li>Key informants (community leaders and officers)</li> </ul>	<ul style="list-style-type: none"> <li>Face to face interviews</li> </ul>	<ul style="list-style-type: none"> <li>Household questionnaire</li> <li>Questionnaire for community leaders</li> <li>Questionnaire for officers</li> </ul>

The committee duly granted the ethical clearance and the protocol reference number is HSS/0729/017D.

In the course of data collection respondents' consent was sought before administering questionnaire to them as suggested by Hay (2003), Saunders, Lewis, and Thornhill (2003), Strydom (2005a) and Smith (2010). The respondents from whom consent was sought comprise the following:

- members of the inner council, Natural Resource Management Committees and community members (heads of households) as well as Individual chiefdom councillors (*Bucopho*) at Ngcayini and Ezikhotheni chiefdoms;
- officers in the Forestry Department of the Ministry Tourism and Environmental Affairs (MTEA);
- officers of SEA; and
- Livelihoods Manager for *World Vision* and the Director of Environment for *Conserve Swaziland* (See Appendix 3.1).

It must be noted that in each of the chiefdoms, consent of the traditional authorities who are the access points/gate keepers' was sought before engaging in data collection to enlist cooperation from the respondents (See Appendix 3.2). Likewise, consent from the Principal Secretary in the MTEA and the Executive Director of SEA was sought to enlist cooperation of the officers in their organizations (See Appendix 3.2).

#### **4.4 The Sources of Information**

Since the focus of the study is assessment of the role of community action in the management of community forests in Swaziland using Ezikhotheni and Ngcayini as case studies, the key sources of information were therefore, heads of households (men or women) in sampled homesteads, resource management committee members, traditional authorities (headman, inner councils and ward elders), *Bucopho* and officers (from Ministry of Tourism and Environmental Affairs, Swaziland Environment Authority, and NGOs), as well as field observation (mapping).

The target population in this study were the heads of households (men or women) in the homesteads from the two chiefdoms. This is because they are decision makers in the households, hence they have a significant role in the management of community resources.

In terms of population distribution, according to a personal interview with the Individual chiefdom councillors (*Bucopho*) during the field reconnaissance survey in the year 2017 it was gathered that Ngcayini had 103 homesteads (three homesteads being new arrivals), while Ezikhotheni had 508 (eight homesteads being new arrivals) (Field reconnaissance survey, 2017). In terms of selecting respondents, since at Ngcayini there were 100 eligible homesteads, they were all included in the study. At Ezikhotheni on the other hand, where there were 500 eligible homesteads, 200 homesteads were selected comprising 40 per cent of the total.

To determine the sample size the study used a sample size calculator where a confidence interval (margin of error that a researcher can tolerate) of 5.37 and a confidence level (amount of uncertainty that a researcher can tolerate) of 95% were chosen (Figure 4.1). Noteworthy, there are three factors that determine the size of the confidence interval for a given confidence level namely; sample size, percentage (percentage of the sample that picks a particular answer/response distribution) and population size. In terms of the percentage (response distribution), to determine the sample size needed for the given level of accuracy the study used the worst case percentage (50%) as shown in Figure 4.1.

Determine Sample Size	
Confidence Level:	<input checked="" type="radio"/> 95% <input type="radio"/> 99%
Confidence Interval:	<input type="text" value="5.37"/>
Population:	<input type="text" value="500"/>
Response distribution	<input type="text" value="50%"/>
Sample size needed:	<input type="text" value="200"/>

Determine Confidence Interval	
Confidence Level:	<input checked="" type="radio"/> 95% <input type="radio"/> 99%
Sample Size:	<input type="text" value="200"/>
Population:	<input type="text" value="500"/>
Percentage	<input type="text" value="50%"/>
Confidence Interval:	<input type="text" value="5.37"/>

Figure 4.1: Determining the sample size and confidence interval for Ezikhotheni

A sample size of 200 homesteads was deemed ideal in the study considering the characteristics of the population, which is basically homogenous in many respects. For instance, all the homesteads submit under the same authority (traditional authorities), thus

bound to comply with community rules governing management of community forests. At the same time, all the homesteads directly or indirectly benefit from the community forests.

Having determined the sample size of 200 homesteads, then simple random sampling was used to ensure that all homesteads in the chiefdom had an equal chance of being selected for the sample, as recommended by Strydom (2005b). In the quest of implementing simple random sampling a list of the homesteads was solicited from the traditional authorities through the *Bucopho*. Then the homesteads were numbered from the first to the last. At that juncture, the table of random numbers was used to come up with the homesteads which participated in the study. Worth noting is that in some homesteads there were more than one household, in such cases only one head of household was interviewed. The reason for interviewing one instead of all the heads of households is because of the homogeneity of households in the sense that by virtue of belonging to the chiefdom they are bound to participate in the management of the community forests. In the household, the interview was administered to either the man or woman as a head of the household. In the event of their unavailability however; the eldest household member responsible for making decisions was interviewed as suggested by Marambanyika and Beckedahl (2017). It must be noted that in the event that a selected respondent refused to participate in the study another homestead was selected until the intended sample size was attained. All in all, the sample comprises 300 homesteads with 100 from Ngcayini (Figure 4.2) and 200 from Ezikhotheni (Figure 4.3).

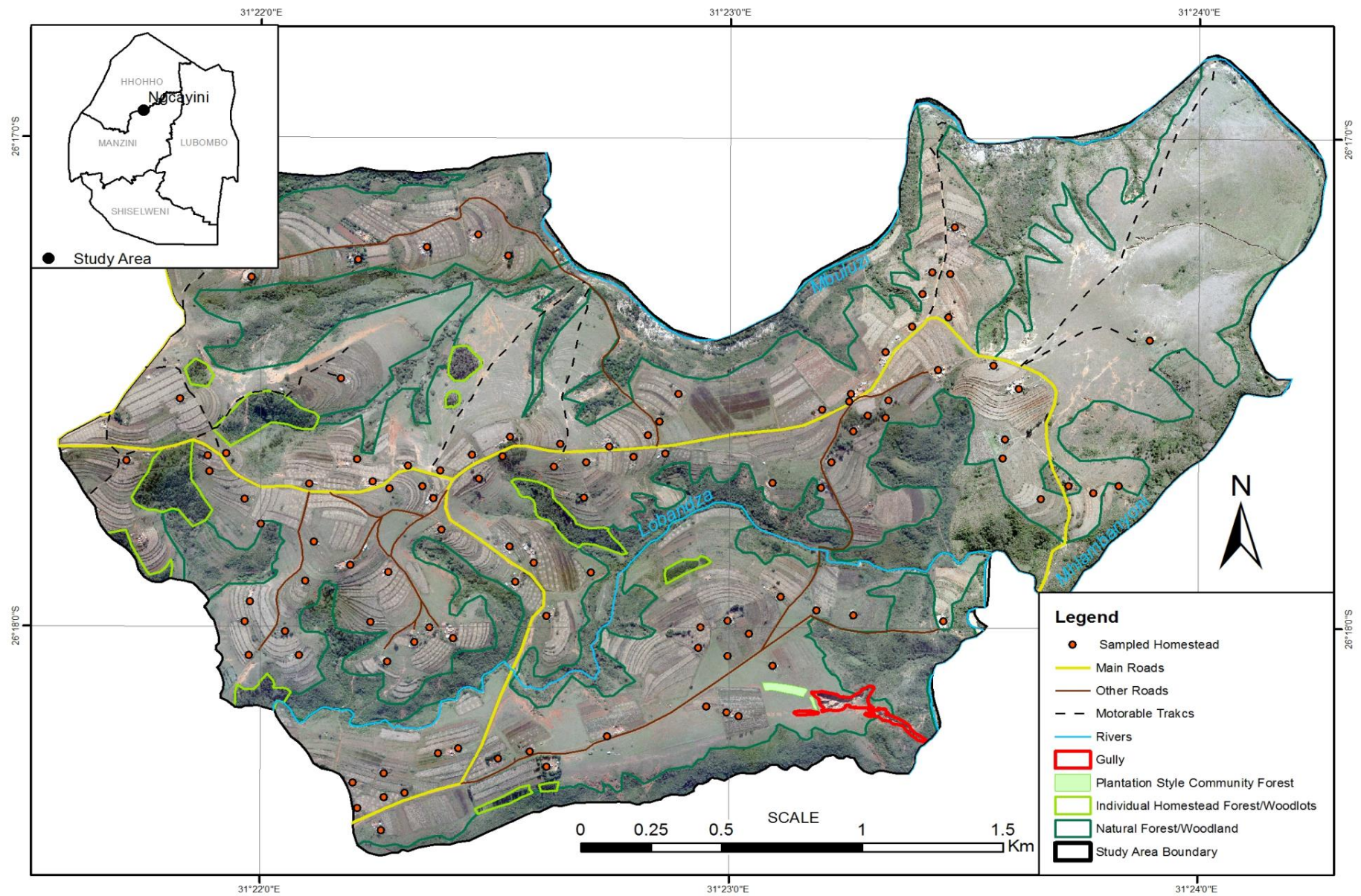


Figure 4.2: Sampled homesteads at Ngcayini chiefdom



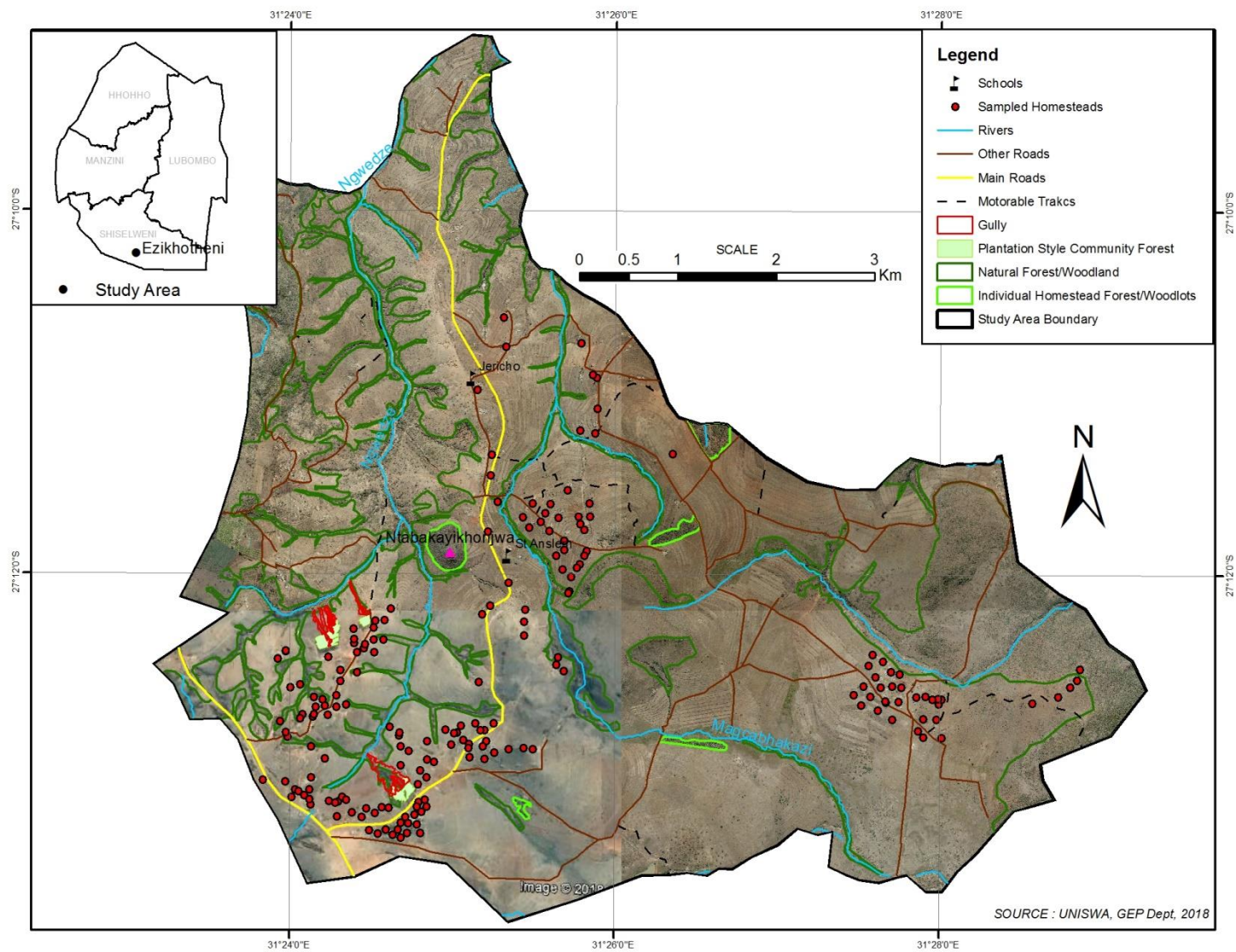


Figure 4.3: Sampled homesteads at Ezikhotheni chiefdom

It must be noted that the two chiefdoms involved introduces an element of heterogeneity (mutually exclusive strata). In spite of the noted heterogeneity, these chiefdoms comprise members who are homogeneous with respect to characteristics such as language, gender, and age, as well as availability of community forests. It is assumed that all homesteads in the two chiefdoms are also homogenous in the sense that by virtue of belonging to the chiefdom they are bound to participate in the management of community forests. Participation in the management of community forests ought to be regardless of whether one has a household woodlot or not. Thus, simple random sampling in the case of Ezikhotheni ensured that inclusion in the sample was regardless of whether a homestead has an individual household woodlot or not, and is also irrespective of proximity of a homestead to a community forest.

Worth mentioning is that seeking permission from the traditional authorities as access points into the communities enhanced the cooperation from community members and is in line with the correct protocol. The traditional authorities informed community members about the researcher and the purpose of the study during community meetings. For instance, all community members at Ngcayini cooperated without any resentment. At Ezikhotheni, however, some heads of households refused to cooperate; hence the researcher had to select other homesteads until the intended sample was attained. It is important to note that Ezikhotheni chiefdom is large in areal extent (4 760 hectares) and sparsely populated; hence not all community members attend community meetings. On the other hand, Ngcayini is 787 hectares. It is important to note that, loyalty of community members to traditional authorities in a tribal system of administration is likely to introduce an element of bias to the study, unlike in a democratic system of government which is open to criticism. Thus, some bias is inevitable in the present study since community members 'cooperation was induced by loyalty to traditional authorities.

In addition to interviewing heads of households, information was also solicited from key informants. A key informant is a person (or a group of persons) who has unique skills or professional background related to the issues being studied, knowledgeable in the field studied or has access to other information of interest to the researcher as pointed out by

Marshall (1996). A key informant can also be someone who has a way of communicating that represents or captures the essence of what the respondents say and actually do (Mahoney, 1997). Regarding selection of key informants in the study they were purposively selected for in-depth interviews based on their role in the communities regarding development and governance of community forests. Key informants in this study comprise the following:

- three (3) NRMC members from each chiefdom who were selected through convenience sampling;
- Headman (*Indvuna*);
- three (3) inner council members and three (3) ward elders from each chiefdom who were selected through convenience sampling;
- Individual chiefdom councillors (*Bucopho*);
- Four (4) officers from the Forestry Department in the Ministry of Tourism and Environmental Affairs (MTEA);
- Four (4) officers from Swaziland Environment Authority; and
- Livelihoods Manager from *World Vision* and the Director of Environment from *Conserve Swaziland*. These are Non-Governmental Organizations (NGOs) which are active in the study sites. It must be noted that *Yonge Nawe* "You too must conserve." used to be one of the most active NGOs in Swaziland, but it ceased operations (defunct) in the country, hence it could not be part of the study.

#### **4.5 Data Collection Techniques**

Generally, research is categorized into qualitative and quantitative approaches, where the former concentrates on gathering textual data while the latter gathers numeric data which is subjected to statistical manipulation. This study employs both qualitative and quantitative approaches since the data collection instruments; mainly the structured questionnaires comprise closed and open-ended questions. Combination of approaches ensures better quality and reliability of data. The study employed a variety of methods in the collection of data, which is triangulation. This is mainly done to minimize subjectivity of certain methods to particular bodies of knowledge in accordance with Nachmias and Nachmias (1996). The methods that were used include; interviewer-administered questionnaires to

internal and external stakeholders, as well as mapping of plantation-style community forests and gullies under rehabilitation (Figure 4.4). Furthermore, Landsat satellite images for the years 2008, 2013 and 2017 were used to calculate the Normalized Difference Vegetation Index in the two chiefdoms under study. Table 4.2 details the work plan followed in this study (See appendix 1).

Regarding interviewer-administered questionnaire, they have a high response rate and afford the interviewer more control over the respondents who answer the questions compared to a self-administered questionnaire which may be passed from one person to the other.

Moreover, since the questionnaire comprises both closed and open-ended questions it has an advantage of extensive probing particularly through the open-ended questions. As a matter of fact, the questionnaires prepared in this study include a list of questions or issues that were explored and suggest probes for following up on key topics as suggested by Mahoney (1997).

The questionnaire was meant to assist the interviewer to pace the interview and make interviewing more systematic and comprehensive. It must be mentioned that for all sampled homesteads a GPS was used to capture the coordinates signalling the location of these homesteads. The GPS coordinates were then plotted on Google Earth images to portray the spatial distribution of the sampled homesteads in relation to the community forests (Figure 4.2 and Figure 4.3).

There are two types of interviewer-administered questionnaires which were prepared in the study. One of them was administered to the heads of households in sampled homesteads in the two chiefdoms (See Appendix 2.2). The other one was directed to key informants. The key informants were divided into two, hence also the questionnaires namely; community leaders [traditional authorities, members of NRMCS, and Individual chiefdom councillors (*Bucophos*)] (See Appendix 2.3), and officers (from MTEA- Forestry Department, SEA and NGOs) (See Appendix 2.4).

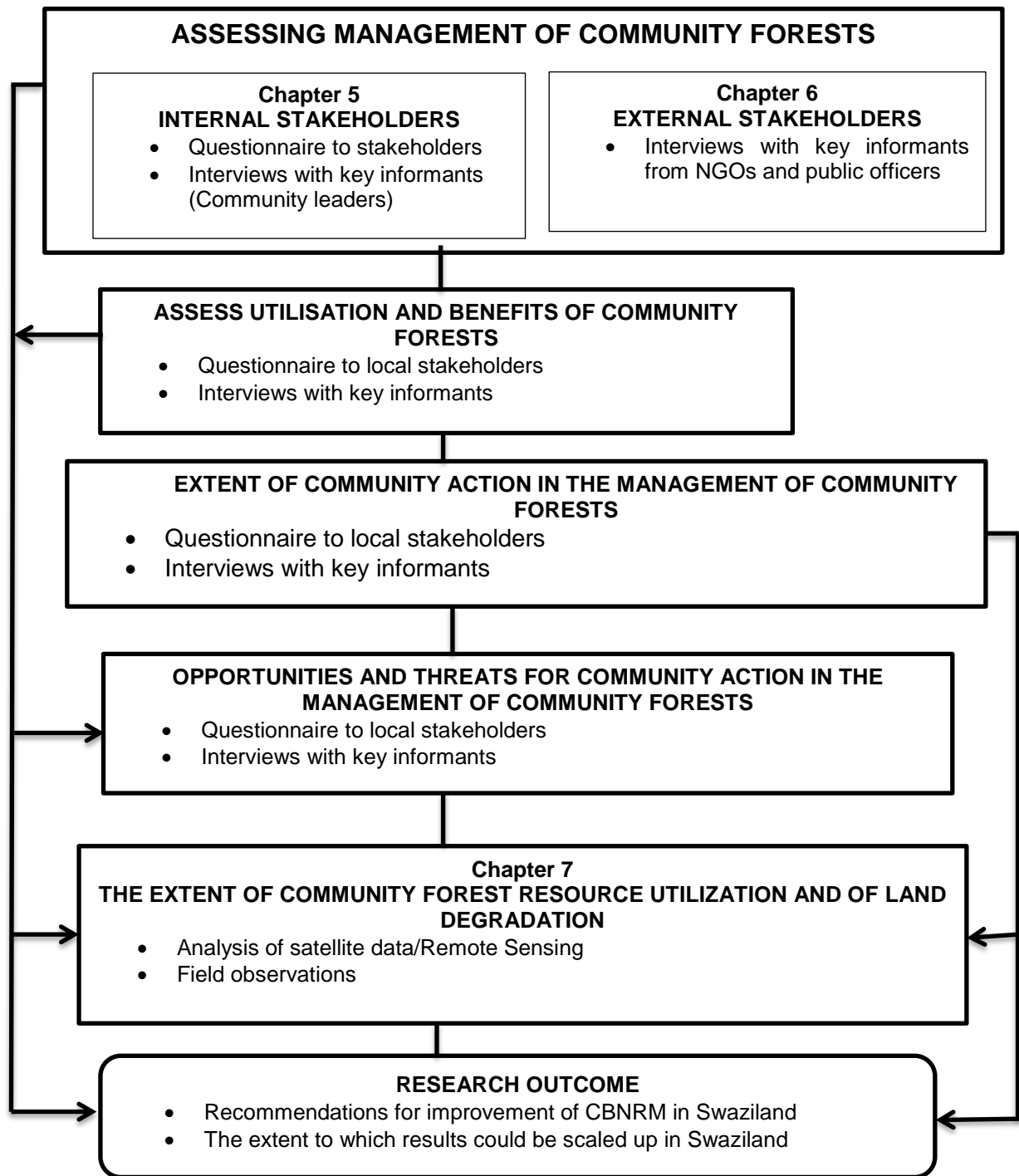


Figure 4.4: Pathway for accomplishing the specific objectives of the study

It must be noted that interviewer-administered questionnaires have a limitation of being time consuming, especially where the researcher uses a tape recorder or an assigned note taker for purposes of recording interview data. Therefore, to save time this study adopted an

approach of recording interview data; whereby the interviewer takes detailed notes during the interview.

Mapping involved the use of a Global Positioning System (GPS) to capture the coordinates signalling the location and boundaries of the community forests planted to alleviate land degradation, as well as boundaries of gullies where these forests were established. The coordinates were plotted on Google Earth images where the boundaries of community forests as well as of gullies were drawn. This was done on Google Earth images for three different years namely 2008; 2013 and 2017 in order to indicate whether these features (plantation-style community forests and gullies) were increasing or decreasing. This was ascertained through calculating the area of the plantation-style community forests and gullies in the different time periods. The choice of these years (2008, 2013 and 2017) was motivated by availability of Google Earth images and the fact that the plantation-style community forests in question were only established between 2001 and 2003. Worth noting is that an increase in the spatial extent of community forests is a positive attribute although it may also be due to a spread of alien invasive plant species such as *Lantana camara*, *Chromolaena odorata*, and *Psidium guajava*. Notably, the tree species planted for controlling land degradation namely; wattle (*Acacia mearnsii*) and *Eucalyptus spp.* are also invasive so it is likely that they also spread disproportionately. An increase in the size of the gullies is however a negative attribute, as it depicts that the gully is not rehabilitating.

The Normalised Difference Vegetation Index (NDVI) was used to determine changes in vegetation cover over the years (2008, 2013, and 2017) at Ngcayini and Ezikhotheni chiefdoms. Notably, NDVI is a technique for monitoring surface vegetation and changes in vegetation of the entire Earth in accordance to James (2005). The NDVI is calculated as a ratio of measured reflectivity in the red and near-infrared portions of the electromagnetic spectrum (James, 2005). Calculated values for NDVI ranges from minus one (-1) to plus one (+1) where high NDVI values indicate healthier vegetation, while low NDVI values depicts less or no vegetation (Weier and Herring, 2000). For instance, very low NDVI values (0.1 and below) correspond to barren areas, while moderate values (0.2 to 0.3) represent shrubs and grasslands, with high values (0.6 to 0.8) indicative of temperate and

tropical rainforests (Weier and Herring, 2000). It is worth noting that, a zero depicts that there is no vegetation. On the other hand, negative NDVI values indicate presence of water bodies. In this study the mean and median of the NDVI for the years 2008, 2013 and 2017 were calculated using Landsat satellite images (Landsat 5, 7 and 8 with a resolution of 30m) to portray changes in vegetation cover. The images were processed using Google Earth Engine (maps produced using ArcGIS 10.5). This was undertaken to highlight the effectiveness of the intervention made through establishment of plantation-style community forests in the study sites. For instance, an increase in the NDVI values over the years indicates that the degradation is rehabilitating.

#### **4.6 Methods of Data Analysis**

The data in this study is presented as narratives, crosstabs, graphs, and maps. Responses were coded and inputted for analysis using the Statistical Package for Social Scientists (SPSS) program version 20. SPSS is a Windows based program that can be used to perform data entry and analysis as well as to create tables and graphs as observed by Colman and Pulford (2006). One may wonder why so much concern about SPSS when there are; other statistical tools including Excel, which is readily available in all computers using Windows software. The fact is that although Excel is a common tool used in statistical analysis, it is not in general a statistical tool as indicated by Paura, and Arhipova (2012). Moreover, compared to a statistical tool Excel has limited statistical analysis. Furthermore, SPSS has advantages over Excel in relation to data organization. In Excel for example, data organization is implemented according to the data analysis methods, thus forcing the researcher to reorganize data in many ways if many different analyses are necessary to perform as noted by Paura, and Arhipova (2012). In SPSS however, data is organized by cases (rows) and variables (columns), such that in the database each row might correspond to a single recorded observation and each column in the dataset corresponds to a specific measurement or type of recorded information as pointed out by Paura, and Arhipova (2012).

In this study cross-tabulation was used to depict frequencies of responses from heads of households and key informants for various attributes across the two chiefdoms

(Ezikhothereni and Ngcayini). Moreover, Chi-square ( $\chi^2$ ) statistical analysis was employed to determine the level of significance in the difference between the two chiefdoms regarding aspects of the management of community forests. Worth noting is that the main reason for calculating an inferential statistic is to get a  $p$  value ( $p$  = probability). The  $p$  value is the probability that the samples are from the same population with regard to the dependent variable (outcome). Normally, the hypothesis being tested is that the samples (groups) differ on the outcome. The  $p$  value is directly related to the null hypothesis. Therefore, the  $p$  value determines whether the null hypothesis should be rejected or accepted. Thus, the  $p$  value is used to estimate whether or not the researcher views the null hypothesis as true. The  $p$  value provides an estimate of how often a researcher gets the obtained result by chance, if in fact the null hypothesis is true.

Regarding when to accept or reject the null hypothesis, it is important that the researcher first decide on the level of significance (cut-off) for the analysis. Notably, in the sciences (behavioural, social and natural sciences), a general pattern is to use either **0.05 (95%)** or **0.01 (99%)** as the cut-off (Ebon, 1985; Leedy, 1997; Pallant, 2001). As such, if the probability associated with an inferential statistic is equal to or less than **0.05 (95%)**, then the difference in mean results is said to be **significant at the 0.05 (95%) level**. On the other hand, if the **0.01 (99%)** cut-off is used, then the difference in mean result is **significant at the 0.01 (99%) level**. Using the **0.05 (95%)** level of significance means if the null hypothesis is true, the researcher will get the result 5 times out of 100 (or 1 out of 20). Therefore, rejecting or accepting the null hypothesis is a gamble. Hence, there is always a possibility that a researcher is making a mistake in rejecting the null hypothesis. This is called a **Type I Error** - rejecting the null hypothesis when it is true. Contrariwise, if a researcher uses a **0.01 (99%)** cut-off, the chance of a **Type I Error is 1 out of 100**. Therefore with a **0.05 (95%)** level of significance, the researcher is taking a bigger gamble. This is because there is a 1/20 (5 out of 100) chance that the researcher is wrong, and that the treatment (or predictor variable) does not really matter.

At this juncture, one wonders why a researcher will take the bigger gamble of **0.05 (95%)** rather than **0.01 (99%)** level of significance. This is primarily because the researcher does



not want to miss discovering a true difference. The ground rules for rejecting or accepting a null hypothesis are as follows.

- **If the  $p$  value is small, reject the null hypothesis** and accept that the samples are truly different with regard to the outcome.
- **If the  $p$  value is large, accept the null hypothesis** and conclude that the treatment or the predictor variable had no effect on the outcome.

In this study a level of significance of 0.05 (**95%**) was chosen. With respect to deriving a  $p$  value it must be noted that when using a computer program to calculate an inferential statistic (such as a  $t$ -test, Chi-square ( $\chi^2$ ), correlation), the results will show an exact  $p$  value. Conversely, if you use the formulas for hand calculation, you will need to use a table of critical values in order to get a  $p$  value.

Regarding qualitative data obtained from key informant interviews, it was presented in narratives and analysed using interpretational analysis. Interpretational analysis refers to examining data for constructs, themes and patterns that can be used to describe and explain phenomenon studied (Leedy, 1997). This involves an interpretation of what the findings means with regard to the questions raised by the study and what the maps depicts, as well as in relation to the theoretical framework adopted in the study.

The coordinates that were collected by use of a handheld GPS were downloaded into the computer and ArcView GIS was used to prepare maps. Some of the results were presented in form of tables (attribute data). This facilitated an analysis of the spatial dimension of the data.

Having seen how data has been collected and analysed it is important to highlight how the findings are organized in the subsequent chapters. Subsequently, chapters five, six and seven focus on data presentation, analysis and interpretation (Figure 4.5). Specifically chapter five focuses on the role of internal stakeholders while chapter six concentrates on the role of external stakeholders in the management of community forests. Chapter seven focuses on the extent of community forest resource utilization and of land degradation. Then chapter eight concentrates on the discussion of the findings and finally chapter nine delves on the conclusion and recommendations of the study.

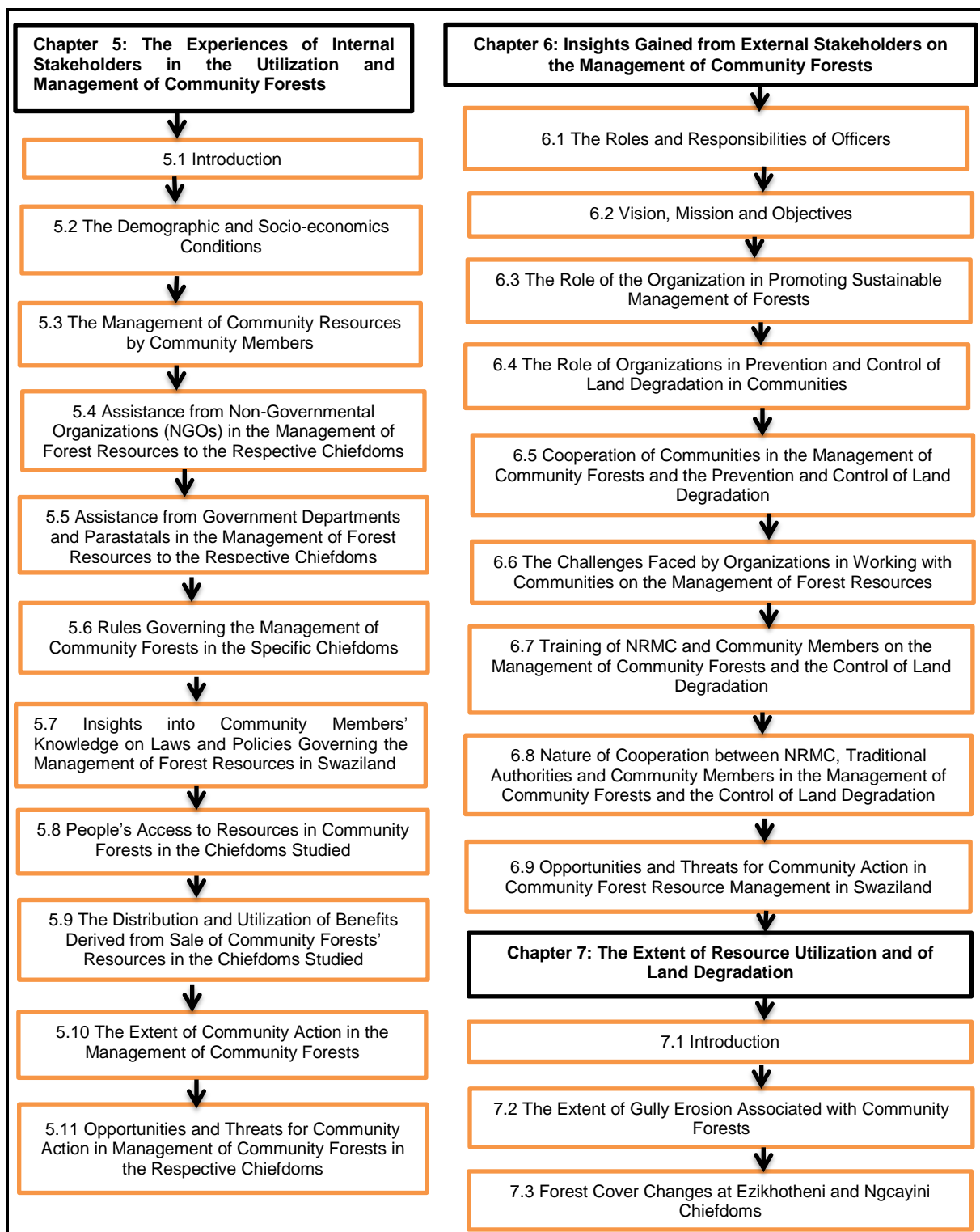


Figure 4.5: Flow chart on data presentation and analysis

## **CHAPTER 5**

### **THE EXPERIENCES OF INTERNAL STAKEHOLDERS IN THE MANAGEMENT OF COMMUNITY FORESTS**

#### **5.1 Introduction**

This chapter focuses on a presentation and analysis of the findings on the experiences of internal stakeholders in the utilization and management of community forest resources in Swaziland using Ezikhotheni and Ngcayini chiefdoms as case studies. The key areas of concern in this chapter include: management of community forests by community members; distribution and utilization of benefits from community forests; extent of community action in the management of community forests in Swaziland; as well as opportunities and threats for community action in management of community forests in Swaziland.

#### **5.2 Demographic and Socio-economics Conditions**

The study sites are Ngcayini in the Manzini administrative region and Ezikhotheni in the Shiselweni administrative region. There were a total of 300 respondents (heads of households), where 100 were from Ngcayini and 200 from Ezikhotheni. Moreover, there were 22 community leaders comprising the headman, three (3) Natural Resource Management Committee (NRMC) members, three (3) inner council members, three (3) ward elders, and an Individual chiefdom councillors (*Bucopho*) from each chiefdom.

In terms of age of the heads of households, the findings depict that they ranged from 21 to 80 at Ngcayini and 21 to 81 years and above in age at Ezikhotheni. Notably, a highest number of heads of households were aged between 51 and 60 years at Ezikhotheni (27%) whereas at Ngcayini they were aged between 31 and 40 years (26%) (Figure 5.1). This indicates that there was a good representation of community members in terms of age, hence the findings portrays views for all age-groups in the respective chiefdoms.

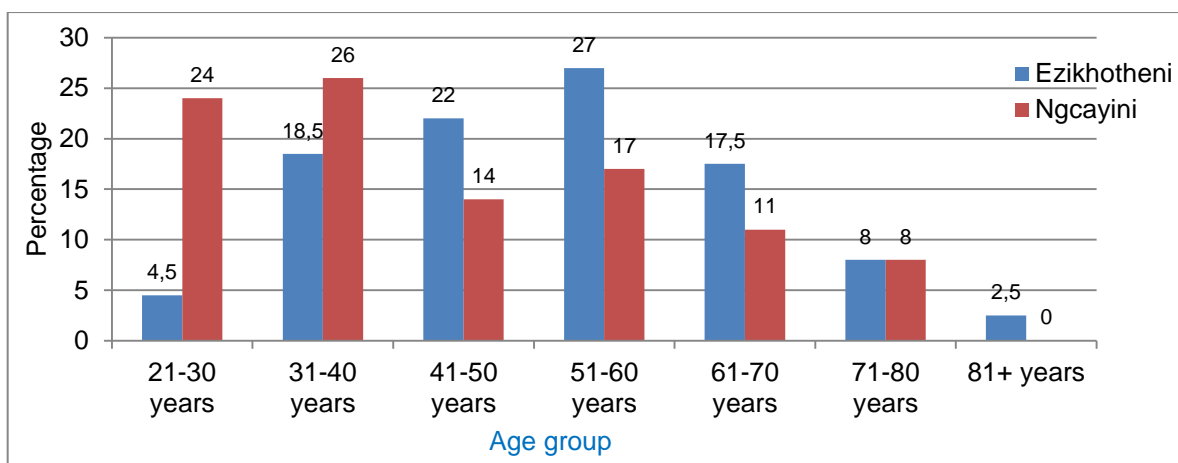


Figure 5.1: Age distribution of respondents in the case study sites

With respect to gender, there were more females (59%) than males (41%) in both chiefdoms. There were 56.5% females and 43.5% males from Ezikhotheni, and 64% females and 36% males from Ngcayini. This is justifiable considering that most men are often away from home due to wage-based employment. Correspondingly, 27% of the households from Ezikhotheni and seven per cent (7%) from Ngcayini were reportedly dependent of on wage-based employment (Table 5.1).

Table 5.1: Source of income for households

Source of income	Ezikhotheni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Wage-based employment	54	27	7	7
Self-employed	30	15	28	28
Grants	97	48.5	17	17
None	3	1.5	46	46
Wage-based employment and grants	12	6	0	0
Self-employed and grants	3	1.5	2	2
Wage-based employment and Self-employed	1	0.5	0	0
Total	200	100	100	100

There were however, some households which relied on more than one source of income namely wage-based employment and grants, as well as wage-based employment and self-

employment. This is normally referred to as a diversification of livelihoods, which is a best practice that cushions households in the event of unexpected risks and hazards. In other words, diversification of livelihoods acts as a safety net in the event that one source of income fails. It must be noted that 48.5% of the households were dependent on grants at Ezikhotheni, while at Ngcayini 46% of the households had no source of income (Table 5.1). Nonetheless, it is gratifying to note that 15% of the households from Ezikhotheni and 28% from Ngcayini relied on self-employment as a source of income (Table 5.1). Gratification is due to the fact that there is generally a high rate of unemployment in the country; hence a more feasible solution is self-employment. It must be noted that despite having or not having a source of income, most of the homesteads and households generally look decent and they all have fields where they cultivate crops when there are good rains.

Considering that the study anchors on community forests, heads of households were asked to estimate the distance of their homesteads and households in relation to a community forest. Above all, it must be noted that in both study sites the heads of households were more inclined to plantation-style community forests than natural forests. The reason for this state of affairs is that the natural forests were regarded as free-access resources save only for royal tree species (those used in royal kraals) such as *Umhlume* (*Adina spp.*), *Sihloko*, *Imbondvo* (*Combretum spp.*) *Lusekwane* (*Dichrostachys cinerea spp.*) and *Umphahla* (*Brachylaena spp.*). At this juncture, it must be mentioned that there was one (1) plantation-style community forest at Ngcayini (Figure 4.2), while there were three (3) plantation-style community forests at Ezikhotheni (Figure 4.3). Regarding distance of homesteads to the community forest(s) the findings reveal that 17% of the homesteads at Ngcayini (Figure 4.2) and 59% at Ezikhotheni (Figure 4.3) were located near community forests. On the other hand, 83% of the homesteads at Ngcayini (Figure 4.2) and 41% at Ezikhotheni (Figure 4.3) were located away from community forests.

In terms of the estimated distance, the findings indicate that 30% of the homesteads at Ezikhotheni and 10% at Ngcayini were located at a distance less than 500 meters from the community forest(s) (Figure 5.2). Those located at a distance of more than one kilometre,

comprised 41% in each chiefdom (Figure 5.2). This is mainly due to the nature of the distribution of the plantation-style community forests in the two chiefdoms.

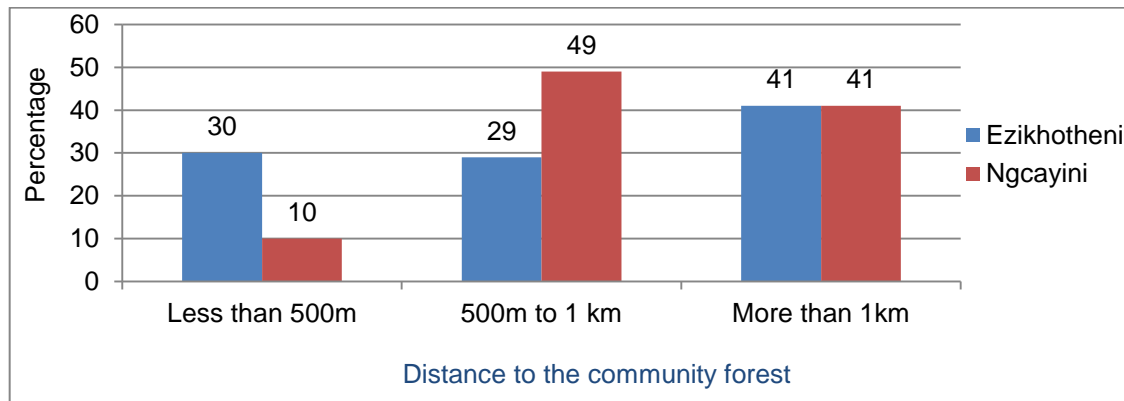


Figure 5.2: Distance of sampled households from community forests in the two chiefdoms

Furthermore, it is important to consider the fact that these plantation-style community forests were planted to control land degradation, hence constructing settlements in such areas is hazardous. Moreover, regarding the distance of homesteads from plantation-style community forests it is important to highlight that the size of the chiefdom was also a contributing factor. Where for instance, Ezikhotheni is a large chiefdom in areal extent (4 760 hectares) with settlements sparsely distributed (Figure 4.3); hence some of the heads of households had no idea about management of the plantation-style community forests. Compared to Ezikhotheni, Ngcayini is 787 hectares.

With respect to ownership of a homestead woodlot, the findings reflect that 18% of the homesteads in both chiefdoms had homestead woodlots, while 82% do not have. Specifically 7.5% of the homesteads at Ezikhotheni and 39% at Ngcayini had homestead woodlots. On the other hand, 92.5% of the homesteads at Ezikhotheni and 61% at Ngcayini indicated that they do not have homestead woodlots. This means that there are more people who depend on natural forests and woodlands, as well as plantation-style community forests for forests resources in the respective chiefdoms.

When looking at issues of family size most households had five to nine (5-9) people (49% of the heads of households at Ezikhotheni and 45% at Ngcayini) (Table 5.2). Notably, the

findings indicate that none of the surveyed households at Ezikhotheni had a family size of 15 and above members, whereas at Ngcayini only two per cent (2%) of the households had that family size (15 and above) (Table 5.2). Normally family size has a bearing on population size and thus on utilization of resources as observed by the Australian Academy of Science (2019). In other words, the higher the population size the higher the demand for resources, which often culminates in over-exploitation and hence land degradation.

Table 5.2: Family size (number of people in the household)

Family size	Ezikhotheni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Less than 5 people	91	45.5	35	35
5-9 people	98	49	45	45
10-14 people	11	5.5	18	18
15 and above	0	0	2	2
Total	200	100	100	100

### 5.3 The Management of Community Resources by Community Members

The main concern for this study is management of community resources, in particular community forests by community members. Community members in this case include individuals, traditional authorities (headman, inner council and ward elders' members), NRMC members, as well as Individual chiefdom councillors (*Bucopho*).

#### 5.3.1 Community meetings and the management of community forests

Considering that management of resources by a group of people requires agreements, it is essential that they meet and agree on how to execute their management responsibilities. It is for that reason that heads of households were asked on whether they hold meetings to deliberate on issues pertaining to management of community forests in their chiefdoms or not. From the findings, it emerged that most heads of households in both chiefdoms (64.5% at Ezikhotheni and 86% at Ngcayini) indicated that they do not hold meetings to deliberate on issues relating to management of community forests. On the other hand, 35% of the heads of households at Ezikhotheni and 14% at Ngcayini pointed out that there were meetings held to discuss issues pertaining to management of community forests. Finally, 0.5% of the heads of households at Ezikhotheni stated that they lacked knowledge regarding meetings held to discuss issues relating to management of community forests. At

this point it must be mentioned that most people generally do not attend community meetings, hence they are normally not privy to information relating to issues deliberated on in such gatherings.

From the point of view of community leaders, holding of meetings with community members to discuss issues pertaining to management of community forests in the chiefdoms is not common. For instance, 90.9% of the community leaders at Ezikhotheni and 63.6% at Ngcayini pointed out that they do not hold meetings with community members to deliberate on issues relating to management of community forests. On the other hand, 9.1% of the community leaders at Ezikhotheni and 36.4% at Ngcayini revealed that they do hold meetings with community members to deliberate on issues relating to management of community forests. In general, it is clear that only a few community members normally participate in decision-making concerning the management of community forests. In turn, this has a bearing on adherence to those decisions.

With respect to the level of significance of the findings regarding holding community meetings to discuss issues pertaining to management of community forests, a chi-square ( $\chi^2$ ) test  $p$  value of 0.000 is attained. Therefore, there is a high level of significance in the difference between the chiefdoms regarding holding community meetings to deliberate on issues pertaining to management of community forests. This, in turn reflects that the frequency of holding community meetings varies between chiefdoms.

Regarding gender dynamics in the meetings, the findings reflect that there was poor attendance by males and good attendance by females. For instance, 95.7% of the heads of households at Ezikhotheni and 85.7% at Ngcayini indicated that there was poor attendance in community meetings by males (Figure 5.3). On the other hand, 98.6% of the heads of households at Ezikhotheni and 85.7% at Ngcayini indicated that there was good attendance in community meetings by females (Figure 5.3). This means that in most decisions that are made during community meetings women have a stake, which is a good practice considering the call for women empowerment and gender equity. From the community leaders' viewpoint, attendance by community members in community meeting was good at Ezikhotheni (100%) and poor at Ngcayini (100%).



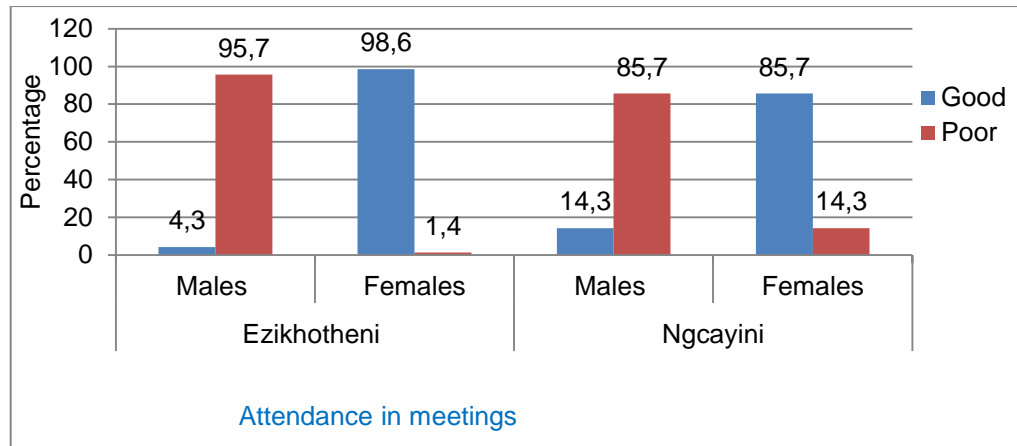


Figure 5.3: State of attendance in community meetings by gender in the case study sites

With respect to the level of significance of the findings regarding attendance by males and females in community meetings, the chi-square ( $\chi^2$ ) test yields a  $p$  value of 0.149 for males and 0.018 for females. The  $p$  value for males of 0.149 indicates that there is no significant difference between the chiefdoms regarding attendance in community meetings by males. On the other hand, the  $p$  value of 0.018 denotes a significant difference between the chiefdoms in relation to attendance in community meetings by females.

There were reasons advanced for good and poor attendance by males and females in community meetings. For poor attendance by males the reasons include: wage-based employment; that men do not like meetings but like alcohol; and that most men are reluctant to involve themselves in development issues; as well as that most households are female-headed. On the other hand, good attendance by males in community meetings was attributed to that they are leaders and thus have to guide development. With respect to females, good attendance in community meetings was attributed to that most women are housewives and thus not employed. Other reasons include: that there are more females in the community than males, as well as that females generally like development. On the other hand, the marginally poor attendance by females was attributed to that women push men to meetings whilst they are busy with domestic chores. According to community leaders, poor attendance in community meetings by community members was attributed to men being away on wage-based employment. On the other hand, good attendance was due to that people want to hear things for themselves for ease of understanding.

The study also invoked the issue of the nature of participation of males and females in community meetings. The findings generally indicate that both males and females were actively participating during meeting proceedings. For instance, 100% of the heads of households at Ezikhotheni and at Ngcayini unanimously indicated that males actively participate during meeting proceedings. Likewise, females actively participated both at Ezikhotheni (98.6%) and at Ngcayini (92.9%). Thus, it was 1.4% of the heads of households at Ezikhotheni and 7.1% at Ngcayini who pointed out that, females participated passively during meeting proceedings. The reason for passive participation of females at Ezikhotheni was mainly that most of them arrived in the area through marriage so they do not have information on the community forests. At Ngcayini, females argued that they are not responsible for harvesting community forests. In general, active participation of community members in community meetings reflects that they are responsible for most of the decisions made regarding the management of community forests in the respective chiefdoms. Also, active participation demonstrates knowledge on the issues deliberated on, which indicate equitable exposure to training across gender.

The reasons advanced for active participation of males during meeting proceedings include that: they have agricultural and forestry knowledge (72.8% at Ezikhotheni and 50% at Ngcayini) (Table 5.3a). This is mainly because all along there was a prevalence of gender inequality where males had more opportunities (for example in education) than females. Nonetheless, with the advent of women empowerment advocating for gender equity there is now a paradigm shift such that there are now almost equal opportunities across gender in all spheres of life. Moreover, 10% of the heads of households at Ezikhotheni and 14.3% at Ngcayini argued that males actively participate during meeting proceedings because they are interested in the success of the project (Table 5.3a). Furthermore, from the viewpoint of heads of households (8.6% at Ezikhotheni and 35.7% at Ngcayini) males were leaders and thus responsible for guiding development (Table 5.3a). According to 8.6% of the heads of households at Ezikhotheni, males were also active participants because they need the forest resources for construction purposes. Indeed in the ideal household setting, cutting logs for construction purposes is a domestic chore for males, with females concerned about

gathering fuel wood and collecting water. Nonetheless, there are cases where females carry out all the chores due to absence or indolence of males or vice versa.

Table 5.3a: Reasons for active participation of males during meeting proceedings

Reasons for active participation	Ezikhotheni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Interested in the success of the project	7	10	2	14.3
Have agricultural and forestry knowledge	51	72.8	7	50
They are leaders and thus have to guide development	6	8.6	5	35.7
They need the forest resources for construction purposes	6	8.6	0	0
Total	70	100	14	100

Females on the other hand, actively participate during meeting proceedings because they like development (58% at Ezikhotheni and 23.1% at Ngcayini) and also that; they are key stakeholders in forest maintenance as they get firewood (14.5% at Ezikhotheni and 15.4% at Ngcayini) (Table 5.3b). It is however, worth noting that 27.5% of the heads of households at Ezikhotheni highlighted that women are affected by a shortage of fuel wood (Table 5.3b). This is mainly because unlike at Ngcayini, at Ezikhotheni the so-called free-access natural forests are scarce. Even those which exist are not actually forests but woodlands dominated by scattered shrubs not trees.

Therefore, those who do not have individual homestead woodlots/forests rely on buying forest resources. Furthermore, at Ngcayini 61.5% of the heads of households averred that women are normally active participants during meeting proceedings because they always want to get clarity on issues (Table 5.3b). There were some heads of households who indicated that females were normally passive during meeting proceedings. This was attributed to that most of them arrived at Ezikhotheni through marriage so they do not have information on the community forests, while at Ngcayini females are not responsible for harvesting community forests. Community leaders ‘perspective on community members

‘participation was that they actively participate in order to ensure understanding and success of the projects.

Table 5.3b: Reasons for active participation of females during meeting proceedings

Reasons for active participation	Ezikhothereni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
They are affected by a shortage of fuel wood in the community	19	27.5	0	0
They like development	40	58	3	23.1
They are key stakeholders in forest maintenance and they get firewood	10	14.5	2	15.4
They always want to get clarity on issues	0	0	8	61.5
Total	69	100	13	100

The study also raised issues pertaining to attendance by community leaders/traditional authorities in meetings convened to deliberate on issues relating to management of community forests. On this note, the findings indicate that community leaders duly attended (84.3% at Ezikhothereni and 100% at Ngcayini). Therefore, it was 15.7% of the heads of households at Ezikhothereni who were not affirmative to community leaders’ attendance in community meetings. Noteworthy, all the heads of households who affirmed community leaders’ attendance in community meetings unanimously avowed that they actively participate (100% at Ezikhothereni and at Ngcayini). Reasons advanced for active participation include that: they like development (40.7% at Ezikhothereni and 7.1% at Ngcayini); they are project owners and responsible for guiding further development of the project (59.3% at Ezikhothereni and 14.3% at Ngcayini); as well as sources of information and therefore responsible for educating community members at Ngcayini (78.6%). Portraying community leaders as sources of information is significant as it indicates that whenever they have an opportunity for being trained they relay the information to the community members. This is a sustainable practice in as far as management of resources is concerned.

Community leaders' responses were not deviating from the views of the heads of households. For instance, community leaders from both chiefdoms unanimously agreed that they attend community meetings held for deliberating on issues pertaining to management of community forests. Likewise, during these meetings the community leaders participate actively mainly to ensure success of the projects and because they are responsible for training the community members. Notably, the training of community members by community leaders which was raised by heads of households was also confirmed by the community leaders themselves.

### **5.3.2 The role of community members in the management of community forests**

Ideally, community members have a role to play in management of community resources; hence management of community forests at Ezikhotheni and at Ngcayini is not an exception. From the findings, it emerged that most of the heads of households in both chiefdoms did not know the role of males in management of community forests (33.5% at Ezikhotheni and 71% at Ngcayini) (Table 5.4a). Likewise, 33.5% of the heads of households at Ezikhotheni and 79% at Ngcayini indicated that they do not know the role of females in management of community forests (Table 5.4b). Lack of knowledge on gender roles in the management of community forests stems from poor attendance in community meetings. Nonetheless, at Ezikhotheni, 24.5% of the heads of households pointed out that, males were responsible for pruning and harvesting (Table 5.4a), while 22.5% indicated that females were also responsible for pruning and harvesting (Table 5.4b). Contrariwise, at Ngcayini, 13% of the heads of households pointed out the males were responsible for reporting any illegal activities carried out in the forest to community leaders (Table 5.4a), while 11% indicated that females were liable to collect only dry wood for fuel wood (Table 5.4b).

Table 5.4a: The role of males in management of community forests in the study sites

Role of males	Ezikhothereni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Pruning, mending fence and harvesting	19	9.5	0	0
Planting, pruning and making fire breaks	11	5.5	0	0
Pruning and harvesting	49	24.5	1	1
Pruning, mending fence and making fire breaks	15	7.5	1	1
Pruning and mending fence	7	3.5	0	0
Planting, pruning and harvesting	28	14	0	0
Planting and fencing	4	2	2	2
Reporting any illegal activities carried out in the forest to community leaders	0	0	13	13
Do not know	67	33.5	71	71
Attending meetings in order to comply with rules governing community forests	0	0	3	3
Selective harvesting of forest resources in natural forests	0	0	6	6
Destruction of alien invasive plant species	0	0	3	3
Total	200	100	100	100

From the community leaders' point of view, the roles of males and females were similar as those highlighted by heads of households. For instance, exclusively at Ngcayini, males and females were responsible for reporting illegal activities carried out in the forest to community leaders, as well as attending community meetings in order to comply with rules governing community forests. At Ezikhothereni on the other hand, the roles and responsibilities of males and females include: planting, pruning, mending fence, making fire breaks and harvesting.

Table 5.4b: The role of females in management of community forests in the study sites

Role of females	Ezikhothereni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Pruning, mending fence and harvesting	17	8.5	1	1
Planting, pruning and making fire breaks	14	7	0	0
Pruning and harvesting	45	22.5	1	1
Pruning, mending fence and making fire breaks	13	6.5	0	0
Pruning and mending fence	4	2	0	0
Planting, pruning and harvesting	10	5	0	0
Planting and fencing	3	1.5	1	1
Pruning	9	4.5	0	0
Reporting any illegal activities carried out in the forest to community leaders	0	0	5	5
Do not know	67	33.5	79	79
Attending meetings in order to comply with rules governing community forests	0	0	2	2
Watering, pruning and harvesting	18	9	0	0
Collecting only dry wood for fuel wood	0	0	11	11
Total	200	100	100	100

Regarding the level of significance of the findings on the roles of males and females in management of community forests, the chi-square ( $\chi^2$ ) test yield a *p* value of 0.000 for males and 0.000 for females. This denotes that there is a high level of significance in the difference between the chiefdoms concerning the roles of males and females in management of community forests.

Despite the noted disparity between the chiefdoms regarding gender roles in the management of community forests, there were no differences in the activities executed by males and females in the chiefdoms. This demonstrates that the society embraces gender equity.

### **5.3.3 Training of community members on the management of community forests**

The study also ventured on investigating issues regarding training of community members on the management of community forests. In the preceding section on attendance in community meetings, it transpired that community leaders have a responsibility of educating community members on the management of community resources. The findings reveal that a majority of the heads of households (59% at Ezikhotheni and 66% at Ngcayini) stated that community members were not trained. On another note, 17% of the heads of households at Ezikhotheni and 15% at Ngcayini indicated that they do not know whether community members were trained or not. Therefore, 24% of the heads of households at Ezikhotheni and 19% at Ngcayini indicated that community members were trained.

Among the community leaders it emerged that 63.6% at Ezikhotheni and 36.4% at Ngcayini affirmed that there is training afforded to community members. It must however, be noted that 27.3% of the community leaders at Ezikhotheni and 63.6% at Ngcayini revealed that there was no training for community members on management of community forests. It was just 9.1% of the community leaders at Ezikhotheni who claimed lack of knowledge on whether community leaders were trained or not. Once again, inability to attend in community meetings deprives community members of privileges such as training on the management of community resources.

Regarding who train community members, a number of institutions were identified. These include internal (from within the community) and external organizations (from outside the community). Institutions from within the community included the Natural Resource Management Committee (NRMC) at Ezikhotheni (2.1%) and inner council members at Ngcayini (94.7%) (Table 5.5). External organizations included Non-Governmental Organizations (NGOs) (45.8%) and the Forestry Department in the MTEA (35.4%) at Ezikhotheni, and the University of Swaziland (5.3%) at Ngcayini (Table 5.5). From these findings it can be deduced that traditional authorities/community leaders are more active in the management of resources at Ngcayini compared to Ezikhotheni. Moreover, the visibility of the University of Swaziland at Ngcayini is mainly through the Geography,



Environmental Science and Planning Society (UNIGEPS) which has rendered community service in the area through planting trees in an effort to control land degradation. At Ezikhotheni, the findings reveal that NGOs are more active in the area compared to Ngcayini. This is justified considering the size of Ezikhotheni chiefdom and the severity of land degradation.

Table 5.5: Institutions responsible for training community members on management of Forest resources

Institution responsible for training	Ezikhothereni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Natural Resource Management Committee	1	2.1	0	0
Non-Governmental Organizations	22	45.8	0	0
Forest department from MTEA	17	35.4	0	0
Swaziland Environment Authority	1	2.1	0	0
Inner council members	0	0	18	94.7
Non-Governmental Organizations and Forest department	2	4.2	0	0
Agriculture extension officers	1	2.1	0	0
Forest department from MTEA and Agriculture extension officers	2	4.2	0	0
Forest department from MTEA and SEA	2	4.2	0	0
University of Swaziland	0	0	1	5.3
Total	48	100	19	100

Community leaders echoed the views of heads of households regarding institutions responsible for training community members. For instance, community leaders at Ngcayini pointed out, that community members were trained by inner council members and Rural Development Areas (RDAs). According to the community leaders at Ezikhotheni, community members were trained by NRMCS and NGOs.

In terms of the specific area of training, the findings indicate that it include: forest management (41.7% at Ezikhotheni and 15.8% at Ngcayini); causes and ways of

preventing soil erosion (35.4% at Ezikhotheni and 10.5% at Ngcayini); importance of trees/forests to human beings and animals (20.8% at Ezikhotheni and 5.3% at Ngcayini); and fire prevention, unnecessary cutting of trees and procedures on how to access resources in planted community forests (2.1% at Ezikhotheni and 68.4% at Ngcayini). On the other hand, community leaders identified specific areas of training which include: forest conservation and forest management; causes and ways of preventing soil erosion; importance of trees/forest to human beings and animals; fire prevention, as well as unnecessary cutting of trees and procedures on how to access resources in planted community forests.

The study also investigated the frequency of the training received by community members. The findings reflect that the frequency varied from, one chiefdom to the other. For instance, at Ezikhotheni, training was more frequent during the early stages of the project (tree planting) (81.2%), whereas at Ngcayini it was conducted during community meetings (57.9%) (Figure 5.4). From the community leaders' perspective, community members were trained once after planting trees in both chiefdoms. At Ngcayini, community members were trained after every two to three months, every weekend when there is a community meeting and whenever there is a need.

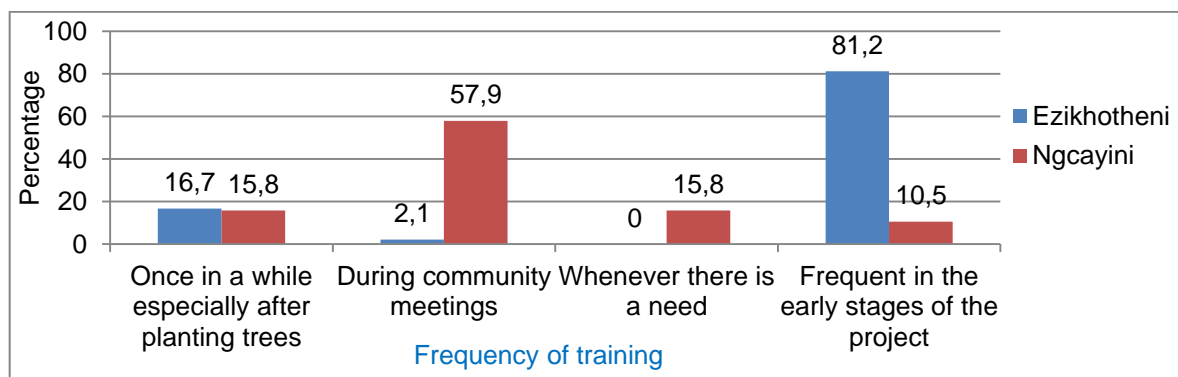


Figure 5.4: Frequency of training for community members in the case study sites

When applying the chi-square ( $\chi^2$ ) test on the findings on the specific area of training offered to community members to establish the level of significance, it yields a  $p$  value of 0.000. This symbolizes that there is a high level of significance in the difference between

the chiefdoms with reference to the nature of training offered to community members in management of community forests.

#### **5.3.4 Community participation in the management of community forests**

The study explored whether community members were motivated to participate in the management of community forests or not. From the findings, it is evident that there was uncertainty on this issue. For instance, 50% of the heads of households at Ezikhotheni, and 12% at Ngcayini indicated that community members were motivated to participate in the management of community forests. On the other hand, 32.5% of the heads of households at Ezikhotheni, and 49% at Ngcayini specified that community members were not motivated to participate. Further 17.5% of the heads of households at Ezikhotheni, and 39% at Ngcayini signposted a dearth of knowledge on the issue. Community members' motivation was attributed to that the project benefits the entire community (97% at Ezikhotheni and 91.7% at Ngcayini), and that inner council members fine all those who fail to participate in community forest activities (3% at Ezikhotheni and 8.3% at Ngcayini). Indeed, benefits derived from a project are an incentive for enhanced participation, hence sustainability of the project.

Community leaders' were probed on what they do to encourage community members 'participation in the management of community forests. The findings reveal that, it was mainly encouraging community members to comply with the community forest rules (54.5% at Ngcayini) and encouraging community members' participation in the project during community meetings (45.4% at Ezikhotheni) (Table 5.6).

Applying the chi-square ( $\chi^2$ ) test on the findings on community members' motivation to participate in the management of community forests to establish the level of significance, a  $p$  value of 0.00 is obtained. This reflects that there is a high level of significance in the difference between the chiefdoms with reference to community members' motivation to participate in the management of community forests. In spite of the noted disparity in the chiefdoms, it is clear that as long as people benefit from a project their participation is guaranteed.

Table 5.6: Strategies used by community leaders to encourage community members to participate in the management of community forests

Strategies employed by community leaders'	Ezikhotheni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Nothing due to fear of conflicting with NRMC	1	9.1	0	0
Assisting the NRMC by organizing people to work on the project	1	9.1	0	0
Participating in all community projects work and encouraging others	2	18.2	1	9.1
Encouraging community members' participation in the project during community meetings	5	45.4	0	0
Summoning and encouraging community members who do not participate in community projects	1	9.1	1	9.1
Organizing community meetings and encouraging people to participate in community projects	1	9.1	0	0
Nothing since there are no community forests meetings where people can be trained	0	0	3	27.3
Encouraging community members to comply with the community forest rules	0	0	6	54.5
Total	11	100	11	100

### 5.3.5 Role of Natural Resource Management Committees (NRMCs) in the management of forest resources

The study investigated the role of Natural Resource Management Committees (NRMCs) in the management of forest resources in the study sites. The findings reveal that 66.5% of the heads of households at Ezikhotheni and 5% at Ngcayini confirmed existence of NRMCs in their chiefdoms (Table 5.7). Therefore, 33% of the heads of households at Ezikhotheni and 95% at Ngcayini indicated non-existence of NRMCs in their chiefdoms (Table 5.7).

Finally, there was 0.5% of the heads of households at Ezikhotheni who disclosed lack of knowledge on existence of a NRMCM in the chiefdom (Table 5.7). This could be due to non-attendance in community meetings and failure to participate in development projects among some community members. On the other hand, it could also be due to inefficiency of the NRMCMs in executing their responsibilities, thus compelling community members to render it non-existing.

Table 5.7: Respondents' knowledge about existence of a Natural Resource Management Committee (NRMCM) in the chiefdom

Respondents' knowledge about existence of a Natural Resource Management Committee (NRMCM)	Ezikhotheni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Yes	133	66.5	5	5
No	66	33	95	95
Do not know	1	0.5	0	0
Total	200	100	100	100

Where a NRMCM exists, respondents indicated that it was established at the early stages or inception of the project (90.2% at Ezikhotheni and 20% at Ngcayini). Therefore, the other respondents disclosed lack of knowledge regarding when the committees were established. Lack of such knowledge is often solely due to that, community members do not keep records of events. In terms of who established the NRMCMs in the chiefdoms, 92.5% of the heads of households at Ezikhotheni were of the view that it was instituted by community members in collaboration with NGOs. At Ngcayini on the other hand, 80% of the heads of households pointed out that it was initiated by community members in collaboration with a Rural Development Area committee. The most impressive facet in the formation of the NRMCMs is the involvement of community members. This indicates that the concept of a NRMCM was not imposed on community members rather it evolved amongst them. There were however, respondents who claimed lack of knowledge regarding who established NRMCMs in their chiefdoms, and they comprised 7.5% at Ezikhotheni and 20% at Ngcayini.

The roles and responsibilities of NRMCM members in the management of community forests are mainly management and protection of community forests. For instance, at Ngcayini all

the respondents (100%) mentioned that the NRMC is responsible for management and protection of community forests. At Ezikhotheni, the NRMC is responsible for management and protection of community forests and the funds generated (85.7%), as well as organizing people to work in community forests activities (14.3%). Community leaders were also engaged on the same subject of the roles and responsibilities of NRMC members in the management of community forests.

According to community leaders, the major responsibility of the NRMCs in both chiefdoms is to lead in forest related activities as well as protecting the forests (54.5% at Ezikhotheni and 9.1% at Ngcayini) (Figure 5.5). It must be noted that 90.9% of the heads of households at Ngcayini lacked knowledge on the roles and responsibilities of the NRMC. This is primarily because the NRMC in this chiefdom was not as active as it was the case at Ezikhotheni. Moreover, the community members had generally lost trust in the NRMC as they believed that it conspired with illegal harvesters for its own selfish ends. In the case of Ezikhotheni, it was gathered that there is a forest that was planted by *Yonge Nawe* "You too must conserve." in an effort to control land degradation, however it is not managed by the NRMC but overseen by an individual on behalf of the Chief (Plate 5.1).

It is important to note that the NRMC when executing its roles and responsibilities in the management of community forests also involves community members. This is crucial for enlisting the support of community members in management activities and ensuring sustainability of the resources concerned. Therefore, community members were probed to indicate whether or not the NRMCs encourage community participation. From the findings, it is evident that indeed the NRMCs encourage community participation in the course of executing their roles and responsibilities in the management of community forests (78.9% at Ezikhotheni and 80% at Ngcayini).

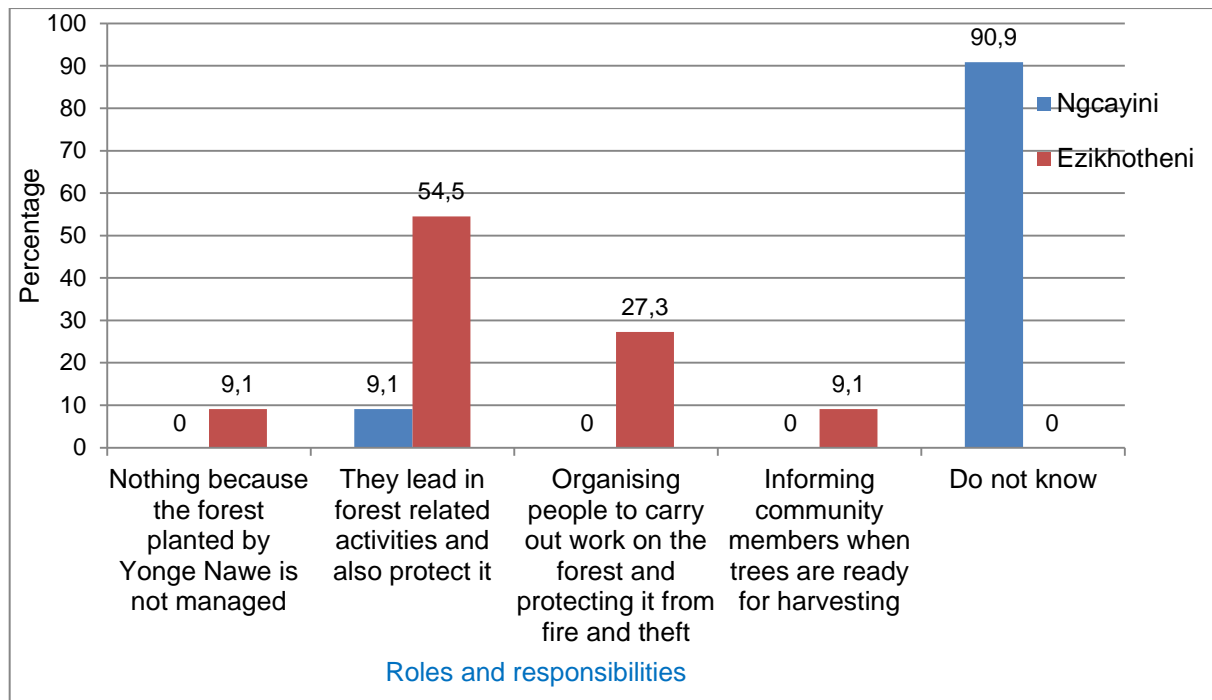


Figure 5.5: Perceived roles and responsibilities of the NRMC members in the management of community forests in the studied chiefdoms



Plate 5.1: A plantation-style community forest planted by *Yonge Nawe* at Ezikhotheni  
Source: Google Earth (2017)

There were however, negative responses from 21.1% of the heads of households at Ezikhotheni and 20% at Ngcayini. When asked on which roles and responsibilities were community members encouraged to participate, it transpired that involvement was in all

activities pertaining to the community forests. This demonstrates good leadership qualities where stakeholders are made to be part and parcel of the management of their community's resources. Once again, this is an incentive towards sustainable management of resources in general.

Despite that the NRMCS were commended for involving community members in all activities pertaining to the community forests, however there was a lack of consultation with community members. This was particularly the case at Ezikhotheni, where for instance 82% of the heads of households decried that the NRMCS does not consult with community members, with 18% indicating that there was consultation. This may be due to the fact that Ezikhotheni chiefdom is large with the forests concentrated on one side of the chiefdom, therefore communication is a problem. For instance, in the course of data collection it also transpired that the size of the chiefdom was a challenge even when it comes to attendance in general community meetings, such that in most instances distant community members did not show up. This was attributed to inability to receive invitations on time, as well as issues of mobility since the chiefdom also comprises farms, and there is a lack of public and private transport to ferry community members to and from meetings. At Ngcayini however, 80% of the respondent acceded to that there was consultation, with 20% pointing out lack of consultation with community members.

When asked on the specific areas of consultation, where NRMCS consults with community members it emerged that it occurs in all activities pertaining to the community forests (100% at Ngcayini and 33.3% at Ezikhotheni). Moreover, at Ezikhotheni there was also consultation on what could be the convenient days for carrying out forest activities (66.7%). Just like encouraging participation and ensuring equitable distribution of benefits, consultation with community members in any project is a crucial incentive for its sustainability.

Applying the chi-square ( $\chi^2$ ) test on the findings on the roles and responsibilities of the NRMCS members in the management of community forests at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.000 is obtained. This reflects that there is a high level of significance in the difference between the chiefdoms with



reference to the roles and responsibilities of the NRMC members in the management of community forests at Ezikhotheni and Ngcayini chiefdoms.

Just like other stakeholders NRMC members must be afforded training so that they could execute their duties in a satisfactory manner. It was on those bases that the study ventured into investigating whether NRMC members were trained on management of community forests and the control of land degradation. The findings reflect mixed feelings on this issue. For instance, 70.7% of the heads of households at Ezikhotheni and 20% at Ngcayini indicated that there was training for NRMC members on management of community forests and the control of land degradation (Figure 5.6a). The other heads of households either pointed out that there was no training for NRMC members or that they lacked knowledge on this issue.

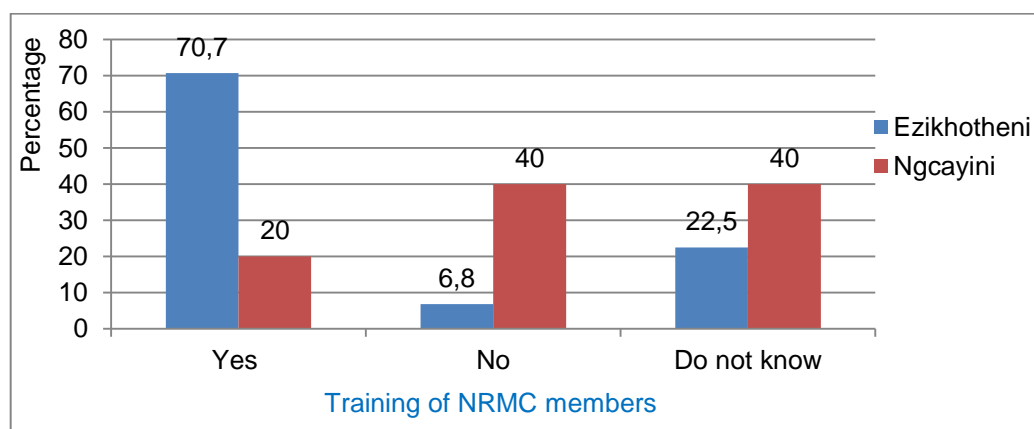


Figure 5.6a: Heads of households' views regarding training of the NRMC members on the management of community forests and the control of land degradation in the studied chiefdoms

Information concerning training of NRMC members was also solicited from community leaders, who shared almost the same sentiments as the heads of households. For instance, 90.9% of the community leaders at Ezikhotheni and none (0%) at Ngcayini acknowledged that there was training for NRMC members (Figure 5.6b). Therefore, a majority of the community leaders at Ngcayini (72.7%) were of the view that there was no training afforded to NRMC members on management of community forests and the control of land degradation (Figure 5.6b). This indicates that there is a precarious lack of training for

NRMC committee members, something which is likely to jeopardize sustainable forest resource management. Further on that, lack of training for NRMC members implies lack of training for community members, which means ‘the blind are leading the blind’. This act is a recipe for disaster in as far as resource management is concerned. Also, considering that the relationship between community leaders and the NRMC was not amicable at Ngcayini it may have influenced former’s responses on issues pertaining to the latter.

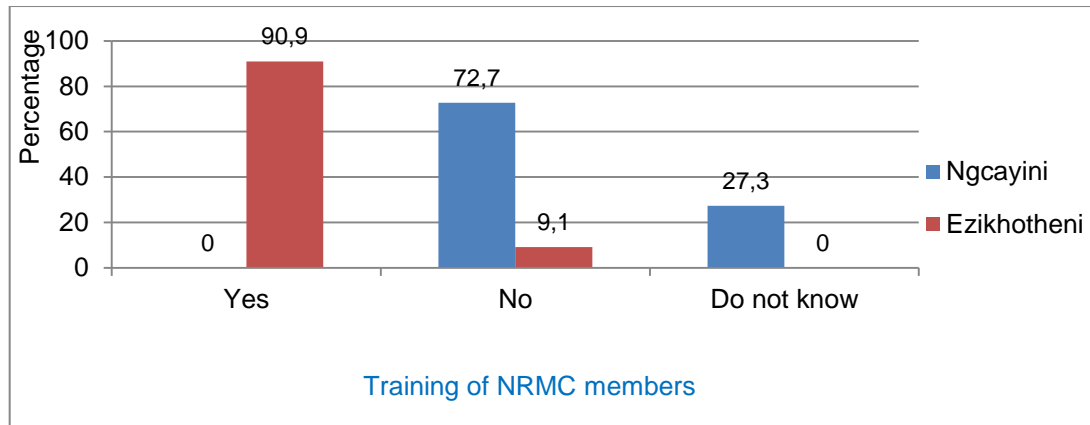


Figure 5.6b: Community leaders’ views regarding training of the NRMC members on the management of community forests and the control of land degradation in the studied chiefdoms

Since NRMC members received training on management of community forests and the control of land degradation, it was of interest to find out if the knowledge is relayed to the rest of the community members. On that note, the findings exposes that 100% of the heads of households at Ngcayini and 59.6% at Ezikhotheni acceded to that, NRMC members pass on the knowledge they receive in training to the rest of the community members. Then 40.4% of the heads of households from Ezikhotheni decried that, NRMC members do not relay the knowledge they receive in training to the rest of the community members. As noted earlier on, this could be due to the size of the chiefdom which makes communication to be somehow difficult. Regarding community leaders’ views on disseminating knowledge acquired in training to the rest of the community members 80% indicated that it was done at Ezikhotheni. As noted earlier on, community leaders indicated that NRMC members were not trained at Ngcayini. Thus, it was 20% of the community leaders at Ezikhotheni who indicated that NRMC members were not transmitting the knowledge acquired in training to the rest of the community members.

Regarding the mode of transmission of the knowledge received in training by NRMC members to the rest of the community members, the findings depict that at Ezikhotheni it was during; community forest activities (64.3%), general community meetings (28.6%), and special meetings for addressing issues related to community projects (7.1%). From the perspective of community leaders, dissemination of knowledge to community members by trained NRMC members was through oral presentations made during community forest activities and community meetings.

When applying the chi-square ( $\chi^2$ ) test on the findings on training of NRMC members on management of community forests and the control of land degradation at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.011 is obtained for the heads of households and a  $p$  value of 0.000 for community leaders. These values reflect that there is a high level of significance in the difference between the chiefdoms with reference to the training of NRMC members on management of community forests and the control of land degradation.

### **5.3.6 Roles and responsibilities of the traditional authorities in the management of community forests**

The study would not have done justice without establishing the roles and responsibilities of traditional authorities (inner council and ward elders' members, headman and the Chief) in the management of community forests. It is important to note that inner council and ward elders' members normally work together as a team in executing their roles and responsibilities. This is because their mandates are overlapping in that as community leaders they oversee the welfare of community members, which stretches from allocation of land to adjudication over civil cases. The headman on the other hand, is the leader of the inner council and ward elders' members, and thus directly answerable to the Chief. The Chief is the supreme authority in the community who is normally approached after exhausting all the structures. The Chief works hand in hand with the council of princes and princesses (*Bantfwabenhosi*). It must be mentioned that under normal circumstances the council of princes and princesses also advises the inner council and ward elders' members, and vice versa where necessary.

According to the heads of households the main roles and responsibilities of inner council and ward elders' members in the management of community forests at Ezikhotheni were organizing people to work on the project (28.5%), and disciplining people who cut wet trees for fuel wood and fruit trees (22.5%) (Figure 5.7a). At Ngcayini on the other hand, the major roles and responsibilities were disciplining people who harvest forest resources illegally (45%), and ensuring that anyone going to harvest forest resources is accompanied by a community police (21%) (Figure 5.7a). It is interesting to note that 26.5% of the heads of households at Ezikhotheni and 32% at Ngcayini expressed lack of knowledge on the roles and responsibilities of inner council and ward elders' members. This is typical of community members who do not pay tribute labour to their Chiefs (*kuhlehla*). Paying tribute labour involves attending community meetings as well as participating in royal kraal activities such as ploughing, planting, weeding, harvesting, and construction activities (huts, hut enclosure, kraals, maize cribs), as well as royal kraal ceremonies (*ummemo*).

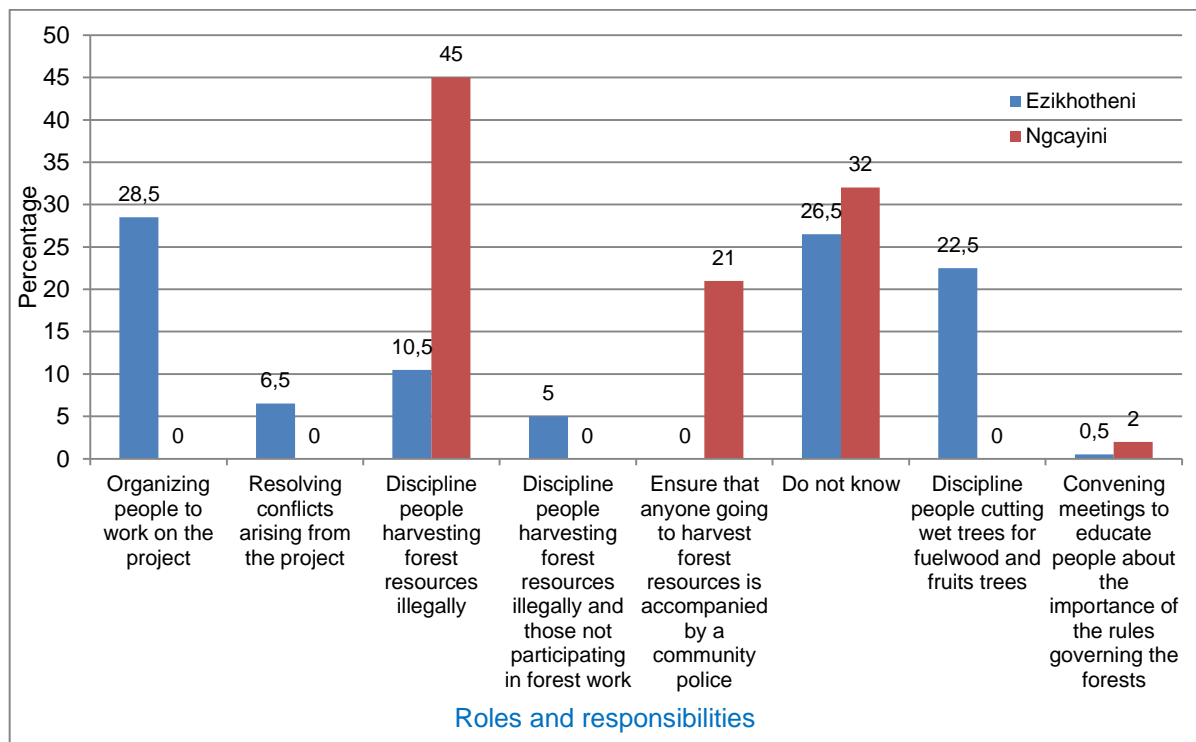


Figure 5.7a: Heads of households' views on the roles and responsibilities of inner council and ward elders' members in the management of community forests in the studied chiefdoms

From the point of view of community leaders themselves, roles and responsibilities of inner council and ward elders' members include; resolving conflicts arising from the community forest projects (36.4%) and organizing people to work on the projects (27.3%) at Ezikhotheni (Figure 5.7b). At Ngcayini, community leaders indicated that inner council and ward elders' members were mainly responsible for ensuring that anyone going to harvest forest resources is accompanied by a community police (63.6%) (Figure 5.7b).

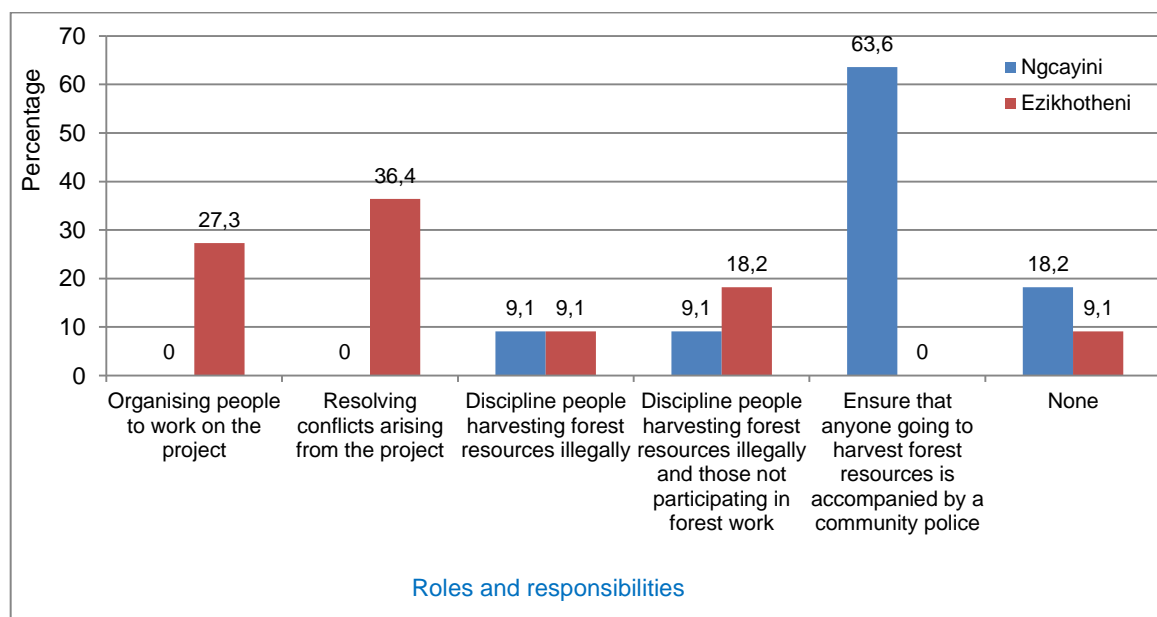


Figure 5.7b: Community leaders' views on the roles and responsibilities of inner council and ward elders' members in the management of community forests in the studied chiefdoms

There were community leaders who revealed that inner council and ward elders' members had no roles and responsibilities in the management of community forests. Such responses were more common from NRMC members. This is because NRMC members often perceived the participation of inner council and ward elders' members in the management of community forests as interference in their (NRMC members) sphere of influence (management of natural resources). Such a situation is very unhealthy in resource management since it reflects a conflict of interests, which normally instigates mismanagement of the resources concerned. The conflicts emanates from the fact that the concept of NRMCs is new, and the practice has been that overseeing management of natural resources was a prerogative of traditional authorities. This clearly indicates that

there is a need for a clear demarcation of leadership and responsibilities between NRMCs and traditional authorities in the respective chiefdoms.

In the case of Ngcayini, as already alluded to earlier on, NRMC members were perceived by traditional authorities as conspirators who were selling forest resources illegally. To attest to that, funds generated from the sale of forest resources were received by the headman, who then handed them over to the royal kraal for performing royal kraal duties. Noteworthy, the money was put into good use for the benefit of the community through buying a royal kraal stamp and its accessories. For instance, unlike in other chiefdoms at Ngcayini there is no stamp fee for documents that require the royal kraal stamp. Therefore as a researcher, I was also afforded the benefit of a free royal kraal stamp whereas at Ezikhotheni I paid fifty Emalangen (E50) for a royal kraal stamp.

When applying the chi-square ( $\chi^2$ ) test on the findings on the roles and responsibilities of inner council and ward elders' members in the management of community forests at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.000 is obtained for the heads of households and also a  $p$  value of 0.012 for community leaders. These values reflect that there is a high level of significance in the difference between the chiefdoms with reference to the roles and responsibilities of inner council and ward elders' members in the management of community forests.

As already alluded to earlier on that the headman is directly answerable to the Chief, in the event of absence of a substantive Chief, the headman executes most of the roles and responsibilities of the Chief. According to the heads of households, the headman is mainly responsible for disciplining people who illegally harvest forest resources (70% at Ngcayini and 22% at Ezikhotheni), as well as disciplining people who cut wet trees for fuel wood and fruit trees (Figure 5.8a). It is important to note that the headman has a role of convening meetings to educate people about the importance of the rules governing community forests (1% at Ezikhotheni and 6% at Ngcayini) (Figure 5.8a). This is a very important practice in as far as community development is concerned in general, and in management of natural resources in particular. This is more so because it encourages sharing of knowledge on various issues and thus leading to a common understanding of

issues in a community. Nonetheless, there were heads of households who claimed that they lacked information on the roles and responsibilities of the headman in the management of community forests (33.5% at Ezikhotheni and 12% at Ngcayini) (Figure 5.8a). Once again, such claims are typically associated with community members who neither attend community meetings nor participate in royal kraal activities.

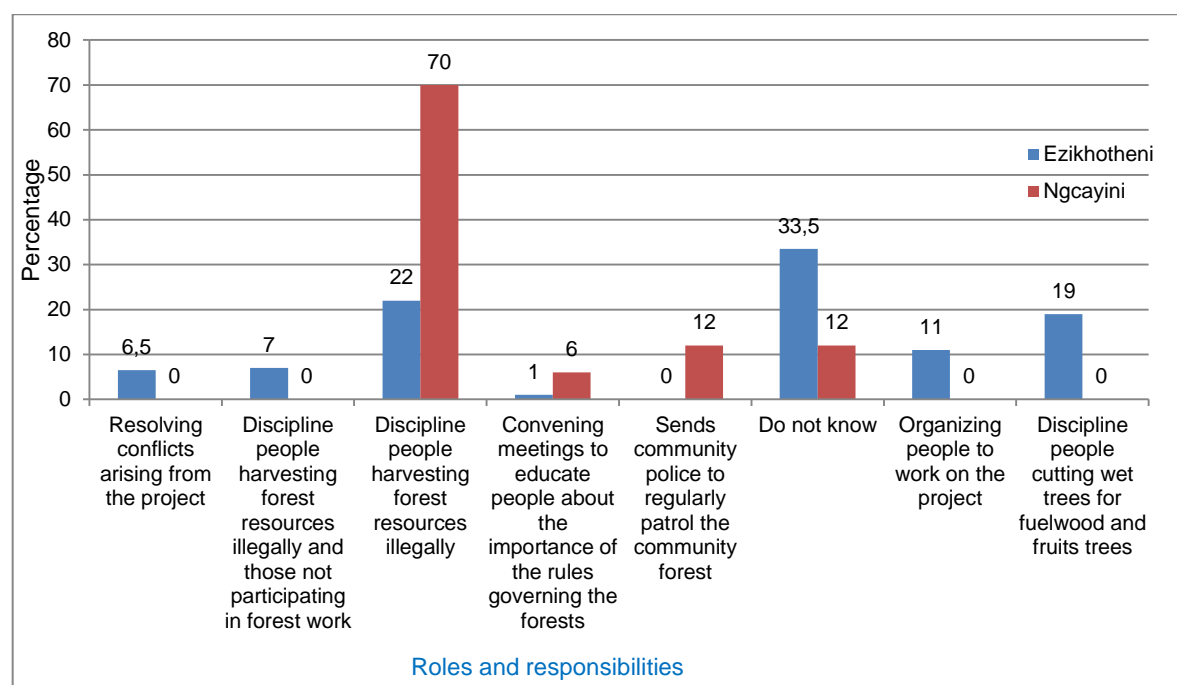


Figure 5.8a: Heads of households' views on the roles and responsibilities of the headman in the management of community forests in the case study sites

Regarding the perspective of community leaders on the roles and responsibilities of the headman in the management of community forests, the findings indicate that there were two major roles. These were resolving conflicts arising from the project (63.6% at Ezikhotheni) and sending community police to regularly patrol the community forest (54.5% at Ngcayini) (Figure 5.8b). Disciplining people who illegally harvest forest resources also feature prominently in the findings. Just like in the case of heads of households, there were community leaders who claimed that there were no roles and responsibilities of the headman in the management of community forests. Likewise, these viewpoints are associated with NRMC members who felt threatened by the involvement of traditional authorities in the management of natural resources in general and community forests in particular.

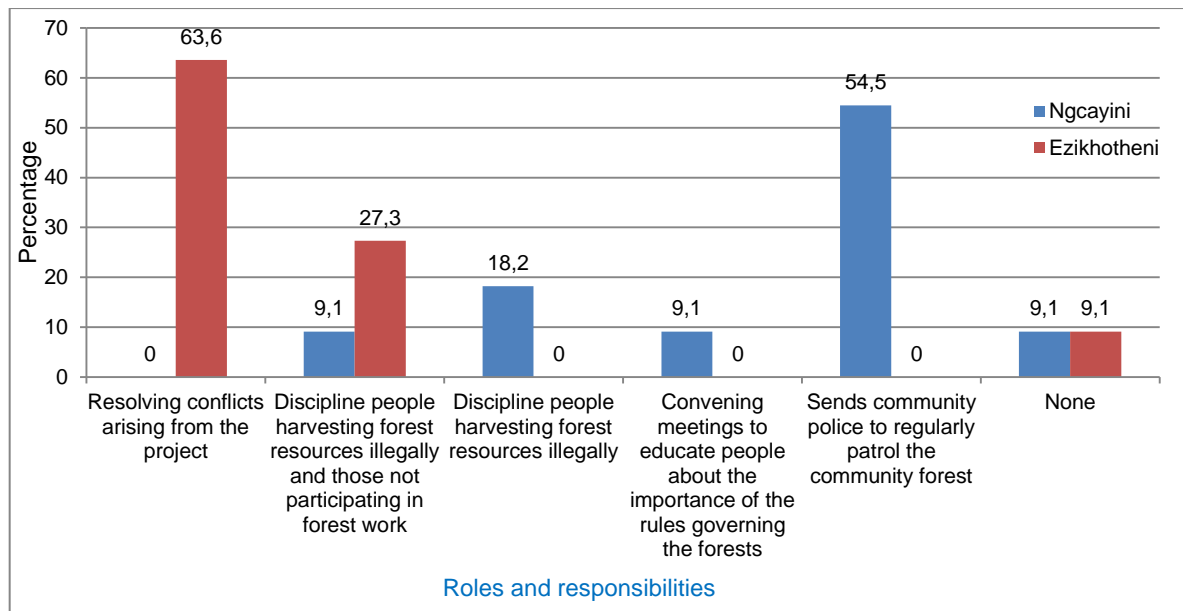


Figure 5.8b: Community leaders' views on the roles and responsibilities of the headman in the management of community forests in the case study sites

Applying the chi-square ( $\chi^2$ ) test on the findings on the roles and responsibilities of the headman in the management of community forests at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, yield a  $p$  value of 0.000 for the heads of households and a  $p$  value of 0.004 for community leaders. These values reflect that there is a high level of significance in the difference between the chiefdoms with reference to the roles and responsibilities of the headman in the management of community forests.

With respect to the roles and responsibilities of the Chief in the management of community forests, it must be noted that there was no substantive Chief at Ngcayini. Therefore, both the heads of households and community leaders indicated that there were no roles and responsibilities for the Chief in the management of community forests. At Ezikhotheni, it emerged from 1.5% of the heads of households that the Chief was responsible for overseeing all developments in the community. Otherwise a majority of the heads of households (93.5%) claimed a lack of knowledge regarding the roles and responsibilities of the Chief in the management of community forests. Finally, 5% of the heads of households declared that there were no roles and responsibilities for the Chief in the management of community forests.



Just like in the case of heads of households, from the community leaders' perspective the Chief is responsible for overseeing all developments in the community (9.1% at Ezikhotheni). Similarly, there were also community leaders who were of the view that the Chief does not have a role and responsibility in the management of community forests (90.9% at Ezikhotheni). It must be noted that this is mainly because, culturally a Chief rarely shows up in community meetings as well as infrequently participates in royal kraal and community activities. Therefore, to most people Chiefs are regarded as hermits, and people are normally afraid of them. Basing on the respect accorded to Chiefs, I believe this is intentionally aimed at earning them a higher level of respect from community members.

## **5.4 Assistance received from NGOs in the Management of Forest**

### **Resources by the Respective Chiefdoms**

Non-Governmental Organizations (NGOs) are generally the main engines driving developments in most countries worldwide. The assistance rendered by NGOs touches all aspects of physical and human resource development. For instance, they assist in agricultural production, infrastructure development (schools, roads, bridges, fencing of rangelands, homesteads for the needy, church structures, water supply, rain water harvesting), as well as food aid. They also have a niche in forest development and in controlling land degradation. Findings from the heads of households indicate that, there are NGOs assisting in forest development and in controlling land degradation at Ezikhotheni (67%) and at Ngcayini (9%). Some heads of households however, negated the presence of NGOs in their chiefdoms (33% at Ezikhotheni and 91% at Ngcayini).

Regarding the NGOs which were assisting in the chiefdom in terms of forest development and in controlling land degradation, the findings from the heads of households and community leaders indicate that they include; *World Vision* and Japan International Cooperation Agency (JICA), which featured most in both chiefdoms. Other NGOs include *Yonge Nawe* and *Conserve Swaziland*. It must be noted that *Yonge Nawe* was also involved in the planting of trees in an effort to control land degradation, especially at Ezikhotheni but the forest is not managed as a community forest, since it is overseen by an individual on behalf of the Chief. This situation is worsened by the fact that *Yonge Nawe* ceased its

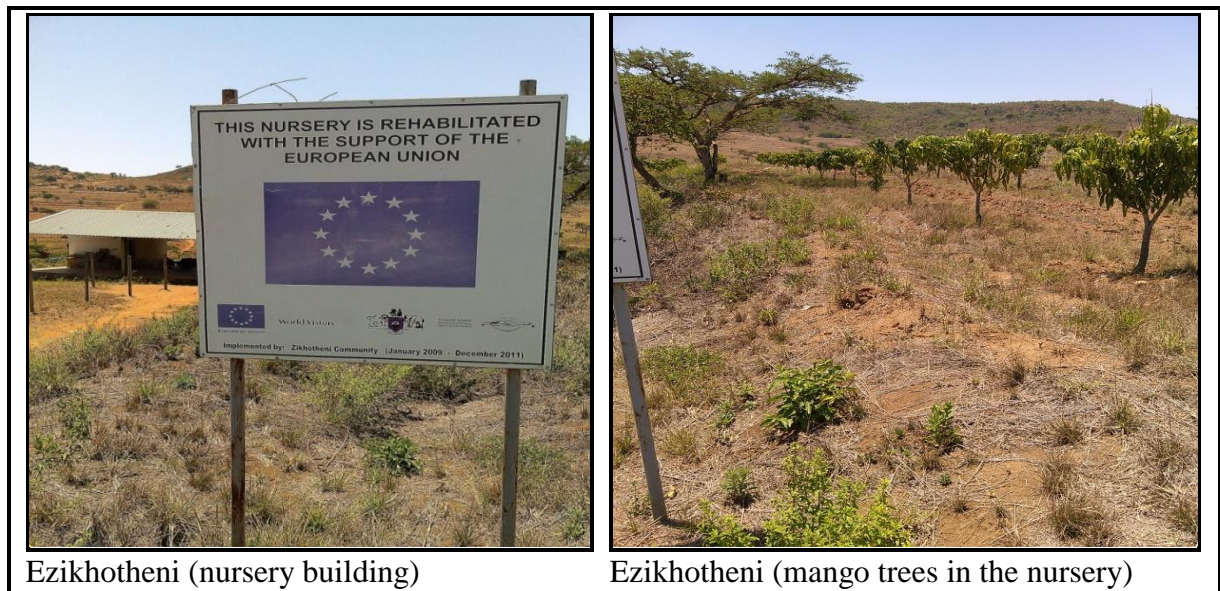
operations in Swaziland. *Conserve Swaziland* is a small organization, which is very active in implementing projects on forest development and in controlling land degradation; but it does not have funds. Therefore, *Conserve Swaziland* normally implements projects which are funded by NGOs such as *World Vision* and JICA. For instance, the plantation-style community forests under study at Ngcayini and at Ezikhotheni were planted by *Conserve Swaziland* but funded by JICA in collaboration with the Ministry of Agriculture and Co-operatives between 2001 and 2003 (Plate 5.2). At present, the most active NGO in both chiefdoms is *World Vision*.



Plate 5.2: A billboard acknowledging the contribution by JICA and *Conserve Swaziland* in forest development at Ngcayini and Ezikhotheni chiefdoms

NGOs have played a significant role in forest development as well as in controlling land degradation. For instance, in terms of forest development the heads of households together with community leaders pointed out that, NGOs provide training to community members on forest resources management; donate seedlings and fencing materials, as well as plant trees in eroded areas. It is important to note that planting trees was preceded by fencing off the eroded areas so as to protect the trees from animals and human beings. A more unique role which NGOs executed at Ezikhotheni was the construction of a nursery where community members grow fruit trees as well as propagate seedlings for the trees they plant in eroded areas (Plate 5.3). Regarding control of land degradation, the findings from heads of households and community leaders indicate that in addition to what is done in forest

development; they reclaim dongas through construction of gabions, storm bunds and artificial waterways.



Ezikhotheni (nursery building)

Ezikhotheni (mango trees in the nursery)

Plate 5.3: Ezikhotheni nursery funded by the European Union in collaboration with *World Vision* and *Yonge Nawe*

Furthermore, heads of households were probed on the advantages and disadvantages of the assistance provided by NGOs to communities. From the finding the advantages include that NGOs provide free service to communities (78.4% at Ezikhotheni and 44.4% at Ngcayini), which is normally aimed at meeting the community's greatest need (8.4% at Ezikhotheni and 44.4% at Ngcayini).

Moreover, the findings depict that projects pursued by NGOs are successful (13.2% at Ezikhotheni) and also that they afford capacity building among community members (11.2% at Ngcayini). On the other hand, the disadvantages of assistance provided by NGOs include that: they do not stay forever in the community (48.5% at Ezikhotheni and 11.1% at Ngcayini), and also create dependency among the people (10.4% at Ezikhotheni) (Figure 5.9). A striking finding at Ngcayini was that NGOs require a lot of labour from the community (11.1%) (Figure 5.9). Such responses are often associated with indolence.

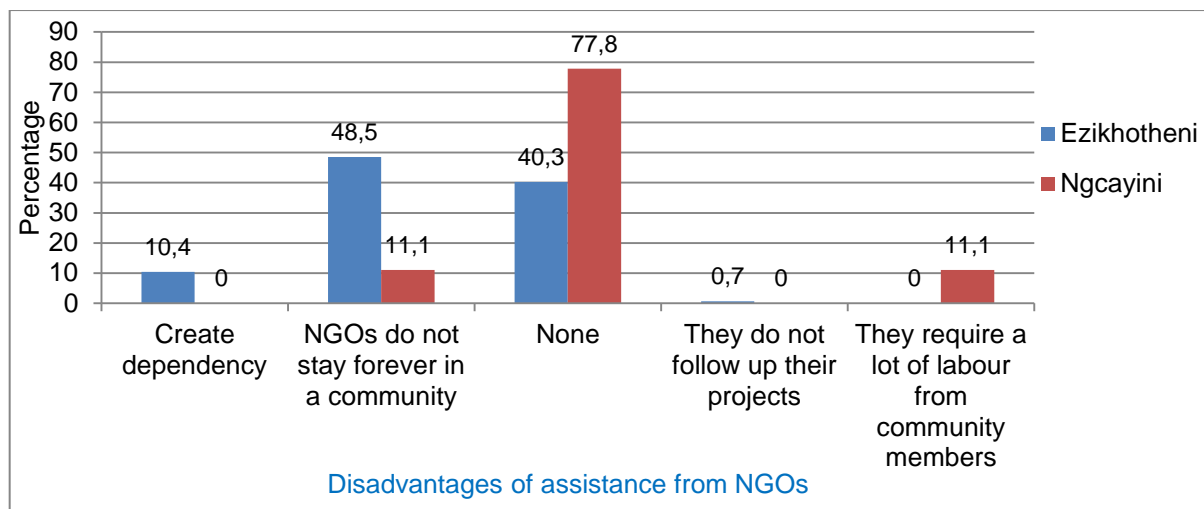


Figure 5.9: The disadvantages associated with assistance provided by NGOs in forest development in the studied chiefdoms

When applying the chi-square ( $\chi^2$ ) test on the findings concerning the assistance provided by NGOs in forest development and in controlling land degradation at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.000 is attained for both forest development and controlling land degradation. This depicts that there is a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms regarding the assistance provided by NGOs in forest development and in controlling land degradation.

### 5.5 Assistance received from Government Departments and Parastatals in the Management of Forest Resources by the Respective Chiefdoms

Considering that there are government departments and parastatals whose mandate is to oversee forest development and control land degradation in the country, both the heads of households and community leaders were probed on their roles in the chiefdoms. Findings from the heads of households reveal that, the government departments were not active in the chiefdoms. This is more so because the findings depict that 35% of the heads of households at Ezikhotheni and 2% at Ngcayini acknowledged existence of government departments assisting in forest development and in controlling land degradation in their chiefdoms. Therefore, a majority of the heads of households (65% at Ezikhotheni and 98% at Ngcayini) negated the existence of government departments in their chiefdoms. This may

be due to the dominance of NGOs such as JICA and *World Vision* in the implementation of projects. Nonetheless, as shown in Plate 5.2 the Ministry of Agriculture and Co-operatives (particularly the Forestry Department) played a pivotal role in the implementation of the plantation-style community forests at Ezikhotheni and Ngcayini chiefdoms. It must be noted that the Forestry Department has since been moved from the Ministry of Agriculture and Co-operatives to the Ministry of Tourism and Environmental Affairs (MTEA).

According to heads of households, government departments which were reported to be assisting communities in forest development and in controlling land degradation include; the Forestry Department in the MTEA (84.2% at Ezikhotheni and 100% at Ngcayini. Other departments which were reported to be active at Ezikhotheni include; agricultural extension officers (2.9%) and Swaziland Environment Authority (SEA) (12.9%), which is a parastatal under the MTEA. Interestingly, community leaders claimed a lack of knowledge on government departments which were assisting in forest development and in controlling land degradation at Ezikhotheni (90.9%) and Ngcayini (100%). Therefore, 9.1% of the community leaders at Ezikhotheni revealed that the Forestry Department was assisting in forest development and in controlling land degradation.

In terms of what government departments have done and are doing in terms of forest development, the findings from the heads of households depicts that they train community members on the importance of trees and on forest management in general. They also plant trees to assist communities with forest resources especially because there is a call to conserve natural forests, since they take a long time to regenerate after being harvested. Consequently, woodlots have been developed in a number of areas for the same purpose. The trees which are planted have an advantage of growing and regenerating very fast, and these include *Acacia mearnsii* (wattle) and *Eucalyptus spp.* (gum trees). Despite the noted advantage, these tree species have been declared as highly invasive and they also deplete water resources, as well as contribute to soil acidification. At the same time, natural forests are threatened by alien invasive plant species which seems to be competitively excluding them in the ecosystem. Community leaders on the other hand, disclosed that government departments provide communities with tree seedlings and fencing material. As already

indicated, normally tree planting is preceded by fencing in an effort to protect the seedlings from destruction by animals and human beings.

With respect to controlling land degradation, the heads of households revealed that government departments were mainly training community members on the role of forests in preventing and controlling soil erosion. Community leaders on the other hand, pointed out that government departments were assisting communities with planting trees in degraded areas. For example, SEA who is tasked with commemoration of the World Environment day usually celebrates through planting trees in different communities especially where there is evidence of active gullies and dongas.

Applying the chi-square ( $\chi^2$ ) test on the findings concerning what government departments have done and are doing, in terms of assisting in forest development and in controlling land degradation at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, yields a  $p$  value of 0.000 for both forest development and controlling land degradation. This value depicts that there is a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms concerning what government departments have done are doing in terms of assisting in forest development and in controlling land degradation.

## **5.6 Rules Governing the Management of Community Forests in the Specific Chiefdoms**

Management of community forests is normally governed by rules to ensure sustainability of the resources; hence the heads of households were probed regarding existence of such in their chiefdoms. Evidence from the findings, depicts that there are rules governing management of community forests at Ezikhotheni (90%) and at Ngcayini (88%) chiefdoms. Nonetheless, there were some heads of households (10% at Ezikhotheni and 12% at Ngcayini) who negated existence of rules governing management of community forests in their chiefdoms. Regarding the actual rules, the findings from both the heads of households and community leaders indicate that at Ngcayini there was only one inclusive rule which covered both natural forests and the plantation-style community forests. Here, community members have to seek permission from the headman (100%) for cutting any live tree which



include fruit trees and royal trees from the natural forests save only for alien invasive tree species (Figure 5.10a). Notably, for other resources derived from natural forests; community members only needed permission from the headman otherwise they were not expected to pay for them. In the case of the plantation-style community forests, community members buy forest resources from the headman (100%) (Figure 5.10b).

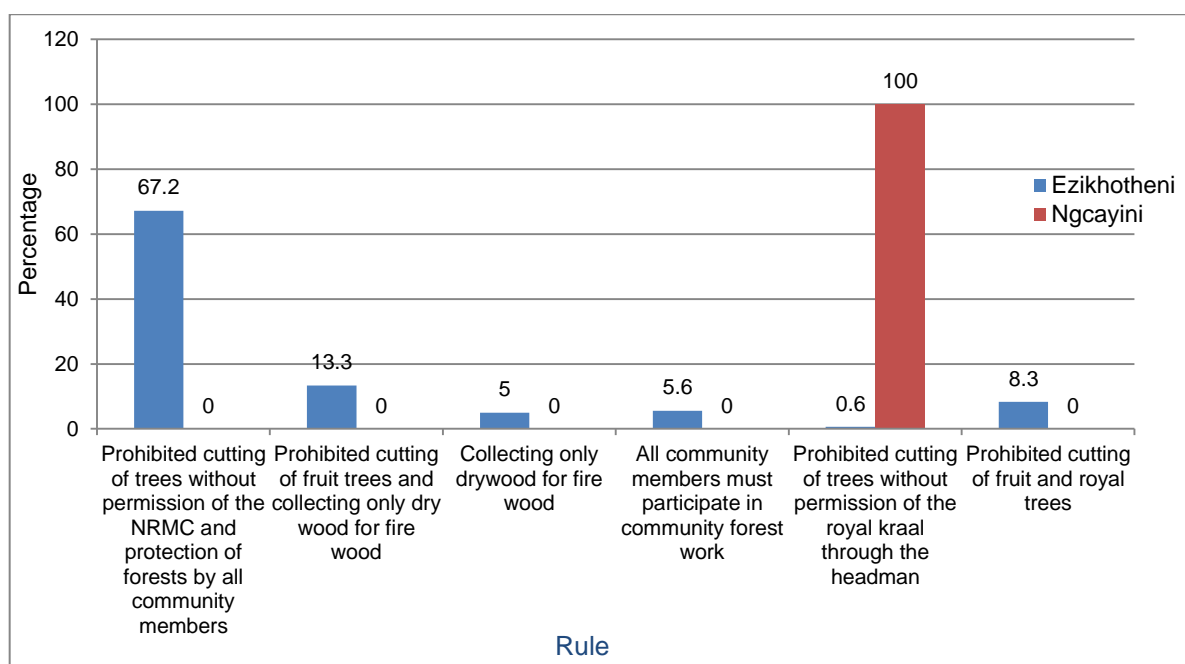


Figure 5.10a: Heads of households' views on the rules governing management of community forests in the case study chiefdoms

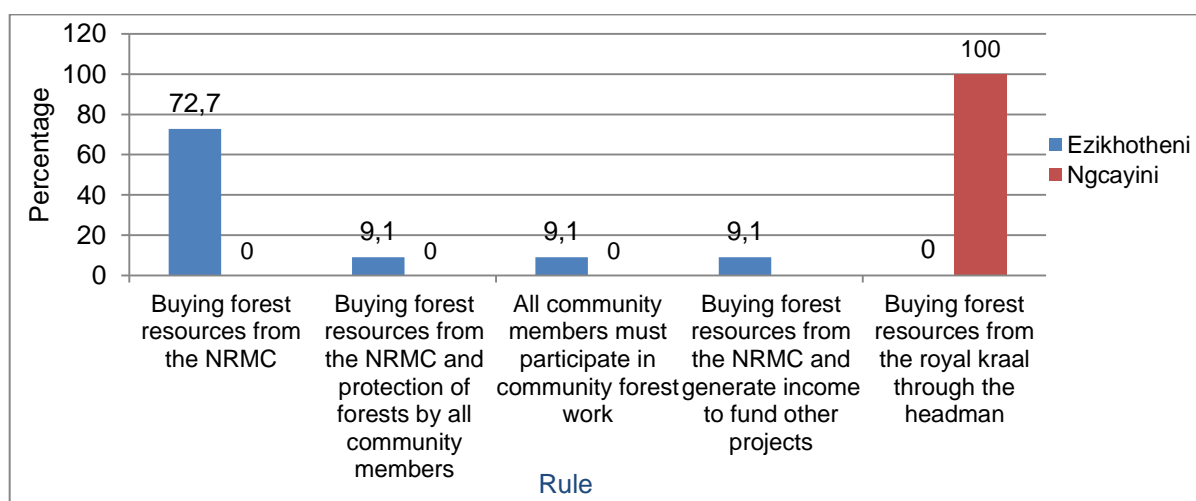


Figure 5.10b: Community leaders' views on the rules governing management of community forests in the case study chiefdoms

At Ezikhotheni, natural forests are very scarce especially in the immediate precinct of the plantation-style community forests save only for woodlands dominated by scattered shrubs. Therefore, there were a number of rules governing management of community forests with the major rule from the viewpoint of the heads of households being prohibited cutting of trees without the permission of the NRMC and protection of forests by all community members (67.2%) (Figure 5.10a). Other rules highlighted by the heads of households include: prohibited cutting of fruit and royal trees, as well as live trees for fuel wood. At the same time, there is a rule that compel all community members to participate in community forest work (5.6%) (Figure 5.10a) and (9.1%) (Figure 5.10b). From the community leaders' side, the main rule was buying forest resources from NRMC members (72.7%) (Figure 5.10b). A most significant aspect of this rule is that the income generated through selling forest resources was used to fund other community projects (9.1%) such as a water project as well as a Neighbourhood Care Point (NCP) at Ezikhotheni (Figure 5.10b).

When applying the chi-square ( $\chi^2$ ) test on the findings concerning the rules governing management of community forests at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.000 is attained on the views of both the heads of households and community leaders. These values depict that there is a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms concerning the rules governing management of community forests. The difference is largely due to the manner in which forest resources are administered in the chiefdoms.

The study endeavoured to investigate on issues surrounding formulation of the rules governing management of community forests in the chiefdoms understudy. Findings from heads of households reveal that the rules were mainly formulated by the community members (77.3% at Ezikhotheni and 20.5% at Ngcayini), and community leaders (18.3% at Ezikhotheni and 47.7% at Ngcayini). At Ezikhotheni, 0.6% of the heads of households pointed out that, NRMC members were behind the formulation of the rules. Nonetheless, there were heads of households who claimed to be ignorant on the formulation of the rules (3.8% at Ezikhotheni and 31.8% at Ngcayini). Community leaders indicated that rules were



formulated by community members (54.5% at Ezikhotheni and 100% at Ngcayini) and community leaders (45.5% at Ezikhotheni).

It is important to note that, rules are only effective if there is a mechanism to enforce them. Therefore, the study also probed both the heads of households and community leaders on issues pertaining to enforcement of the rules. In that regard, the heads of households revealed that enforcement was through reporting and fining all people who break the rules (92.2% at Ezikhotheni and 84.1% at Ngcayini). Perpetrators were reported to the headman, inner council members and NRMC members. Notably, some heads of the households claimed to be uninformed on how the rules were enforced (7.8% at Ezikhotheni and 15.9% at Ngcayini). Community leaders on the other hand, disclosed that enforcement was solely through reporting and fining all people who break the rules (100% at Ezikhotheni and 100% at Ngcayini).

Regarding the authority responsible for enforcing the rules the findings from both the heads of households and community leaders depicts that at Ngcayini it was mainly the inner council and the headman (90%) (Figure 5.11a) and (81.8%) (Figure 5.11b). At Ezikhotheni on the other hand, enforcement was mainly undertaken by the inner council and NRMC members (43.9%) (Figure 5.11a) and (81.8%) (Figure 5.11b). Notably, at Ngcayini the NRMC members were not active in the management of community forests instead it was a prerogative of the headman and inner council members. Contrariwise, at Ezikhotheni the NRMC was very active in the management of community forests but it collaborated with the inner council members. It is worth noting that at Ezikhotheni community police (9.1%) were part of the authorities responsible for enforcing rules governing management of community forests (Figure 5.11b). Community police are normally very instrumental in ensuring peace and safety in communities if they get a good backing from community members.

Considering effectiveness of the rules in the management of community forests, findings from the heads of households depict that they were effective in both chiefdoms (72.8% at Ezikhotheni and 79.5% at Ngcayini). There were however, some heads of households who

negated the effectiveness of the rules in both chiefdoms (27.2% at Ezikhotheni and 20.5% at Ngcayini).

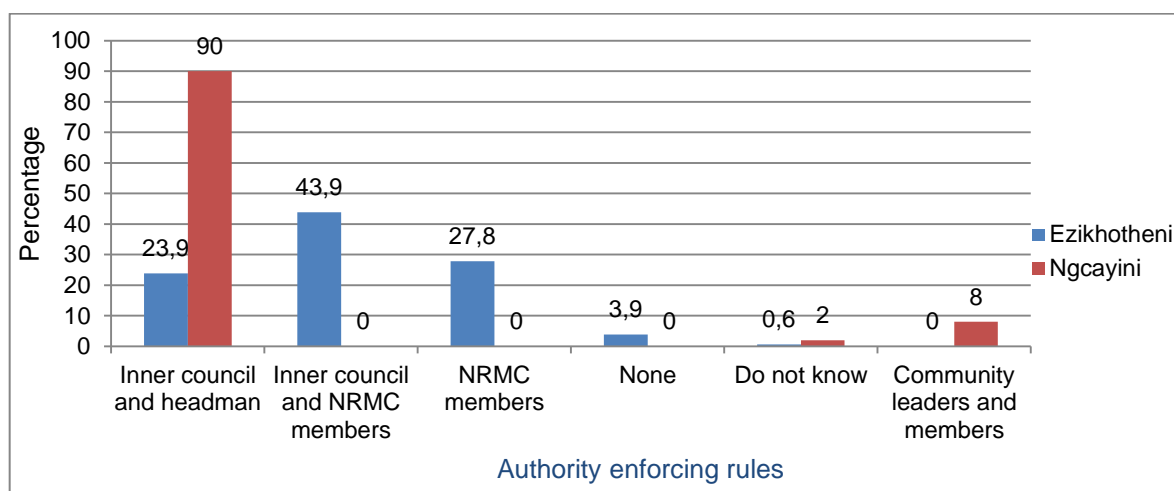


Figure 5.11a: Heads of households' views on the authority responsible for enforcing the rules governing management of community forests in the respective chiefdoms

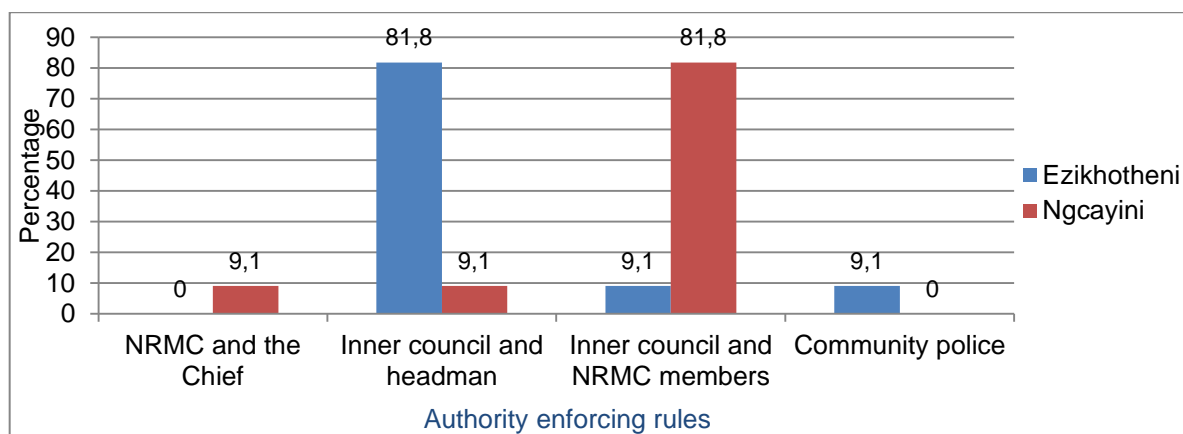


Figure 5.11b: Community leaders' views on the authority responsible for enforcing the rules governing management of community forests in the respective chiefdoms

In terms of indicators for effectiveness of the rules in the management of community forests the findings from both the heads of households and community leaders reveal that the major indicator was that most community members comply with the rules and thus forests were developing (93.1% at Ezikhotheni and 90% at Ngcayini) (Figure 5.12a) and (90.9% at Ezikhotheni and 81.8% at Ngcayini) (Figure 5.12b). Other noted indicators include; that there were few cases of rule breaking that had been reported to the inner

council, as well as that people caught cutting trees illegally were fined to discourage others from committing similar offences (Figure 5.12a and Figure 5.12b). On the other hand, the indicators for ineffectiveness of the rules from the point of view of the heads of households, were that some people illegally harvest forest resources deliberately (38.8% at Ezikhotheni and 100% at Ngcayini), as well as that some people illegally cut fruit and royal trees and also wet trees for fire wood (61.2% at Ezikhotheni).

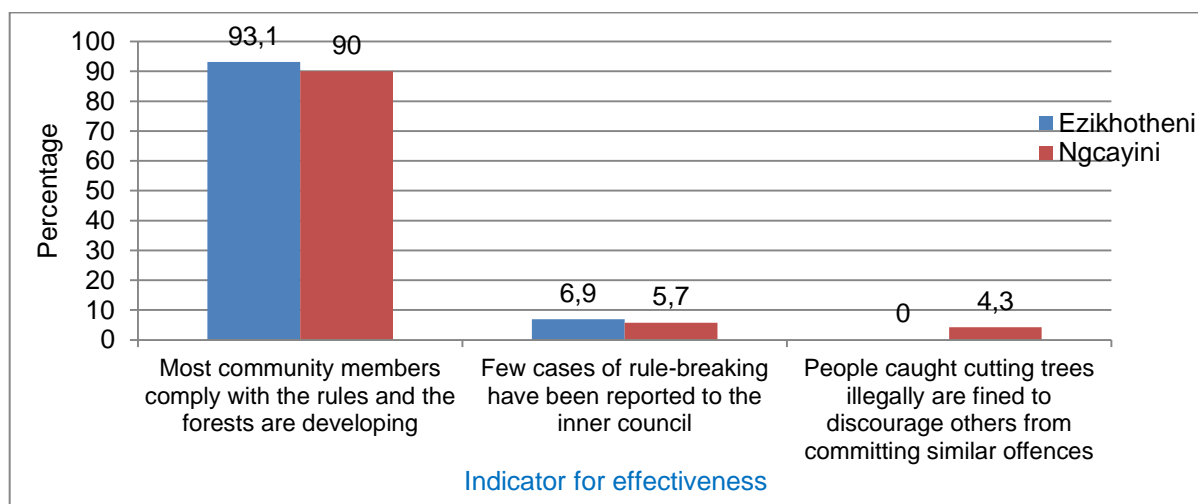


Figure 5.12a: Heads of households' views on the indicators for effectiveness of the rules in the management of community forests in the case study chiefdoms

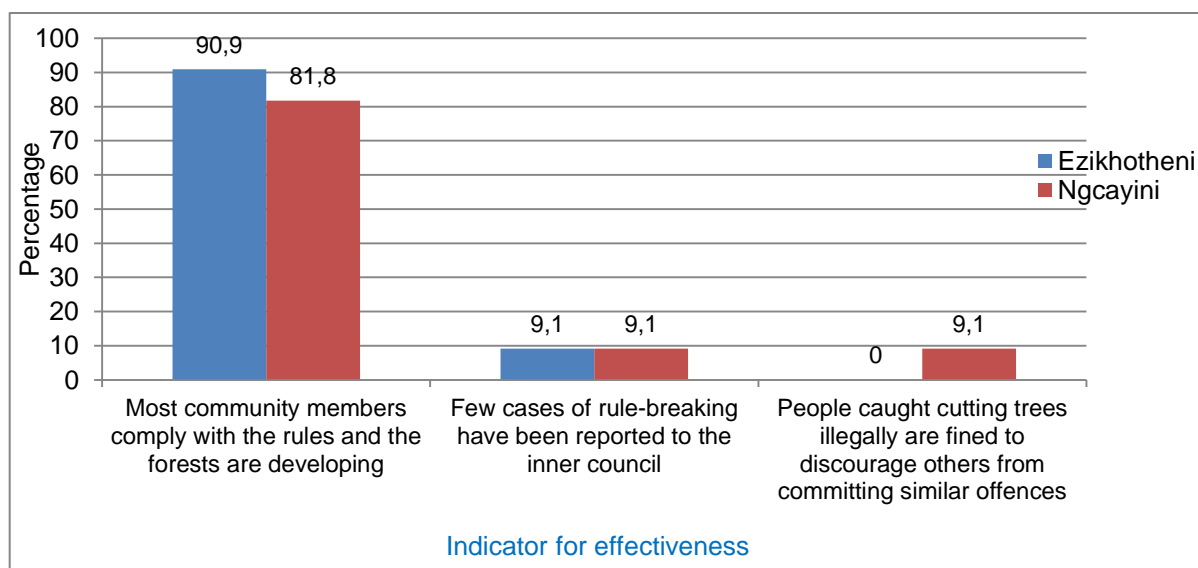


Figure 5.12b: Community leaders' views on the indicators for effectiveness of the rules in the management of community forests in the case study chiefdoms

Applying the chi-square ( $\chi^2$ ) test on the findings concerning indicators for effectiveness of the rules in the management of community forests at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, yield a  $p$  value of 0.056 for the views of the heads of households and a  $p$  value of 0.591 for the views of community leaders. These values depict that there is no significant difference between the Ezikhotheni and Ngcayini chiefdoms regarding indicators for effectiveness of the rules in the management of community forests.

On the other hand, when applying the chi-square ( $\chi^2$ ) test on the findings relating to indicators for ineffectiveness of the rules governing management of community forests at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.000 is attained. This value depicts that there is a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms with reference to indicators for ineffectiveness of the rules governing management of community forests. This indicates that there is remarkable degree of ineffectiveness of the rules governing management of community forests in the respective chiefdoms.

### **5.7 Community Members' Knowledge on Laws and Policies Governing the Management of Forest Resources in Swaziland**

Management of resources is not just a concern at the community level, rather it is a countrywide and as well as a worldwide concern. It is on that basis, that this study probed community members on their knowledge on laws and policies governing management of forest resources in Swaziland. The findings on the one hand depicts that a majority of the heads of households at Ezikhotheni (76%) claimed to have knowledge on laws and policies governing management of forest resources in Swaziland compared to those at Ngcayini (45%). On the other hand, some the heads of households in both chiefdoms refuted having knowledge on laws and policies governing management of forest resources in Swaziland (24% at Ezikhotheni and 55% at Ngcayini). From the standpoint of the community leaders, they have knowledge on laws and policies governing management of forest resources in Swaziland (81.8% at Ezikhotheni and 90.9% at Ngcayini). There were however, some community leaders who did not have knowledge on laws and policies governing

management of forest resources in Swaziland (18.2% at Ezikhotheni and 9.1% at Ngcayini).

When asked to outline the laws and policies both heads of households and community leaders highlighted the National Forest Policy and the Environment Management Act. For instance, 52.6% of the heads of households at Ezikhotheni and 95.6% at Ngcayini indicated that they know the National Forest Policy (NFP). Contrariwise, 47.4% of the heads of households at Ezikhotheni and 4.4% at Ngcayini pointed out that they know the Environment Management Act (EMA). Findings from the community leaders reflect that 100% at Ezikhotheni and 100% at Ngcayini claimed knowledge of both the National Forest Policy and the Environment Management Act.

To validate the knowledge of both the heads of households and community leaders, they were probed to state the provisions of the identified law and policy. The heads of households indicated that the provisions include; that people must prevent forest fires and avoid cutting fruit and immature tree species (30.3% at Ezikhotheni and 55.6% at Ngcayini) (Figure 5.13a). Other provisions were that people must cut and replace trees, as well as refrain from unnecessary burning and cutting of trees (11.2% at Ezikhotheni and 33.3% at Ngcayini) (Figure 5.13a).

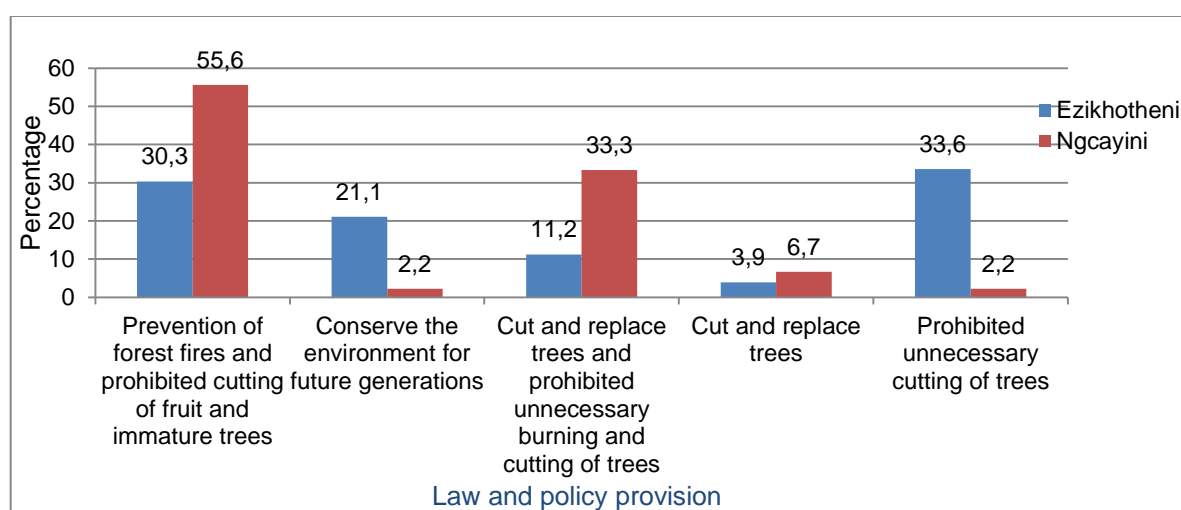


Figure 5.13a: Ezikhotheni and Ngcayini heads of households' views on the provisions of the law and policy governing the management of forest resources in Swaziland

From the viewpoint of community leaders, people must prevent forest fires and avoid cutting fruit and immature trees (88.9% at Ezikhotheni and 10% at Ngcayini) (Figure 5.13b). Another provision highlighted in both chiefdoms, is that it is prohibited to unnecessarily cut trees (11.1% at Ezikhotheni and 20% at Ngcayini) (Figure 5.13b). Notably, the heads of households in both chiefdoms (21.1% at Ezikhotheni and 2.2% at Ngcayini) (Figure 5.13a) and community leaders at Ngcayini (40%) (Figure 5.13b) highlighted a very crucial provision of conserving the environment for future generations. This basically implies sustainable management of the environment in general and forest resources in particular.

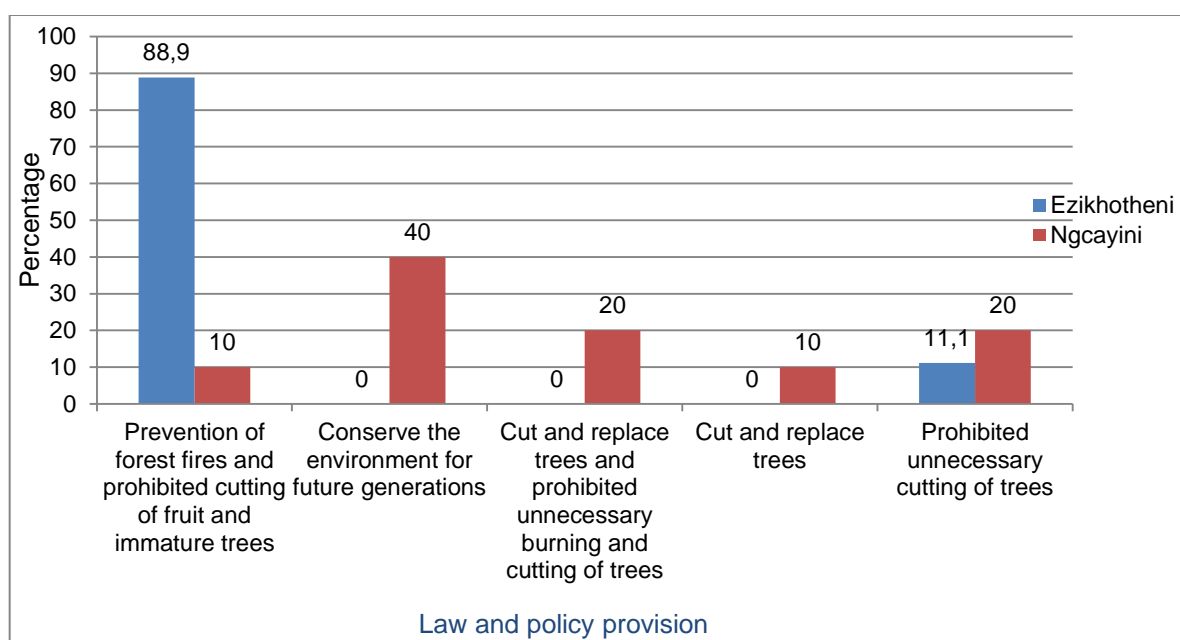


Figure 5.13b: Ezikhotheni and Ngcayini community leaders' views on the provisions of the law and policy governing the management of forest resources in Swaziland

When inquired on the source of knowledge in relation to laws and policies governing management of forest resources in Swaziland, the heads of households and community leaders identified the radio and training as their key sources. For instance, 48% of the heads of households at Ezikhotheni and 66.7% at Ngcayini identified the radio as their source of information (Figure 5.14a). Moreover, 17.8% of the heads of households at Ezikhotheni and 24.4% at Ngcayini were in favour of training as their source of information relating to laws and policies governing management of forest resources in Swaziland (Figure 5.14a).

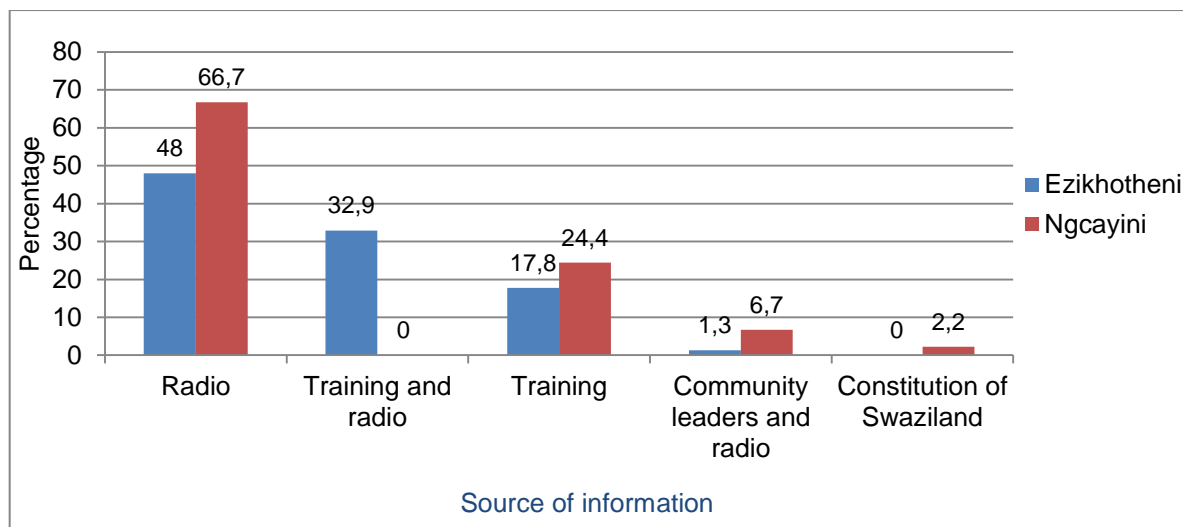


Figure 5.14a: Ezikhotheni and Ngcayini heads of households' views on the source of information on the law and policy governing the management of forest resources in Swaziland

The community leaders (77.8% at Ezikhotheni and 30% at Ngcayini) cited the radio as their source of information (Figure 5.14b). Furthermore, 22.2% of the community leaders at Ezikhotheni and 40% at Ngcayini, regarded training as their source of information pertaining to laws and policies governing management of forest resources in Swaziland (Figure 5.14b). The popularity of the radio as a source of information indicates that people take their time to listen to programs aired in their national broadcasting service station. At the same time, training was also considered a prominent source of information, which depicts that people are ambitious to know more about their environment, hence they maximize training opportunities. It is worth noting that 2.2% of the heads of households at Ngcayini identified the Constitution of Swaziland as their source of information regarding laws and policies governing the management of forest resources in the country (Figure 5.14a). This is a crucial finding as it reveals that people take their time to read their country's constitution, which reduces the problem of ignorance of the law.

When applying the chi-square ( $\chi^2$ ) test on the findings concerning knowledge on the laws and policies governing management of forests resources in Swaziland to establish the level of significance, yield a  $p$  value of 0.000 for the views of heads of households and a  $p$  value of 0.013 for the views of community leaders. These values depict a high level of significance in difference between the Ezikhotheni and Ngcayini chiefdoms regarding

knowledge on the laws and policies governing management of forests resources in Swaziland.

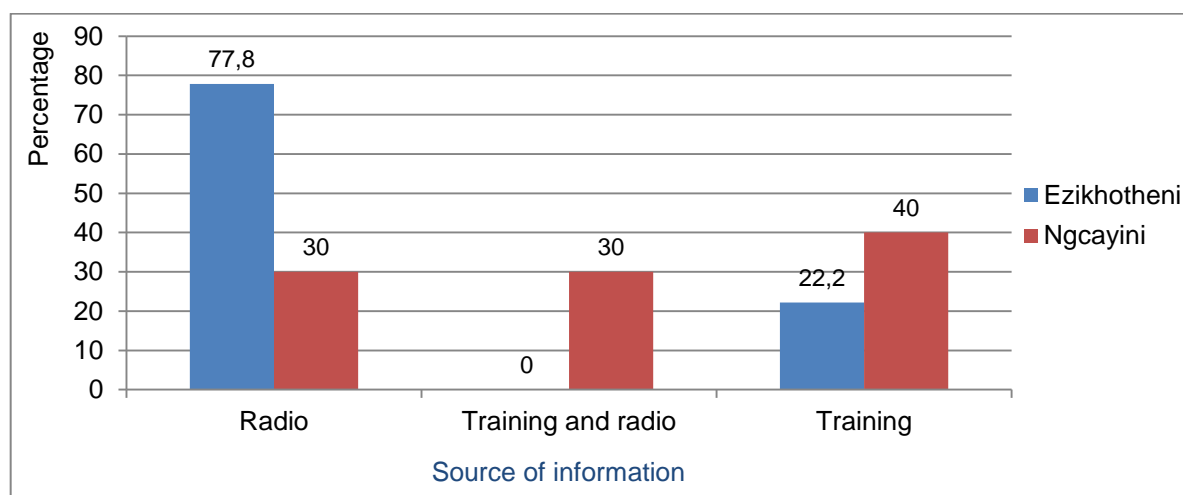


Figure 5.14b: Ezikhotheni and Ngcayini community leaders' views on the source of information on the law and policy governing the management of forest resources in Swaziland

## 5.8 Community's Access to Resources in Community Forests in the Chiefdoms Studied

There are basically two modes of access to resources, namely free or open (free-for-all) and controlled. On the one hand, free-access is normally associated with over-exploitation of resources and mismanagement of the environment, which culminates in land degradation. On the other hand, controlled access promotes conservation of resources and sustainable management of the environment. Therefore, controlling access to resources ensures their sustainability. This study also investigated on how community members access timber and non-timber forest products (NTFPs) for domestic use in community forests. It is important to mention that in both chiefdoms community members were not made to pay for resources derived from natural forests. Instead, they were expected to seek permission from community leaders to extract the resources (particularly cutting live trees); hence most community members regarded natural forests as free-access resources. For instance, 32% of the heads of households at Ezikhotheni, pointed out that access to timber/wood resources in natural forests was free in their chiefdom.



In the plantation-style community forests, community members purchased resources from designated authorities. For instance, findings from the heads of households depict that at Ezikhotheni access to resources in plantation-style community forests was mainly through buying from NRMC members (66%). At Ngcayini on the other hand, the resources were bought from the royal kraal via the headman (96%). Once again, it must be mentioned that at Ezikhotheni there was an active NRMC overseeing management of community forests, whereas at Ngcayini it was a prerogative of the headman and inner council members.

Moreover, some heads of households pointed out that access to resources particularly in natural forests was through asking for permission from the royal kraal via the headman (1.5% at Ezikhotheni and 2% at Ngcayini). It must be noted that, although it was mandatory for community members to seek permission from the traditional authorities to cut trees in natural forests, normally households which are located away from the royal kraal evaded this requirement. Asking for permission from traditional authorities is a mechanism of restricting non-community members from poaching for resources, as well as avoiding over-exploitation of resources. Noteworthy, in both chiefdoms community members were allowed to collect dry wood in natural forests for domestic use only, but not allowed to cut live trees for fuel wood. There were some heads of households who claimed to be ignorant on how timber/wood resources are accessed in community forests for domestic use (0.5% at Ezikhotheni and 2% at Ngcayini).

From the standpoint of community leaders, access to timber/wood resources in plantation-style community forests for domestic use, was through buying from the NRMC members (100%) at Ezikhotheni and buying from the royal kraal through the headman (100%) at Ngcayini). According to both the heads of households and community leaders the timber/wood resources extracted for domestic use were mainly poles, rafters and fire wood in both chiefdoms. On the other hand, regarding access to timber/wood resources for sale at Ezikhotheni it was through buying from NRMC members (100% from both heads of households and community leaders). At Ngcayini, community members were not allowed to buy timber/wood resources for purposes of selling (100% from both heads of households and community leaders). The timber/wood resources extracted for sale at Ezikhotheni were

largely poles, rafters and fire wood. Generally, this depicts that leadership is vital in the management of community resources.

Applying the chi-square ( $\chi^2$ ) test on the findings concerning access to timber/wood resources in community forests for domestic use to establish the level of significance, yield a  $p$  value of 0.000 for both the views of heads of households and community leaders. These values depict a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms regarding access to timber/wood resources from community forests for domestic use.

This study also investigated how community members access non-timber forest products (NTFPs) for domestic use and for sale. The findings from heads of households depicts that at Ezikhotheni access was largely through requesting for permission from NRMC members (57.5%) whereas at Ngcayini it was free (97%) (Figure 5.15a). On the other hand, according to community leaders community members' access to non-timber forest products (NTFPs) for domestic use and for sale was largely through asking for permission from NRMC members at Ezikhotheni (90.9%) and solely free-access at Ngcayini (100%) (Figure, 5.15b). Community leaders also hinted another mode of access, which is illegal collection of medicinal plants at Ezikhotheni (9.1%) (Figure, 5.15b). This was practiced by community and non-community members for their own selfish ends. Despite isolated cases of illegal harvesting there is a clear indication that access to community resources is controlled in the respective chiefdoms. At the same time, there is illegal harvesting only because access is controlled.

Concerning the NTFPs extracted for domestic use, 5% of the heads of households at Ezikhotheni and 6% at Ngcayini pointed out that they include; honey, wild fruits and other edible plants (Table 5.8a). Among other NTFPs, were grass for making nests and thatching (37.5% at Ezikhotheni) as well as *Imphepho* (*Helichrysum rugulosum*), *Umtsanyelo*, *Liphephetse* (*Anthraxia phyllicoides*) (27% at Ngcayini) (Table 5.8a).

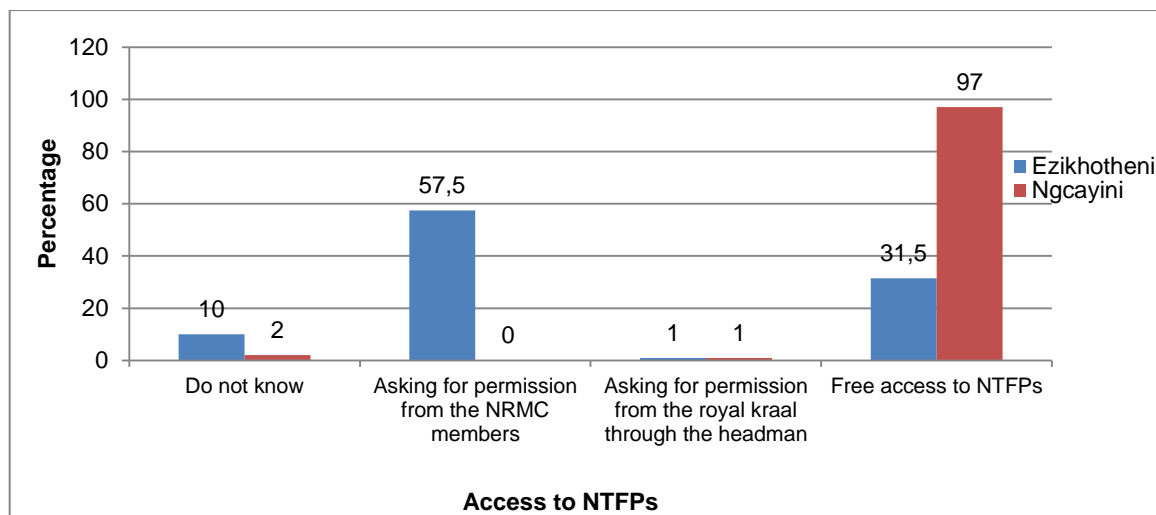


Figure 5.15a: Heads of households' views on community members' access to non-timber forest products (NTFPs) for domestic use and for sale in the case study chiefdoms

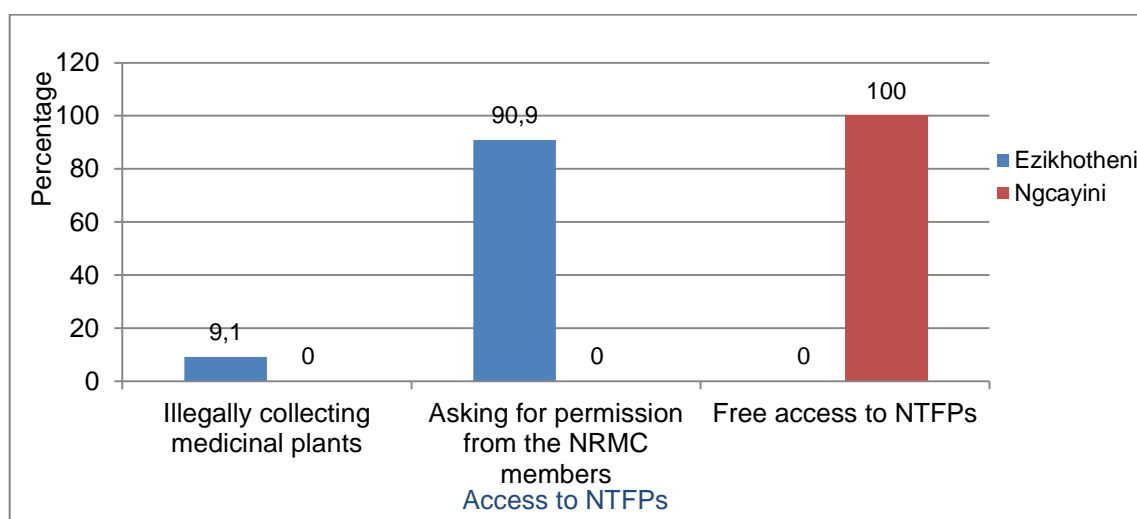


Figure 5.15b: Community leaders' views on community members' access to non-timber forest products (NTFPs) for domestic use and for sale in the case study chiefdoms

According to community leaders, NTFPs extracted for domestic use include; honey, wild fruits and other edible plants (27.3% at Ngcayini) as well as thatching grass and medicinal plants (36.4% at Ngcayini) (Table 5.8b). At Ezikhotheni, NTFPs extracted for domestic use include; *Imphepho* (*Helichrysum rugulosum*), *Liphephetse* (*Anthraxia phylicoides*) and medicinal plants (27.3%) (Table 5.8b).

Table 5.8a: Heads of households' views on non-timber forest products (NTFPs) extracted for domestic use

Non-Timber Forest Products (NTFPs) for domestic use	Ezikhothereni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Honey, wild fruits, and edible plants	10	5	6	6
Medicinal plants	6	3	3	3
Grass for making nests and thatching	75	37.5	0	0
None	79	39.5	3	3
Honey, wild fruits, edible plants and medicinal plants	5	2.5	5	5
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Umtsanyelo</u> , <u>Liphephetse</u> ( <i>Athrixia phylicoides</i> )	0	0	27	27
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Liphephetse</u> ( <i>Athrixia phylicoides</i> ), and <u>Inkakha</u> ( <i>Momordica spp.</i> )	0	0	4	4
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Liphephetse</u> ( <i>Athrixia phylicoides</i> ) and medicinal plants	0	0	23	23
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Liphephetse</u> ( <i>Athrixia phylicoides</i> ), <u>Lusololo</u> ( <i>Bauhinia galpinii</i> ) and herbs	0	0	2	2
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Lusololo</u> ( <i>Bauhinia galpinii</i> ), <u>Lukhwane</u> ( <i>Cyperus</i> ), <u>Lutindzi</u> and <u>Incoboza</u> ( <i>Cyperus spp.</i> )	0	0	18	18
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Liphephetse</u> , medicinal plants, <u>Intfocwane</u> ( <i>Peddiea africana</i> ), <u>Mafodlwane</u> , <u>Intokolovu</u>	0	0	6	6
Grass for fodder and medicinal plants	25	12.5	3	3
Total	200	100	100	100

Table 5.8b: Community leaders' views on non-timber forest products (NTFPs) extracted for domestic use

Non-Timber Forest Products (NTFPs) for sale	Ezikhothereni		Ngcayini	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Honey, wild fruits, and edible plants	0	0	3	27.3
Thatching grass and medicinal plants	0	0	4	36.4
None	0	0	4	36.4
Honey, wild fruits, edible plants and medicinal plants	1	9.1	0	0
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Umtsanyelo</u> , <u>Liphephetse</u>	1	9.1	0	0
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), and <u>Liphephetse</u>	3	27.3	0	0
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Liphephetse</u> and medicinal plants	3	27.3	0	0
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Liphephetse</u> , <u>Lusololo</u> ( <i>Bauhinia galpinii</i> ) and medicinal plants	1	9.1	0	0
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Lusololo</u> ( <i>Bauhinia galpinii</i> ) and <u>Incoboza</u> ( <i>Cyperus spp.</i> )	1	9.1	0	0
<u>Imphepho</u> ( <i>Helichrysum rugulosum</i> ), <u>Liphephetse</u> , medicinal plants, <u>Intfocwane</u> ( <i>Peddiea africana</i> ), <u>Mafoedlwane</u> , <u>Intokolovu</u>	1	9.1	0	0
Total	11	100	11	100

In terms of NTFPs extracted for sale, the findings depict that they mainly include medicinal plants and Imphepho (*Helichrysum rugulosum*). For instance, 6% of the heads of households at Ezikhothereni and 21% at Ngcayini indicated that medicinal plants were among the NTFPs which were sold from the chiefdom (Figure 5.16a). Moreover, 35% of the heads of households at Ngcayini pointed out that Imphepho (*Helichrysum rugulosum*) was the most sold NTFP from the chiefdom (Figure 5.16a).

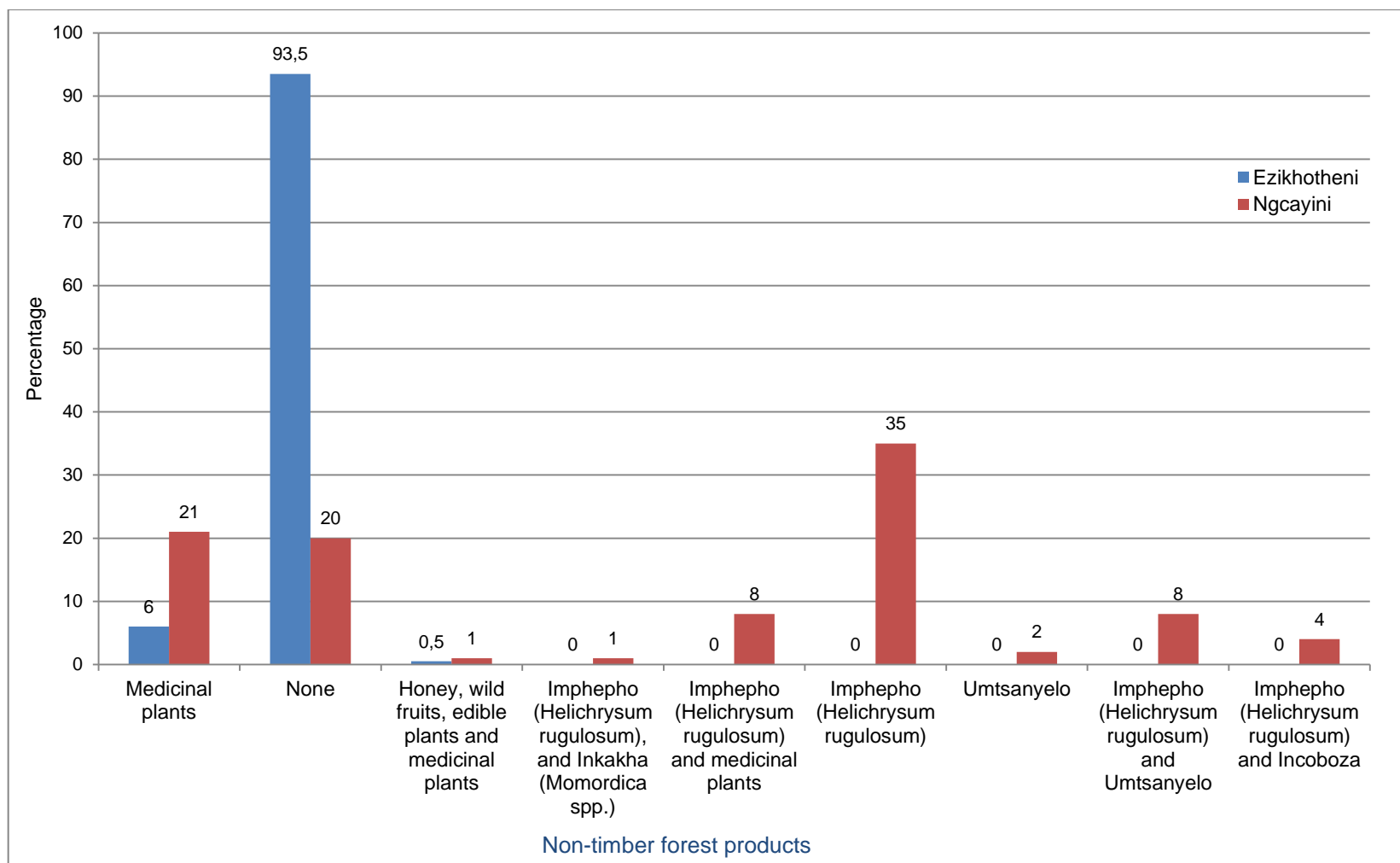


Figure 5.16a: Heads of households' views on non-timber forest products (NTFPs) extracted for sale in the respective chiefdoms

Community leaders (45.5% at Ezikhotheni and 18.2% at Ngcayini) stated that medicinal plants were sold from the chiefdom (Figure 5.16b). Furthermore, 54.5% of the community leaders pointed out that *Imphepho* (*Helichrysum rugulosum*) was the most sold NTFP from the chiefdom (Figure 5.16b). Notably, the NTFPs were mainly sold out of the communities, with the main markets being Manzini city for Ngcayini chiefdom and Nhlangano town for Ezikhotheni chiefdom.

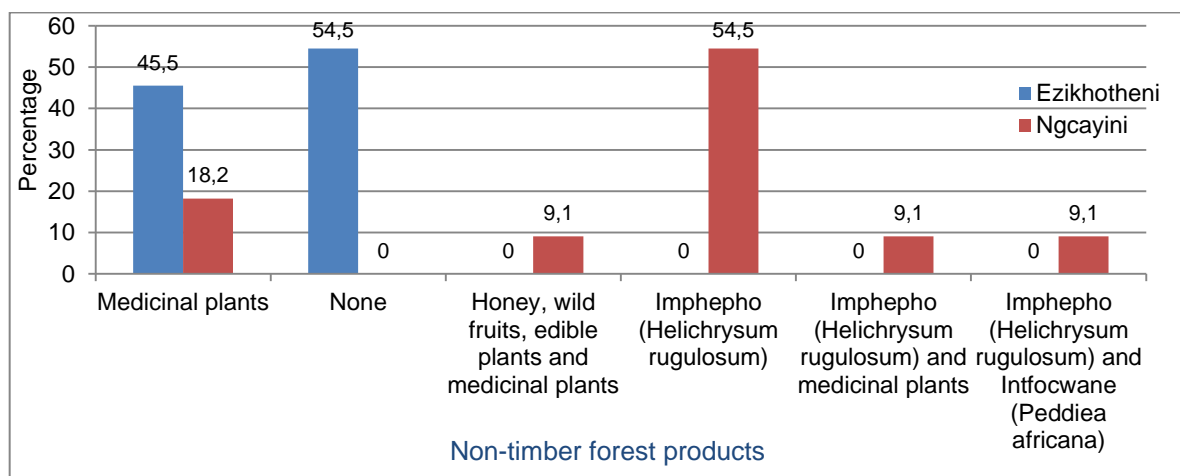


Figure 5.16b: Community leaders' views on non-timber forest products (NTFPs) extracted for sale in the respective chiefdoms

It must be noted that *Imphepho* (*Helichrysum rugulosum*) is mostly used as a medicinal plant. For instance, it is believed to have supernatural powers to cast out evil spirits through its scent when being burnt. In general, the sale of NTFPs has become a viable source of a livelihood for most women in the country. This is evident through the consignments of *Imphepho* (*Helichrysum rugulosum*), *Umtsanyelo* and other NTFPs which are particularly delivered and displayed at Manzini satellite bus rank on Wednesdays and Thursdays. All in all, this depicts that there is a strong dependence on forest resources by community members, hence the need for managing them in a sustainable manner to alleviate poverty and at the same time ensure posterity.

When applying the chi-square ( $\chi^2$ ) test on the findings concerning access to non-timber forest products from community forests for domestic use and for sale to establish the level of significance, a  $p$  value of 0.000 is attained for both the views of the heads of households

and community leaders. These values depict a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms regarding access to non-timber forest products from community forests for domestic use and for sale.

## **5.9 The Distribution and Utilization of Benefits Derived from Sale of Community Forests' Resources in the Chiefdoms Studied**

The study investigated on the distribution and utilization of benefits derived from the sale of community forests' resources to individuals and to the community at large.

### **5.9.1 Distribution of benefits to individuals and to the community at large**

Distribution of benefits accrued from sale of resources from community forests to individuals, was mainly done by NRMC members (83.2%) at Ezikhotheni and by community leaders (59.5%) at Ngcayini. There were also heads of households who claimed to be oblivious on who distributed benefits to individuals (16.8% at Ezikhotheni and 40.5% at Ngcayini). According to community leaders, at Ezikhotheni the benefits from sale of community forest resources were mainly distributed by NRMC members to individuals (90.9%). At Ngcayini, the benefits were distributed by community leaders (18.2%). There were community leaders who claimed to be uninformed on who distributed benefits to individuals (9.1% at Ezikhotheni and 81.8% at Ngcayini).

In terms of distributing benefits accrued from sale of resources from community forests to the community at large, 89.1% of the heads of households at Ezikhotheni indicated that it was mainly a responsibility for NRMC members. At Ngcayini, 100% of the heads of households declared that it was a prerogative of community leaders. Moreover, 10.9% of the heads of households at Ezikhotheni claimed to be in the dark concerning who distributed benefits from sale of forest resources from community forests to the community at large. According to 90.9% of the community leaders at Ezikhotheni, it was mainly a responsibility of NRMC members. On the other hand, 100% of the community leaders at Ngcayini revealed that it was solely a responsibility for community leaders. Moreover, 9.1% of the community leaders at Ezikhotheni claimed to be unaware on who was



responsible for the distribution of benefits to the community at large. This reflects that there is clear leadership in the management of community resources in the respective chiefdoms.

When applying the chi-square ( $\chi^2$ ) test on the findings concerning distribution of benefits accrued from the sale of community forests resources to individuals and the community at large to establish the level of significance, a  $p$  value of 0.000 is attained for both the views of the heads of households and for the community leaders. These values indicate that there is a high level of significance in difference between Ezikhotheni and Ngcayini chiefdoms regarding distribution of benefits accrued from the sale of community forests resources to individuals and the community at large.

### **5.9.2 Utilization of benefits derived from community forests**

The study also investigated utilization of benefits accrued to individuals and to the community in general from the sale of forests' resources. Evidence from the findings indicates that a majority of the heads of households disclosed that there were no benefits accruing to individuals (100% at Ezikhotheni and 95% at Ngcayini). On the contrary, 5% of the heads of households from Ngcayini indicated that individuals benefited through refreshments for special community meetings; when the community has visitors. Community leaders' perspective on the benefits accruing to individuals reflects mixed views. For instance, 90.9% of the community leaders at Ezikhotheni and 81.8% at Ngcayini indicated that there were no benefits from sale of forest resources which accrue to individuals. On the other hand, 18.2% of the community leaders at Ngcayini indicated that individuals benefited through refreshments during special community meetings; particularly when there are guests in attendance in the course of the meeting. Furthermore, 9.1% of the community leaders at Ezikhotheni mentioned that all the money was taken by the Chief. This only applied to the forest that was planted by *Yonge Nawe*, which is not managed by the NRMC like the other plantation-style community forests (Plate 5.1). This is largely because when it was planted, a NRMC was not established to oversee its management. Instead a person was bestowed with the responsibility of overseeing the forest and that person reports directly to the Chief.

When applying the chi-square ( $\chi^2$ ) test on the findings concerning benefits accrued by individuals from the sale of community forests' resources to establish the level of significance, a  $p$  value of 0.007 is attained for the views of heads of households and a  $p$  value of 0.217 for community leaders. The  $p$  value for heads of households of 0.007 shows a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms regarding benefits accrued by individuals from the sale of community forests' resources. On the other hand, the  $p$  value for community leaders of 0.217 depicts that there is no significant difference between Ezikhotheni and Ngcayini chiefdoms regarding benefits accrued by individuals from the sale of community forests' resources.

Looking at benefits accrued at the community level the findings on the one hand depict that a majority of the heads of households (64.1% at Ezikhotheni and 63% at Ngcayini) indicated that there were no benefits accumulated (Figure 5.17a). On the other hand, 29.9% of the heads of households at Ezikhotheni indicated that the money accrued through the sale of forest resources from community forests was used in financing a community water project (Figure 5.17a). At the same time, 37% of the heads of households at Ngcayini, stated that the money was used to fund community leaders when attending royal kraal duties, as well as catering for community needs like buying the royal kraal stamp and its accessories (Figure 5.17a). This indicates that community members are not involved in making decisions on how to use the proceeds from the sale of resources from community forests or they do not support the manner in which the money is used.

Likewise, the views of the community leaders on the money accrued through the sale of forest resources from community forests were not deviating much from those of the heads of households. For instance, 45.5% of the community leaders at Ezikhotheni revealed that the money was mainly used for funding a community water project (Figure 5.17b). At Ngcayini on the other hand, the money was specially used to fund community leaders when attending royal kraal duties, as well as in catering for community needs like buying the royal kraal stamp and its accessories (100%) (Figure 5.17b).

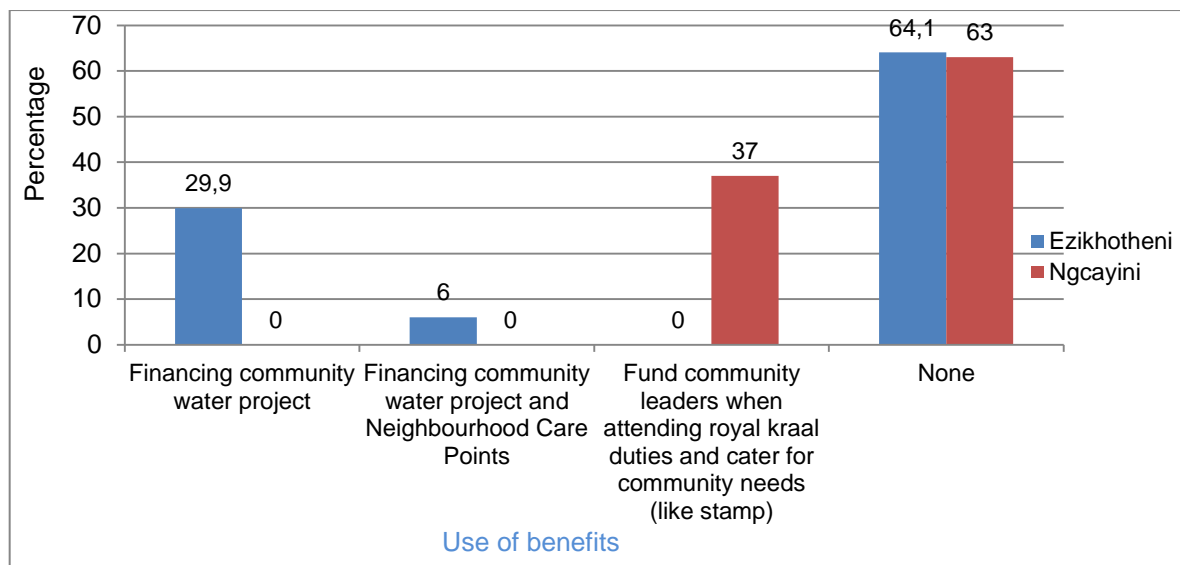


Figure 5.17a: Heads of households' views on benefits accrued by the community at large at Ezikhotheni and Ngcayini chiefdoms

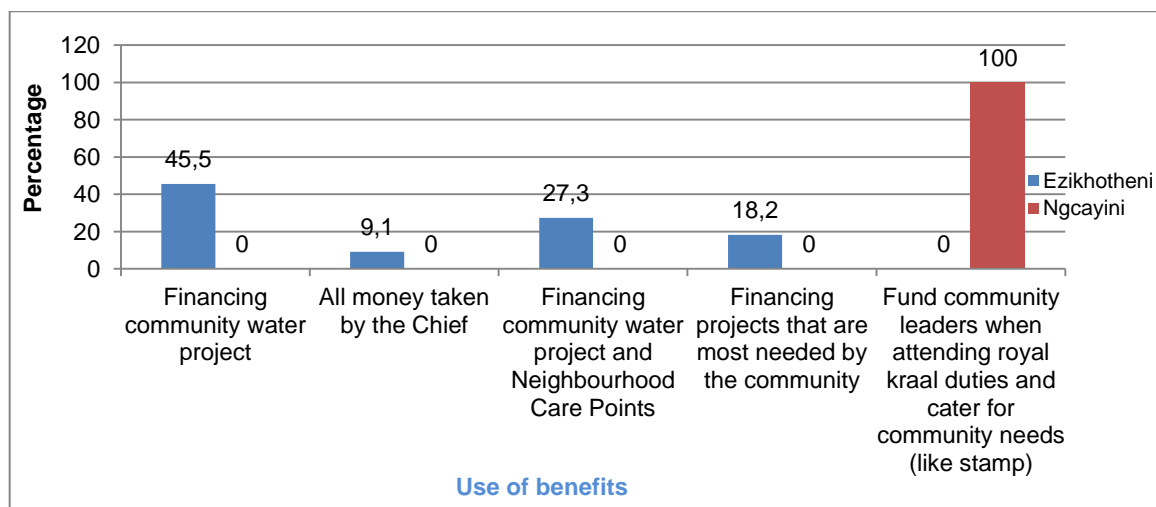


Figure 5.17b: Community leaders' views on benefits accrued by the community at large at Ezikhotheni and Ngcayini chiefdoms

Furthermore, at Ezikhotheni 9.1% of the community leaders revealed that all the money accrued was taken by the Chief (Figure 5.17b). As already indicated, this pertains to the community forest that was planted by *Yonge Nawe*, which is not managed by the NRMC (Plate 5.1). Finally, according to 6% of the heads of households and 27.3% of the community leaders at Ezikhotheni, some of the proceeds from the sale of community forest

resources were also used in financing both the community water project and neighbourhood care points (Figure 5.17a and Figure 5.17b).

Regarding the purchase of a royal kraal stamp and its accessories, this is evident through the fact that at Ezikhotheni a stamp fee of E50 is charged by the royal kraal for any document that requires to be stamped. Yet, at Ngcayini, there is no stamp fee levied for documents that requires the royal kraal stamp. Therefore, in the final analysis the procurement of a royal kraal stamp and its accessories using community funds removes the burden of stamp fees from community and non-community members in need of the stamp.

Applying the chi-square ( $\chi^2$ ) test on the findings concerning benefits accrued by the community at large from the sale of community forests' resources to establish the level of significance, a  $p$  value of 0.000 is attained for both the views of the heads of households and for the community leaders. These values indicate that there is a high level of significance in difference between Ezikhotheni and Ngcayini chiefdoms regarding benefits accrued by the community at large from the sale of community forests' resources.

### **5.9.3 The ecological importance of forests**

Forests are part and parcel of the ecosystem hence they not only serve human needs; instead they provide a variety of ecosystems services even to non-human elements of the environment. It is on those bases that this section of the study concentrates on the importance of community forests to animals, water catchments, and significance of the tree species in the culture of Swaziland. The importance of forests to animals was confirmed by a majority of the respondents in both chiefdoms (100% of the heads of households at Ezikhotheni and 99% at Ngcayini). Notably, 1% of the heads of households at Ngcayini negated that forest are important to animals. Community forests were considered to be important to domestic animals in terms of grazing and browsing, while in the case of wild animals they afford them food plants, foraging space and habitats. These sentiments were shared by both heads of households and community leaders. Domestic animals which are kept in both chiefdoms include cattle, goats, sheep, pigs and donkeys. On the other hand, wild animals include; rabbits, mice, bees, grey duckers, snakes, mongooses and birds. Once again, these views were shared by both the heads of households and community leaders.

Forests are very important in protecting water catchments especially through reducing the rate of evaporation and soil erosion. Likewise at Ezikhotheni and Ngcayini, community forests are important in the protection of catchments for the rivers traversing these areas. At Ezikhotheni, the catchments are for Ngwedze, Mhlakela, Mdakane and Magcabhakazi rivers. At Ngcayini, the catchments are for Lobanda, Mhlambanyoni, Bhudlweni and Mkhosana rivers. This basically indicates that Ezikhotheni and Ngcayini chiefdoms are well drained. For instance, in an effort to maximize the usage of water from the rivers some community members have vegetable garden along the rivers. They use the water from the rivers for irrigation.

By the same token, there are tree species which are designated as royal trees in the country. For instance, according to 41% of the heads of households at Ezikhotheni and 6% at Ngcayini these tree species include Imbondvo lemnyama (*Combretum molle*), Lusekwane (*Dichrostachys cinerea*) (Table 5.9a in Appendix 4). Likewise, community leaders also identified species such as Imbondvo lemnyama (*Combretum molle*) and Lusekwane (*Dichrostachys cinerea*) (27.3% at Ezikhotheni and 9.1% at Ngcayini) (Table 5.9b in Appendix 4). Worth noting is that some of the species were found in both chiefdoms such as Imbondvo lemnyama (*Combretum molle*) and Lusekwane (*Dichrostachys cinerea*) but others such as Umphahla (*Brachylaena spp.*), Masweti (*Manonhotaxis caffra*), Umlahlabantfu (*Zizyphus mucronata*) were found at Ngcayini, whereas Umncuma (*Olea spp.*) was found at Ezikhotheni (Table 5.9a in Appendix 4).

In terms of the uses of royal tree species, 96% of the heads of households at Ezikhotheni and 79% at Ngcayini reflected that a majority of them were for constructing kraals (Figure 5.18). Tree species which are used in the construction of kraals include; Imbondvo lemnyama (*Combretum molle*), Lusekwane (*Dichrostachys cinerea*), Umphahla (*Brachylaena spp.*), Umncuma (*Olea spp.*) and Umhlume (*Adina spp.*). At the same time, tree species such as Umhlume (*Adina spp.*) and Umphahla (*Brachylaena spp.*) are also used in the building of huts and hut enclosures. It must also be noted that Umhlume (*Adina spp.*) and Umphahla (*Brachylaena spp.*) have a spiritual value attached to them, that is, they prevent lightning strikes.

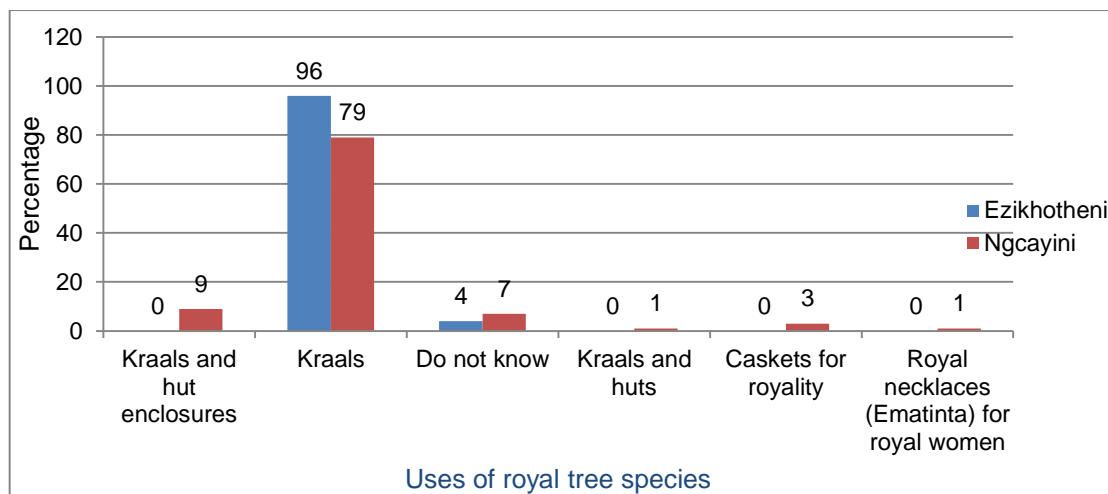


Figure 5.18: Ezikhotheni and Ngcayini heads of households' views on uses of royal tree species in the royal kraals

The findings also reveal that there is a tree species which is used for making caskets for royalty namely *Masweti* (*Manonhotaxis caffra*) (3% at Ngcayini) as well as those used for making royal necklaces (*Ematinta*) for royal women (1% at Ngcayini) namely *Umlahlabantfu* (*Zizyphus mucronata*) (Figure 5.18). These necklaces are normally worn by royal women who are breastfeeding. At the same time, *Umlahlabantfu* (*Zizyphus mucronata*) is also used for burials. That is to say, after the grave has been constructed a branch of *Umlahlabantfu* (*Zizyphus mucronata*) is normally laid on it symbolizing that the person has indeed been laid to rest. According to community leaders, royal tree species are mainly used for constructing kraals (90.9% at Ezikhotheni and 90.9% at Ngcayini), as well as constructing hut enclosures (9.1% at Ezikhotheni and 9.1% at Ngcayini).

Considering the significance of the tree species in the culture of Swaziland, the study also investigated how they are protected. Findings from the heads of households indicate that it is prohibited to cut and use royal tree species in your homestead (87% at Ezikhotheni and 14% at Ngcayini). On the other hand, 1% of the heads of households at Ezikhotheni and 77% at Ngcayini declared that royal tree species are not protected, because people access them without permission as they are part of the natural forests. Furthermore, 12% of the heads of households at Ezikhotheni and 9% at Ngcayini claimed to be ignorant on how the royal tree species are protected. Community leaders on the other hand, revealed that it is prohibited to cut and use royal tree species in your homestead (100% at Ezikhotheni and

36.4% at Ngcayini). Moreover, some community leaders stated that royal tree species are not protected since people access them without permission as they are part of the natural forests (63.6% at Ngcayini). It is worth noting that a majority of both heads of households and community leaders at Ngcayini asserted that royal tree species are not protected. This is largely because there was no substantive Chief at Ngcayini, hence people deliberately disobeyed rules.

Applying the chi-square ( $\chi^2$ ) test on the findings concerning the protection of tree species used in royal kraals to establish the level of significance, a  $p$  value of 0.000 is attained for the views of the heads of households and a  $p$  value of 0.001 for the community leaders. These values indicate that there is a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms regarding protection of tree species used in royal kraals.

## **5.10 The Extent of Community Action in the Management of Community Forests**

The main thrust in this study is the role of community action in the management of community forests. Therefore, heads of households and community leaders were investigated on the extent of community action in the management of community forests. For instance, 75% of the heads of households at Ezikhotheni and 15% at Ngcayini acceded to that they had an understanding of community action in forest resource management. Contrariwise, 25% of the heads of households at Ezikhotheni and 85% at Ngcayini negated having knowledge on community action in forest resource management. It is important to note that, the notion of community action was generally well embraced at Ezikhotheni than at Ngcayini. As already alluded to earlier on, this is evident through the activities of the NRMCS where it was active at Ezikhotheni than at Ngcayini.

When asked to disclose their understanding on community action, 90% of the heads of households at Ezikhotheni and 40% at Ngcayini indicated that it involves community members coming together and formulating rules, as well as appointing a committee to oversee community forest resources. At the same time, some of the heads of households

proclaimed that community action is when community members collaborate in taking care of natural forests in their surroundings. According to the community leaders, community action involves community members coming together and formulating rules, as well as appointing a committee to oversee community forest resources (100% at Ezikhotheni and 100% at Ngcayini). This indicates that both community members and leaders have hands-on experience of community action from the respective chiefdoms.

When asked on the existence of community action in their chiefdoms, 71.5% of the heads of households at Ezikhotheni and 6% at Ngcayini acknowledged its existence. On the other hand, 28.5% of the heads of households at Ezikhotheni and 62.3% at Ngcayini refuted the existence of community action in their chiefdoms. Of note is that, a majority of the heads of households at Ngcayini negated existence of community action in the management of community forest resources. Regarding, who initiated the idea of community action in the chiefdom, the findings depict that it was mainly community leaders. For instance, 74.8% of the heads of households at Ezikhotheni and 50% at Ngcayini indicated that it was initiated by community leaders (Figure 5.19a). Some of the heads of households were however, of the view that it was initiated by community members (23.1% at Ezikhotheni and 33.3% at Ngcayini) (Figure 5.19a).

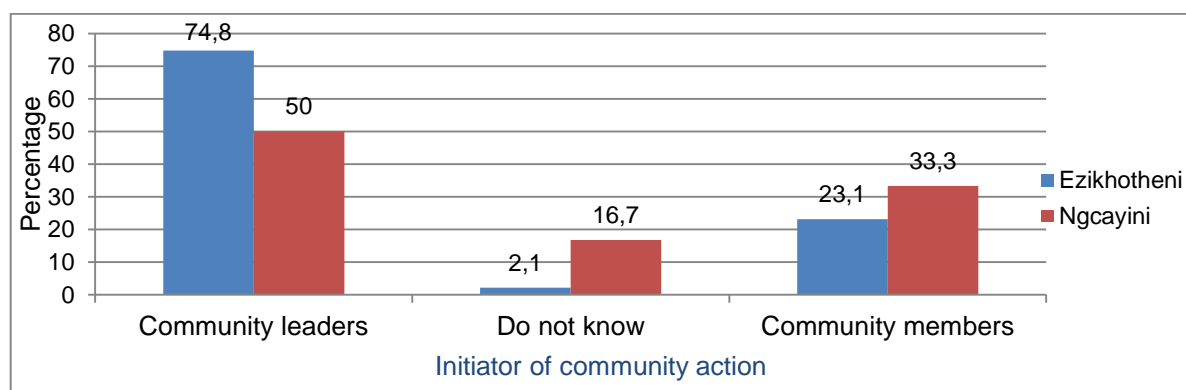


Figure 5.19a: Heads of households' views on who came up with the idea of community action in the management of community forests in the respective chiefdoms

According to the community leaders, community action was primarily initiated by community leaders (90.9% at Ezikhotheni and 9.1% at Ngcayini) (Figure 5.19b). Notably, there were some community leaders who claimed that community action was initiated by



the Chief at Ezikhotheni (9.1%) and by the Japan International Cooperation Agency (JICA) at Ngcayini (9.1%) (Figure 5.19b). There were some of the heads of households (16.7%) (Figure 5.19a) and community leaders (81.8%) (Figure 5.19b) at Ngcayini, who claimed to be oblivious on who initiated community action in the chiefdom. This may be attributed to the level of involvement of community members in decision making on development initiatives at the community level. That is to say, often time's community members are not encouraged to participate in decision making on development initiatives being undertaken in their communities.

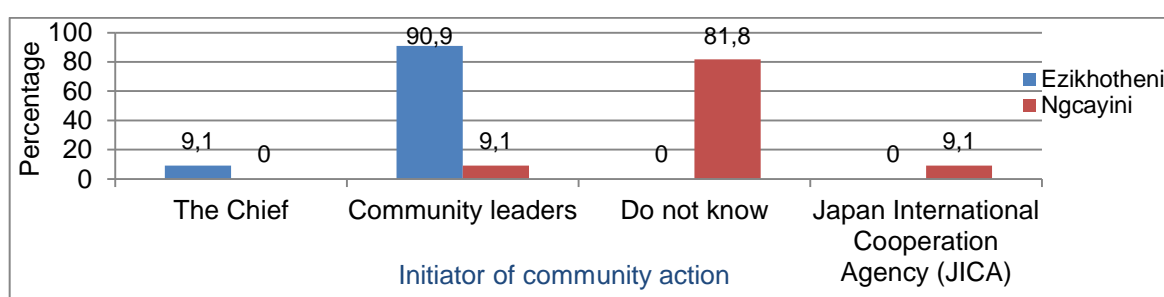


Figure 5.19b: Community leaders' views on who came up with the idea of community action in the management of community forests in the respective chiefdoms

### 5.10.1 Successes and failures of community action

Regarding success of community action in the chiefdoms, the heads of households highlighted that it was a huge success (95.8% at Ezikhotheni and 83.3% at Ngcayini). Nonetheless, 4.2% of the heads of households at Ezikhotheni and 16.7% at Ngcayini repudiated the success of community action. In terms of the indicators for success, (93.4%) of the heads of households at Ezikhotheni revealed that there was cooperation in the forest and water projects (Figure 5.20a). At Ngcayini, 100% of the heads of households stated that there is cooperation in forest management and community members abide by the rules (Figure 5.20a).

According to the community leaders, at Ezikhotheni success was mainly indicated by the community forests, water and nursery projects (45.5%) (Figure 5.20b). At Ngcayini, the main indicators for success of community action were; planting of trees along the donga with the help of JICA (27.3%), and controlled harvesting in the plantation-style community

forest (18.2%) (Figure 5.20b). At Ezikhotheni, other indicators for success included projects such as electricity schemes, fencing of grazing lands, as well as construction of the Chief's royal kraal (*umphakatsi*) (Figure 5.20b). At Ngcayini, other notable achievements which denotes success of community action include fencing of a donga by *World Vision* (9.1%), and construction of community Sisa Ranches (9.1%) (Figure 5.20b). Overall, the achievements made by the two chiefdoms indicate that there is community action although it does not merely imply that all community members are on the same page. For instance, despite the notable achievements revealed by both heads of households and community leaders, some of the community leaders claimed that there were no indicators for success of community action in their chiefdoms (9.1% at Ezikhotheni and 36.3% at Ngcayini) (Figure 5.20b).

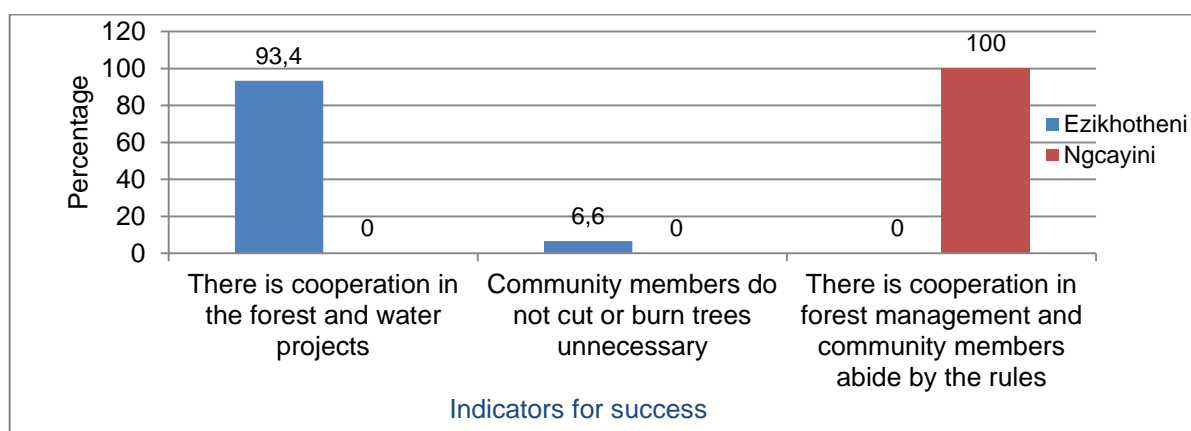


Figure 5.20a: Heads of households' views on indicators for success of community action in the respective chiefdoms

When applying the chi-square ( $\chi^2$ ) test on the findings concerning indicators for success of community action at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.000 is attained for the views of the heads of households and a  $p$  value of 0.027 for the views of the community leaders. The value for the views of the heads of households indicates that there is a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms regarding indicators for the success of community action. Nonetheless, the value for the views of the community leaders (0.027) also indicates that there is a significant difference between Ezikhotheni and Ngcayini chiefdoms regarding indicators for the success of community action.

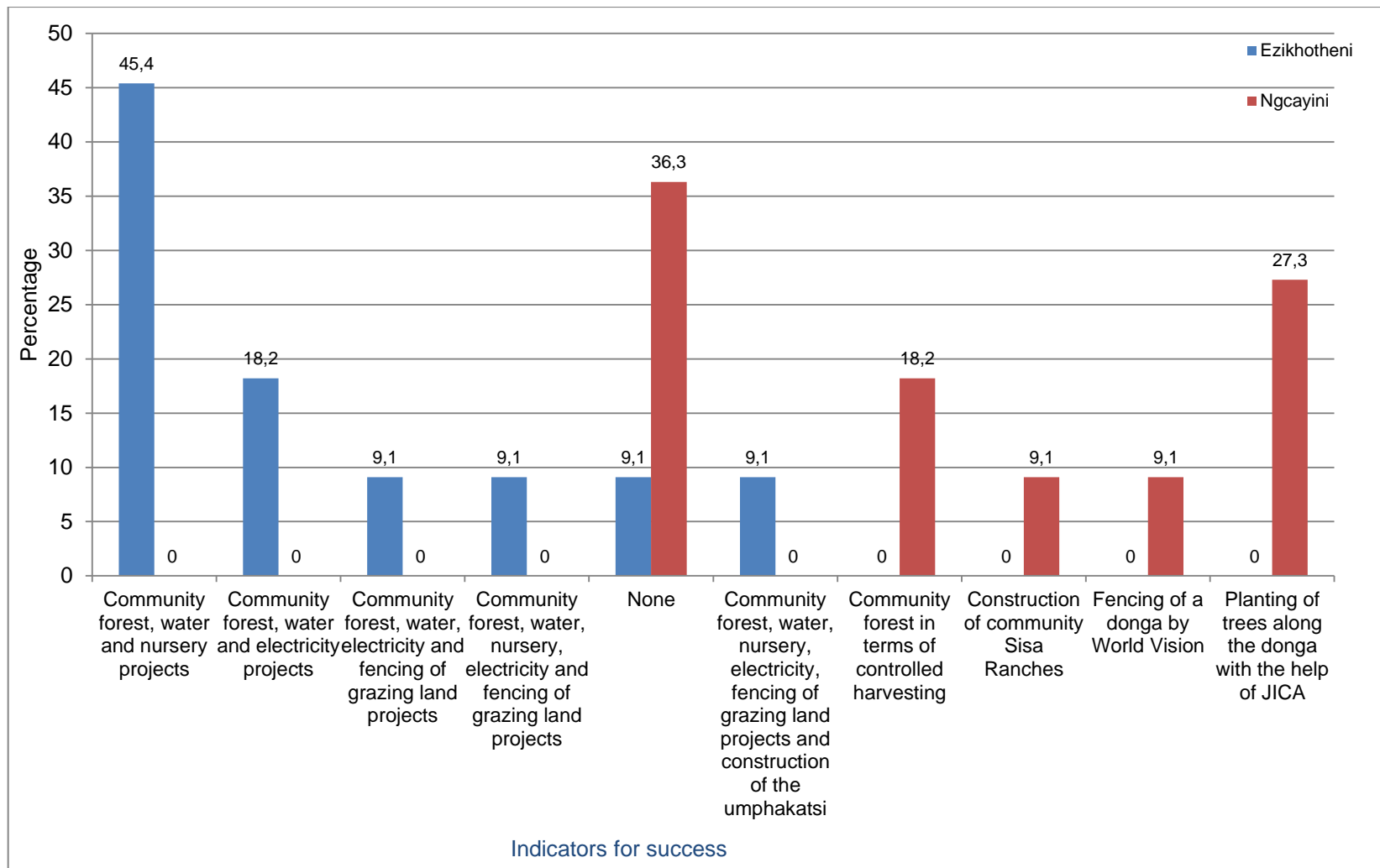


Figure 5.20b: Community leaders' views on indicators for success of community action in the respective chiefdoms

In spite of the remarkable success of community action, it also had notable failures. For instance, 33.3% of the heads of households at Ezikhotheni and 100% at Ngcayini disclosed that some community members cut trees any how without permission of the NRMC members and traditional authorities (Figure 5.21a). At the same time, 33.3% of the heads of households at Ezikhotheni decried that some community members do not participate in community projects but reap the projects' benefits (Figure 5.21a). Furthermore, 33.3% of the heads of households at Ezikhotheni complained that some community members illegally cut fruit and royal trees as well as live trees for fire wood (Figure 5.21a).

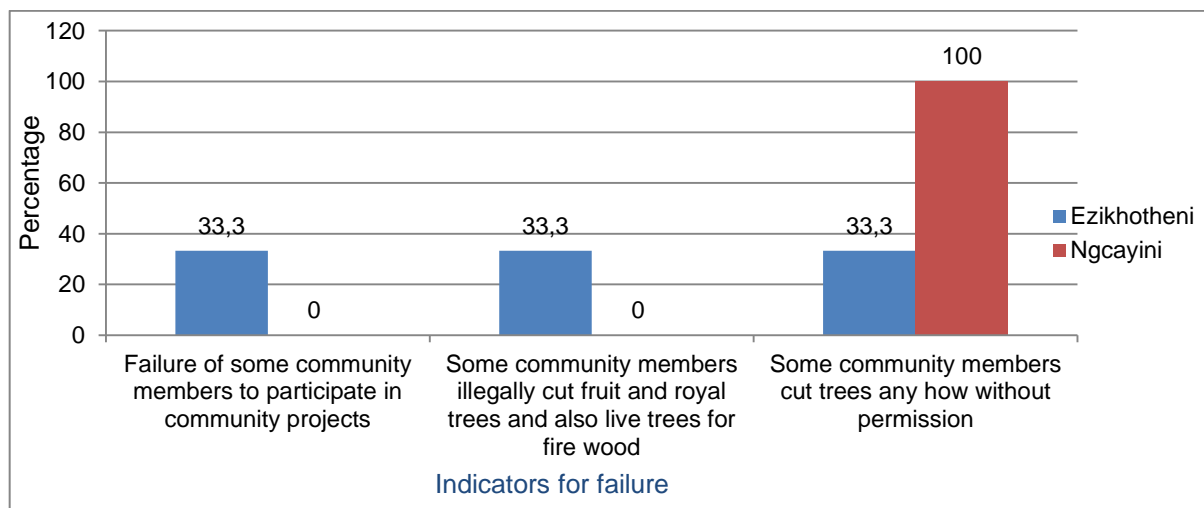


Figure 5.21a: Heads of households' views on indicators for failure of community action in the case study chiefdoms

According to the community leaders the main indicators for failure of community action at Ezikhotheni include piggery and poultry projects (27.3%) (Figure 5.21b). At Ngcayini, the main defect for community action was the theft of fence around the plantation-style community forest and dongas (63.6%) (Figure 5.21b). In the case of Ezikhotheni, 9.1% of the community leaders decried that the Chief monopolizes the community forest and also promotes commercial harvesting of sand against the will of the community (Figure 5.21b). Once again, it must be reiterated that the community forest referred to in this case is the one which was planted by *Yonge Nawe* (Plate 5.1), and it is not under the management of the NRMC. From the findings it is clear that there are always merits and demerits of cooperation, hence the successes and failures of community action in the respective chiefdoms. Regarding the monopolization of resources by the Chief, this seems to be a

common practice among almost all the newly installed Chiefs. This is therefore, a clear indicator for the need of remunerating Chiefs for administering communities.

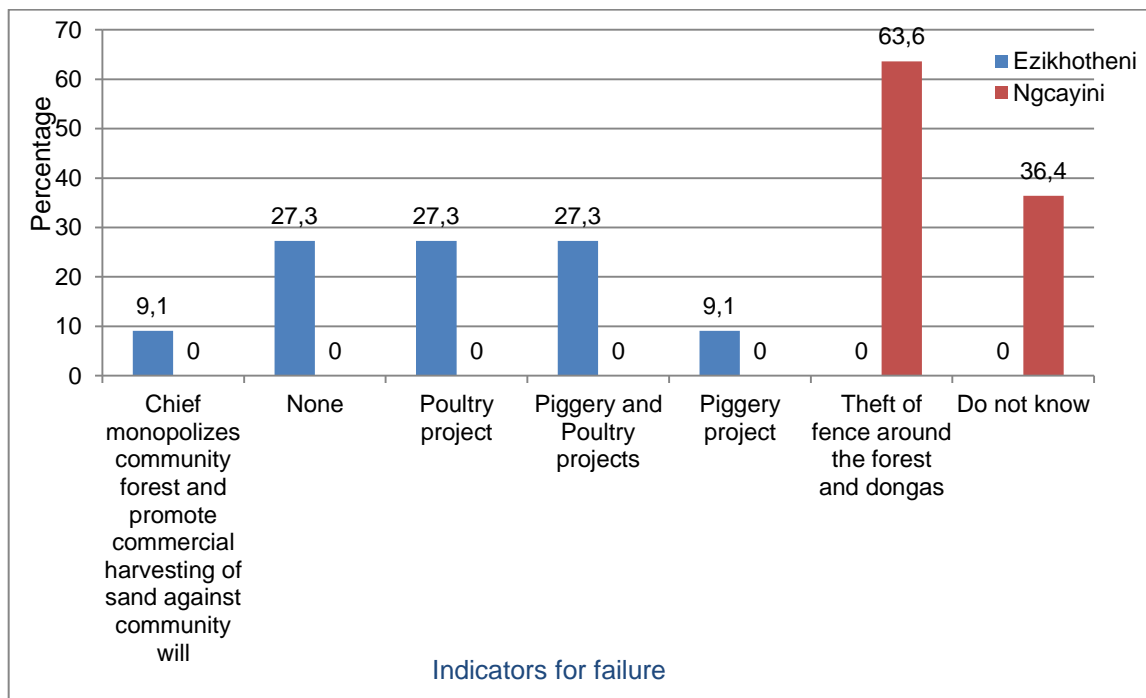


Figure 5.21b: Community leaders' views on indicators for failure of community action in the case study chiefdoms

Applying the chi-square ( $\chi^2$ ) test on the findings concerning indicators for failure of community action at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.459 is attained for the views of heads of households and a  $p$  value of 0.001 for the views of community leaders. The  $p$  value for the views of heads of households of 0.459 indicates that there is no significant difference between Ezikhotheni and Ngcayini chiefdoms regarding indicators for failure of community action. Nonetheless, the  $p$  value for the views of community leaders of 0.001 indicates that there is a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms regarding indicators for failure of community action.

## **5.11 Opportunities and Threats for Community Action in the Management of Community Forests in the Respective Chiefdoms**

The study also considered opportunities and threats for community action in the management of community forests at Ezikhotheni and Ngcayini chiefdoms.

### **5.11.1 Opportunities for community action**

Regarding availability of opportunities for community action, 97.5% of the heads of households at Ezikhotheni and 9% at Ngcayini consented, while 2.5% at Ezikhotheni and 91% at Ngcayini negated. A reason advanced for negating opportunities for community action in both chiefdoms was lack of knowledge on community action among community members (60% at Ezikhotheni and 44% at Ngcayini). Other reasons include; lack of transparency on the money derived through selling forests resources at Ezikhotheni (40%), and disobeying of rules by community members due to an absence of a Chief at Ngcayini (56%).

Concerning the opportunities for community action, 93.8% of the heads of households at Ezikhotheni and 22.2% at Ngcayini, indicated that training and mobilizing community members on community action was a crucial step towards attainment of community wide collaboration in the management of resources (Figure 5.22a). At Ngcayini in particular, it also transpired that training and disciplining community members who do not participate in community activities (77.8%) was considered as a viable opportunity for community action in the management of community forests in particular, and resources in general (Figure 5.22a). A more striking issue regarding the outlined opportunities is the emphasis on training. Indeed for any project to be successful the beneficiaries must be trained so that they comprehend and appreciate it.

According to the community leaders (81.8% at Ezikhotheni and 45.5% at Ngcayini) there is an opportunity for community action in the management of community resources through training and mobilizing community members on community action (Figure 5.22b). At Ezikhotheni, community leaders viewed training and disciplining community members who do not participate in community activities (9.1%) as an opportunity for community

action in the management of community forests in particular, and resources in general (Figure 5.22b).

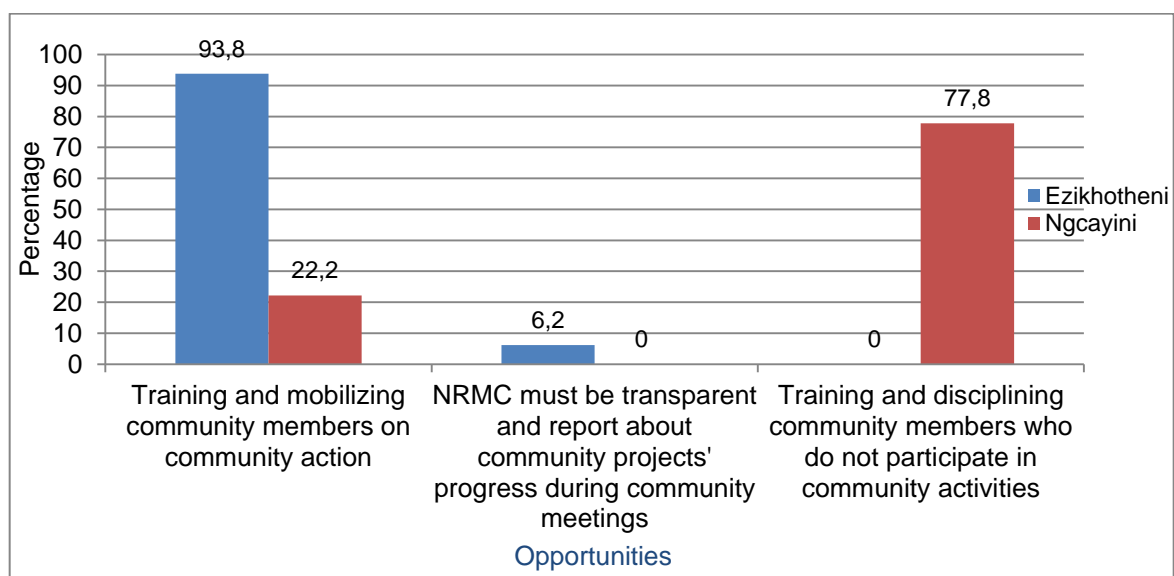


Figure 5.22a: Heads of households' views on opportunities for community action in the respective chiefdoms

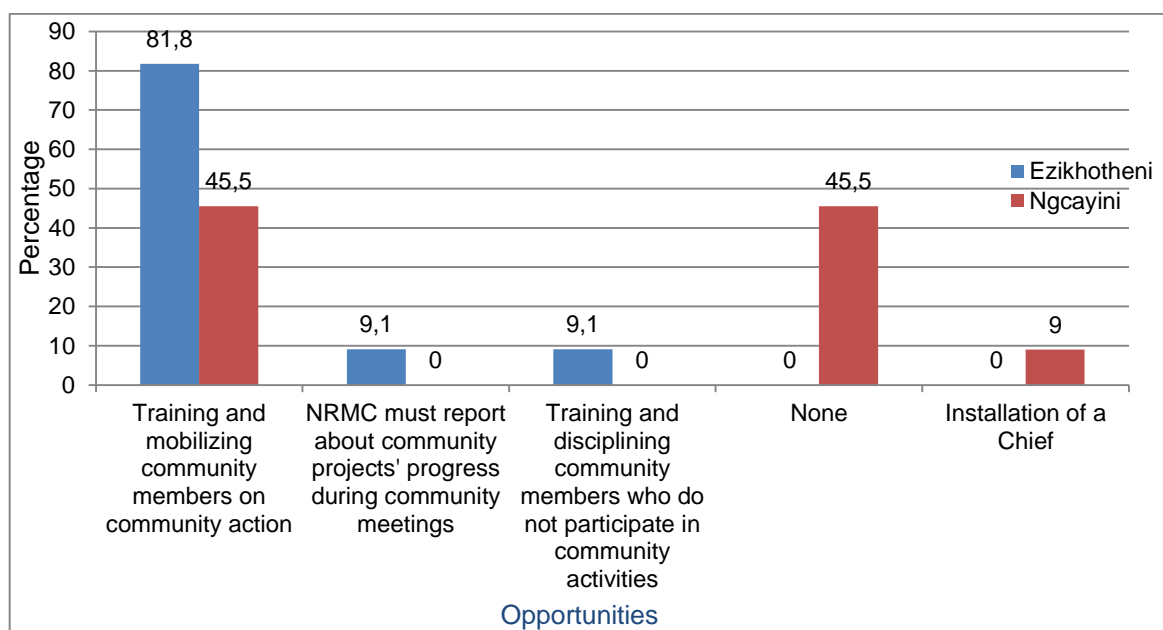


Figure 5.22b: Community leaders' views on opportunities for community action in the respective chiefdoms

At Ngcayini, there was a hope that installation of a Chief (9%) would improve community action in the management of community forests in the chiefdom (Figure 5.22b). Experience however, indicates that in most of the chiefdoms in Swaziland, where new Chiefs have been installed there is no peace and lack of development due to chieftaincy disputes. On those bases, there is no guarantee that installation of a Chief will aid community action in the management of resources at Ngcayini chiefdom. According to both heads of households and community leaders at Ezikhotheni, there was also an opportunity for community action through transparency in the NRMCC, and in its reporting about progress in community projects during community meetings (6.2% in Figure 5.22a, and 9.1% in Figure 5.22b).

When applying the chi-square ( $\chi^2$ ) test on the findings concerning opportunities for community action at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.000 is attained for the views of the heads of households and a  $p$  value of 0.058 for the views of the community leaders. The  $p$  value for the views of the heads of households of 0.000 indicates that there is a high level of significance in the difference between Ezikhotheni and Ngcayini chiefdoms regarding opportunities for community action in the management of community forests. On the other hand, the  $p$  value for the views of the community leaders of 0.058 indicates that there is no significant difference between Ezikhotheni and Ngcayini chiefdoms regarding opportunities for community action.

#### **5.11.2 Threats for community action**

With respect to the threats for community action, 60% of the heads of households at Ezikhotheni and 13% at Ngcayini affirmed that there were threats, whereas 40% at Ezikhotheni and 87% at Ngcayini negated existence of any threats. The reasons for negating threats for community action were that; community members cooperate in management of community forests (96.2% at Ezikhotheni and 3.4% at Ngcayini), as well as that there was no community action in the chiefdom (3.8% at Ezikhotheni and 96.6% at Ngcayini). It is evident from the findings that unlike at Ezikhotheni, the concept of community action was indeed not well understood at Ngcayini.



According to 69.2% of the heads of households at Ezikhotheni, the main threat for community action in the management of community forests was failure of community members to attend meetings and participate in community projects' activities (Figure 5.23a). At Ngcayini, 46.2% of the heads of households divulged that the major threat was reluctance of the community members to accept change and also dearth of unity due to the absence of a Chief (Figure 5.23a). Other identified threats include; lack of knowledge of community action by the community members (0.8% at Ezikhotheni and 23.1% at Ngcayini), and illegal harvesting of forest resources and wildfire (10.8% at Ezikhotheni and 7.7% at Ngcayini) (Figure 5.23a). Furthermore, the heads of households at Ezikhotheni were concerned about lack of transparency among the NRMC members (12.5%), as well as their (NRMC members) failure to convene meetings for discussing progress on the community forest project (6.7%) (Figure 5.23a). At Ngcayini on the other hand, the heads of households were concerned about the theft of fence around plantation-style community forests (15.4%) (Figure 5.23a).

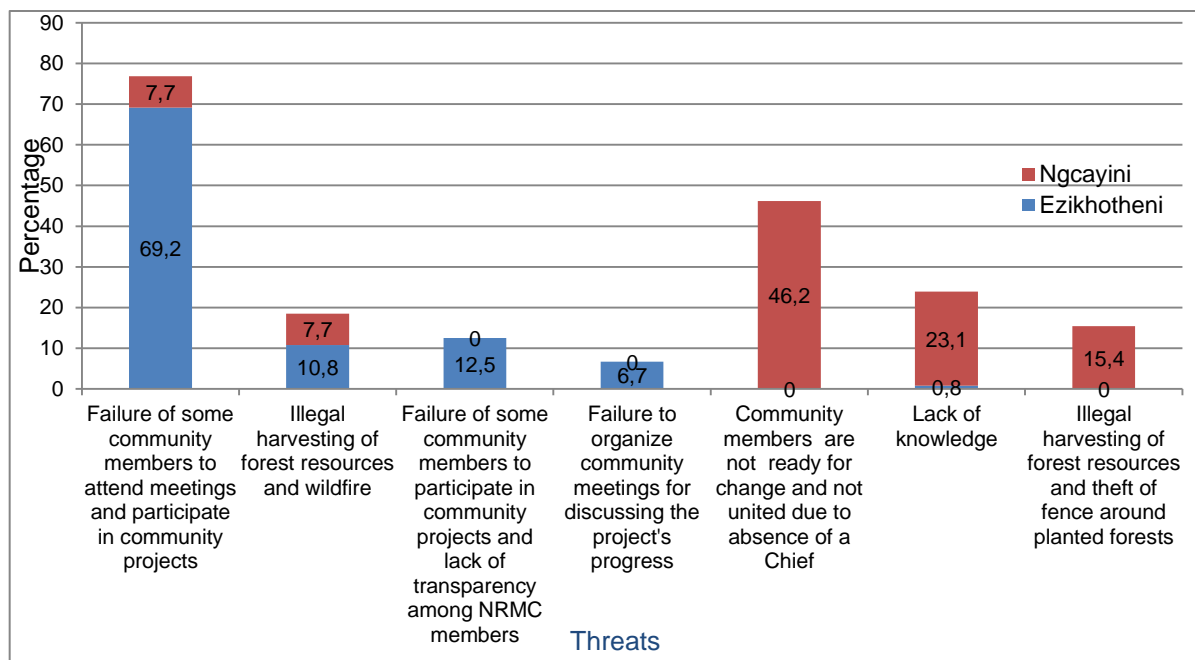


Figure 5.23a: Heads of households' views on threats for community action in the case study chiefdoms

From the perspective of the community leaders, the main threats for community action were failure of the community members to attend meetings and participate in community

projects (36.4% at Ezikhotheni and 27.3% at Ngcayini) (Figure 5.23b). At Ngcayini in particular, 54.5% of the community leaders were of the view that there were no threats to community action in the chiefdom (Figure 5.23b). Furthermore, illegal harvesting of forest resources was identified as a serious threat to community action at Ezikhotheni (36.4%) and at Ngcayini (9.1%) (Figure 5.23b). At Ezikhotheni on the one hand, there was also a concern regarding monopolization of community resources (forest and sand) by the Chief (9.1%), while at Ngcayini there was a view that the community members were not united due to the absence of a Chief (9.1%) (Figure 5.23b). From the identified threats it can be deduced that there is a need for capacity building among community members on the importance of sustainable management of community resources. This is more so because most resources on Swazi Nation Land (SNL) are communally owned, hence all community members are equally responsible for their sustainable management.

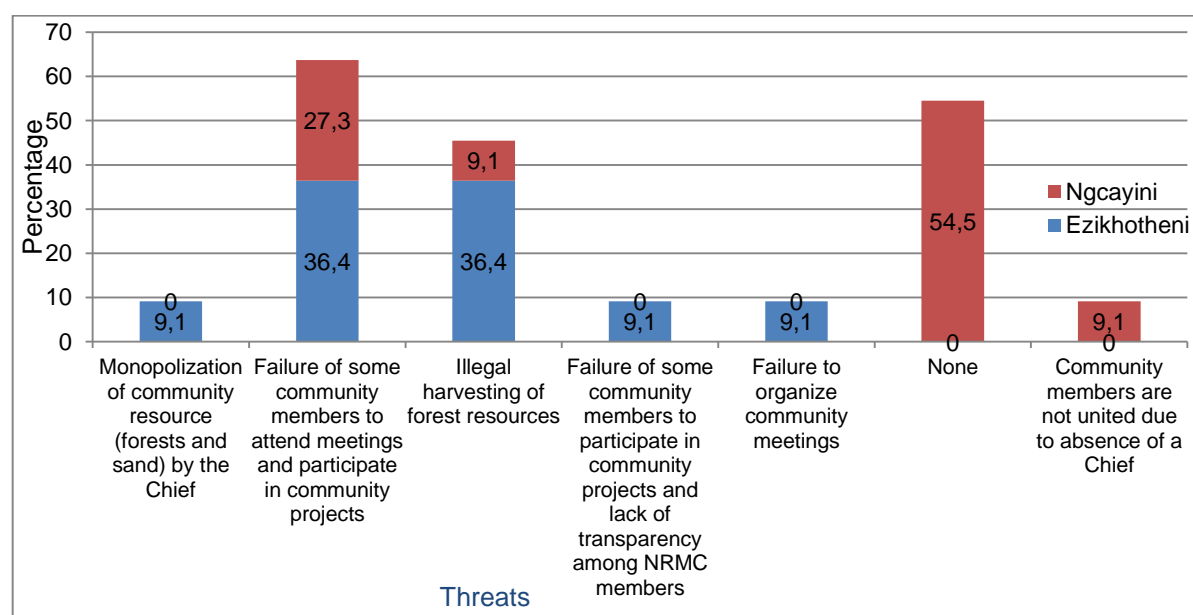


Figure 5.23b: Community leaders' views on threats for community action in the case study chiefdoms

When applying the chi-square ( $\chi^2$ ) test on the findings concerning threats for community action at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.000 is attained for the views of the heads of households and a  $p$  value of 0.063 for the views of the community leaders. The  $p$  value for the views of the heads of households of 0.000 indicates that there is a high level of significance in the difference

between Ezikhotheni and Ngcayini chiefdoms regarding the threats for community action in the management of community forests. On the other hand, the  $p$  value for the views of the community leaders of 0.063 indicates that there is no significant difference between Ezikhotheni and Ngcayini chiefdoms regarding the threats for community action.

### **5.11.3 Conflicts pertaining to management of community forests**

The study investigated conflicts pertaining to the management of community forests at Ezikhotheni and Ngcayini, and on how they are resolved. This is mainly because; normally where there is collaboration of people conflicts arises. Worth noting is that unresolved conflicts are a serious threat to sustainable management of resources. According to 8% of the heads of households at Ezikhotheni and 5% at Ngcayini there were conflicts arising pertaining to management of community forests in the chiefdoms. Notably, a majority of the heads of households (76.5% at Ezikhotheni and 87% at Ngcayini) argued that there were no conflicts arising in relation to management of community forests in the chiefdoms. In addition, there were also some heads of households who claimed to be ignorant on conflicts arising with regard to management of community forests (15.5% at Ezikhotheni and 8% at Ngcayini).

Regarding the conflicts, 81.2% of the heads of households at Ezikhotheni and 80% at Ngcayini identified illegal harvesting of forest resources as the major conflict in the management of community forests (Figure 5.24a). Other noted conflicts were the failure of community members to participate in community forest work at Ezikhotheni and theft of fence at Ngcayini. From the perspective of community leaders, illegal harvesting of forests resources was the most common source of conflict in both chiefdoms. For instance, 45.5% of the community leaders at Ezikhotheni stated that illegal harvesting of forest resources in conjunction with failure to participate in project work was the major conflict (Figure 5.24b). It is important to note that theft of fence around the plantation-style forests was also a source of conflict among the community members at Ezikhotheni (9.1%) and at Ngcayini (9.1%) (Figure 5.24b). Furthermore, at Ngcayini, the community leaders pointed out that community members were not content about the lack of transparency among community leaders on the money obtained and used from selling forest resources (9.1%). On the other

hand, at Ezikhotheni, the community leaders pointed out that community members were disgruntled on the reluctance of the NRMC to disseminate information regarding funds generated through the forest project and cooperate with them (traditional authorities) (9.1%) (Figure 5.24b).

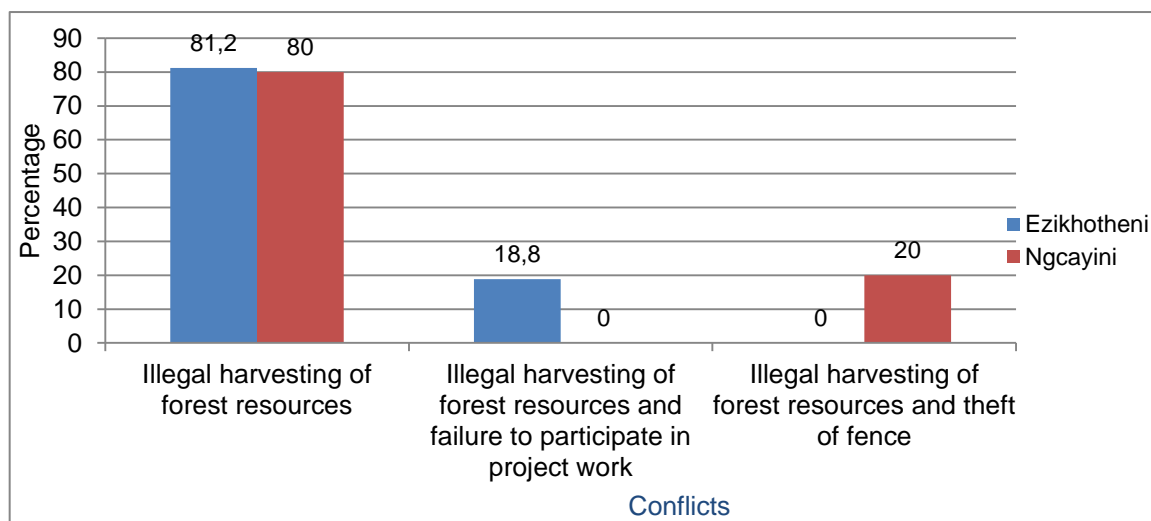


Figure 5.24a: Heads of households' views on conflicts pertaining to management of community forests in the respective chiefdoms

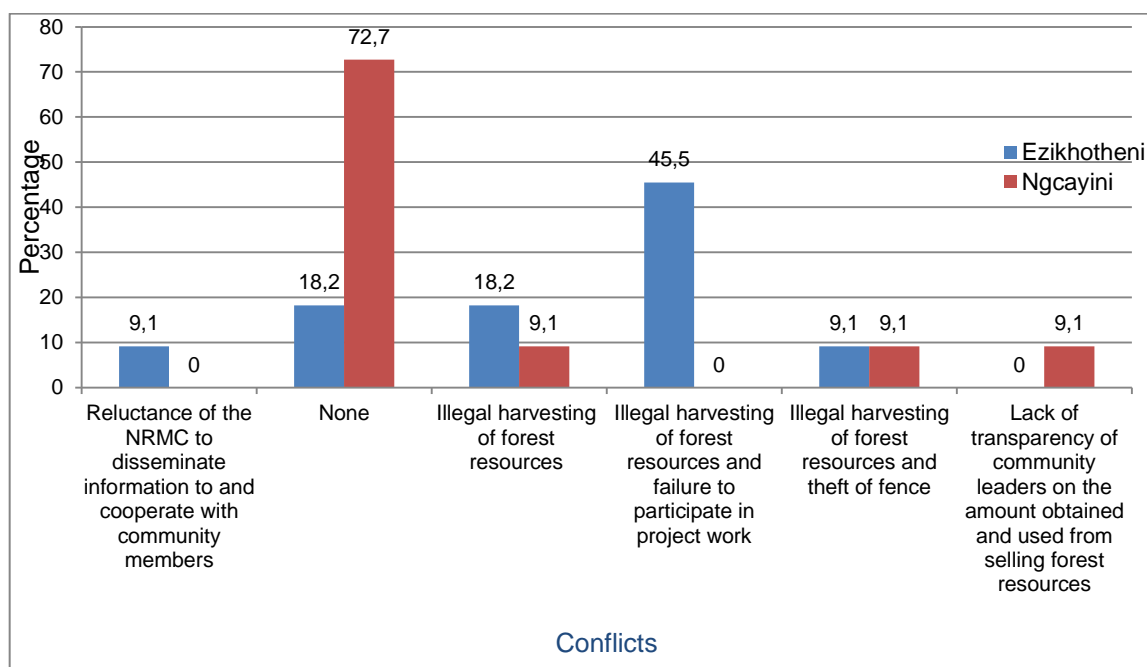


Figure 5.24b: Community leaders' views on conflicts pertaining to management of community forests in the respective chiefdoms

In addition, the heads of households were probed on how the conflicts were resolved. In turn, they indicated that the inner council fine community members who harvest resources illegally (87.5% at Ezikhotheni and 100% at Ngcayini). Another strategy of conflict resolution applied at Ezikhotheni was to both encourage participation in forest activities and fine people who illegally harvest resources (12.5%). It must be noted that, the strategies indicated by the heads of households were also highlighted by the community leaders. For instance, 40% of the community leaders at Ezikhotheni and 33.3% at Ngcayini, pointed out that the inner council fine community members who harvest forest resources illegally. At the same time, another 40% of the community leaders at Ezikhotheni and 33.3% at Ngcayini indicated that the inner council encourages participation and fine people who harvest resources illegally. Nonetheless, 20% of the community leaders at Ezikhotheni and 33.3% at Ngcayini claimed that the conflicts were not resolved.

Applying the chi-square ( $\chi^2$ ) test on the findings concerning conflicts arising in the management of community forests at Ezikhotheni and Ngcayini chiefdoms to establish the level of significance, a  $p$  value of 0.126 is attained for the views of the heads of households and a  $p$  value of 0.053 for the views of the community leaders. These  $p$  values (0.126 and 0.053) indicate that there is no significant difference between Ezikhotheni and Ngcayini chiefdoms regarding the conflicts arising in the management of community forests in the chiefdoms.

## **5.12 Summary**

There are two types of community forests in the study sites namely natural and plantation-style, where the former are regarded as free-access resources (free-for-all), which means that community members do not pay for resources. Despite being open access resources, the community members have to seek permission from community leaders to extract resources. Similarly, NTFPs are not paid for but their access requires permission from community leaders. On the contrary, access to plantation-style community forests is controlled. For instance, access points to plantation-style community forests are traditional authorities and NRMCS. These are some of the major rules governing management of community forests in the study sites. Other key rules include; prohibited cutting of fruit and

royal trees, as well as prohibited cutting of live trees for fuel wood. Notably, the rules are formulated by community members and enforced by NRMCs and traditional authorities. In addition to the rules, community members had knowledge of the National Forest Policy and environmental legislation especially the Environment Management Act.

In terms of managing the community forests, internal stakeholders embarked on a number of strategies which include holding meetings to deliberate on issues concerning management of the forests. It however, emerged that most community members do not attend meetings. The roles and responsibilities of males and females in the management of community forests indiscriminately include planting, pruning, mending fence, making fire breaks and harvesting. Of utmost importance is that, the community members are trained on management of community resources. There are NRMCs in both chiefdoms, but it is more active at Ezikhotheni than at Ngcayini.

Concerning distribution of benefits derived from sale of forest resources in community forests it was carried out by the NRMC members at Ezikhotheni and traditional authorities at Ngcayini. Nevertheless, there was an element of a conflict of interests between the NRMCs and traditional authorities in the course of executing their duties and responsibilities. Another notable distinction between the chiefdoms is that the notion of community action was well embraced at Ezikhotheni than at Ngcayini. Notably, community action is fraught with both opportunities and threats. In particular, opportunities include training and disciplining community members who do not participate in community activities, whereas threats comprise chieftaincy disputes and absence of substantive Chiefs to oversee the administration and management of resources.

As reflected on Figure 4.5 that data presentation is divided into three chapters (five, six and seven), the subsequent chapter (six) concentrates on the collaborations between organizations and communities in the management of community forests.

## **CHAPTER 6**

### **INSIGHTS GAINED FROM EXTERNAL STAKEHOLDERS ON THE MANAGEMENT OF COMMUNITY FORESTS**

#### **6.1 The Roles and Responsibilities of Officers**

This section focuses on a presentation of the findings from key informants, particularly officers involved in the development and management of community forests at Ezikhotheni and Ngcayini chiefdoms. The officers who were investigated include four officers from Swaziland Environment Authority (SEA), four officers from the Forestry Department in the Ministry of Tourism and Environment Affairs (MTEA), one officer from *World vision*, and one officer from *Conserve Swaziland*. All in all, there were ten officers involved in the study and consequently the findings are presented.

With respect to the positions held by officers in their organizations, the findings depict a broad spectrum of experience. From SEA the officers include; Director of policy planning, research and information, Ecologists, Biodiversity Officer and National Environment Fund Manager. Officers from the Forestry Department in the MTEA include; two Senior Foresters, Forestry officer – Silviculture, and the Herbarium Curator. Then from *World Vision* the officer was a Livelihoods Manager, while from *Conserve Swaziland* the officer was the Director of Environment.

Regarding the responsibilities of the officers, from SEA they include; overseeing biodiversity and ecosystems management, regulation of use of biotechnology, management of the National Environment Fund (NEF) and its activities, information and education. The Forestry officer – Silviculture - is responsible for coordinating afforestation and reforestation programs, development of technical information on best practices and methods for managing natural forests. Moreover, one Senior Forester is responsible for training and educating farmers on tree planting and creating awareness on Invasive Alien Plant Species (IAPS) and rehabilitating degraded land. The other Senior Forester is mainly responsible for Forestry extension. Furthermore, the Herbarium Curator is responsible for

making inventories and documenting/publishing of the flora of Swaziland, taxonomy, curation and maintenance of herbarium. On the other hand, the Livelihoods Manager is mainly a livelihoods lead. Finally, the Director of Environment is responsible for being an environmental practitioner helping communities rehabilitate degraded land through forestations and prevention of desertification.

The future plans of the organizations regarding officers' mandate and effectiveness are that; SEA envisages institutional growth of the organization, institutional decentralization of service provision, as well as raising adequate funds and expanding the activities to huge national projects. The future plans for the Forestry Department are to promote tree growing and conservation of natural forest resources, training and establishing a national botanical garden, improve working with communities and conservation of biodiversity. For *World Vision*, the plans are to be a leading organization in development and impacting critical masses. Furthermore, the future plans for *Conserve Swaziland* are to serve all communities and encourage all people to live green through capacity building.

## **6.2 Vision, Mission and Objectives**

The vision for SEA is to be a leading and credible environmental authority in the world. The Forestry Department's vision is to achieve efficient, profitable, sustainable management and utilization of forest resources for the benefit of the entire society. *World vision's* idea is the development of rural households so that they manage their lives sustainably. Finally, the vision for *Conserve Swaziland* is to promote soil, water and forest conservation.

In terms of the mission statements of the organizations, for SEA it is to safeguard the environment and human health through effective environmental management for the present and future generations. The duty of the Forestry Department is to provide a climate infrastructure that will maximize quality and security of life of the people of Swaziland, as well as promote and support a forest industry through creating an environmental framework that preserves forests for sustainable socio-economic development. *World Vision* has a mission of promoting Christian international partnership following the Lord in working



with the poor for their transformation. Finally, *Conserve Swaziland*'s mission statement is that soil and water are our greatest assets help conserve them.

Regarding the objectives of the organizations, SEA is supposed to ensure compliance and enforcement, public awareness and education, pollution control and waste management, as well as Natural Resource Management (NRM). The objectives of the Forestry Department are to improve access to land for development of forest resources, secure land tenure for trees and forests. According to the Government of Swaziland (2018), the objectives of the Forestry Department are to provide an oversight role, direction and guidance to the forest development and management sector; provide extension services to farmers; promote tree growing and sustainable use of forest and natural resources; promote sustainable use, management and development of forest resources including development of the forest industry; improve forest productivity and ensure sustainable supply of multiple forest products and services; conserve bio-diversity of forest resources and encourage its sustainable use including protection of plant genetic resources and environment; and enhance national capacity to manage and develop the forest sector. *World Vision*'s objective is to promote rural development, wash, livelihoods, education, and health. Furthermore, *Conserve Swaziland*'s objective is to ensure that communities are living in harmony with their environments through ecological land management and environmental stewardship.

### **6.3 The Role of the Organizations in Promoting Sustainable Management of Forests**

The organizations involved in this study play a major role in enhancing sustainable management of forests in general and community forests in particular. For instance in the case of forests in general, SEA employs strategies such as afforestation programs, sporadic growing of fruit and other trees, and commemorating the World Environment Day (50%) (Figure 6.1a). Another strategy for SEA is raising awareness on the negative impacts of forest degradation such as fuel wood control (50%) (Figure 6.1a). This involves prohibited sale of fuel wood derived from natural forests.

The Forestry Department in the MTEA is very active in promoting sustainable management of forests through employing strategies such as: regulating the utilization and management of forests (25%); creating awareness on deforestation and prevention of forest fires (25%); educating farmers about the Flora Protection Act and tree planting (25%); as well as convening meetings in different parts of the country and conducting radio programs such as *Temvelo* and *Temahlatsi* (25%) (Figure 6.1a). As for *World Vision*, promotion of sustainable management of forests is through encouraging Farmer Managed Natural Regeneration (FMNR) (100%) (Figure 6.1a). *Conserve Swaziland* mainly promote sustainable management of forests through radio programs on Wednesday at 1430 hours, and national radio program entitled ‘Participatory Ecological Land Use Management’ (PELUM) (100%) (Figure 6.1a). It is important to mention that PELUM Swaziland is an association of NGOs concerned with promoting ecological land use practices.

In terms of the strategies specifically implemented in promoting sustainable management of community forests; for *World Vision* is FMNR (100%), and for *Conserve Swaziland* is establishment of 13 community forests in the country with community-based committees to manage them (100%) (Figure 6.1b). Notably, the plantation-style community forests at Ngcayini and Ezikhotheni are among the 13 community forests established by *Conserve Swaziland*. Worth noting on the strategy for *Conserve Swaziland* is that, both at Ngcayini and Ezikhotheni NRMCS were formed when the forests were established. Just like in the case of forests in general, SEA is also active in the management of community forests through: afforestation programs (50%); Environment Impact Assessments (EIAs), provision of management plans for wattle forests, and afforestation of indigenous species (25%); as well as capacity building on management of community forests (25%) (Figure 6.1b). Finally, the Forestry Department is also active in management of plantation-style community forests through employing strategies such as: establishment of more forests to ensure that there is sufficient wood for energy (25%); training on tree planting, sensitization about Invasive Alien Plant Species (IAPS) and prevention of forest fires (25%); educating farmers about the Flora Protection Act and encouraging them to protect forests; as well as convening meetings and conducting workshops to sensitize community members on sustainable management of forests (25%).

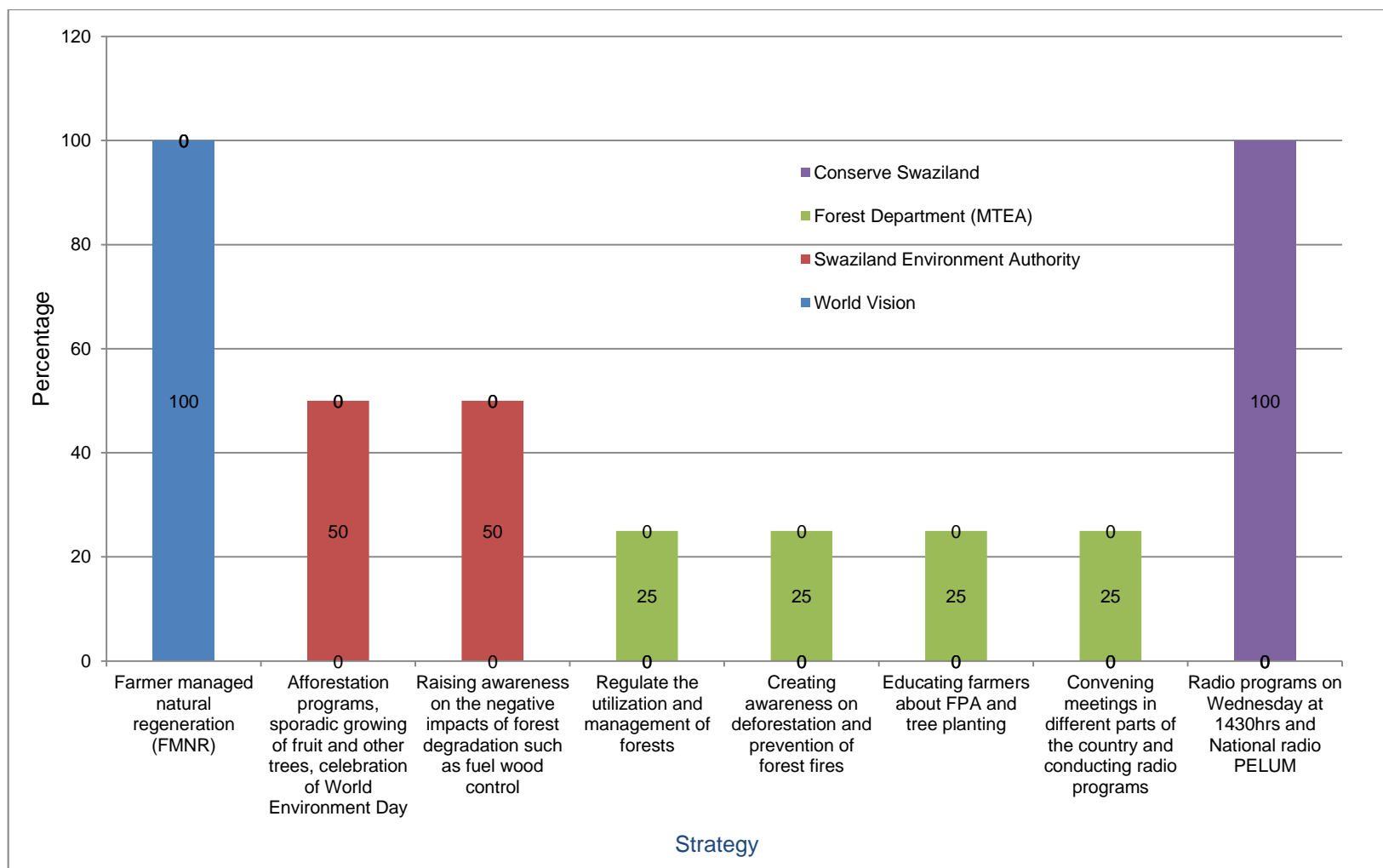


Figure 6.1a: Strategies for promoting sustainable management of forests in general

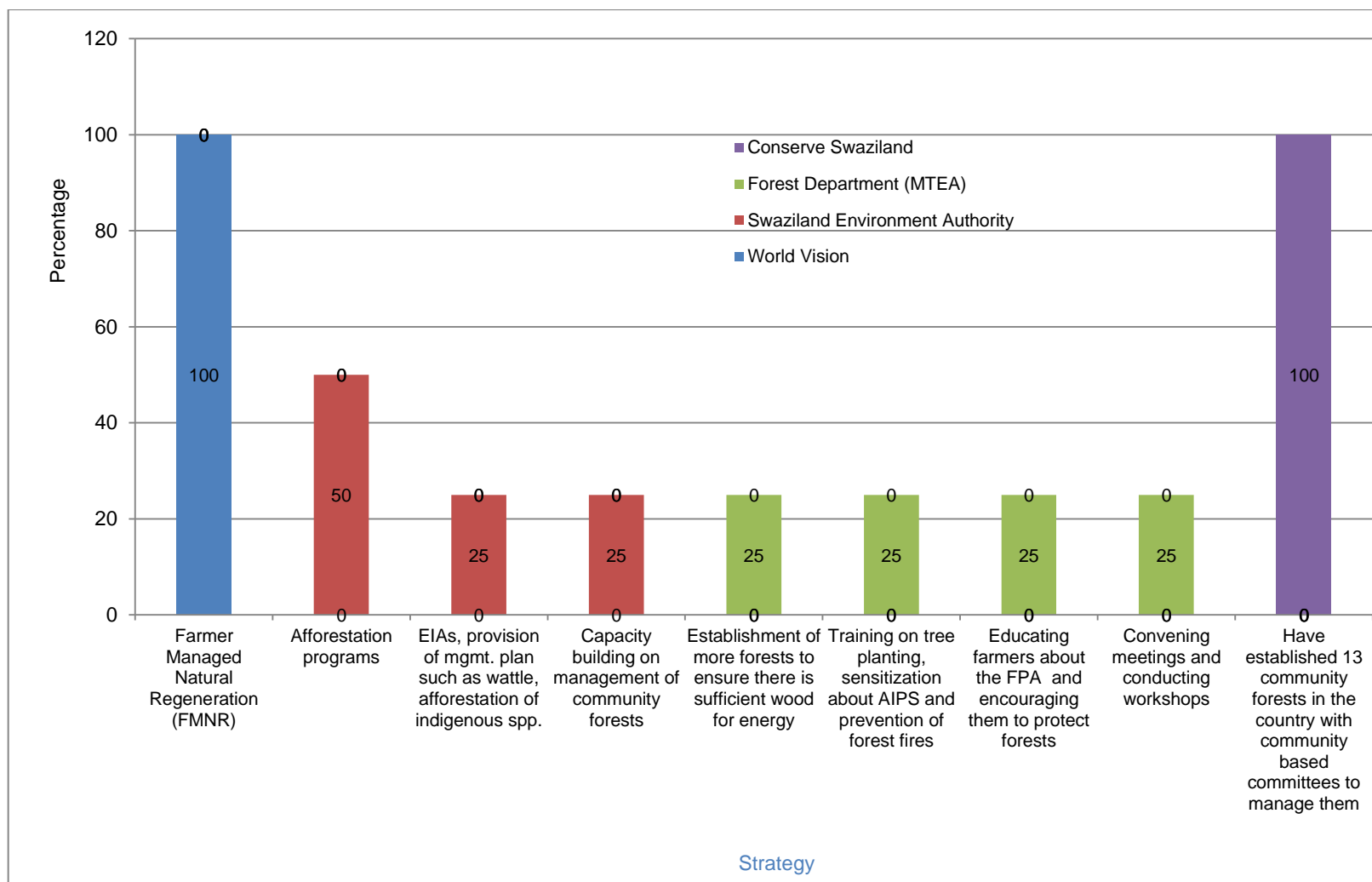


Figure 6.1b: Strategies for promoting sustainable management of community forests

From the strategies employed by the Forestry Department it transpires that community members are indeed trained on management of forest resources.

## **6.4 The Role of the Organizations in Prevention and Control of Land**

### **Degradation in the Communities**

The organizations under study play a pivotal role in prevention and control of land degradation in a number of communities including at Ngcayini and at Ezikhotheni. The strategy employed by *World Vision* is mainly good agro-practices such FMNR (100%); while for *Conserve Swaziland* is mainly; gully rehabilitation, implementing land degradation prevention measures, as well as natural and plantations' forestation programs (100%) (Figure 6.2). For SEA the strategies employed include: afforestation, gully control (gabions), and restoration of wetlands (25%); raising awareness through community meetings on or self-invitation on issues such as selling fuel wood (25%), as well assisting communities in rehabilitating landscapes through providing funding and technical support (50%) (Figure 6.2). The Forestry Department employs strategies such as: creating awareness on sustainable utilization of indigenous trees and training communities on alternative sources of energy (25%); as well as tree planting campaigns at community level on degraded areas, training on tree planting and radio programs.

## **6.5 Cooperation of Communities in the Management of Community**

### **Forests and the Prevention and Control of Land Degradation**

The organizations were probed on whether community members were cooperating in the management of community forests, as well as in preventing and controlling land degradation. The findings from the officers in the various organizations reflect that 75% of the respondents from SEA, 75% from the Forestry Department, 100% from *World Vision*, and 100% from *Conserve Swaziland* confirmed that communities were cooperative in the management of community forests as well as in the prevention and control of land degradation. From SEA, 25% of the respondents negated that communities are cooperative, while 25% from the Forestry Department indicated that the communities were both cooperative and not cooperative.

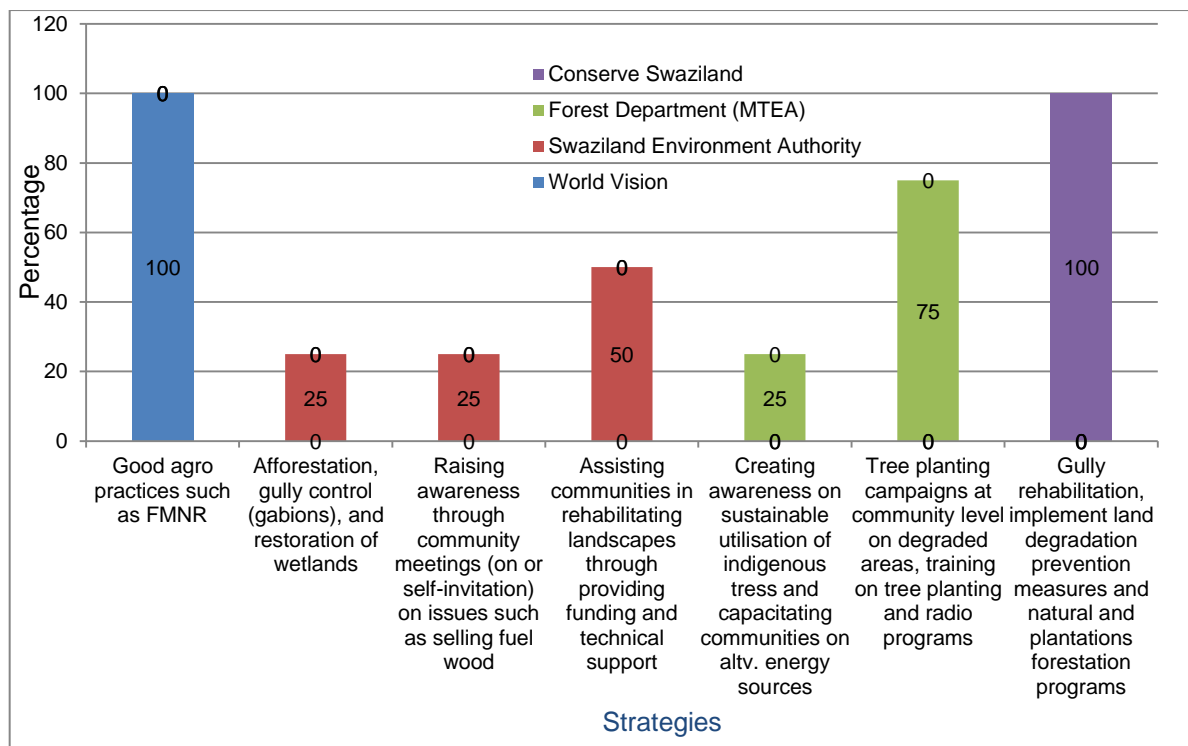


Figure 6.2: Strategies for preventing and controlling land degradation in communities

Regarding the nature of cooperation, *World Vision* indicated that community led systems are well controlled by community functions, dip tanks, and inner councils (100%) (Figure 6.3). *Conserve Swaziland* pointed out that, cooperation was through communities providing labour and managing their natural resources with the NGOs providing expertise and capacity building (100%) (Figure 6.3). According to SEA and the Forestry Department, during rehabilitation work community members organize meetings; collect rocks; insert gabions; plant trees; and mount fence around the area under rehabilitation (33.3% from Forestry Department and 25% from SEA) (Figure 6.3). Furthermore, it must be noted that community members were environmentally conscious and also proactive in reporting illegal activities to SEA (50%), as well as any unsustainable harvesting of indigenous trees to MTEA (33.3%) (Figure 6.3). On the same note, there was a view that people were reluctant to participate in community forest activities but they wanted benefits (33.3%) (Figure 6.3).

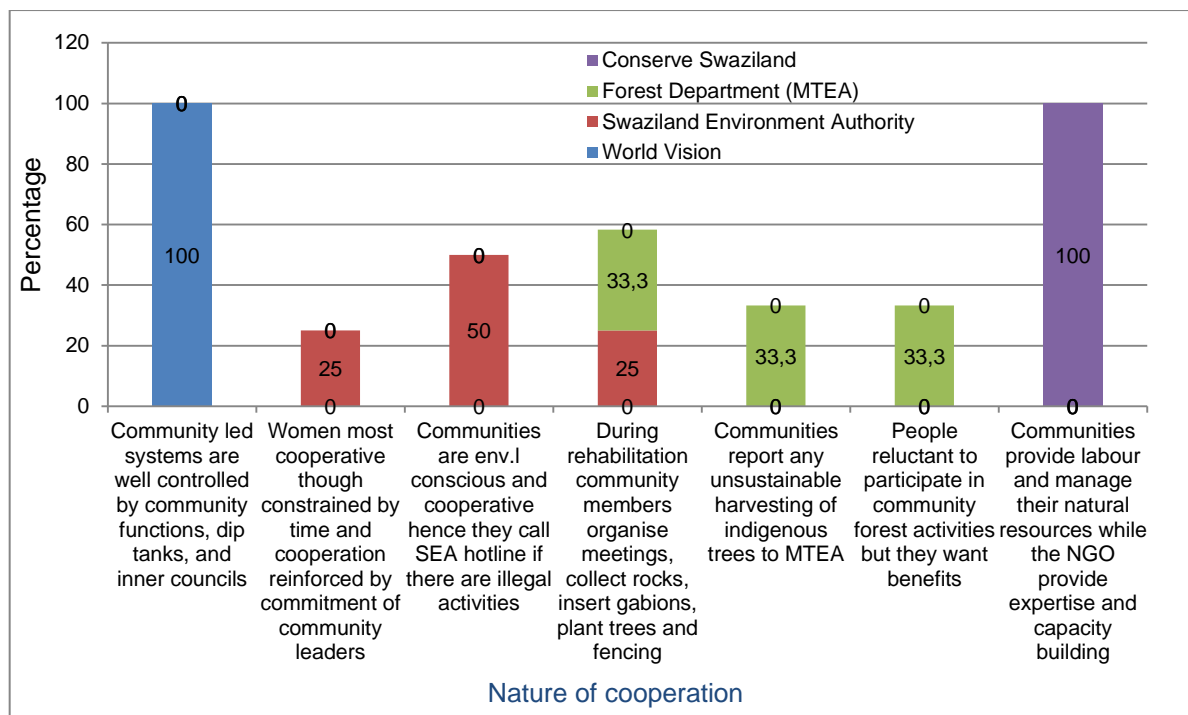


Figure 6.3: Nature of cooperation by communities in the management of community forests as well as in prevention and control of land degradation

The study also investigated the forums used by organizations to deliberate on issues related to management of community forests and control of land degradation with communities. On this issue, the findings depict that there are various forums used. For instance, *World Vision* use dip tanks, and general community meetings (100%), while *Conserve Swaziland* use traditional structures and developmental institutions mainly for participatory and sustainability of the programs (100%) (Figure 6.4). Forums used by SEA include; community meetings, schools, invitation to NGOs, arranged workshops with communities, school drama, environmental clubs, and the media. The Forestry Department relies on community and constituency meetings, schools, radio programs such as *Temahlatsi*, tree planting days, and organized workshops for deliberating on issues related to management of community forests and control of land degradation (Figure 6.4).

Evidence depicts that in the deliberations on issues pertaining to management of community forests and control of land degradation, community members participate actively. Reasons for active participation include that; communities are aware of the importance of community forests (100% from *World Vision*), as well as that using the

participatory approach make communities feel they belong and own the project (100% from *Conserve Swaziland*) (Figure 6.5). According to SEA and the Forestry Department, active participation among community members was due to that; they are aware of climate change and its impacts, loss of pastures and crop land, invasive species, and dongas (Figure 6.5). Other reasons advanced by respondents from SEA include that; community members' actively participate due to commercialization of forest resources, and loss of homes, fields, pastures and even grave yards to land degradation (Figure 6.5).

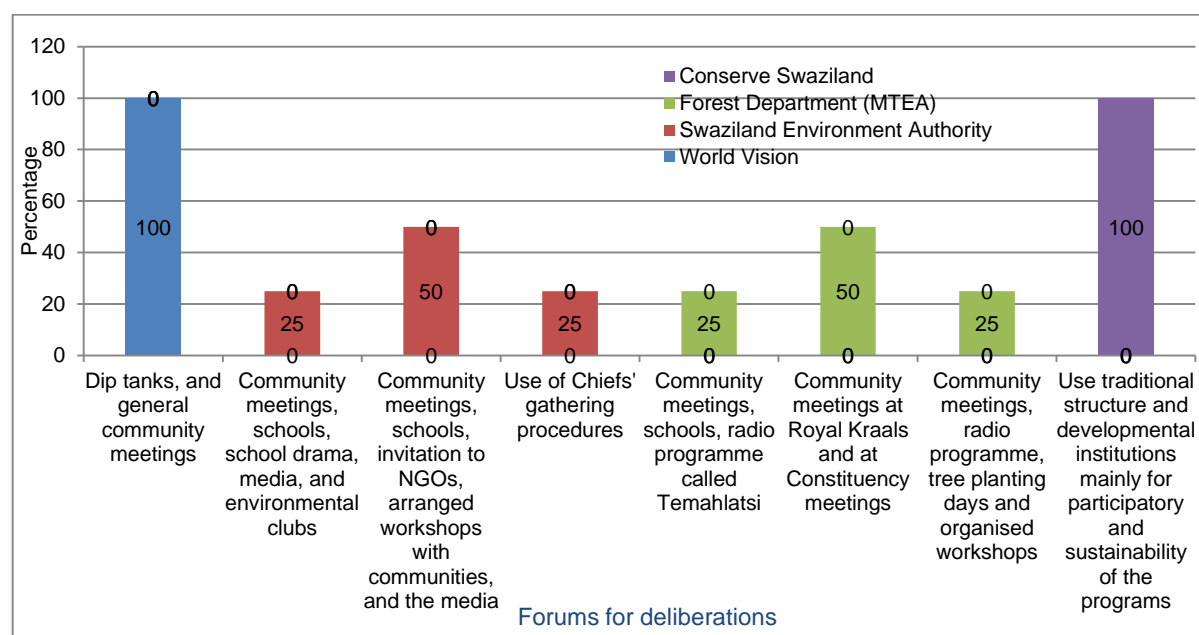


Figure 6.4: Forums used by institutions to deliberate on issues related to management of community forests and control of land degradation

The Swaziland Environment Authority (SEA) attributes active participation of community members to that initiation of community projects always follow a bottom-up approach, hence they are involved in all stages of the project (Figure 6.5). This in turn creates a sense of ownership of the project among the community members. Reasons advanced by respondents from the Forestry Department on community members' active participation include that they make their own decisions but with guidance from officers from the Forestry Department, as well as that they use forest resources on a daily basis and conduct business using forest products (Figure 6.5)



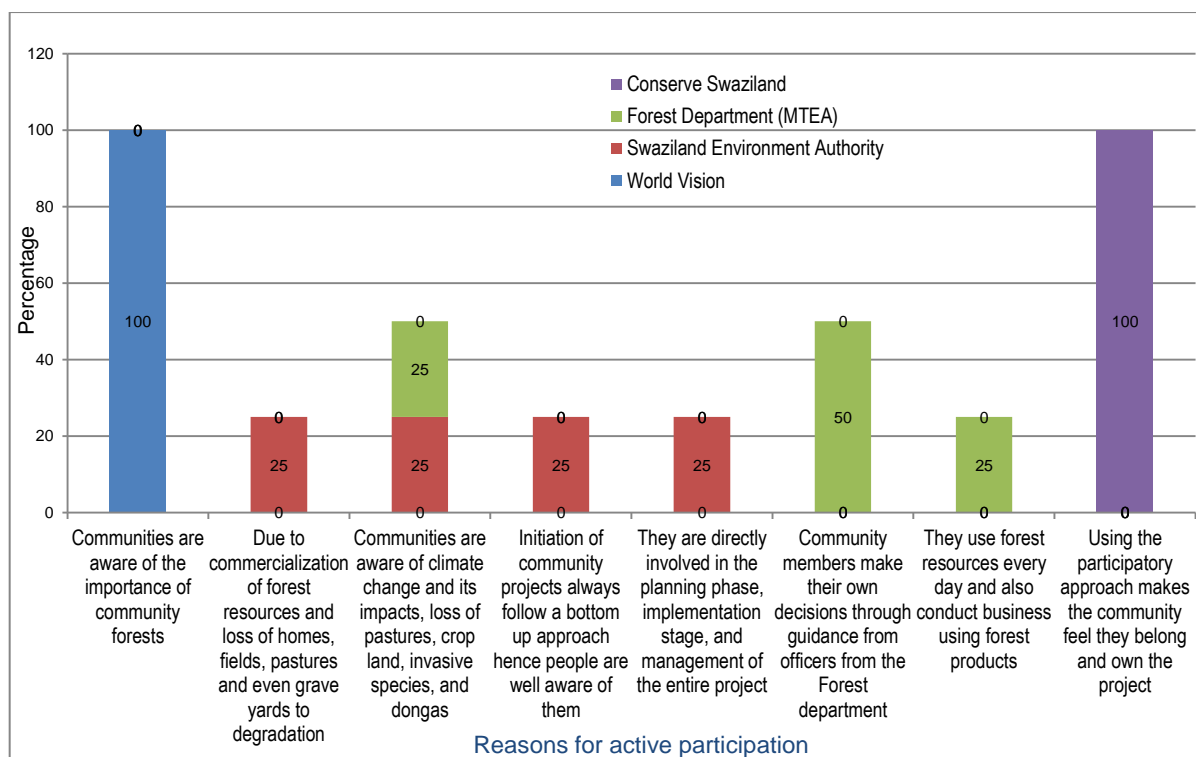


Figure 6.5: Reasons for active participation of community members in deliberations on issues related to management of community forests and control of land degradation

In the management of community forests and control of land degradation in communities, traditional authorities play a crucial role. For instance, according to *World Vision*, traditional authorities manage set by-laws (100%); while *Conserve Swaziland* pointed out that they encourage management committees to manage projects properly and coordinate between NGOs and their communities (100%) (Figure 6.6). According to SEA, traditional authorities' roles and responsibilities include monitoring and directing land allocation and use in the community, and working together with the Land Management Board (LMB); as well as adoption of Community Development Plans (CDPs) and motivation of community members (Figure 6.6). Other roles of traditional authorities stated by SEA include: formulating rules on management of community resources and organizing meetings for capacity building exercises; as well as being involved in the planning process in their communities and enforcing cooperation among community members (Figure 6.6).

According to the Forestry Department, traditional authorities are responsible for issuing permits to community members who are interested in harvesting trees for domestic use and

also protecting some tree species, specifically royal tree species and fruit trees (Figure 6.6). Furthermore, the Forestry Department indicated that traditional authorities are responsible for overall control and management of forests in their communities (Figure 6.6).

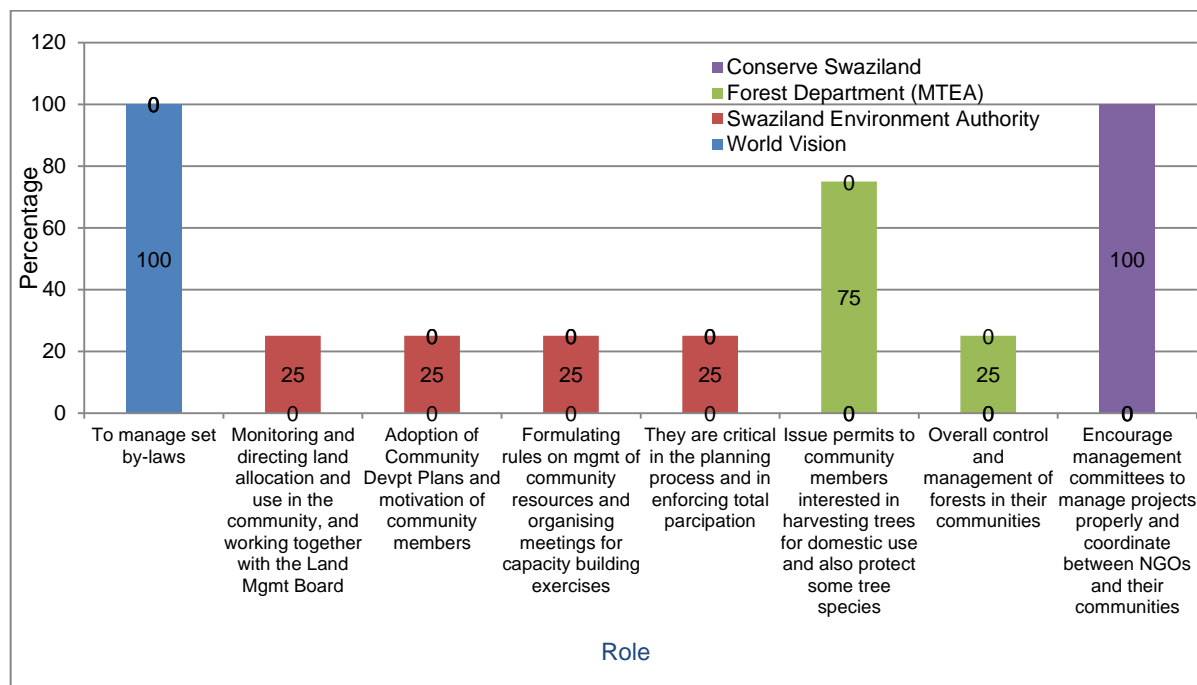


Figure 6.6: Role of traditional authorities on issues pertaining to management of community forests and control of land degradation

Regarding the effectiveness of traditional authorities in executing their roles on the management of community forests and control of land degradation, *World Vision* indicated that they do so very well (100%) (Figure 6.7). *Conserve Swaziland* shared the same sentiments, but arguing that it depends on whether they are well informed about the project through sensitization and participatory approach (100%) (Figure 6.7). The SEA and Forestry Department, were of the view that effectiveness of traditional authorities varies from one community to another with some managed properly (Figure 6.7). On another note, SEA declared that traditional authorities are not effective due to chieftaincy disputes and absence of substantive chiefs, which means there are acting chiefs (Figure 6.7). Another view from SEA was that traditional authorities were very cooperative if the projects are in line with the goals and aspirations of their communities (Figure 6.7). Moreover, SEA averred that traditional authorities ensure community development and

conservation of environmental resources as well as aligning developments with management of the environment (Figure 6.7). According to the Forestry Department, traditional authorities execute their roles very well but the responsibilities are often shouldered by the headman alone (Figure 6.7). On the other hand, the Forestry Department also contended that traditional authorities do not execute their roles very well, due to poverty and rapid population growth which force them to allocate marginal land for settlement (Figure 6.7).

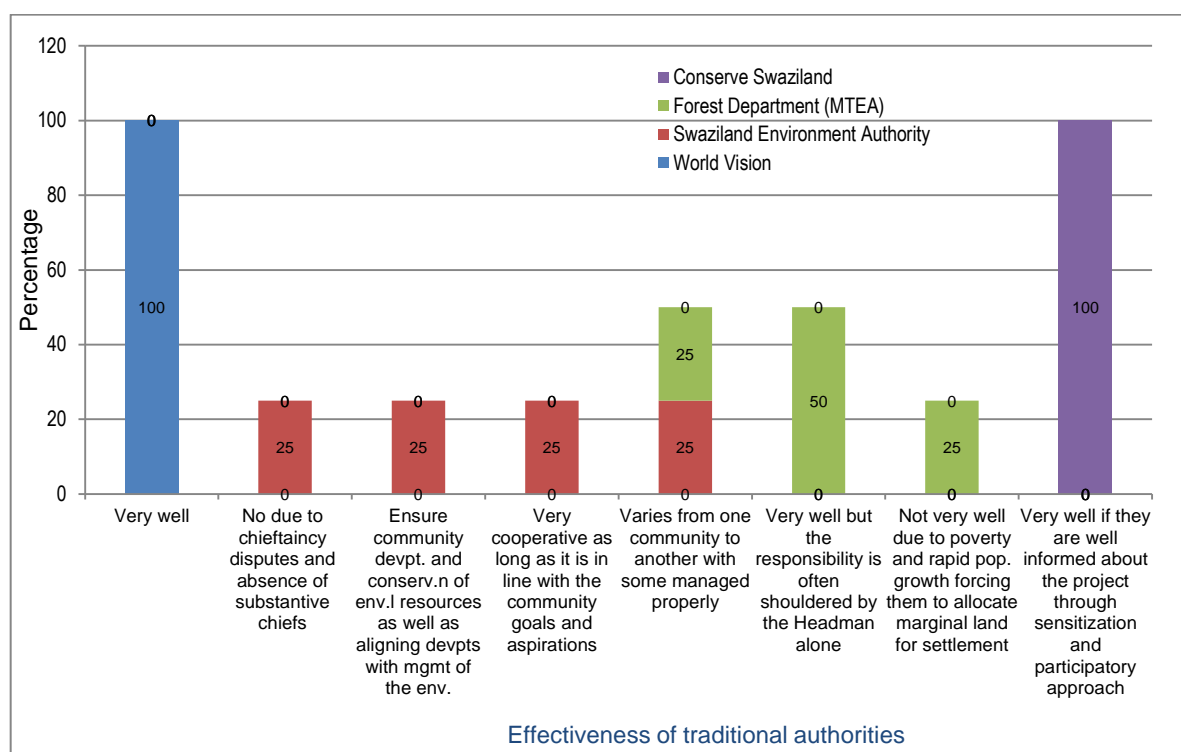


Figure 6.7: Effectiveness of traditional authorities in executing their roles on management of community forests and control of land degradation

## 6.6 The Challenges faced by the Organizations in Working with Communities on the Management of Forest Resources

The organizations acknowledged that in their day to day work of assisting communities on the management of forests in general and community forests in particular, they encounter a number of challenges. For instance, *World Vision* argued that there is lack of community cohesion (unity) (100%); while *Conserve Swaziland* argued that there are conflicts of ownership since forests take long to be harvested, such that some beneficiaries die before

reaping the benefits (100%) (Figure 6.8). According to SEA, the major challenges are; high rate of deforestation, spread of IAPS, and commercialization of fire wood derived from natural forests, as well as bio-trade in general (Figure 6.8).

The commercialization of wood derived from natural forests is evident along the country roads particularly in the Lowveld region of the country. Other noted challenges include: inadequate human and financial resources; as well as conflicting time for holding meetings and trainings. For instance, meetings and trainings planned by organizations are normally held mid-week when some community members are at work (Figure 6.8). According to the Forestry Department, the challenges faced by organizations when working with communities on management of community forests and controlling land degradation include: lack of forest legislation in the country and lack of capacity building among traditional authorities; over reliance on wood for energy, and lack of transport for the officers to the chiefdoms (Figure 6.8). Furthermore, the Forestry Department decried that there are challenges relating to conflicts of ownership of forests, few trained people, and boundary/chieftaincy disputes (Figure 6.8).

## **6.7 Training of NRMC and Community Members on the Management of Community Forests and the Control of Land Degradation**

NRMC members are trained by the organizations which work with communities on management of community forests and the control of land degradation. For instance, according to *World Vision*, NRMC members are trained on Farmer Managed Natural Regeneration (FMNR) and Natural Resource Management (NRM) (100%) while *Conserve Swaziland* specializes on training on land degradation, forest management, need for community-based NRMCs and their duties, record keeping and financial management (100%) (Figure 6.9). According to SEA, the training is on human impacts on the environment; CBNRM; sustainable development; environmental legislation (namely Environment Management Act (EMA), Flora Protection Act (FPA), National Forest Policy (NFP), Natural Resources Act (NRA), as well as the Game Act) (Figure 6.9).

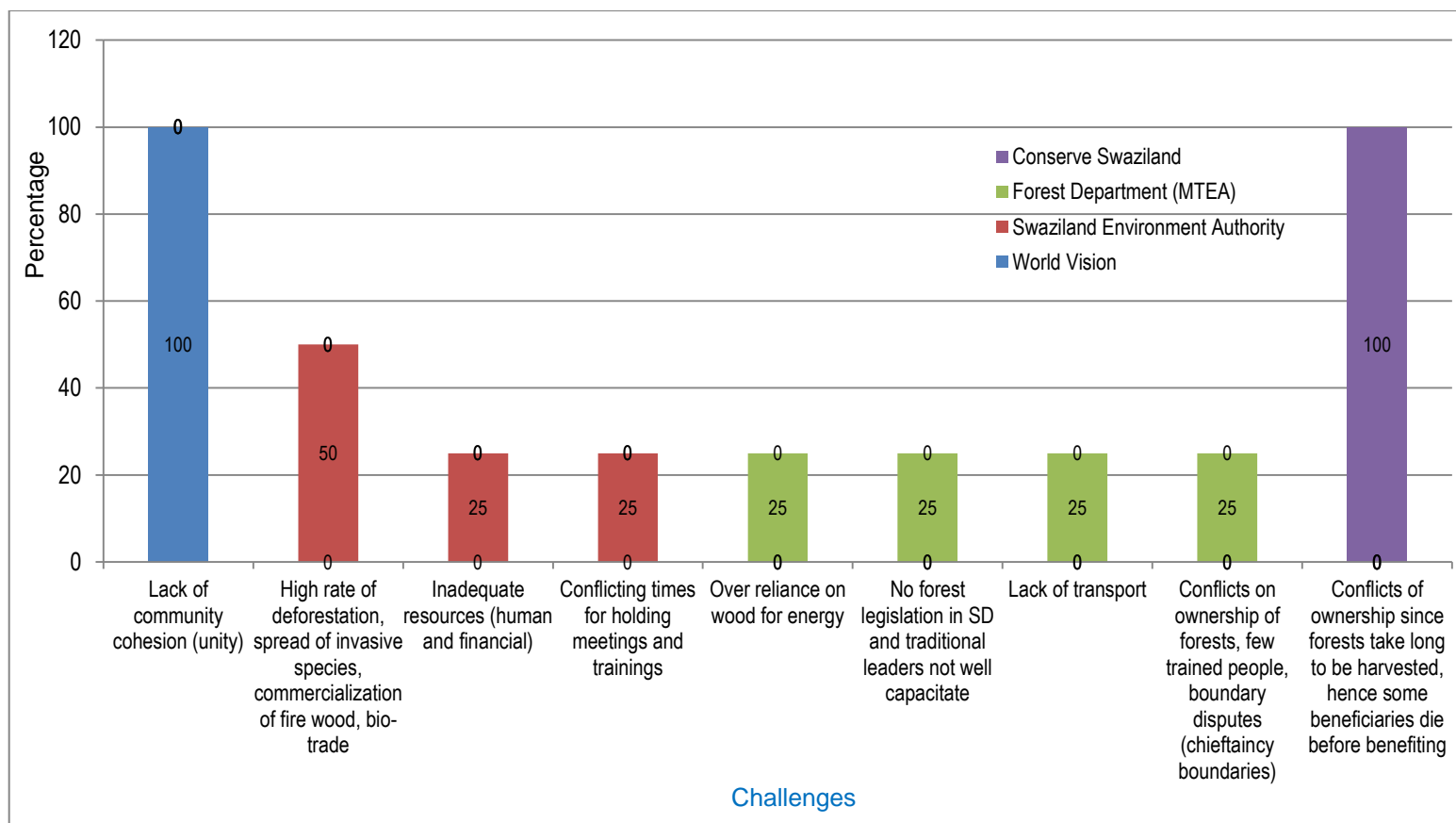


Figure 6.8: Challenges faced by organizations in working with communities on management of community forests and control of land degradation

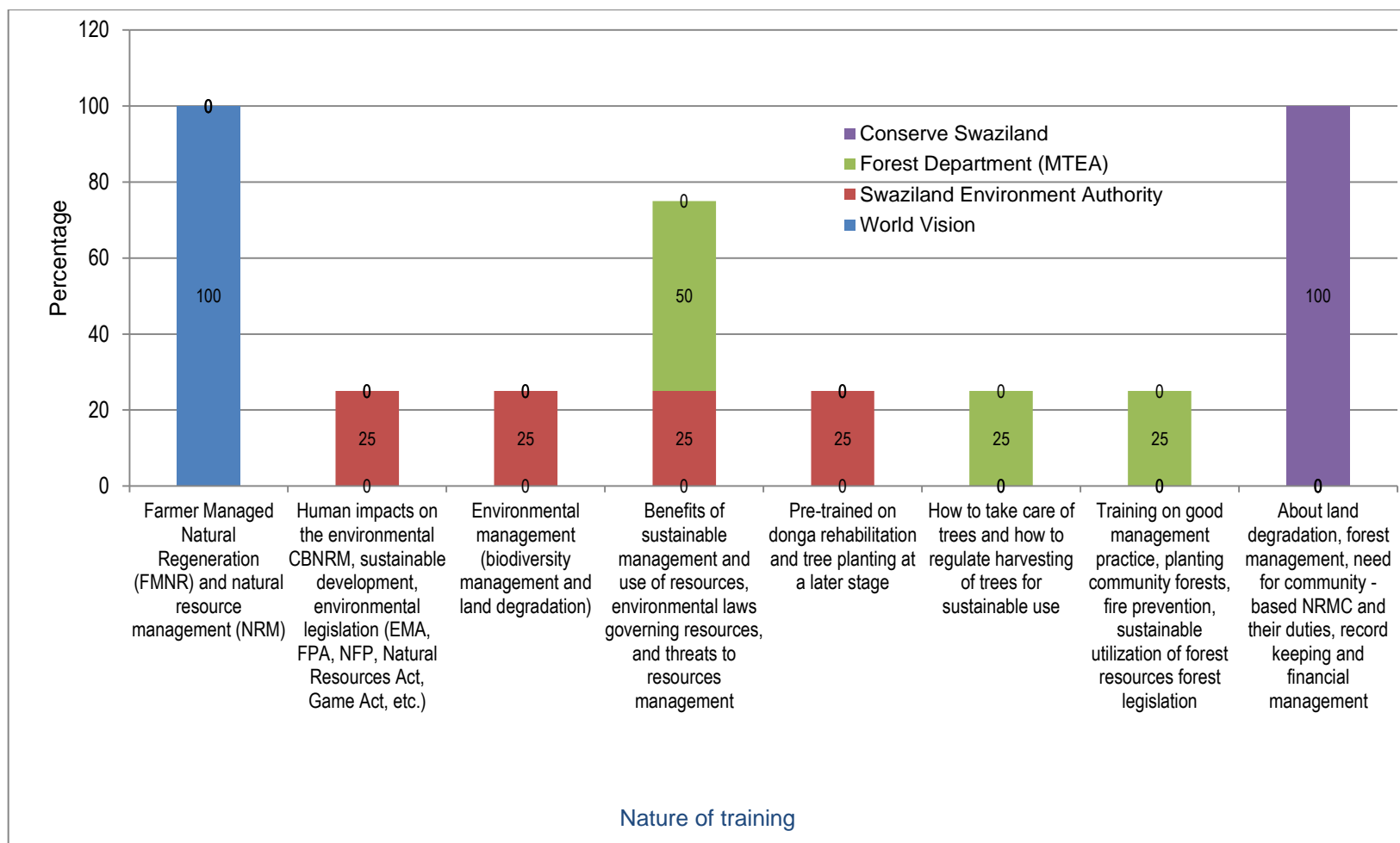


Figure 6.9: Nature of training for NRMC members afforded by organizations working with communities on management of community forests and control of land degradation

Other areas of training offered by SEA include environment management, and pre-training on donga rehabilitation and tree planting at a later stage (Figure 6.9). Furthermore, SEA and the Forestry Department shared the same sentiments regarding training on benefits of sustainable management and use of resources, environmental laws governing resources, as well as threats to resources management (Figure 6.9). In addition, the Forestry Department also provided training on how to take care of trees and regulate harvesting of trees for sustainable use; as well as good management practices, planting community forests, fire prevention, sustainable utilization of forest resources, and forest legislation (Figure 6.9).

Regarding the frequency of training of NRMC members, evidence indicate that it varied from one organization to the other. For instance, according to *World Vision*, training is offered on a monthly basis; while for *Conserve Swaziland* it is during project conceptualization/initiation and mid project implementation stages. According to SEA, training is offered whenever requested by communities and as per SEA plan for the year. In particular, SEA has a plan of training four communities per month. According to SEA and the Forestry Department, training is also offered once a year depending on need, or once in a while especially when there is a project being implemented. Moreover, for communities with Chiefdom Development Plans (CDPs) the Forestry Department offers training after launching the CDP.

Just like the NRMCS, community members are also trained on the management of community forests and control of land degradation by organizations working in their communities. The nature of training varies from one organization to another. For instance, according to *World Vision*, community members are trained on Farmer Managed Natural Regeneration (FMNR) and Natural Resource Management (NRM) (100%); while *Conserve Swaziland* trains them on resource management and sustainability, planting, rehabilitation, as well as unity and coordination (100%) (Figure 6.10). SEA trains community members on human impacts on the environment, CBNRM, sustainable development, environmental legislation (namely Environment Management Act (EMA), Flora Protection Act (FPA), National Forest Policy (NFP), Natural Resources Act (NRA), as well as the Game Act) (Figure 6.10).

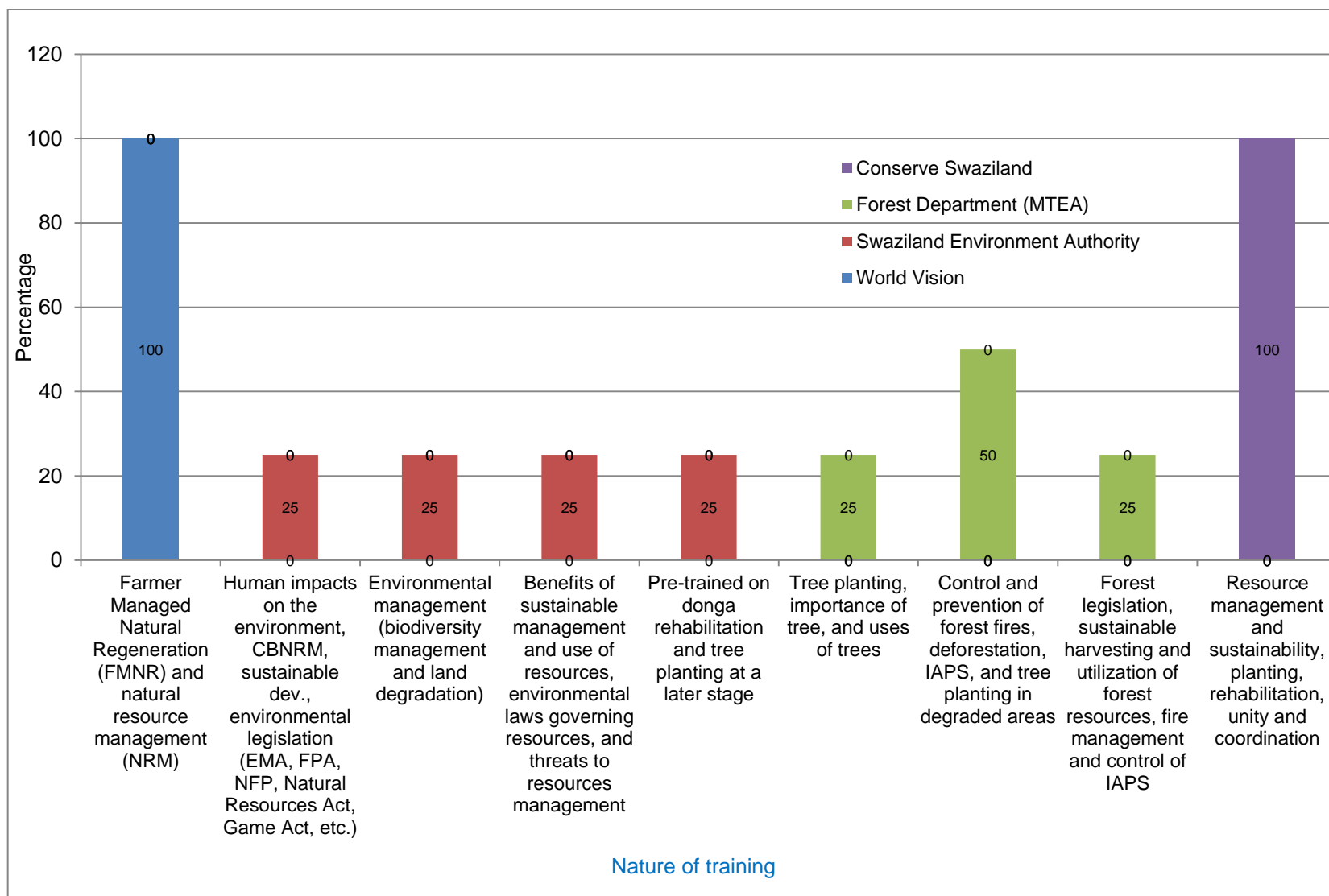


Figure 6.10: Nature of training for communities members afforded by organizations working with communities on management of community forests and control of land degradation



Moreover, SEA trains community members on environment management, and pre-training on donga rehabilitation and tree planting at a later stage (Figure 6.10). Furthermore, SEA also trains community members on benefits of sustainable management and use of resources, environmental laws governing resources, as well as threats to resources management (Figure 6.10). On the other hand, the Forestry Department provides training on tree planting (afforestation), importance of trees, and utilization of forest resources, control and prevention of forest fires, deforestation, IAPS, and tree planting in degraded areas, as well as forest legislation, and sustainable harvesting (Figure 6.10).

The frequency of training for community members by organizations varies from one organization to the other. For instance, according to *World Vision* and the Forestry Department, training is offered on a monthly basis. For *Conserve Swaziland*, training is offered in three phases namely project initiation, mid-project implementation, handing-over to community of the project. According to SEA, training is offered once in a while especially when there is a project being implemented, and whenever requested by communities and as per SEA plan for the year (four communities per month). As indicated earlier on, SEA has a plan of training four communities per month. According to SEA and the Forestry Department, training is also offered once a year depending on need. Moreover, the Forestry Department offers training to community members whenever invited to community meetings.

In addition to training of NRMC and community members, the organizations assist communities on choosing tree species to be planted in community forests. Once the tree species of interest together with the forest site have been chosen, the organizations normally provide communities with seedlings to be planted in the community forests. A classic example is at Ezikhotheni where in addition to providing seedlings, the community was assisted in constructing a nursery for purposes of propagating seedlings for both fruit and non-fruit tree species.

Furthermore, the organizations also assist community members in formulating rules governing the use of forest resources. For instance, *World Vision* collaborates with the

community members on approving the stocking rate, rotational grazing, cutting and replacing of trees, and forest fire prevention; whereas *Conserve Swaziland* assists on specifying when and how to harvest natural resources on degraded land, as well as in protection of project sites from people and animals. SEA plays a key role in formulation of Community Development Plans (CDPs), as well as on formulating rules on how to harvest resources, which part to harvest, and when to harvest to ensure sustainability. The Forestry Department emphasizes on ensuring that; all community members benefit from resources, and that Royal Kraals and the Forestry Department are involved when harvesting and selling resources. (Figure 6.11)

Besides assisting communities in formulating rules governing management of community forests and controlling land degradation, the organizations also educate communities on the environmental legislation governing management of the environment in the country. The environmental legislation on which they emphasize include: Environment Management Act (EMA) No. 5 of 2002, Flora Protection Act (FPA) No. 5 of 2001, National Forest Policy (NFP), Natural Resources Act (NRA) of 1951, Bio Safety Act, Strategy on management of Invasive Alien Plants Species (IAPS), Game Act of 1993, Litter and Stream Bend regulations, Swaziland Environment Authority Policy, Grass Fires Act, The Control of Tree Planting Act of 1972, as well as the Constitution of Swaziland (Table 6.1). Reasons advanced for emphasizing on these environmental legislations include to conserve and protect the environment, enhance resource and environmental management, as well as to ensure sustainable use of indigenous trees. Moreover, other reasons for emphasizing on these legislations are to control deforestation, forest fires, IAPS, and bio-trade in rare and protected plant species. It is important to note that, emphasizing on environmental legislation without enforcement is a fruitless effort; hence the organizations were probed regarding what is being done to ensure enforcement of the legislation. All the institutions except for *World Vision*, affirmed that there are actions taken regarding enforcement of the environmental legislation.

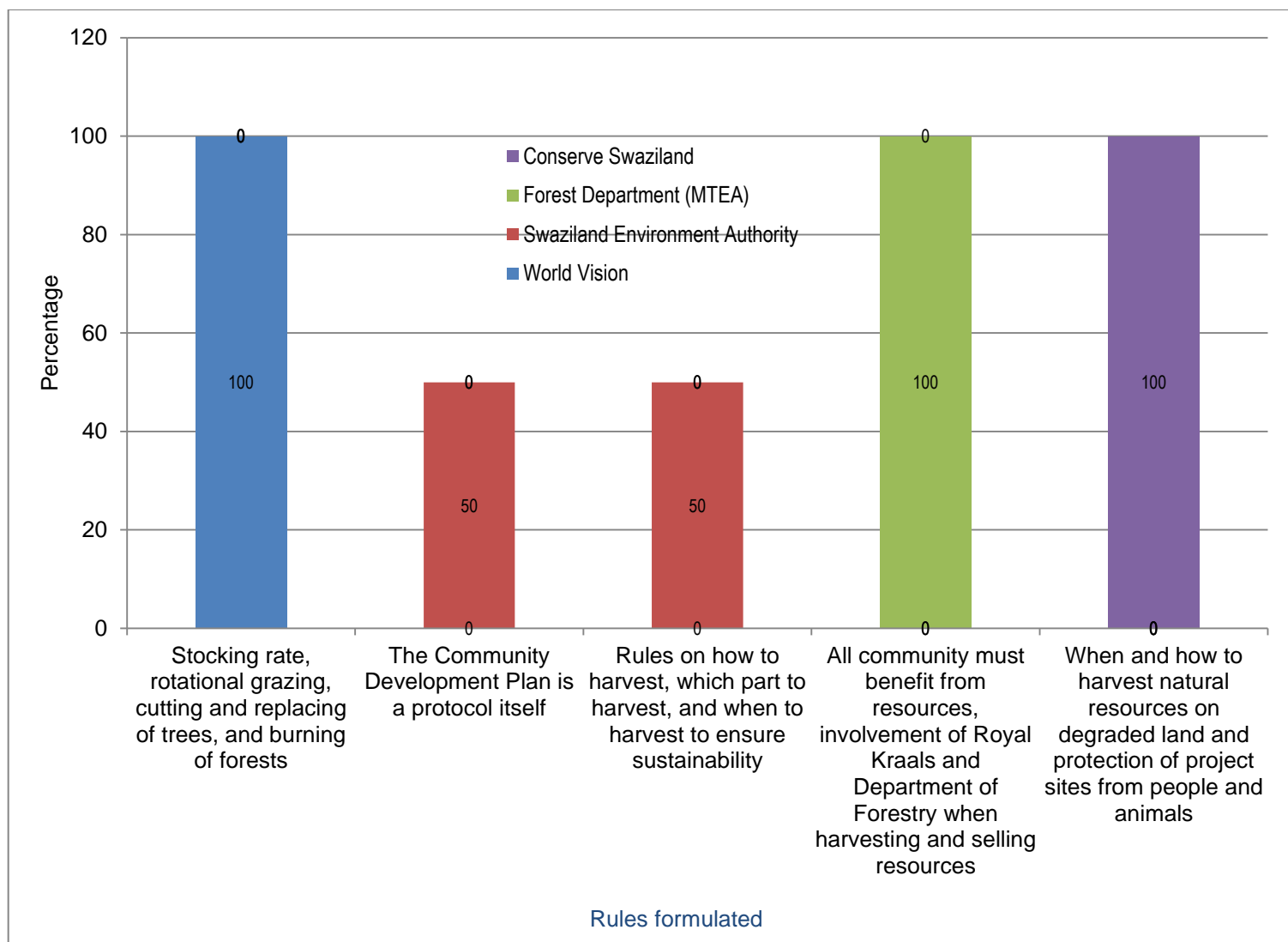


Figure 6.11: Rules formulated by communities members with the help of organizations working with communities on management of community forests and control of land degradation

Table 6.1: Environmental legislation and policies that communities learnt about, and organization that taught them

Environmental legislation and policies	World Vision		Swaziland Environment Authority		Forest Department (MTEA)		Conserve Swaziland	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Swaziland Environment Authority Policy	1	100	0	0	0	0	0	0
EMA, FPA, NFP, Natural Resources Act, Bio Safety Act, Strategy on management of AIPs, Game Act, litter and stream bend regulations	0	0	4	100	2	50	1	100
Constitution of Swaziland, and FPA	0	0	0	0	1	25	0	0
FPA of 2001, Grass Fires Act, The Control of Tree Planting Act of 1972	0	0	0	0	1	25	0	0
Total	1	100	4	100	4	100	1	100

Actions taken by SEA include: development of an environmental law module, in-service training for Royal Swaziland Police (RSP) on enforcing environmental legislation, as well as sensitizing communities on sustainable use and conservation of biodiversity, and fining offenders (Figure 6.12). Moreover, SEA and *Conserve Swaziland* shared the same sentiments regarding raising awareness and fining offenders (Figure 6.12). Notably, SEA is the environmental police of Swaziland. Furthermore, the Forestry Department enhances enforcement through; hosting roadblocks with Royal Swazi Police (RSP) to ensure compliance with the FPA, raising awareness during community meetings, radio programs, and MTEA working with RSP.

The study also investigated the number of officers responsible for enforcing environmental legislations in each organization, and it transpired that *World Vision* had 12 officers, whereas SEA had four comprising three directors and a legal advisor. The Forestry Department on the other hand, had six officers responsible for enforcing environmental legislation, while *Conserve Swaziland* had only two officers.

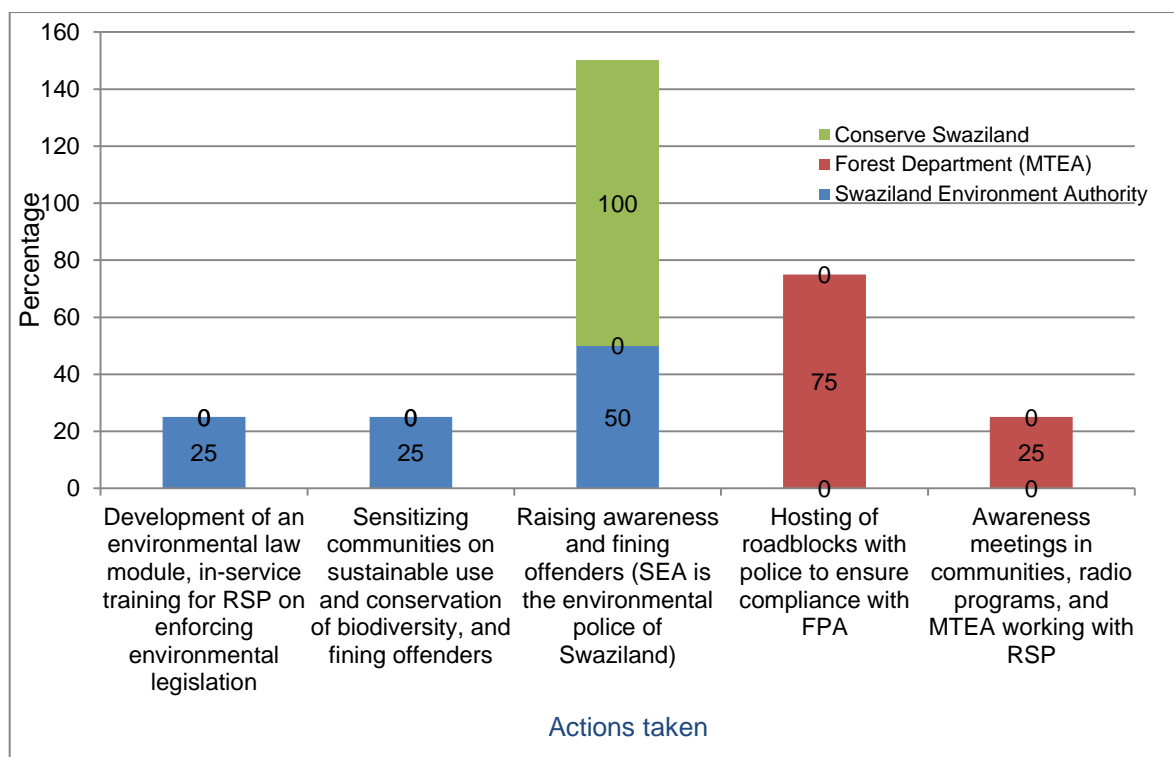


Figure 6.12: Actions taken by organizations to ensure enforcement of environmental legislation

## 6.8 Nature of Cooperation between NRMC, Traditional Authorities and Community Members in the Management of Community Forests and the Control of Land Degradation

The nature of cooperation between NRMC, traditional authorities and community members in the management of community forests and in controlling land degradation varied from one community to the other. For instance, according to *World Vision* cooperation was in the form of a facilitation relationship based on providing training and support material to promote NRM (Table 6.2). From the point of view of *Conserve Swaziland*, there was good cooperation since the projects are needed by communities; hence NGOs provide technical expertise and initial financial help (seed capital) (Table 6.2).

Table 6.2: Nature of cooperation between NRMC, traditional authorities and community members in the management of community forests and control of land degradation

Nature of cooperation	World Vision		Swaziland Environment Authority		Forest Department (MTEA)		Conserve Swaziland	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Facilitation role relationship is based on provision of training, support material to promote NRM	1	100	0	0	0	0	0	0
There is generally cooperation in all management activities although it has been spoiled by development partners	0	0	1	25	0	0	0	0
Once aware of environmental importance community members cooperate and even report traditional authorities to SEA for illegal land use	0	0	1	25	0	0	0	0
Positive response such that some communities have developed Community Development Plans (CDPs) and doing well in terms of environmental conservation	0	0	1	25	0	0	0	0
Good cooperation at some levels but there is need to establish more NRMCs	0	0	1	25	0	0	0	0
Where there are NRMC there has been a good report stating a smooth running or cooperation between leaders and NRMCs	0	0	0	0	1	25	0	0
Communities assisted on tree planting, NRMCs supervise management of forests, and traditional leaders take all the benefits	0	0	0	0	1	25	0	0
There is currently no cooperation	0	0	0	0	1	25	0	0
NRMCs work directly with communities and report to the traditional authorities	0	0	0	0	1	25	0	0
Good cooperation since projects are needed by communities hence NGO provide technical expertise and initial financial help	0	0	0	0	0	0	1	100
Total	1	100	4	100	4	100	1	100

According to SEA, there is generally cooperation in all management activities although it has been spoiled by development partners. Moreover, SEA argued that there is a positive response such that some communities have developed Community Development Plans (CDPs) and are doing well in terms of environmental conservation (Table 6.2). Furthermore, SEA contended that once community members are aware of environmental importance, they cooperate and even report traditional authorities to SEA for illegal land use (Table 6.2). In addition, SEA avowed that there is good cooperation at some levels but there is need to establish more NRMCS (Table 6.2).

From the point of view of the Forestry Department there is cooperation between community leaders and NRMCS (Table 6.2). Moreover, the NRMCS were seen to be working directly with communities and reporting to the traditional authorities (Table 6.2). Furthermore, according to the Forestry Department in some cases communities assisted on tree planting, while NRMCS supervise management of forests, but the traditional leaders take all the benefits (Table 6.2). Despite the positive cooperation that has been seen, the Forestry Department also decoded that there is currently no cooperation between NRMCS, traditional authorities and community members in the management of community forests and control of land degradation (Table 6.2). Lack of cooperation is promoted by the commercialization of forest resources especially *Acacia mearnsii* (wattle) and *Eucalyptus spp.*, which has led to more and more people claiming ownership of forests and woodlots.

## **6.9 Opportunities and Threats for Community Action in Community**

### **Forest Resource Management in Swaziland**

From the perspective of the organizations working with communities on forest resource management and in controlling land degradation, there are opportunities for community action in Swaziland. Such opportunities according to *World Vision* include; income generation (through honey production since bees favour eucalyptus tree species), improved livestock quality, and improved ecosystems (Table 6.3). According to *Conserve Swaziland*, a key opportunity is that more communities are now beginning to appreciate their environments, which is a guarantee for community action in future environmental projects (Table 6.3). From the viewpoint of SEA, the opportunities include: improving

communities' livelihood, carbon stock to curb climate change, and promoting environmental conservation; as well as that combining NRM with livelihood options improves human-environment relations and compliance with environmental legislation (Table 6.3).

Table 6.3: Possible opportunities for community action in forest resource management in the country

Opportunities for community action	World Vision		Swaziland Environment Authority		Forest Department (MTEA)		Conserve Swaziland	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Income generation (honey production), improved livestock quality, and improved ecosystems	1	100	0	0	0	0	0	0
Improving communities' livelihood, carbon stock to curb climate change, and promoting environmental conservation	0	0	1	25	0	0	0	0
Development of National Biodiversity Strategy and Action Plan to lobby for more resources from government	0	0	1	25	0	0	0	0
Formation of multi-stakeholders and civil society in forest res management thus concerted efforts towards biodiversity management	0	0	1	25	0	0	0	0
Combining NRM with livelihood options, improve relations and compliance	0	0	1	25	0	0	0	0
Communities attending meetings, community leaders upholding environmental conservation	0	0	0	0	1	25	0	0
Respect Chiefs and enforcing environmental legislation	0	0	0	0	1	25	0	0
More trees are planted and rehabilitation of degraded areas	0	0	0	0	1	25	0	0
Processing products from forests for market (value addition) and establishing more community forests	0	0	0	0	1	25	0	0
More communities are now beginning to appreciate their environments	0	0	0	0	0	0	1	100
Total	1	100	4	100	4	100	1	100



Other possible opportunities in accordance to SEA include: development of National Biodiversity Strategy and Action Plan to lobby for more resources from government; as well as formation of multi-stakeholders and civil society in forest resource management thus ensuring concerted efforts towards biodiversity management (Table 6.3). The Forestry Department perceived an opportunity for community action through community members attending meetings and community leaders upholding environmental conservation, as well as in community members respecting their Chiefs, and the Chiefs in turn enforcing environmental legislation (Table 6.3). Furthermore, the Forestry Department decoded that with more trees being planted in an effort to rehabilitate degraded areas, there is also a possibility of processing products from forests for marketing (value addition) and establishing more community forests (Table 6.3).

Under normal circumstances it is common that where there are opportunities there will also be threats. Likewise, since there are opportunities for community action there are also threats. From the point of view of *World Vision*, the threats include; lack of community cohesion (unity) and poor community leadership engagement in the management of resources (Figure 6.13).

According to *Conserve Swaziland*, the more serious threats for community action include; absence of a Land Policy and finances, unclear ownership of land and forests, poor law enforcement, as well as poor or lack of environmental impact assessments (EIAs) reports (Figure 6.13). From the view point of SEA, threats to community action include: sugar cane expansion, forest encroachment, alien invasive plant species, wildfire, and mono species, land degradation, loss of biodiversity, as well as climate change. Other noted threats include lack of resources (especially funds and land), absence of a Land Policy for management of Swazi Nation Land (SNL); as well as poverty and unemployment (Figure 6.13). It must be noted that as long as people are poor and unemployed they will always over-exploit environmental resources, which is an unsustainable practice that aggravates land degradation. Ideally, sustainability entails that people must exploit resources in a way that does not jeopardize posterity (Whitehead, 2014).

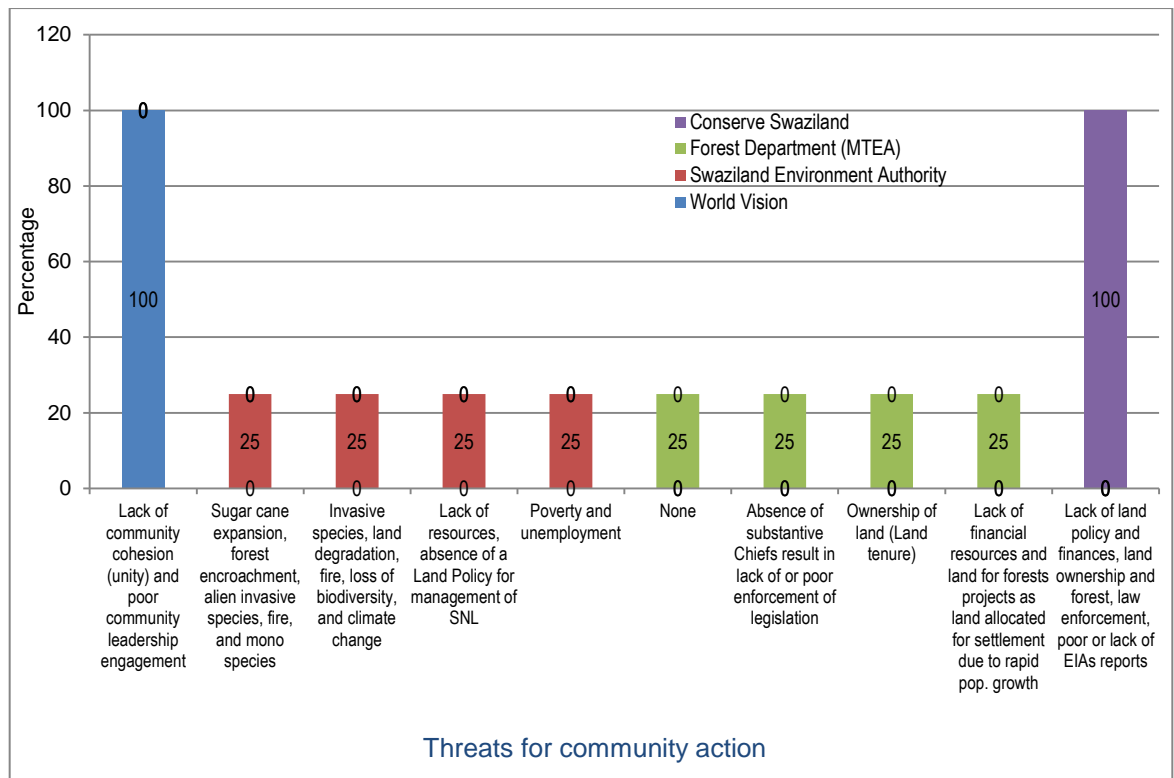


Figure 6.13: Threats for community action in forest resource management in the country

According to the Forestry Department, absence of substantive Chiefs results in lack of or poor enforcement of legislation (Figure 6.13). Another notable threat on SNL is the unclear ownership of land (land tenure). It is important to note that as long as people do not have security of ownership of a resource; the tragedy of the commons is inevitable. Furthermore, the Forestry Department decoded lack of financial resources and land for forests related projects as a serious threat, since almost all available land is allocated for settlement due to rapid population growth (Figure 6.13). As noted earlier on, rapid population growth compels Chiefs to allocate marginal land for settlement, a practice that exacerbates land degradation.

In general, where there are possible opportunities and threats, normally there are also conflicts; hence it was not an exception in this study. The conflicts which were propounded by *World Vision* were mainly; failure of communities to work together and consequently a tragedy of the commons (Figure 6.14). *Conserve Swaziland* on the other hand, noted that conflicts were based on land and forest ownership, environmental funds, resource

sustainability, law enforcement, poor coverage of environmental issues in Community Development Plans (CDPs) (Figure 6.14). According to SEA, conflicts emanated from absence of substantive Chiefs; hence absence of leadership and designated authority. This inevitably results in land disputes within or across chiefdoms (land tenure and ownership). Moreover, natural forests are governed by Chiefs, hence chieftaincy disputes contributes to illegal sale of natural forest resources (Figure 6.14). The Forestry Department also noted some conflicts in the management of community forests. These conflicts include: harvesting indigenous trees for sale, particularly cross-border transfer of wood products for medicinal purposes; as well as deforestation and wildfires, which exacerbates land degradation (Figure 6.14). There was also a conflict in relation to over harvesting of forest resources and clearing forests for settlements (homes, schools, clinics, roads, gardens and crops). Once again, a worst case scenario is the clearing of marginal land which logically promotes land degradation.

Noting the conflicts is not enough, hence there is a need for possible strategies for their resolution. According to *World Vision*, conflicts can be resolved through by-laws (Figure 6.15). On the other hand, *Conserve Swaziland* advocates for a Land Policy, clear land ownership, raising of environment funds, enhanced law enforcement, clear CDPs, as well as clear EIA reports (Figure 6.15). SEA advocates for a clear demarcation of leadership and responsibilities in communities as a strategy for conflicts resolution (Figure 6.15). According to the Forestry Department, conflict resolution is through community sensitization on FPA and reporting Chiefs and community members who are illegally burning forests to SEA or to the police (Figure 6.15). Furthermore, the Forestry Department argued that conflict resolution could be enhanced through collaboration between traditional authorities, Forestry Department, LMB and SEA (Figure 6.15).

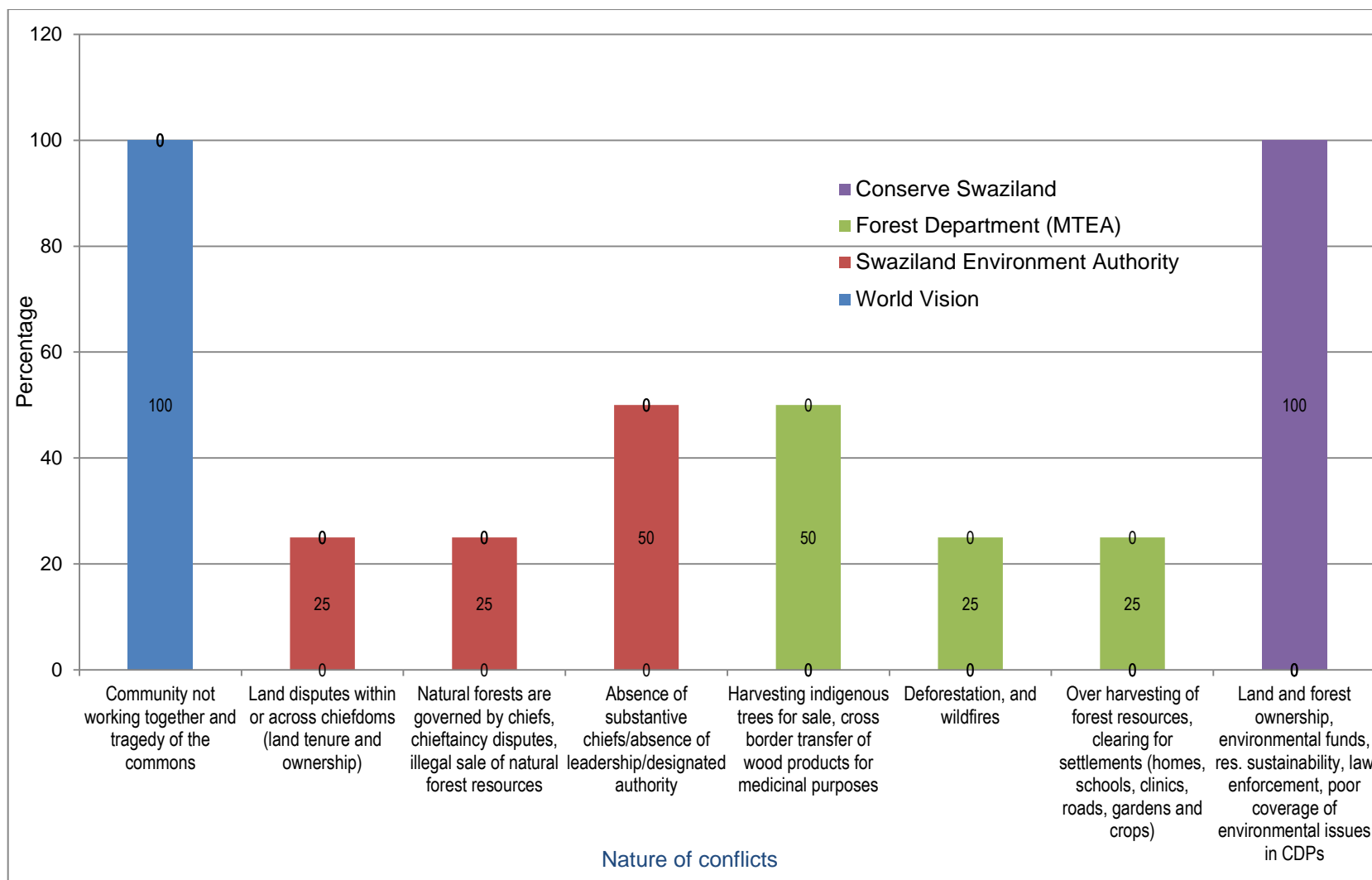


Figure 6.14: The nature of conflicts in the management of community forests

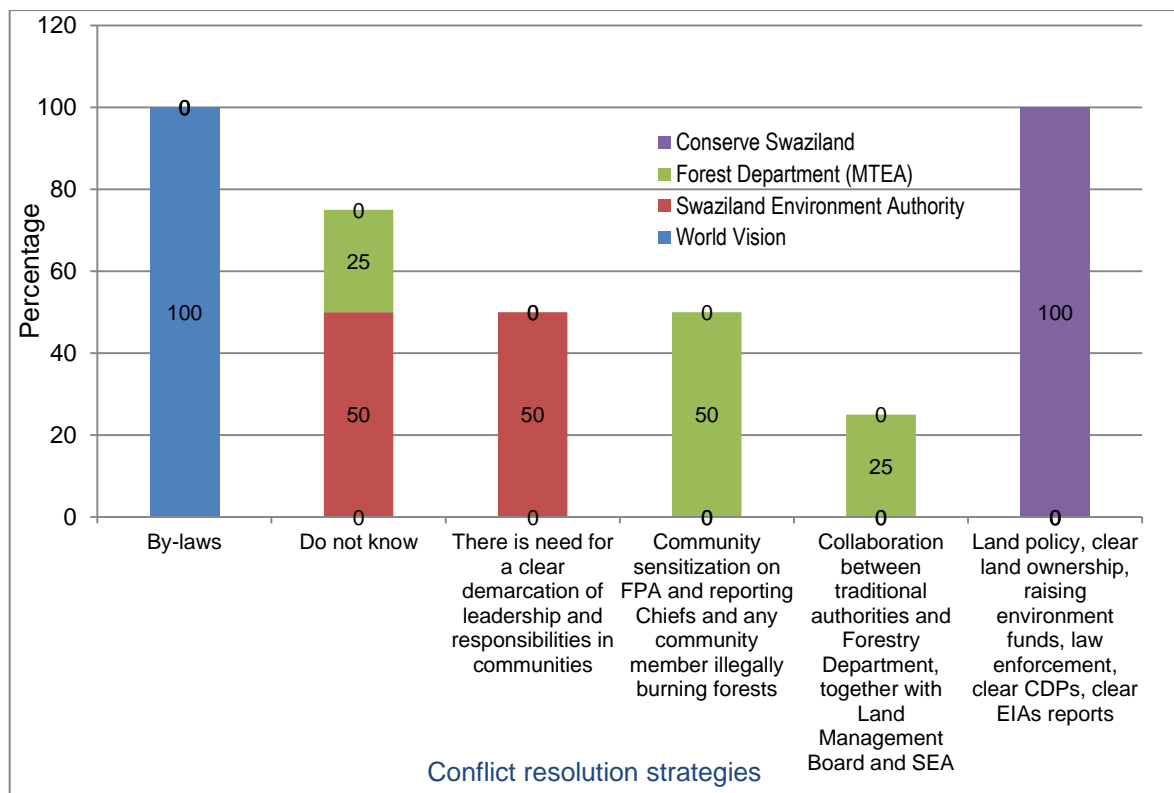


Figure 6.15: Strategies for conflict resolution in communities

## 6.10 Summary

The findings reflect that external stakeholders are crucial in the management of community forests and in controlling land degradation. In this study they comprise NGOs (*Conserve Swaziland* and *World Vision*), SEA and the Forestry Department in the MTEA. Regarding the NGOs, the most active ones include those which implemented the plantation-style community forests in the study sites namely; JICA and *Conserve Swaziland*, as well as *World Vision* who assists in the maintenance of the projects particularly through donating fencing material. On the other hand, SEA and the Forestry Department provide training and tree seedlings to community members. The training by the Government Departments also comprises training regarding the enforcement of environmental legislation; where they conduct in-service training for RSP on enforcing environmental legislation, as well as raising awareness and fining offenders. For instance, SEA is already issuing penalties for violating environmental legislations.

There is remarkable cooperation between NRMCS, traditional authorities and community members in environment management activities. For instance, the cooperation takes the form of providing labour during rehabilitation work as well as being proactive in reporting illegal activities to SEA and to the MTEA. Nonetheless, traditional authorities' cooperation is stalled where there are chieftaincy disputes and no substantive Chiefs. Another challenge for traditional authorities is poverty and rapid population growth, which force Chiefs to allocate marginal land for settlement. The findings further indicate that there is a need to strengthen the cooperation through the formation of more NRMCS.

External stakeholders indicated that management of community forests is fraught with a number of conflicts which relates to: land and forest ownership; environmental funds; law enforcement; land disputes within and across chiefdoms due to absence of substantive Chiefs; bio-trade (cross-border transfer of wood products for medicinal purposes); as well as clearing natural forests for settlement and agriculture in particular marginal land. Nonetheless, the findings indicate that there are strategies to resolve the conflicts which include but are not limited to: environmental by-laws; formulation of a Land Policy; formulation of a (national) grazing policy; having clear land ownership; raising environment funds; enhancing law enforcement; presenting clear EIAs reports; community sensitization on FPA; reporting Chiefs and community members who are illegally burning and harvesting forests to SEA and to the police; as well as a collaboration between traditional authorities, Forestry Department, LMB and SEA.

Having seen the collaborations between organizations and communities in the management of community forests, the next chapter focuses on the extent of resource utilization and of and degradation in the respective chiefdoms.

## **CHAPTER 7**

### **THE EXTENT OF RESOURCE UTILIZATION AND OF LAND DEGRADATION**

#### **7.1 Introduction**

This chapter focuses on mapping the plantation-style community forests which were established to rehabilitate land degradation and the gullies under rehabilitation at Ngcayini and Ezikhotheni chiefdoms. Also considered is the extent of other forest types namely natural forests and woodlands and individual household woodlots, as well as calculating the Normalized Difference Vegetation Index (NDVI) in the years 2008, 2013 and 2017.

#### **7.2 The Extent of Gully Erosion Associated with Community Forests**

Above all, it is important to echo that Ngcayini and Ezikhotheni chiefdoms are severely threatened by land degradation. For instance, Plate 7.1 depicts the nature of land degradation that is affecting the study sites. Notably, at Ngcayini there are some shrubs that are sliding into the gully in the course of its advancement, whereas at Ezikhotheni there is grass in the gully indicating its rehabilitation.

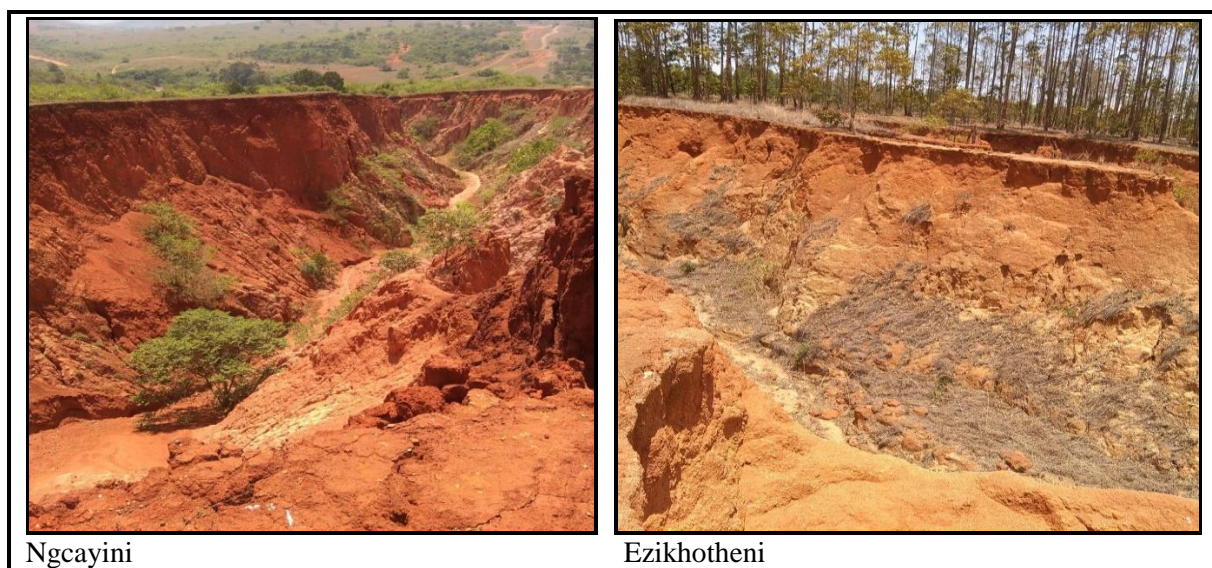


Plate 7.1: Soil erosion at Ngcayini and Ezikhotheni chiefdoms

In view of the severity of land degradation in the study sites it is gratifying that there are interventions that have been made towards its control. Hence, Plate 7.2 depicts plantation-style community forests that have been planted to alleviate degradation in the study sites.



Plate 7.2: Plantation-style community forest intended to alleviate degradation at Ngcayini and Ezikhotheni chiefdoms (Note: the poor ground cover in the foreground)

As indicated in the preceding chapters, the plantation-style community forests were established between 2001 and 2003 at Ngcayini and Ezikhotheni chiefdoms. Therefore, on the basis of availability of Google Earth images the study has calculated the area (in hectares) of these forests and the gullies under rehabilitation in the years 2008, 2013 and 2017. The findings indicate that the area under plantation-style community forests has been increasing in both communities. For instance, at Ezikhotheni the forest increased from 4.48 hectares in 2008 to 6.42 hectares in 2013 and 7.15 hectares in 2017 (Table 7.1) and (Plate 7.3). Likewise, at Ngcayini the forest increased from 0.35 hectares in 2008 to 0.40 hectares in 2013 and 0.48 hectares in 2017 (Table 7.1) and (Plate 7.4). This is a positive attribute since it denotes effectiveness of the intervention made in an effort to rehabilitate degraded land and augment the supply of forest resources. In spite of denoting effectiveness, it could also mean the forests are encroaching into marginal or virgin land.

Table 7.1: Extent of plantation-style community forests and gullies in the case study sites

Year	Area of forest (ha)		Area of gully erosion (ha)	
	Ezikhotheni	Ngcayini	Ezikhotheni	Ngcayini
2008	4.48	0.35	9.78	2.14
2013	6.42	0.40	8.8	2.56
2017	7.15	0.48	9.37	2.59



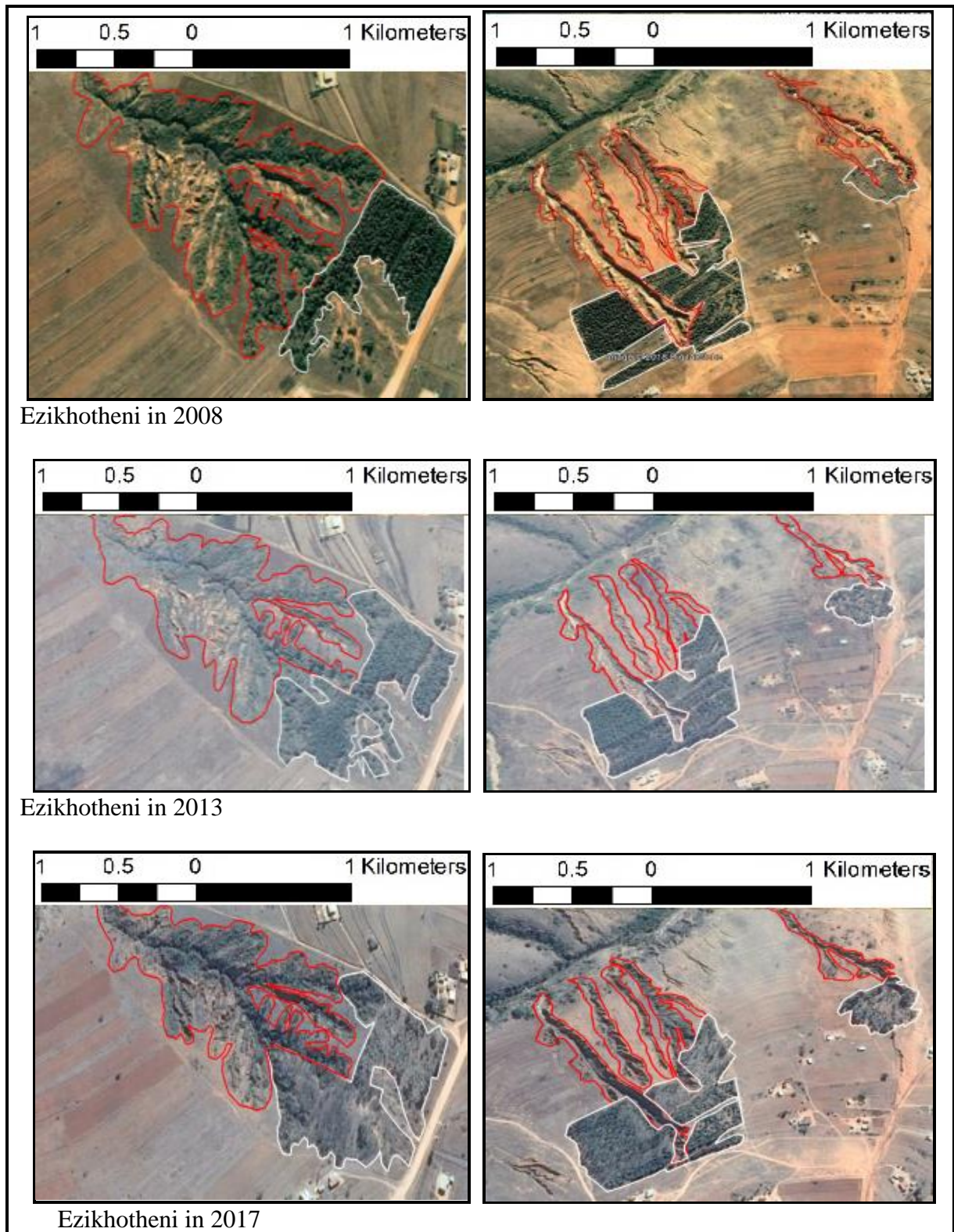


Plate 7.3: Plantation-style community forests and gullies at Ezikhotheni in 2008, 2013 and 2017

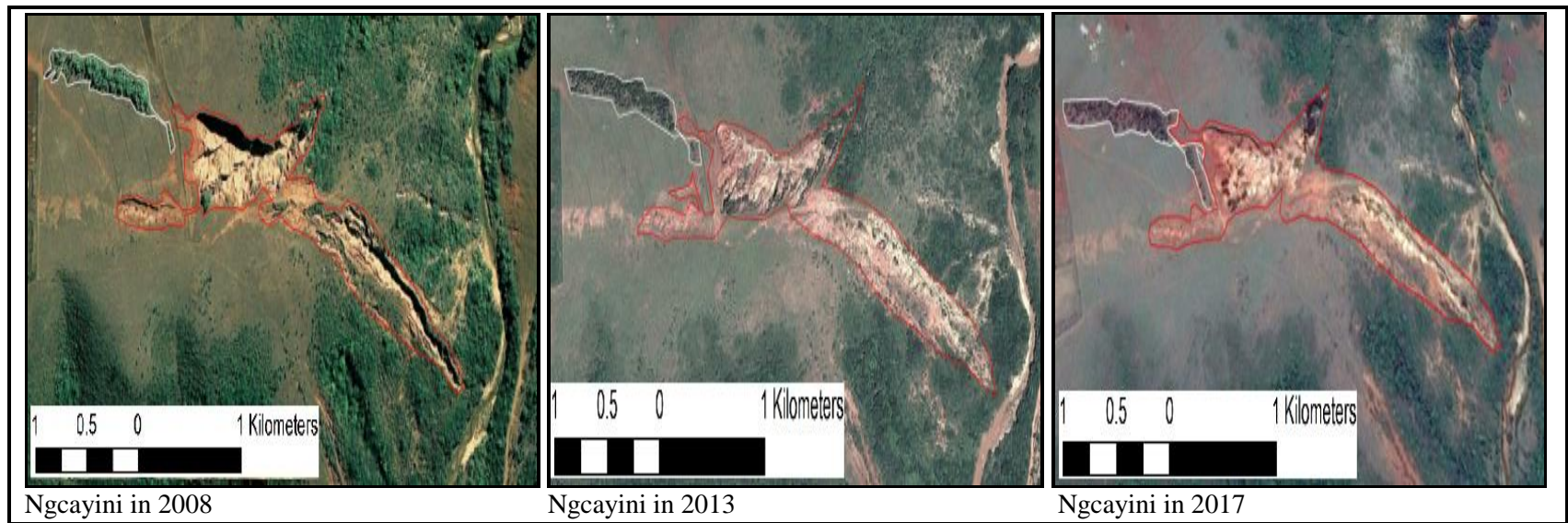


Plate 7.4: Plantation-style community forest and gully at Ngcayini in 2008, 2013 and 2017

With respect to gully size, the findings reflect that it was fluctuating at Ezikhotheni while increasing at Ngcayini. For instance, at Ezikhotheni the gully was 9.78 hectares in 2008 and then decreased to 8.8 hectares in 2013, but then increased to 9.37 in 2017 (Table 7.1) and (Plates 7.3). Despite the noted variations in the gully size over the years, there is an element of rehabilitation which is being indicated. Noteworthy, the increase in the gully size in 2017 can be attributed to a number of factors which include climatic conditions and harvesting of forest resources. According to a personal communication with the chairperson of the NRMC, a large portion of the plantation-style community forest was harvested for sale through the program of commercializing of timber in rural areas. Furthermore, in the year 2015/2016 there was a country wide drought which resulted in very low rainfall received in most parts of the country. Ezikhotheni is one area which was hard hit by drought such that fields were not cultivated during the year 2015/2016 and thus livestock were allowed to graze in the plantation-style community forests even during the summer season due to a shortage of fodder.

According to a personal communication with the chairperson of the NRMC, livestock are only allowed to graze in the plantation-style community forests during the winter season when there is inadequate fodder in the grazing lands and fields. At the same time, absence of rains implies a heavy reliance on forest resources as a safety net. Contrariwise, at Ngcayini, the size of the gully has been increasing from 2.14 hectares in 2008 to 2.56 hectares in 2013 and 2.59 hectares in 2017 (Table 7.1) and (Plates 7.4). Basically, this indicates that the gully is active and therefore not rehabilitating. As already alluded to earlier on, the advancement of the gully was also observed during field visits from 2014 to 2017. A compounding factor is the destruction of the fence surrounding the forest and the gully, which has resulted in uncontrolled grazing and destruction of tree seedlings. It is important to note that the gullies are basically a product of uncontrolled harvesting of natural forests and overgrazing in the respective chiefdoms. As already indicated, efforts towards rehabilitation of the gullies include fencing them off to control grazing and planting *Eucalyptus spp.* in and along the gully.

### 7.3 Forest Cover Changes at the Ezikhotheni and Ngcayini Chiefdoms

The extent of individual household forests at Ezikhotheni, decreased from 30.38 hectares in 2008 to 28 hectares in 2013 but increased again to 31.39 hectares in 2017 (Table 7.2). A similar pattern was observed at Ngcayini where they decreased from 42.71 hectares in 2008 to 42.65 hectares in 2013 but increased to 43.12 hectares in 2017 (Table 7.2). Possible reasons for such a variation in the size of individual household forests include intense usage by the forest owners due to scarcity of wood resources, drought, as well as commercial harvesting of the forests. With respect to natural forests, the findings indicate that at Ezikhotheni they decreased from 812.63 hectares in 2008 to 799.15 hectares in 2013 and then increased to 806 hectares in 2017 (Table 7.2). In contrast, at Ngcayini the natural forest increased from 209.56 hectares in 2008 to 211.34 hectares in 2013 and then decreased to 204.26 in 2017 (Table 7.2). The variation in the size of natural forests and woodlands is mainly due to overexploitation and the spread of invasive plant species. Of note is that Ezikhotheni is mainly characterised by savannah woodlands as opposed to natural forests (Plates 7.5a, 7.5b and 7.5c), yet at Ngcayini natural forests are predominant (Plates 7.6a, 7.6b and 7.6c). In terms of the forest planted by *Yonge Nawe*, it increased from 0.87 hectares in 2008 to 2.49 hectares in 2013 and 3.55 hectares in 2017 (Table 7.2). This implies that the intervention by *Yonge Nawe* is effective.

Table 7.2: Extent of individual household, natural and the *Yonge Nawe* forest in the respective chiefdoms

Year	Individual household forest (ha)		Natural forest (ha)		<i>Yonge Nawe</i> forest (ha)
	Ezikhotheni	Ngcayini	Ezikhotheni	Ngcayini	Ezikhotheni
2008	30.38	42.71	812.63	209.56	0.87
2013	28	42.65	799.15	211.34	2.49
2017	31.39	43.12	806	204.26	3.55

To corroborate the findings regarding changes in land cover in the chiefdoms studied, a mean Normalized Difference Vegetation Index (NDVI) was calculated for the years 2008, 2013 and 2017 (Table 7.3). Based on the Normalized Difference Vegetation Index (NDVI) the vegetation cover has been generally increasing in the chiefdom studied from 2008 to



2017 (Table 7.3). For instance, the mean NDVI at Ezikhotheni was 0.34 in 2008 increasing to 0.45 in 2013, and only decreasing to 0.43 in 2017 (Table 7.3) and (Figure 7.1).

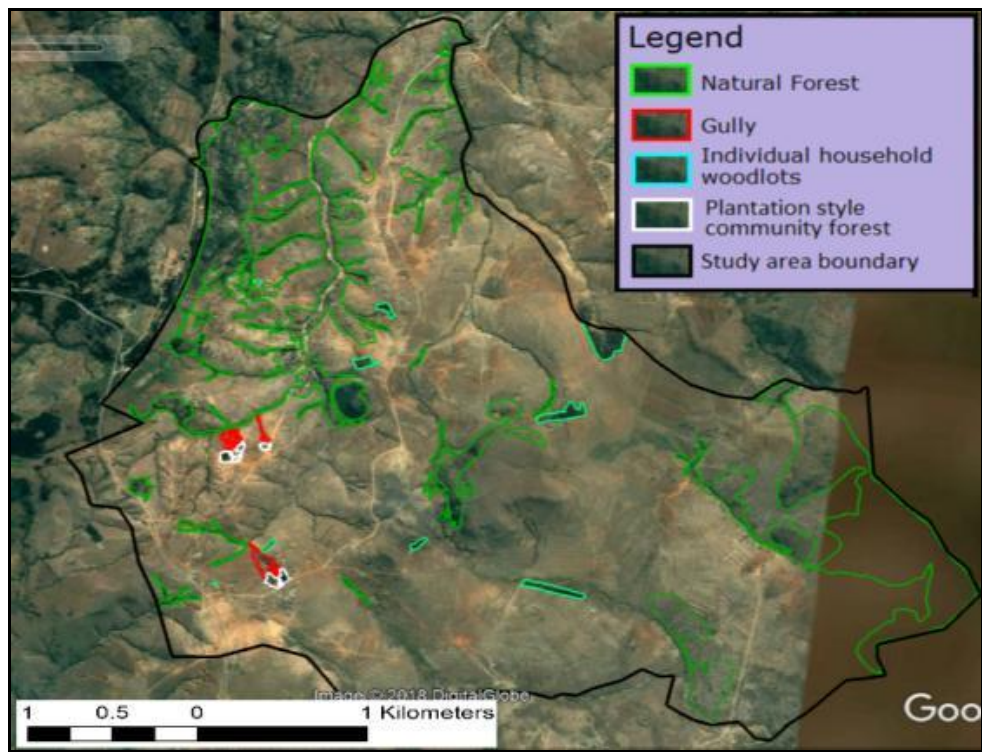


Plate 7.5a: Individual household, plantation-style and natural forests at Ezikhotheni in 2008

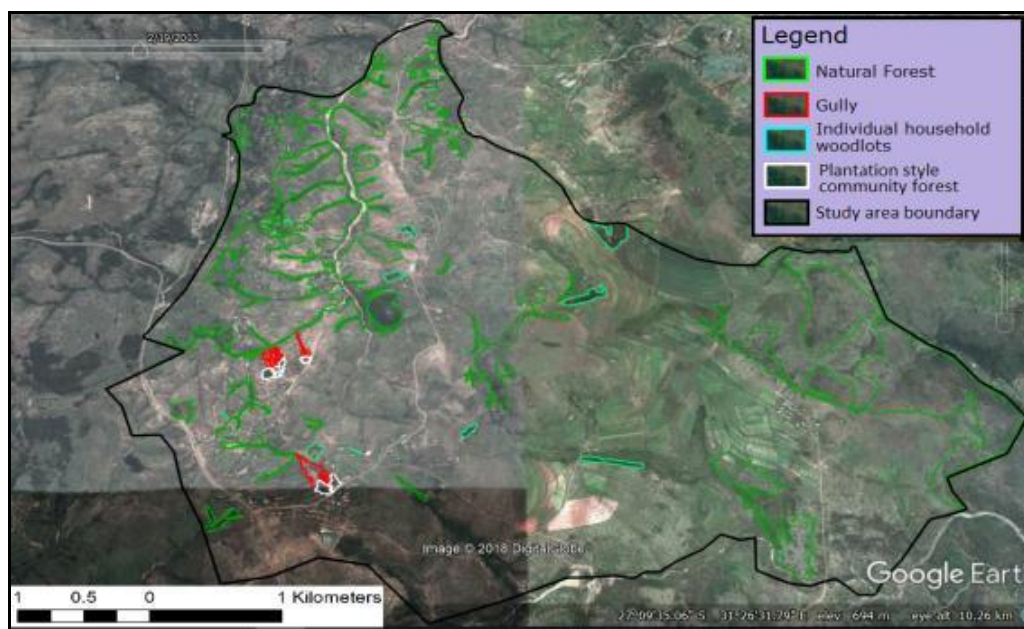


Plate 7.5b: Individual household, plantation-style and natural forests at Ezikhotheni in 2013

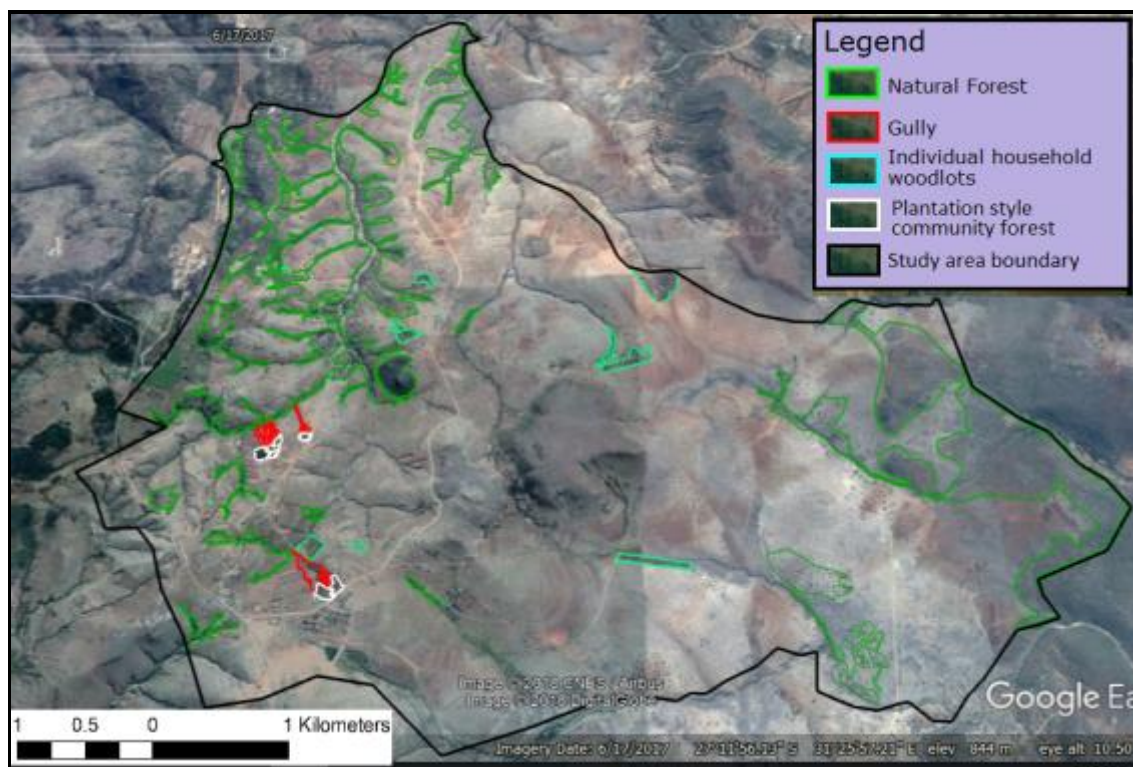


Plate 7.5c: Individual household, plantation-style and natural forests at Ezikhotheni in 2017

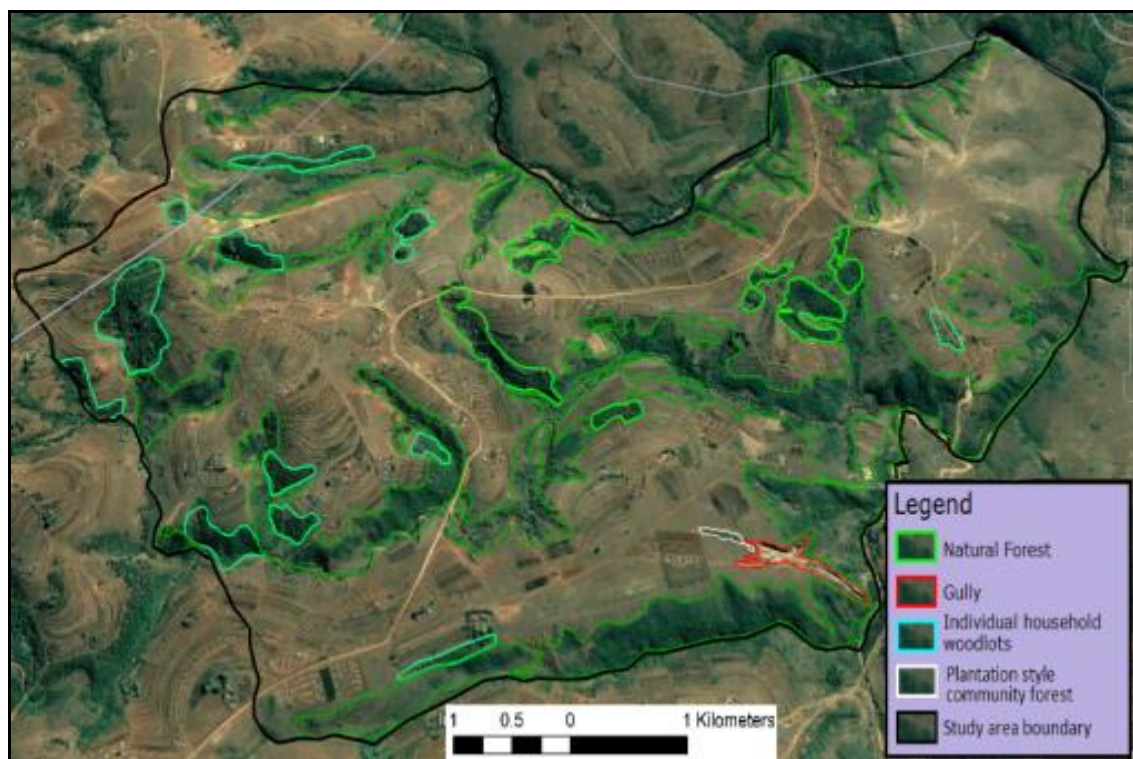


Plate 7.6a: Individual household, plantation-style and natural forests at Ngcayini in 2008



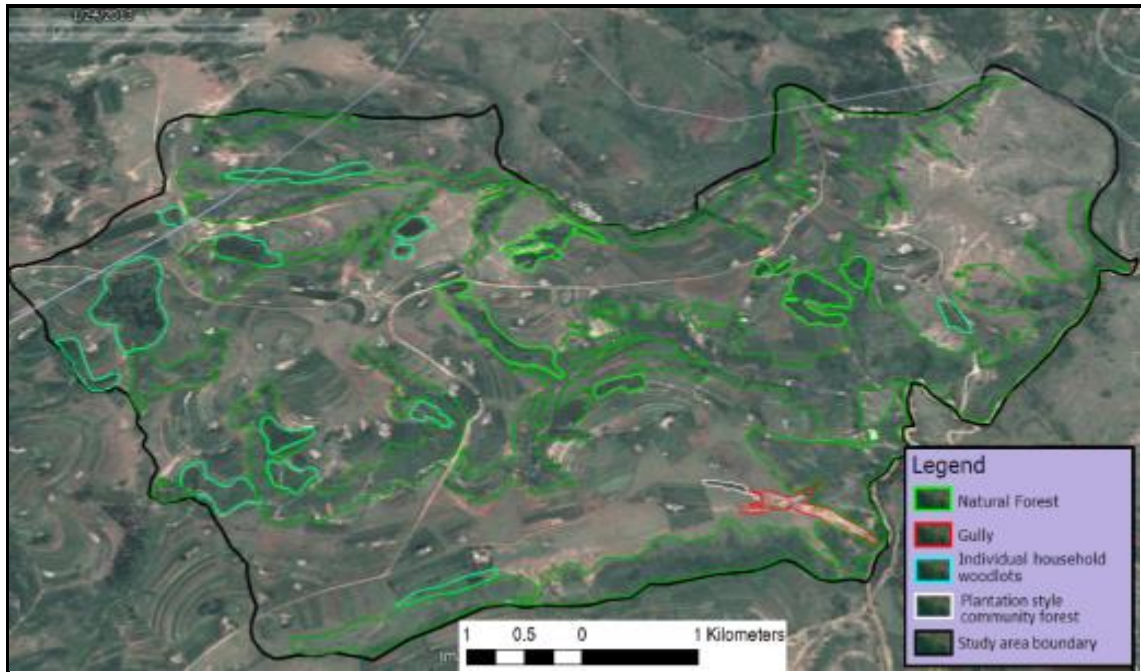


Plate 7.6b: Individual household, plantation-style and natural forests at Ngcayini in 2013

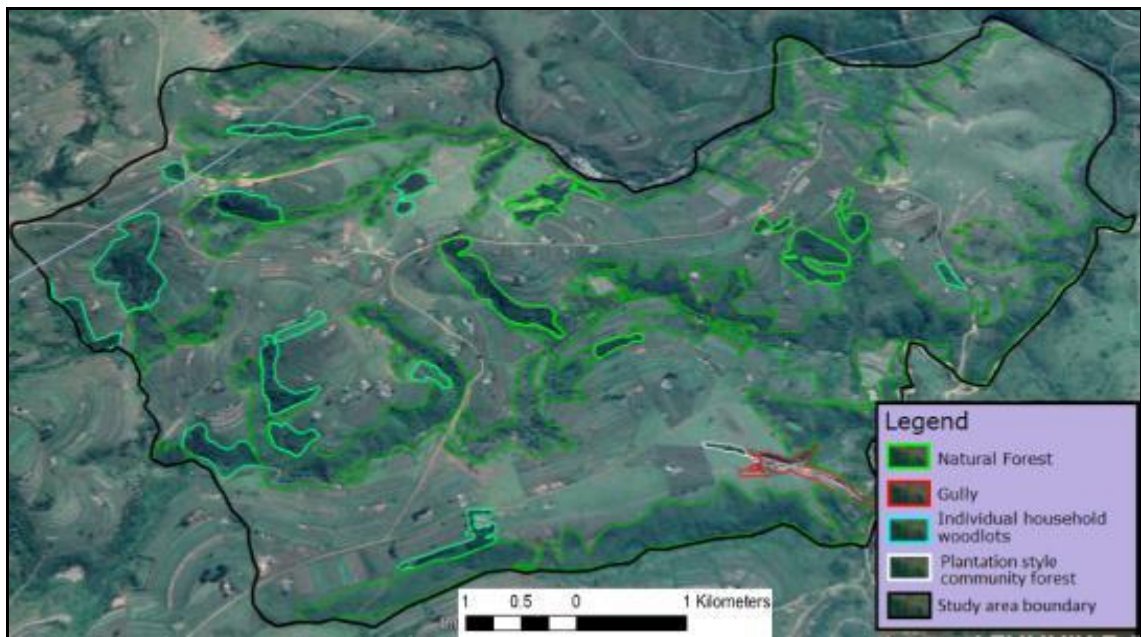


Plate 7.6c: Individual household, plantation-style and natural forests at Ngcayini in 2017

The noted decline can be attributed to harvesting of community forests and the 2015/2016 drought which strike the country resulting in areas such as Ezikhotheni being unable to even cultivate their fields. At Ngcayini on the other hand, the mean NDVI values increased

from 0.33 in 2008 to 0.55 in 2013 and 0.56 in 2017 (Table 7.3) (Figure 7.2). The increase in NDVI values on the one hand, corresponds with the noted increase in the size of the plantation-style community forest pointed out in the preceding section. On the other hand, the increase could be attributed to the spread of alien invasive plant species such as *Lantana camara* and *Psidium guavana* which are more dominant in the area.

Table 7.3: NDVI values (mean and median) in the study sites

Year	Mean		Median	
	Ezikhotheni	Ngcayini	Ezikhotheni	Ngcayini
2008	0.34	0.33	0.33	0.31
2013	0.45	0.55	0.44	0.53
2017	0.43	0.56	0.42	0.55

## 7.4 Summary

The extent of gully erosion in association with community forests and land cover changes in the case study chiefdoms were analysed. Regarding the extent of gully erosion the findings denote that the erosion was rehabilitating at Ezikhotheni, but advancing at Ngcayini. Notwithstanding this observation, the community forests established as an intervention to land degradation were generally increasing in size in both chiefdoms between 2008 and 2017. This was substantiated by the mean NDVI which also indicated an increase in vegetation cover between 2008 and 2017 in the respective chiefdoms. Individual household and natural forests and woodlands were also generally increasing in size between 2008 and 2017 in both chiefdoms. The discrepancy in the data suggests that the extent of the community forest increased in a direction away from the expanding gullies and that communities were not in a position to effectively intervene in extensive erosion problems.



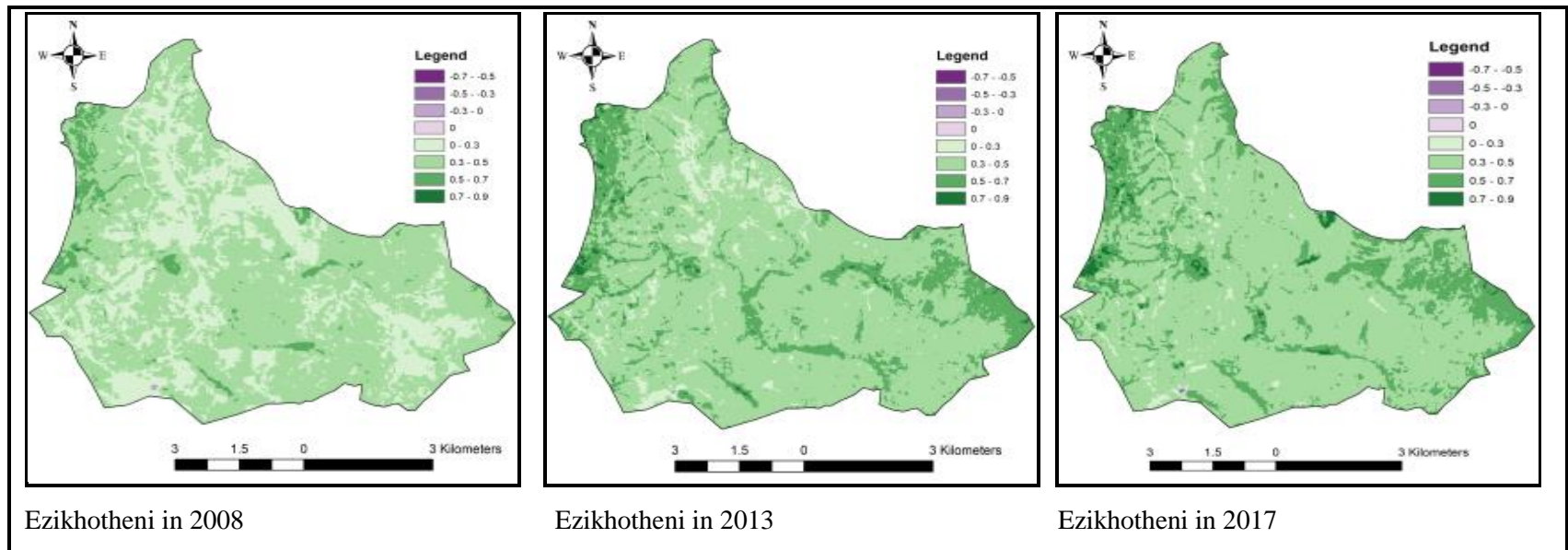


Figure 7.1: Normalized Difference Vegetation Index (NDVI) for Ezikhotheni in 2008, 2013 and 2017

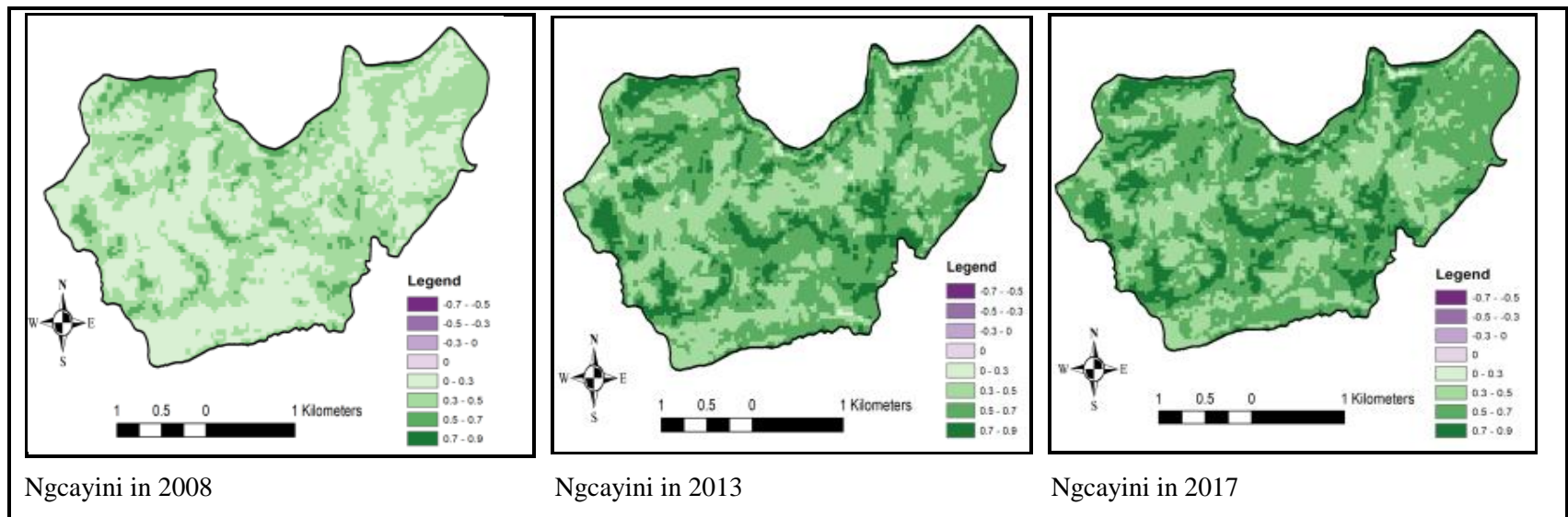


Figure 7.2: Normalized Difference Vegetation Index (NDVI) for Ngcayini in 2008, 2013 and 2017

## **CHAPTER 8**

### **REVIEW OF THE DETAILS OF THE FINDINGS IN THE RESPECTIVE CHIEFDOMS**

#### **8.1 Introduction**

This chapter draws together the issues raised in the study on the assessment of the role of community action in the management of community resources in the country with a specific focus on community forests. The study involved 300 heads of households, 22 community leaders and 10 officers from organizations working with communities on the management of community forests and in controlling land degradation, who were categorized into internal and external stakeholders. Internal stakeholders comprise heads of households and community leaders, while external stakeholders were officers from organizations collaborating with communities on resource management.

Notably, when applying a t-test on the overall findings from the heads of households at Ezikhotheni and Ngcayini a  $p$  value of 0.298 was obtained, suggesting that there is no significant difference between the two chiefdoms concerning the role of community action in the management of community forests at Ezikhotheni and Ngcayini chiefdoms. It is important to recognize that such a relationship may have been influenced by the nature of the research subjects and the nature of their cooperation. For instance, the responses are from human subjects; hence an element of bias is inevitable. Further, as noted in chapter four, seeking permission from traditional authorities enhanced cooperation among the community members. This in turn demonstrates loyalty of citizens to their authorities in a tribal system of administration, an act which could certainly introduce an element of bias in the study, with members being reluctant to criticize their authority and related structures.

For purposes of comprehension, the discussion is presented under subheadings comprising the management of community resources by internal and external stakeholders, the rules governing the management of forest resources, the distribution and utilization of benefits derived from community forests; and the extent of community action in the management of

community resources. The research has also facilitated a critical review of the opportunities and threats associated with community action in the management of community forests as well as the extent of community forest resource utilization and associated land degradation. The discussion also relates the conceptual framework to the findings of the study as well as links everything to existing knowledge on the subject.

## **8.2 The Management of Community Forests by Internal and External Stakeholders**

Above all, as indicated in Figure 1.3b the modified conceptual framework on resource conflict, community action, and social-ecological resilience is divided into three broad elements namely the **context**, **community action institutions** and the **action arena** in accordance to Ratner, Meinzen-Dick and Haglund (2013). The context comprises attributes of resources, attributes of resource users and governance arrangements. The action arena consists of actors, action resources, and rules in use, as well as patterns of conflicts and cooperation. Therefore, resources of concern in this study comprise community forests which are categorized into plantation-style and natural forests. In terms of composition, plantation-style community forests as well as individual household forests comprise *Eucalyptus spp.* (gum) and or *Acacia mearnsii* (wattle) tree species.

The natural forests consist of a diversity of species, which also include Invasive Alien Plant Species (IAPS). For instance, in the study sites dominant invasive plant species include *Lantana camara*, *Chromolaena odorata* and *Psidium guajava*. Noteworthy, is that the tree species grown in plantation-style community forests (*Eucalyptus spp.*, *Pinus spp.* (pine) and *Acacia mearnsii*) are also highly invasive. They deplete water resources; encroach into grazing and crop land as observed by WOCAT (2007) and Working for Water (2007). Despite the noted disadvantages, *Eucalyptus spp.* and *Acacia mearnsii* tree species grow fast and alleviate land degradation through stabilizing the soil as it is the case at Ezikhotheni chiefdom. In addition, unlike *Pinus spp.* (pine) tree species; *Eucalyptus spp.* easily propagates through re-sprouting and coppicing abilities as observed by Nakhoda and Jain (2016).

In terms of distribution, natural forests were more dominant at Ngcayini than at Ezikhotheni chiefdom. Ezikhotheni is also characterized by privately owned farms, hence there were privately owned forests. In the privately owned forests, community members only access resources through buying from the owners. Natural forests and their associated resources are generally threatened by human activities such as settlement and agriculture, wild fire, and commercialization of forest products (bio-trade). For instance, the ever-increasing population and high demand for land have prompted traditional authorities to allocate natural forests and marginal land for settlement and agricultural purposes. In the process valuable indigenous tree species and generally large tracts of forests are destroyed. This is further corroborated by Dlamini (2017) in a study on mapping forest and woodland loss in Swaziland between 1990 and 2015, where it was observed that acacia and broadleaf savannah were being depleted at higher rates with up to 8.1% of forest area lost since the year 2000. This was particularly the case in the eastern half of the country and a few western parts where agriculture (primarily sugarcane), human settlements and other infrastructure developments are dominant land uses in accordance to Dlamini (2017). On the same note, Ngwenya and Hassan (2005) observed that there is large-scale land clearing for agricultural production in Swaziland such that vast areas of natural forests have been converted to large-scale sugar cane farming, uncontrolled extraction of products from communal land, overgrazing and a growing population that depends on forests for fuel wood in the rural areas.

Moreover, where the forest lands have not been cleared for settlement and agriculture, they are normally destroyed by wild fire initiated by community members during the dry season. In particular, *Eucalyptus spp.* and *Acacia mearnsii* tree species respond to fire through rapid propagation and hence they spread disproportionately. The disproportionate spread of *Acacia mearnsii* in particular was also observed by Liu *et al.* (2016) in China, where in a period of six months black wattle seedlings had spread over 1800m with an average rate of 300m per month. In Swaziland, the disproportionate spread of wattle and eucalyptus tree is also promoted by the commercialization of their timber on Swazi Nation Land. Consequent to the disproportionate spread of these tree species other community resources such as water are affected without anyone being held responsible, hence ‘tragedy of the commons’

previously noted by Hardin (1968). Apart from the rapid spread of wattle and eucalyptus trees, natural forests in particular are threatened by bio-trade, which involves resources such as fire wood, medicinal plants and handicrafts. It must be emphasized that the ability of a forest resource to provide for bio-trade and human daily subsistence needs depends upon sustainable harvesting and management practices. Noteworthy, bio-trade has also prompted illegal harvesting of resources.

In an effort to control land degradation and manage community forests, internal stakeholders (community members and their leaders) who are the resource users embark on a number of strategies. These include holding community meetings to deliberate on issues relating to management of forests. It is however, important to note that a majority of the heads of households (64.5% at Ezikhotheni and 86% at Ngcayini) and community leaders (90.9% at Ezikhotheni and 63.6% at Ngcayini) pointed out that they do not hold meetings to deliberate on issues concerning management of community forests. Therefore, it is clearly shown that only a few community members participate in decision-making relating to the management of community forests. Normally, this tends to have a bearing on allegiance to those decisions as observed by Topfer (2000); Chirenje, Giliba and Musamba (2013); Ratner, Meinzen-Dick and Haglund (2013) and Mogotsi *et al.* (2016). It is important to mention that in Swaziland, failure to attend in community meetings is a common practice, such that traditional authorities normally keep a register of all members who are present in each meeting and then levy fines on those who do not attend meeting.

In the meetings the trend is that there was poor attendance by males (95.76% of the heads of households at Ezikhotheni and 85.7% at Ngcayini) and good attendance by females (98.6% of the heads of households at Ezikhotheni and 85.7% at Ngcayini) due to wage-based employment in the case of males. This depicts that in most decisions that are made during community meetings women have a stake, which is a good practice considering the call for women empowerment and gender equity. Also considering that women in their daily activities are very close to nature it is important that they are involved in all decision pertaining to the management of the environment. Regarding this, Ngwenya and Hassan (2005) indicates that traditionally in Swaziland it is the duty of women to carry out

household chores such as cooking and cleaning, which necessitate collection of products of natural forests and woodlands.

In spite of the differences in attendance in meetings, males and females have a host of roles and responsibilities which they execute indiscriminately in the management of community forests. These include: planting and pruning trees; mending fence, protecting forests from fire through making fire breaks; and protection from theft; as well as harvesting forest resources. In terms of protection from theft, all community members are entrusted with the responsibility of vigilance on the community forests and reporting all illegal activities to community leaders. It is worth noting that whenever a community forest project is initiated, a NRMC is established to oversee the management process in collaboration with the traditional authorities.

The NRMC and traditional authorities are also responsible for organizing people to work in the community forest activities, managing a community forest fund and also disciplining people who do not comply with rules governing the management of the community forests. This is corroborated by the National Forest Policy (Government of Swaziland, 2002a), which states that the NRMC is responsible for negotiating forest management matters with all stakeholders in order to establish appropriate rights and responsibilities, and also formulate rules governing the use and management of the community forest resources. The importance of NRMCs in the management of community resources is also echoed by Marambanyika and Beckedahl (2016) who indicate that in Zimbabwe wetland committees are elected by wetland beneficiaries to monitor wetland use and prevent degrading activities.

The findings reveal that NRMCs exist in the respective chiefdoms (66.5% of the heads of households at Ezikhotheni and 5% at Ngcayini), although at Ngcayini it mainly existed in principle as it was not as active as it was at Ezikhotheni. The NRMCs together with traditional authorities, as well as the general community members are trained on issues relating to forest conservation and management, as well as in controlling land degradation.

Training for NRMCS and traditional authorities is conducted by external stakeholders (organizations working with communities such as government departments and NGOs).

On the other hand, training for community members is conducted by traditional authorities as well as external stakeholders. The findings on training of all stakeholders are echoed by WOCAT (2007) in Ethiopia where community leaders and the development committees are trained every year, and the general community is sensitized through two to three day awareness creation seminars held on an annual basis. In this case the training afforded to community leaders' play a pivotal role in improving their leadership and coordination capacities, which is also the aim of the training conducted in the country. In particular, the findings expose that NRMCS members pass on the knowledge they receive in training to the rest of the community members (100% of the heads of households at Ngcayini and 59.6% at Ezikhotheni). This concurs with the observations of Harrison (2006), who argues that NRMCS members must be trained through workshops and seminars, with the hope that they would pass-on the knowledge to the general community.

In terms of the roles and responsibilities of the NRMCS, the findings from heads of households disclosed that at Ngcayini it was mainly management and protection of community forests (100%) while at Ezikhotheni was management and protection of community forests and the funds generated (85.7%), as well as organizing people to work in community forests activities. It must be noted that at Ngcayini the funds generated through the sale of forest resources were received by the headman, who then handed them over to the royal kraal for funding royal kraal duties. This is primarily because the NRMCS in this chiefdom was not as active as it was the case at Ezikhotheni. Moreover, the findings reflected that community members had generally lost trust in the NRMCS members as they were perceived to be conspiring with illegal harvesters for their own selfish ends.

Traditional authorities were generally responsible for disciplining people, who harvest forest resources illegally (45% of the heads of households at Ngcayini and 22.5% at Ezikhotheni). It is important to note that the traditional authorities (inner council and ward elders) are led by the headman in executing their roles and responsibilities. The headman is

the right hand man for the Chief, whose role is overseeing all developments in the community (1.5% of the heads of households at Ezikhotheni). The findings are corroborated by Singwane (2006), and Sithole (2013), who indicate that Chiefs are legitimately in charge of overall management of communal forests and woodland reserves.

At Ngcayini however, there was no substantive Chief. A majority of the heads of households (93.5% at Ezikhotheni) were ignorant on the roles and responsibilities of the Chief in the management of community forests. These sentiments were also shared by community leaders. Such a perception emanates from the fact that culturally a Chief infrequently shows up in community meetings and activities. Therefore, for most people meeting with the Chief is a rare privilege. Therefore, community members are normally afraid of their Chiefs. This principle also directly applies to the King in the country, who does not directly participate in every event when invited, but often send a representative. Basing on the respect accorded to Chiefs, their exclusion from most community events is intentionally aimed at earning them a higher level of respect from community members as it is also the case with the King.

Despite the exposure of all stakeholders to training on resource management and clear roles and responsibilities in the management of community forests in the respective chiefdoms, the findings disclose that there was no close cooperation between the NRMCS and traditional authorities. This was solely because the concept of NRMCS is a novel practice since management of community resources has all along been a preserve for traditional authorities. For instance, as already indicated the findings highlighted that the NRMCS members perceived traditional authorities as people who interfere in their domains. In the same vein, the traditional authorities also perceived NRMCS members as corrupt and conspiring with illegal harvesters from outside the community for their own selfish ends.

Notably, the lack of cooperation was more pronounced where there were no substantive Chiefs. For instance, evidence from external stakeholders (organizations) working with communities in the management of community forests indicates that some communities have been assisted on tree planting, with the NRMCS supervising management of the



forests, but the traditional authorities take all the benefits. In spite of that mismanagement, external stakeholders recommended formation of more NRMCS in order to strengthen cooperation between internal stakeholders. Formation and training of NRMCS is pivotal in all chiefdoms in order to ensure attainment of Sustainable Development Goal 15 which envisage to ‘protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss’. This in turn will enhance community action institutions as well as improve the working relationship between NRMCS and traditional authorities as key actors in community resource management.

External stakeholders (organizations) include the Forestry Department in the Ministry of Tourism and Environmental Affairs (MTEA), Swaziland Environment Authority (SEA), *World Vision* and *Conserve Swaziland* as also key actors in resource management. As already indicated in chapter six, the organizations carry out afforestation programs; educate farmers about the FPA and tree planting; present radio programs; establish community forests, conduct EIAs; provide management plans for wattle forests; as well as sensitize community members about IAPS and prevention of forest fires. The afforestation programs mainly comprise planting trees in degraded areas as a rehabilitation strategy. The findings are in agreement with those of Magagula (2003). During the afforestation programs community members are educated on legislation governing environmental resources such as the FPA and EMA. In the training sessions the importance of tree planting is greatly emphasized.

Notably, the trees planted in an effort to rehabilitate degraded land comprise community forests whose management is normally overseen by NRMCS. It must however be indicated that other than rehabilitation of degraded land, some community forests are established solely to augment the supply of forest resources, considering that natural forests are diminishing. The loss of forests is not only peculiar to Swaziland, for instance, Matsvange, Sagonda, and Kaundikiza, (2016) observed that due the on-going activities in agrarian reform, access to community forests in some districts such as Nyanga in Zimbabwe were severely affected because a significant extent of forestry land was converted into semi-

commercial farming areas. This is also happening in Swaziland as a result of the expansion of sugar cane production. Therefore, in an effort to raise awareness on the importance of forest resource management there are (as previously indicated in chapter six) radio programs pertaining to the management of forest resources which are aired by the organizations namely; *Temahlatsi*, *Temvelo* and PELUM Swaziland which is an association of NGOs concerned with promoting ecological land use practices. On this note, Magagula (2003) concurs that the Forestry Department advises people on the importance of managing forests through the media and community consultations. Considering the importance of the environment in general, in addition to the above mentioned radio programs, it is necessary for the country to promote formal and informal effective education, awareness raising and capacity building programs on natural resource management.

Furthermore, as indicated in chapter six, the Forestry Department and SEA provide management plans for wattle forests to individual household forests owners. This is mainly aimed at controlling the disproportionate spread of wattle forests on rangelands. Here, the forest owners are trained on how to manage their forests and also guaranteed of a market for their forest resources. This is basically the community forestry out-grower scheme where small scale farmers grow trees on their own plots with support from the company in the form of technical advice, seed stock, fertilizers, pesticides tools, harvesting as well as guaranteed purchase and prices as observed by Cairns (2000) and Nawir *et al.* (2002). Despite that this practice is aimed at controlling disproportionate spread of wattle forests, due to the monetary incentive it brings along, people expand their forests through allowing them to spread into rangelands, in order to maximize their profits. For instance, when advised to control the spread of their forests they normally claim that the forest is only spreading to pieces of land that were once occupied by their forefathers. This depicts how community members normally resent rules governing the use of community resources. This is normally a serious problem where all the *Imisumpe* (ward elders) are young such that they do not have a comprehensive history of the community.

In addition, the organizations are also very instrumental in terms of sensitizing community members about invasive alien plant species (IAPS) and prevention of forest fires.

Sensitizing community members about invasive alien plant species (IAPS) is echoed by Liu *et al.* (2016) who state that promoting education and awareness on the dangers of *Acacia mearnsii* invasion is necessary to preclude further expansion of this species. This is further emphasized and enforced by community leaders such that community members are not allowed to burn the pastures willy-nilly instead there are specific times of the year when veld fires are allowed. On the same note, forest companies always plead with neighbouring communities to avoid forest fires. To enlist the cooperation of the communities, the companies normally pledge their support through employment opportunities as well as sponsored soccer tournaments. Despite the efforts made to avert fire, in Swaziland, there is fragmented and inconsistent fire management legislation and policies which inadequately address the appropriate use of controlled burning, especially on communal land as stated in a report by FAO (2015). Furthermore, the report (FAO, 2015) decried that limited government capacity together with weak law enforcement mechanisms by both state and traditional institutions has created a dearth of understanding of fire management among stakeholders (including communities) and government that culminates in the uncoordinated use of fire across the nation. Another important activity undertaken by the organizations is prohibiting the sale of fuel wood derived from natural forests. It is illegal to sell fuel wood derived from natural forests in Swaziland. Nonetheless, community members are allowed to only collect dry wood for domestic use.

Moreover, as previously indicated in chapter six, the organizations play a pivotal role in the prevention and control of land degradation. Community members are sensitized on the strategies for preventing and controlling land degradation through arranged training, workshops and radio programs. In the course of sensitizing community members emphasis is put on utilization of resources in a sustainable way. This is corroborated by Whitehead (2014) who argues that people should not be banned from exploiting resources; instead they have to use them in such a way that they are not depleted to ensure posterity. In this way, community members are able to fight poverty on the one hand, and alleviate land degradation on the other hand.

In general, rehabilitation of gullies involves constructing gabion cages; construction of storm bunds; water diversion channels; as well as planting trees in and along the gully. This is also echoed by Addis *et al.* (2015) who observed that integrated vegetative management and physical measures (check dams) accompanied by an area enclosure (fencing) are the most successful gully erosion control measures so far implemented which have significantly reduced surface runoff and erosion, while improving soil fertility, forage, and fuel wood production along gully lines, in the different agro-ecological environments of North-western Ethiopia. In particular, vegetative materials such as grass (for example, *Chrysopogon zizanioides* (Vetiver grass) and green gold and elephant grass) which can develop in a shallow soil with high tolerance to drought are grown all over the area as observed by Addis *et al.* (2015). Considering the situation at Ngcayini where the gully is advancing amidst the intervention made, this study suggests that in addition to planting trees; Vetiver grass (*Chrysopogon zizanioides*) must also be used. This is in due consideration of its advantages which include being non-invasive whilst producing a massive root system that grows straight down rather than out from the plant as observed by Cindy (2015). It is important to note that these interventions must be preceded by reviving the fence around the affected area.

On another note, the findings of the study reflect that controlling soil erosion also involves protection, conservation and restoration of wetlands. This finding is corroborated by Marambanyika and Beckedahl (2016) in a study conducted in Zimbabwe where they noted evidence of wetland draining, and encroachment by farming activities, as well as desiccation of wetland fringes. In Swaziland, this is spearheaded by organizations such as SEA and Swaziland National Trust Commission (SNTC). This is further encouraged by the Ramsar Convention of 1971 to which Swaziland is a party. In view of that due to the shortage of land, some community members end up being allocated wetlands for settlement and agriculture, there is a need for continuously sensitizing them on the value of wetlands and also enforcing the relevant legislation.

As already indicated in chapter six of the study, the organizations have also proved to be instrumental in providing funding and technical support to communities to rehabilitate

landscapes. For instance, they provide fencing material and tree seedlings to affected communities. It is important to note that in most cases the organizations' assistance is a response to requests made by the concerned communities to other stakeholders who observe the problem and act on behalf of the community. For example, the University of Swaziland, Geography and Environmental Science and Planning Society (UNIGEPS) liaises with the affected communities and then solicit help from the respective the organizations. Upon receipt of the assistance, in the implementation they join hands with the community, particularly schools.

In the course of implementation, the communities are often trained on sustainability in the use of the environment such as in utilization of indigenous trees. Training is conducted with the hope that providing information will change attitudes and behaviour of community members as suggested by Matsvange, Sagonda and Kaundikiza (2016). Specifically, in view of the high rate of poverty which contributes to land degradation communities are trained on usage of indigenous tree species products for purposes of generating income through value addition. These findings are upheld by Dlamini (1999), who cites an example of fruits from *Sclerocarya birrea* (*Umganu*) commonly referred to as *marula* which are used to produce *marula* brew, jam, jelly, fresh juice and cider as well as using the nut as essential edible oil for domestic purposes. In general, the significance of *marula* brew is nationally recognized in Swaziland through hosting of annual *marula* ceremonies in two royal kraals (Buhleni and Hlane) between February and March. In addition, considering the rate of depletion of natural forests, the Forestry Department indicated that communities are also trained on the utilization of alternative sources of energy (25%) such as solar. For example, there is an increasing adoption of solar geysers in Swaziland as well as use of solar energy for purposes of lighting as an alternative to electricity.

The findings of the study also indicate that communities generally cooperate in the prevention and control of land degradation. Notably, cooperation is a key aspect of community action as propounded by the conceptual framework (Figure 1.3b) driving this study. Such cooperation is displayed through providing labour during rehabilitation work, as well as being proactive in reporting illegal activities occurring in the environment to

SEA and to the MTEA. Providing labour during rehabilitation work ensures that the communities own and value the rehabilitation project, hence they safeguard it which alleviates further land degradation. At the same time, reporting illegal activities ensures that the perpetrators are reprimanded for mismanaging the environment in an effort to discourage would be offenders. In that way, further degradation of the environment is lessened. These findings support those of Mazengia *et al.* (2007) in southern Ethiopia in the Gununo watershed, where community members were highly involved in tackling a problem of soil and water conservation. Furthermore, community cooperation is reported by WOCAT (2007) as having been adopted by the Working for Water programme in South Africa in the eradication of wattle trees and vegetating rangelands project.

According to conceptual framework there must be an action arena which is mainly a forum or platform for social bargaining on which the actors may choose to cooperate or not. In this study the forums for deliberating on issues concerning management of community forests and controlling land degradation include arranged workshops; school drama; environmental clubs; the media; as well as tree planting days. Also as already pointed out previously in chapter six external stakeholders reported that cooperation between NRMCS, traditional authorities and community members was generally overwhelming; save only where there were chieftaincy disputes and no substantive Chiefs.

External stakeholders, however noted with concern that poverty coupled with rapid population growth tempt Chiefs to allocate marginal land and sensitive sites for settlement; an action which jeopardizes sustainable management of the environment. This has serious implications on worsening land degradation in Swaziland. In response, the Chiefs ought to be remunerated and then harsh penalties be imposed on those who would be liable for allocating marginal and sensitive sites such as wetlands for settlement. This also means the SEA together with the Land Management Board ought to be more vigilant on all developments taking place in the country and ensure that they are compliant with the environmental legislation. These findings supports those reported in the *State of environment report for Swaziland*, by the Government of Swaziland (2001), where it is argued that rapid population growth exerts pressure on land; growing poverty; inequalities

in land tenure; access and use rights; as well as contributes to the lack of capacity to manage forests.

### **8.3 The Rules Governing the Management of Forest Resources**

As indicated in the conceptual framework (Figure 1.3b), community action is governed by certain rules which are formulated by the communities concerned as well as the national legislation. The findings indicate that there are rules governing management of community forests at Ezikhotheni (90%) and at Ngcayini (88%) chiefdoms. The rules include seeking permission from community leaders (headman at Ngcayini (100%) and NRMC members at Ezikhotheni 67.2%) for cutting any live tree such as fruit trees and royal trees from the natural forests save only for alien invasive tree species. These sentiments were also shared by the community leaders in the respective chiefdoms. The findings are in agreement with the observations made by Sithole (2013) who states that community and non-community members access forest resources through acquisition of permission from the traditional leaders. The findings regarding seeking permission also support those of Mogotsi *et al.* (2016) in Namibia, where access to resources in community forests is authorized by the local leadership.

Asking for permission from community leaders is the main rule governing the management of community forests in the case study sites (100% at Ngcayini and 67.2% at Ezikhotheni), which is meant to control illegal harvesting by both community and non-community members. It must be noted that asking for permission may also be unsustainable if the condition of the resources is not well monitored. Therefore, it is necessary that the NRMCs monitor the condition of the resources and advise accordingly on whether they can be exploited or not. Other rules include buying resources from the royal kraal through the headman (100% at Ngcayini) and NRMCs (72.2% at Ezikhotheni) in the case of plantation-style community forests. Furthermore, community members are prohibited from cutting live trees for fuel wood and cutting fruit and royal tree species. In addition, community members are prohibited from exploiting natural forests for sale. Despite that this rule is also a provision in the environmental legislation (Environment Management Act No. 5 of 2002) of the country, people persist in the sale of handicrafts and fuel wood derived from natural

forests particularly in the Lowveld region. This is mainly due to the high rate of poverty (63% of people living below the poverty line) as noted by World Food Programme (2016). Another contributing factor to the illegal exploitation of natural forests as indicated in report by FAO (2015) is limited government capacity coupled with weak law enforcement mechanisms.

In terms of formulation, the rules governing management of community forests are formulated through a collaborative effort between community members and community leaders with the help of external stakeholders. For instance, community leaders indicated that rules were formulated by community members (54.5% at Ezikhotheni and 100% at Ngcayini) and community leaders (45.5% at Ezikhotheni). Enforcement of the rules was a prerogative of NRMCS and traditional authorities, but community members played a vital role in terms of vigilance over the forests and reporting illegal activities to community leaders. The findings from both the heads of households (90%) and community leaders (81.8%) depict that enforcement of the rules at Ngcayini was carried out by the inner council and the headman. At Ezikhotheni 43.5% of the heads of households and 81.8% of the community leaders stated that enforcement was mainly undertaken by the inner council and NRMCS members. The fact that the rules were enforced is a positive incentive towards sustainable management of resources in the country. This is more so because it depicts a bottom up approach considering the observation in the FAO (2015) report of limited government capacity combined with weak law enforcement mechanisms in Swaziland.

The rules were considered to be effective since there was generally community-wide compliance from community members, depicted through developing forests and few cases of rule breaking reported to the inner council, as well as that people caught cutting trees illegally were fined to discourage others from committing similar offences. The findings are corroborated by Magagula (2003), who consents that the role of traditional authorities in forest resource management is to ensure that there are effective rules and strategies for enforcing the rules. It is important to note that lack of enforcement of existing rules by traditional leaders in the management of natural forests promotes the practice of illegal harvesting as observed by Sithole (2013) at Mpolonjeni. Despite that the rules were



generally observed to be effective in the case study chiefdoms there were some cases of illegal harvesting of forest resources by both community and non-community members. The isolated cases of illegal harvesting are testimony to that access to community resources is controlled in the respective chiefdoms. All in all, there is illegal harvesting only because access is controlled.

Community members were found to be not only knowledgeable on the rules they formulated but they were also conversant with environmental policies and legislation such as the National Forest Policy (NFP) and Environment Management Act (EMA) (76% of the heads of households at Ezikhotheni and 45% at Ngcayini). The same sentiments were shared by community leaders in the respective chiefdoms (81.8% at Ezikhotheni and 90.9% at Ngcayini). To demonstrate knowledge of the legislation both heads of households and community leaders highlighted a very crucial provision of conserving the environment for future generations. Evidence indicates that the knowledge on the legislation was sourced from external stakeholders (organizations working with communities), the Constitution of Swaziland and the media.

Since knowledge of environmental policies and legislations is gauged on actions towards the environment, the findings reveal that there were actions taken towards enforcement of the legislations. As indicated in chapter six, these include in-service training for Royal Swaziland Police (RSP), as well as raising awareness and fining offenders. In the in-service training, the RSP are specifically trained by SEA on how to enforce environmental legislations. A classic example of enforcement is that of the SEA, which is already fining people who violate environmental legislations. Indeed, enforcement of environmental legislations is a mandate for SEA. These findings are however, contested by Dlamini (2015) who argues that over exploitation of resources in Swaziland is catalysed by the combined factors of a lack of a land policy to provide overarching land management regulations; failure to enforce existing legislation; unsuitable land use patterns; poor environmental awareness countrywide which results in poor planning; lack of accountability on SNL; conflicts over land resources; incapacity to integrate land use planning and landscape management.

## **8.4 The Distribution and Utilization of Benefits Derived from Community Forests**

The conceptual framework adopted in the study (Figure 1.3b) indicates that community action yields outcomes which in this case are portrayed as successes or failures. For instance, establishment of plantation-style community forests at Ezikhotheni and Ngcayini chiefdoms generate benefits to community members in the form of stress-free (locally available and cheap) purchase of forest products, free access to non-timber forest products (NTFPs) and money for community activities derived through the sale of forest resources. As already indicated, access to forest resources in plantation-style community forests is through buying from the NRMC members at Ezikhotheni and the headman at Ngcayini. The benefits derived from sale of forest resources are distributed and utilized to the benefit of community members at the individual and community levels by NRMCs (90.9% of the community leaders at Ezikhotheni) and traditional authorities (100% of the community leaders at Ngcayini).

It is important to note that although NTFPs are sold on a large scale, the benefits accrued are solely for the individuals selling the resources. As indicated in chapter five the benefits from sale of forest resources in plantation-style community forests which are acquired by individuals comprise refreshments which are served during special community meetings. At the community level the benefits include: financing community projects such as water, fencing rangelands, electricity schemes, neighbourhood care points, funding community leaders when attending to royal kraal duties, as well as buying a royal kraal stamp and its accessories. For instance, at Ngcayini, community and non-community members do not pay a stamp fee since the royal kraal stamp is purchased with community funds. The stamp fee is E50 at Ezikhotheni for both community and non-community members. As a result, at Ngcayini, as a researcher I benefited from the free stamp, yet it was not the case at Ezikhotheni chiefdom.

At Ezikhotheni, there is a community water project which was funded by Micro-Projects. Basically, Micro-Projects requires that the beneficiaries raise 10 per cent of the total cost of the project, however the community members' contributions fell short of that figure;

therefore it was agreed that the money derived from sale of forest resources be used to top up. At the same time, the money has also been used to subsidize electricity schemes, as well as in assisting in the day to day running of the neighbourhood care points (NCPs). The findings regarding distribution of benefits accrued from sale of forest resources are in agreement with those of Sillah (2003) in The Gambia, where revenues derived from community forests comprise a Local Forest Fund which is solely administered by the village. In the distribution, 15 per cent of the revenue is paid to the Forestry Department for service, while 34 per cent is saved for investing in the forest, and 51 per cent is for village developments (Sillah, 2003). Further, the distribution and utilization of benefits is echoed by Ezzine de Blas, Ruiz-Perez and Vermeulen (2011), in Cameroon, where logging offers direct (monetary) and indirect benefits (building or rehabilitation of schools, roads, and water sources) to communities involved in forest resource management.

A most significant aspect of distributing benefits is to ensure a transparent and an equitable distribution. For instance, often times the distribution of benefits varies on the basis of socio-economic status and gender, such that the poor and women are often marginalized as observed by Timsina (2002). In this study however, the distribution and utilization of resources was not in any way influenced by socio-economic status and gender. As previously indicated in chapter five, community members complained about lack of transparency among community leaders concerning the distribution and utilization of proceeds from sale of resources in community forests. In actual fact, lack of transparency is normally an ill towards sustainable management of resources; hence it must be corrected through involving all stakeholders in decisions that have to do with community resources. At the same time, stakeholders need to be encouraged to always avail themselves in all community deliberations to ensure that they are up-to-date regarding community issues which include management of resources, such as community forests. This is in view of the importance of forest resources, in particular, to people's livelihoods.

The importance of forest resources extends to supplementing and complementing food resources derived from agriculture. As noted in chapter five, community members in the respective chiefdoms expressed a high dependency on timber and NTFPs. The forest

resources include timber and NTFPs such as firewood, medicinal plants, as well as other edible plants. For instance, ingesting some of the forest products contribute to health and hygiene among human beings and assist in curing ailments in animals as observed by Ngwenya and Hassan (2005); Harrison (2006); Babalola (2011); and Makhado and Saidi (2011); and Rosa (2011). A classic example is the Moringa tree species, whose products are regarded as highly nutritious as well as very important in healing a number of ailments. It must however, be noted that heavy reliance on medicinal plants for both domestic purposes and for sale is responsible for loss of biodiversity, which culminates in land degradation particularly due to unsustainable harvesting of species.

In addition to sustaining human livelihoods, community forests were found to be important to both domestic and wild animals in terms of affording them food plants, foraging space and habitats. These findings are in agreement with those of Makhado and Saidi (2011) in South Africa, as well as Maile (2011) in Lesotho. Community forests aids in the protection of catchments for the rivers traversing the respective chiefdoms and probably for the country as a whole. For instance, Swaziland is drained by five main rivers namely Lomati, Komati, Mbuluzi, Lusutfu and Ngwavuma as well as a number of streams. It must be noted that plantation-style forests comprising exotic species such as eucalyptus and wattle unlike natural forests contributes to the depletion of water resources and vanishing of surface streams as reported by Working for Water (2007) and WOCAT (2007). Therefore, it is due to the existence of natural forests that Ezikhotheni and Ngcayini chiefdoms are well drained as shown on Figures 4.2 and 4.3. The findings regarding protection of catchments is corroborated by Maile (2011) in Lesotho, where indigenous trees and shrubs play a critical role in protecting land from soil erosion, especially because such forests mainly occur in catchments and river valleys.

In an effort to take full advantage of the water from the rivers some community members at Ezikhotheni and Ngcayini have established vegetable gardens along the rivers, which is also a countrywide practice in Swaziland. They use the water from the rivers for irrigation. Community forests also enhance the culture of Swaziland through providing royal tree species such as *Imbondvo lemnyama* (*Combretum molle*), *Lusekwane* (*Dichrostachys*

*cinerea*), which are sacred and thus mainly used in royal kraals as also noted by Ngwenya and Hassan (2005). In essence, ordinary citizens in Swaziland are not supposed to willy-nilly cut the royal tree species, since they are reserved for harvesting when commissioned by either the Chiefs' royal kraals or the King's royal kraals.

## **8.5 The Extent of Community Action in the Management of Community Forests Resources**

Notwithstanding the importance of community forests, in accordance to the modified conceptual framework driving the study there is the element on patterns of conflict and cooperation (Figure 1.3b) suggested by Ratner, Meinzen-Dick and Haglund (2013). In this element the concern is with the extent and nature of community action that characterizes patterns of interaction. To further explore the element of patterns of conflict and cooperation, the study has also addressed opportunities and threats of community action. The findings reveal that community action in forest resource management is embraced in the case study chiefdoms though at varying levels. For instance, 75% of the heads of households at Ezikhotheni and 15% at Ngcayini acceded to that they had an understanding of community action in forest resource management. As such, community action was well embraced at Ezikhotheni than at Ngcayini, which can be attributed to the absence of a Chief in the latter chiefdom. Chiefs are mainly responsible for uniting community members under their authority, something which ensures a common understanding of practices and activities undertaken in the country as a whole. As noted in chapter five, to demonstrate understanding of community action community members and leaders indicated that it involves community members coming together and formulating rules, as well as appointing a committee to oversee community forest resources. This indicates that both community members and leaders have hands-on experience on community action in the respective chiefdoms. Therefore, what needs to be done is to ensure that knowledge translates into practice among all the stakeholders.

The findings indicated that community members were involved from inception to implementation of community action in the case study sites. It must however be mentioned that, involvement of community members does not guarantee absolute success of a project.

Hence, community action has encountered successes and failures at both Ezikhotheni and Ngcayini chiefdoms. For instance, at Ezikhotheni success was depicted through cooperation in the forest and water projects (93.4% heads of households), whereas at Ngcayini it was through cooperation in forest management and community members abiding by the rules governing the management of community forests (100% heads of households). Community leaders also pointed out some indicators for the success of community action in their respective chiefdoms. For instance, at Ezikhotheni, they include projects such as electricity schemes, fencing of grazing lands, as well as construction of the Chief's royal kraal (*umphakatsi*). At Ngcayini, other notable achievements which denote success of community action include fencing of a donga by *World Vision*, and construction of community Sisa Ranches).

Overall, the achievements made by the two chiefdoms indicate that there is community action although it does not merely entail that all community members are on the same page. The success of community action is reported by WOCAT (2007) in a Soil and Water Conservation (SWC) project in Ethiopia, where community members and community leaders were involved in every stage of the projects from inception to completion through participatory rural appraisal. This indicates that there is a need to strengthen community action in the respective chiefdoms in particular, and in Swaziland in general to ensure the success of all community projects. This observation is corroborated by Maile (2011) who discloses that in Lesotho community action was strengthened through adoption of a National Forest Policy in 1997 and enactment of the Forestry Act in 1998. Likewise, enactment and enforcement of pertinent legislation could enhance community action in resource management in Swaziland.

In spite of the remarkable success of community action in the respective chiefdoms; it also had notable failures. For instance, 33.3% of the heads of households at Ezikhotheni and 100% at Ngcayini disclosed that some community members cut trees any how without permission of the NRMC members and traditional authorities. As previously indicated in chapter five, other failures at Ezikhotheni include that some community members do not

participate in community projects but reap the projects' benefits and illegally cut fruit and royal trees, as well as live trees for fire wood.

Community leaders indicated that the main defect for community action at Ngcayini was the theft of fence around the plantation-style community forest and dongas. At Ezikhotheni the community leaders complained that the Chief hogs the community forest which was planted by *Yonge Nawe* and also promote commercial harvesting of sand against the will of the community. The monopolization of resources by the Chief seems to be a common practice among almost all the newly installed Chiefs in Swaziland. As indicated earlier on, this may be due to poverty among the Chiefs. Therefore, the earlier suggestion of remunerating Chiefs and levying harsh penalties on those defaulting also holds in this case. The inefficiency of Chiefs in the distribution of forest resources is validated by Magagula (2003).

## **8.6 The Opportunities Associated with Community Action in the Management of Community Forests**

In the conceptual framework (Figure 1.3b) the patterns of conflict and cooperation also encompass the issue of opportunities, which are often accompanied by threats, which culminates in conflicts. Regarding opportunities, the study reflects that it is feasible to strengthen community action in the study sites through a variety of ways. One way is through training and mobilizing community members (93.8% of the heads of households at Ezikhotheni and 22.2% at Ngcayini) as well as disciplining non-participants in community activities (77.8% at Ngcayini). This is more so because evidence from the case study chiefdoms indicates that most community members comply with rules governing the management of community forests and also attend in community meetings. Disciplining defaulters in community activities is a common practice as observed by Dlamini (2015) in a Grazing Land Rehabilitation project at Ngcayini, where a fine was levied on all absconding families during the project work irrespective of whether they had livestock or not.

As noted in chapter five, community members had an opportunity for training in forest resource management; hence they are accustomed to being trained. Other noted

opportunities include income generation through honey production since bees like *Eucalyptus spp.* tree species. Therefore, considering that the *Eucalyptus spp.* forests are already in place, community members' task is to construct boxes and attract bees. There is also an opportunity for improved livestock quality; since depending on the growth stage of the trees in the plantation-style community forests, the animals either graze in the forests or are fed on grass that is cut from the forests. This is mainly applicable where the community forests are fenced off as it was the case at Ezikhotheni chiefdom. The grazing of livestock in forests was also noted by Makhado and Saidi (2011) in South Africa and by Maile (2011) in Lesotho.

Establishment of community forests also provides an opportunity for improved ecosystem functions and services. This is in cognizance of the role played by trees in the sequestration of carbon. Therefore, development of community forests entails an increased carbon stock to curb climate change. To ensure a realization of these opportunities the development of community forests must combine natural resource management (NRM) with livelihood options. This logically improves human environment relations and compliance with environmental legislation. It also transpired from the findings in chapter six that development of the National Biodiversity Strategy and Action Plan is an opportunity to lobby for more resources from government, hence the need to fast-track the process.

The findings from the case study chiefdoms also indicated that there is an opportunity for establishing more community forests as well as processing (value addition) and marketing forest products. This finding is corroborated by Iddi (2002) in Tanzania, where the National Forest Policy of 1998 served as a springboard for community action in forest resources management. For instance, the policy facilitated the decentralization of unreserved forests and woodlands to the jurisdiction of local communities as village forest reserves. In the same vein, Swaziland is also in the quest of decentralization and thus it is hoped that this would further enhance community action in resource management. This is more so because decentralization promotes a bottom-up instead of a top-down approach in development initiatives. Normally, projects that are a product of the bottom-up approach are well supported by community members compared to those that employ a top-down approach.



## **8.7 The Threats Associated with Community Action in the Management of Community Forests**

As alluded to in the preceding section, normally where there are opportunities there is bound to be threats, hence it was the case with community action in the management of community forests at Ezikhotheni and Ngcayini chiefdoms. In terms of the threats for community action, they include the failure of community members to attend in community meetings and participate in community projects' activities (69.2% of the heads of households at Ezikhotheni). This in turn jeopardizes community action and sustainability of community projects; since such members often do not support development initiatives taking place in their communities. It also transpired from the case study chiefdoms that some community members were reluctant to change their behaviour towards the environment especially where there was no substantive Chief (46.2% of the heads of households at Ngcayini). It must however, be noted that in recent times there are disputes and divisions among community members in almost all chiefdoms where new Chiefs have been installed. Nonetheless, in some chiefdoms installation of new Chiefs has united community members and encouraged cooperation among them; hence their communities are developing.

As noted by the organizations working with communities on forest resource management and in controlling land degradation in chapter six, poor leadership in management of resources is a major threat for community action at the community level. This emanates from inefficiency among NRMCS and traditional authorities. As alluded to earlier on, often times there is lack of cooperation between community members, NRMCS and traditional authorities; hence mismanagement of community resources. Moreover, the organizations decried the absence of a Land Policy in the country, which results in unclear ownership of land on SNL and resources such as forests, hence the escalating land degradation.

It is important to note that on SNL, people have only user rights; which depend on their allegiance and will of traditional authorities. In other words, when occupying and using a piece of land on SNL there is no security of being on that land for a long time; since traditional authorities may decide to re-allocate that piece of land for other uses. This is

because people occupying and using SNL do not have title deeds; hence they cannot either sell or use the land as collateral for loans. The issue of insecure tenure is echoed by Dlamini (2015), who argues that it perpetuates a free-for-all scenario, where no one is held responsible for mismanagement of the environment; hence perpetuate the tragedy of the commons observed by Hardin (1968).

In spite of the insecure tenure, Swaziland has a comprehensive environmental legislation, which however is not enforced. On this note, it must be mentioned that SEA is the main government parastatal responsible for enforcing environmental legislation. For a long time SEA has been a public sector (government department), something which made it very difficult for the organization to engage in a full scale enforcement of the legislation, especially where government was a perpetrator. It must be noted that this problem still persists since as a government parastatal, the SEA largely depends on government for funding. As noted in chapter six there is often a lack of Environment Impact Assessment (EIA) reports in Swaziland, yet the legislation spells out clearly that for any project that has an impact on the environment, an EIA must be conducted and a comprehensive report submitted to SEA. It is the responsibility of SEA to give projects a green light on the basis of their EIA reports. Due to the predicament of being a government parastatal SEA's power of vetoing projects has certain limits, hence the endless mismanagement of the environment.

The findings of the study in chapter six also highlighted the expansion of sugar cane production as a serious threat to community action in forest resource management. This is largely because sugar cane production is now a major agricultural activity in Swaziland and it involves clearing of large tracts of land. As such, large tracts of natural forests are cleared off in the course of land preparation for sugar cane production. In addition to being cleared off, natural forests are encroached by invasive alien plant species (IAPS) to the point that most indigenous tree species are becoming extinct due to competitive exclusion; hence a loss of biodiversity. This assertion is validated by Kumar and Prasad (2015) who observed that invasive plant species encroaches large areas of land, especially the forests where they virtually replace the forest floor vegetation and reduce native tree regeneration. A similar

observation was made by Stafforda *et al.* (2017) in South Africa and Namibia, that alien plant invasions change the composition and/or balance of species in natural ecosystems and impact biodiversity, land productivity and water availability. In view of the undesirable state induced by invasive alien plant species Stafforda *et al.* (2017) recommend that they should be cleared as a step towards restoring a desired state of productive land and healthy ecosystems.

Climate change is also responsible for the loss of biodiversity; since it has created conducive conditions for some species to display their invasive properties. As a result, there is an ever increasing list of invasive plant species. For instance, in the recent past *Psidium guavana*, *Acacia mearnsii* and *Eucalyptus spp.* were propagating very slowly in the Highveld physiographic region of Swaziland, something that has since changed at present. This is mainly attributed to climate change. At the same time, *Acacia mearnsii* and *Eucalyptus spp.* in particular are also notorious for depleting water resources. For instance, their spread has resulted in many surface streams disappearing in the Highveld physiographic region of Swaziland. It is mainly for that reason South Africa embarked on the Working for Water programme, where wattle trees are eradicated as reported by WOCAT (2007).

Apart from the loss of biodiversity emanating from climate change related issues, poverty and unemployment are serious threats to biodiversity. This is because poverty stricken and unemployed people normally do not have livelihood options; hence they rely on available natural resources such as forests to earn a living. Consequently, evidence suggests that there is a strong link between poverty and land degradation through overexploitation of environmental resources. Poverty and unemployment are indicators of lack of financial resources in a country, hence this is also a threat to community action in the management of community forests in the case study chiefdoms in particular, and generally the country as a whole.

Considering that implementation of environmental projects requires capital; lack of money as well as land for forest related projects was noted with concern in this study. The scarcity

of land is exacerbated by the ever increasing population. Therefore, in an effort to cope with the hiking demand for land; traditional authorities are normally compelled to even allocate marginal land for settlements as also observed by Dlamini (2015). As it has already been indicated over and over again, a plausible solution to this problem would be remunerating Chiefs and closely monitoring their actions while discouraging them through harsh punishments for mismanagement of the environment.

Regardless of its suitability for any activity, land on SNL is generally encrusted with problems relating to ownership and tenure rights, which is a major threat to community action in resource management. This is validated in the *Draft National Forest Programme*, which elucidates that there is lack of clear ownership, tenure and rights to use forests (natural, wattle and woodlands) on SNL (Government of Swaziland, 2002b). The lack of clear ownership and tenure rights leads to unclear distribution of benefits accrued through sale of community forest resources on SNL. In turn, these problems create a sense of insecurity among community members with respect to committing themselves on sustainable management of resources. This is validated by Bruce (1989) who avers that failure to understand existing rights in land and trees has been a major cause of failure in many community forests. In the same vein Siry *et al* (2015) point out that clear and secure tenure is a precondition for capital investments in forestry, and influences local decisions linked to forest protection and forest destruction.

Regarding poor law enforcement, Swaziland is a major culprit considering that there is a comprehensive environmental legislation namely EMA No. 5 of 2002, which however is inadequately enforced. To validate this assertion Hassan, Mbuli and Dlamini (2002) argue that lack of enforcement of environmental legislation jeopardizes the sustainability of environmental resources. In Swaziland, community members are normally ignorant of the legislation due to lack of capacity building. This is because laws are crafted in a language which is very complicated to comprehend. Therefore, there is a need for the relevant institutions take time in inducting community members on environmental legislation.

In accordance with conceptual framework (Figure 1.3b) adapted and modified as propounded by Ratner, Meinzen-Dick and Haglund (2013) **patterns of conflict and cooperation** influence the institutional and ecosystem characteristics, which either contributes to social-ecological resilience or increase livelihood vulnerability and conflict risk. It is worth noting that often time's conflicts arise due to threats in a management strategy. Therefore, it is on those bases that the study delves on sources of conflicts in the management of community forests and how they are resolved. In this case, the conflicts include illegal harvesting of forest resources (81.2% of the heads of households at Ezikhotheni and 80% at Ngcayini) and failure to participate in community forests activities.

The theft of forests resources was perpetrated by community and non-community members. Nonetheless, if caught in the act of stealing resources punitive measures in the form of fines are applied on the perpetrators by the inner council (87.5% at Ezikhotheni and 100% at Ngcayini). This is done solely to discourage would-be perpetrators as well as ensure that all community members benefit from the forest resources. The benefits in this case also include having an opportunity to buy the resources in the community forest when need arises, as well as the benefits accrued through sale of the resources to individuals and the community at large. For instance, at both Ngcayini and Ezikhotheni chiefdoms, community leaders and members applauded the community forests projects for the ease of accessibility of forest resources especially rafters. In addition to the ease of accessibility, the forest resources (rafters) were cheaper in the local community forests compared to buying them from individual homesteads forests.

As previously indicated in chapter five, apart from the theft of forest resources, there was also pilfering of fence around plantation-style community forests and gullies in the case study chiefdoms. The culprits in this case included both community and non-community members. This is a serious problem in as far as resource management is concerned. In Swaziland, the theft of fence is also common along the main roads; something that has resulted in a hike in road accidents caused by livestock. Likewise, the fence mounted around forests and gullies is a control mechanism meant to ensure a speedy growth of the trees without human and animal perturbation, as well as to expedite gully rehabilitation.

This observation is echoed by Chaturvedi *et al.* (2014), who underscore that one of the prerequisites for rehabilitating degraded land is to successfully safeguard it by fencing from biotic agencies which will result in substantial upturn in the yield of grasses.

At Ngcayini, the study discovered that the entire fence around the plantation-style community forest was stolen; hence the gully is not rehabilitating. At Ezikhotheni, there was fence around the plantation-style community forests which however, needed some attention (mending). The NRMC members acknowledged that they mend the fence during the summer season since in winter it is often damaged by livestock. Due to the shortage of fodder during the winter season, the livestock are allowed to graze in the plantation-style community forests. Evidence of grazing livestock in forests is also provided by Sillah (2003) in the Gambia, Manyatsi *et al.* (2010) in Swaziland, Makhado and Saidi (2011) in South Africa and Maile (2011) in Lesotho.

As noted in chapter six, the major sources of conflicts identified by organizations working with communities in the management of forest resources and in controlling land degradation include unclear land and forest ownership coupled with chieftaincy and land disputes. Evidence indicates that private ownership of resources is normally an incentive for sustainable management, while communal ownership is a recipe for ‘the tragedy of the commons’ as observed by Hardin (1968). Therefore, the depletion of natural forests in Swaziland is mainly because they are communally owned. In that regard, almost all community members aim at maximizing usage of natural forests at the expense of environmental degradation. This is more evident when you compare forests on TDL and those on SNL. As such, those on TDL are normally well managed and under strict control compared to those on SNL, which are a free-for-all without anyone held responsible for their mismanagement. Ideally, sustainable management of communally owned resources is a responsibility of all community members, but due to unclear and insecure tenure rights this is not happening in Swaziland.

Regarding private ownership of resources evidence suggests that privatization increases individual responsibility for the environment and rational use of its resources as observed

by Hasan (2002). The process of privatizing resources in itself often fail to conserve them, instead frequently hasten their destruction as suggested by Ostrom (2003) and Hasan (2002). For instance, since under privatization there is strict control over resources; illegal harvesters often set the resources on fire if they fail to gain access to them. This is exactly what is experienced by private forest companies such as Montigny in Swaziland. According to the report by FAO (2015), there has been a general increase in the occurrence of uncontrolled fires in Swaziland, from 5% of the land area in 2000 to 10% in 2010, with disastrous fire events occurring in 2007 and 2008. Notably, these fire occurrences resulted in more and more negative impacts on communities, industry, the national economy and development objectives culminating in the closure of the Sappi Usutu Pulp Mill and downscaling of Peak Timbers operations.

In addition, to uncontrolled fires, chieftaincy and land disputes also instigate mismanagement of community resources. This is more so because community members are normally divided into factions which submit to different authorities; hence ‘a survival of the fittest’ regarding exploitation of community resources. In such situations, perpetrators are likely to ‘jump the gun’ from one authority to the other to evade persecution. As previously indicated the ever increasing population compounds the situation of mismanagement of resources; as traditional authorities are compelled to even allocate marginal land for settlement in an effort to cope with the ever increasing demand for land by the populace. Once again, this is a countrywide problem.

Another conflict highlighted in the findings emanates from bio-trade, especially of resources exploited from community forests. With the prevalence of chieftaincy and land disputes it is difficult to arrest the problem of bio-trade. The findings in chapter six also highlighted a challenge of a dearth of environmental law enforcement coupled with lack of environmental funds to implement forest related projects at the local and national levels. In response to this challenge SEA, indicated that there are efforts made towards enforcement of environmental legislation as well as siphoning funds for environmental activities. There is however, a need to expedite this process in order to combat mismanagement of the environment before further damage is incurred.

Normally identifying conflicts should not be an end in itself, rather a means to an end, which is their resolution. Therefore, as indicated in chapter six, in an effort to resolve the conflicts the organizations working with communities advocated for enactment of by-laws on management of environment resources. They also argued for formulation of a Land Policy, which it is hoped would resolve the problem of unclear ownership of land and forests. The organizations were also in favour of generating more environmental funds, as well as sensitizing communities on environmental legislation. This is hoped to logically augment enforcement of environmental legislation in the country. Sensitization on environmental legislation will also enable community members to report Chiefs and other fellow community members, who are illegally burning and harvesting forest resources to SEA and to the Royal Swaziland Police (RSP).

To resolve the conflicts relating to theft of resources, in chapter six the organizations recommended formation of more NRMCS and strengthening of collaborations between traditional authorities, Forestry Department, LMB and SEA. This finding is supported by Iddi (2002), who avers that in Tanzania conflicts are resolved at the community level using customary laws. For instance, they have reconciliation committees at the village level comprising the wise men and women of the village. This is practically the same as the inner council at the chiefdom level in the context of Swaziland. The organizations also appealed for clear EIAs for all projects to be implemented on the environment. It is hoped that clear EIAs will enable SEA to grant a green light to only deserving projects.

Subsequent to the preceding discussion, the next sub-section focuses on the extent of land degradation associated with utilization of community forest resources. According to the conceptual framework (Figure 1.3b) driving this study, this sub-section focuses on the outcome of community action in the management of community forests which include successes and failures.



## 8.8 The Extent of Land Degradation Associated with Utilization of Community Forest Resources

It was shown in Chapter seven (Table 7.1) that the size of the plantation-style community forests generally increased between 2008 and 2017 in the respective chiefdoms. At the same time, there was also a general increase in the NDVI values between 2008 and 2017 with only a slight decline at Ezikhotheni in 2017. Regarding NDVI values, Riva *et al.* (2017) point out that low water availability and poor soil fertility generally limit vegetation growth thus resulting in a low vegetation cover and low NDVI values. On the same note, Gebrehiwot and Veen (2014) in a study conducted in Enderta District of Northern Ethiopia observed an annual decline of 3.62 in the NDVI values between the period 2001 and 2009 in an unprotected area which was compared with a fenced degraded land. The observed decline in NDVI values was attributed the increasing population, which was growing at a very rapid rate of about 3% annually and their persistent increased demand for cropland, subsistent income and fuel wood that led to vegetation clearance at an alarming rate in the area as observed by Gebrehiwot and Veen (2014). Moreover, Gebrehiwot and Veen (2014) observed that vegetation clearance in Enderta District is largely driven by dependence on land for livelihood; absence of alternative employment opportunities; low productivity of cultivated land and the associated poverty. Consequently the unprotected area is subjected to a great pressure of wood collection as many people collect and transport wood for sale to nearby urban areas as observed by Gebrehiwot and Veen (2014). Likewise in the case of Swaziland, clearance of vegetation is also rife due to the same drivers observed in Enderta District of Northern Ethiopia.

At Ngcayini on the other hand, the mean NDVI values increased from 0.33 in 2008 to 0.55 in 2013 and 0.56 in 2017. The increase in NDVI values on the one hand, corresponds with the noted increase in the size of the plantation-style community forest depicted in Chapter seven (Table 7.1). On the other hand, the increase could be attributed to the spread of alien invasive plant species such as *Lantana camara* and *Psidium guavana* which are more dominant in the area. Regarding this, the Government of Swaziland (2001) argues that overgrazing together with extensive tree cutting for fuel wood has led to a spread of alien invasive plant species such as Guava (*Psidium guavana*), Syringia (*Melia azedorach*),

*Sesbania punicea* and *Lantana spp.* The findings on the increase in NDVI values are corroborated by Gebrehiwot and Veen (2014) in a study conducted in Enderta District in Northern Ethiopia where the NDVI values for the fenced degraded area increased by 8.03 annually during the period of 2001-2009. Noteworthy, the change was attributed to its closure from livestock interference and indiscriminate tree felling, which in essence encouraged regeneration of vegetation cover in the area. Quintessentially, there is strong evidence that fenced areas appear to be successful in regenerating natural vegetation on degraded lands. Therefore, it can be safely concluded that fencing is a prerequisite for the success on any rehabilitation activity.

On the same note, Chaturvedi *et al.* (2014) and Gebrehiwot and Veen (2014) point out that fencing should go along with by soil conservation measures for example, construction of check dams and disposal of runoff. Likewise in the case study chiefdoms (Ngcayini and Ezikhotheni), these preconditions were met, although at Ngcayini in particular the fence was then stolen exposing the area to further degradation as indicated by the findings. Furthermore, Chaturvedi *et al.* (2014), point out that planting of fuel, fodder, or multipurpose trees on degraded land can mitigate the scarcity of fuel and fodder for rural households while guaranteeing satisfactory protection to these lands against further degradation. According to Reubens *et al.* (2011) acceptance and success of tree planting and land rehabilitation activities depend on the amount of attention given to local environmental and social conditions, cultural values, as well as people's needs and knowledge. In other words, involving local people in designing, implementing, and evaluating such activities normally contribute to their success.

Regarding the extent of land degradation at Ngcayini, an active and advancing gully (increasing in size) was found denoting a failure of the intervention. A compounding factor is the destruction of the fence surrounding the forest and the gully, which has resulted in uncontrolled grazing and destruction of tree seedlings. The destruction of seedlings through grazing and trampling by animals during the establishment period was also observed by WOCAT (2007) in South Africa in the Working for Water Programme where *Acacia mearnsii* is replaced with palatable grass species. At Ezikhotheni the gullies were

rehabilitating following the intervention of establishing plantation-style community forests. In turn, this denotes a success of the intervention at Ezikhotheni, not only in terms increasing forest resources but also in reducing the extent of degradation and thus safeguarding the soil resource. The findings relating to actively eroding and stabilizing or rehabilitating gullies are corroborated by Addis *et al.* (2015) in a Ethiopia where it was found that 56 of the observed gullies were active (actively eroding) and only seven of the measured gullies were inactive (stabilized). Notably, an active gully can occur where the erosion is actively moving up in the landscape due to head cut retreat, which is exactly what is happening at Ngcayini chiefdom.

As previously indicated in chapter six, due to poverty traditional authorities end up allocating marginal land for settlement and agricultural purposes. This in turn promotes land degradation. In particular, the most dominant land use in the country is extensive, largely uncontrolled grazing (covering 11 630 km<sup>2</sup> while crop farming covers 2 194.63 km<sup>2</sup>) and it has been argued that this is responsible for severe soil erosion, which manifests in the form of gullies as indicated in the *State of environment report for Swaziland* by the Government of Swaziland (2001).

The evident land degradation at Ezikhotheni and Ngcayini chiefdoms is also largely due to overgrazing and it applies to most communities in the country. The *State of environment report for Swaziland* further noted that, of the grazing land (11 630 km<sup>2</sup>) in Swaziland, communal grazing comprised 71% with more than half of it suffering from serious to very serious erosion especially in the montane grassland and aquatic ecosystems (Government of Swaziland, 2001). Overgrazing also promotes bush encroachment as well as the spread of invasive alien plant species such as *Psidium guavana*, as highlighted in the *State of environment report for Swaziland* by the Government of Swaziland (2001). The encroachment of *Psidium guavana* is also a concern at Ezikhotheni and Ngcayini chiefdoms.

Concerning grazing, evidence depicts that land degradation is mainly induced by continuous grazing systems, hence the need to change to rotational grazing systems. For

instance, in Matatiele Local Municipality in the Eastern Cape Province of South Africa, Morokong (2016) observed that implementation of rotational grazing systems, in particular the Holistic Planned Grazing (HPG) increased forage utilisation by concentrating livestock into a grazing camp for four weeks. Thereafter, the camp is completely grazed, and then the kraal and the herd are relocated to the next grazing camp. Morokong (2016), observed that this not only reduced land degradation but also improved the quality of the livestock since it ensured that animals graze where there is enough grass.

Another intervention to continuous grazing systems is reported by WOCAT (2007) in Ethiopia, where the national Soil and Water Conservation (SWC) programme initiated a grazing land management project in response to rapid population growth which resulted in communal grazing areas being converted into cropland, hence overgrazing. The project involved delineating of the grazing land and fencing it off to exclude open access. Out of this project land users, benefited through cutting fodder to stall-feed livestock and cutting grass hay which is stored to feed animals during the dry season. Nonetheless, absence of rains implies a heavy reliance on forest resources as a safety net.

## **8.9 Summary**

This chapter has specifically concentrated on the discussion of the findings and highlighted areas of particular concern. The key areas of concern are: the management of community resources by internal and external stakeholders; the rules governing the management of forest resources; the distribution and utilization of benefits derived from community forests; the extent of community action in the management of community resources; the opportunities and threats associated with community action in the management of community forests as well as the extent of community forest resource utilization and of associated land degradation.

Having presented the discussion of the findings, the subsequent chapter focuses a synthesis of the study as a whole.

## **CHAPTER 9**

### **CONCLUSION AND RECOMMENDATIONS**

#### **9.1 Insights from the Findings on the Role of Community Action in the Management of Community Forests**

This study concludes that there were a limited number of meetings convened to deliberate on issues relating to the management of community forests in the chiefdoms under study. The limited meetings convened are normally dominated by females due to wage-based employment among males as well as the reluctance of males to involve themselves in development issues. Failure to attend in community meetings contributes to some community members' ignorance on trainings conducted on forest resource management. There is often reluctance among community members to participate in community forest resource management activities. This results in most community members being ignorant on the role of males and females in forest resource management.

Notably, failure to attend in community meetings and participate in the management of community forests is to a certain extent influenced by distance of homesteads to the forests. For instance, distant community members normally do not receive invitations on time. At the same time, there is often lack of transport (public or private) to ferry community members to and from meetings and project activities. Despite the noted weaknesses among community members, they themselves acknowledged that the community forest projects were beneficial to all stakeholders; hence their motivation to participate in forest management activities.

Establishment of community forests is accompanied by formation of NRMCS. The formation of NRMCS involves all community members; hence they (NRMCS) encourage participation in the execution of their duties. In turn, this is a best practice principle, which ensures sustainability of resources. There is a concern that more NRMCS should be established. Evidence indicates that the working relations between traditional authorities and NRMCS are normally strained. This is largely because the concept of NRMCS is new,

yet the status quo is that management of community resources has all along being overseen by traditional authorities. Ideally, traditional authorities are responsible for organizing people to work on forest resource management activities and discipline those who do not comply with traditional protocols (rules) such as illegally harvesting resources and failure to participate in community activities. In particular, the Chief is responsible for overseeing all developments in a community.

There are also external stakeholders (particularly NGOs and government departments as well as parastatals), which are instrumental in development and management of community resources. Noteworthy, *World Vision* appears to be more visible in the communities than the government departments (Forestry) and parastatals (SEA), yet organizations like SEA have a pivotal role of enforcing environmental legislation. Therefore, in an effort to enhance the enforcement of environmental legislation, it is necessary for relevant government departments and parastatals to increase their visibility in the communities and sensitize them about the legislation. This is due to the fact that communities are often not inducted on the legislation. Induction is necessary because the legislation is crafted in a complicated language.

Management of community resources is essentially governed by rules such as seeking permission from community leaders to cut live trees as well as fruit and royal trees from natural forests. Other rules include purchasing resources in plantation-style community forests through community leaders. Failure to adhere to the rules attracts a fine from community leaders. This is solely done to control access to resources. Notably, royal tree species are customarily well protected where there is a Chief than where there is no substantive Chief. Nonetheless, access to resources in natural forests such as fuel wood and NTFPs is free for community members, since they do not pay for them. Despite the free access, community members are as a rule expected to seek permission from community leaders to extract the resources. This is a strategy for controlling over-exploitation of resources and extraction by non-community members. In addition to complying with community rules, community members were also knowledgeable on the National Forest

Policy and Environment Management Act. The main source of knowledge on the policy and legislation was the radio.

Individual households normally extract NTFPs for both domestic purposes and for sale. Timber resources extracted from plantation-style community forests are primarily sold to community and non-community members. Then NRMCS and traditional authorities distribute the proceeds to individuals and the community at large. At the individual level, the benefits accrued include refreshments served during special community meetings; while at the community level they comprise financing of community projects and purchasing royal kraal stamps. Other than meeting the basic needs of human beings; forests are also important to domestic and wild animals, water catchments as well as in the culture of Swaziland. With respect to culture, there is a significance attached to certain plants and animal species in Swaziland.

Community action is not a foreign concept in Swaziland; however it is embraced at different levels depending on availability of a strong leadership especially substantive Chiefs. In Swaziland, there is an opportunity to strengthen community action through training and disciplining community members who do not participate in community activities. Other feasible opportunities include poverty reduction through commercialization of community forest by-products such as honey production as well as through processing forest products (value addition) for purposes of marketing. On the ecological front, community forests improve livestock quality through providing tender and nutritious grass species. Forests are also ecologically important in terms of increasing the carbon stock to curb climate change. Furthermore, it is envisaged that combining natural resource management (NRM) with livelihood options improves human-environment relations and compliance with the environmental legislation. In recognition of the importance of community forests, the development of the National Biodiversity Strategy and Action Plan is a reliable vehicle towards lobbying for more resources from government, which are necessary for enhancing sustainable forest resource management in Swaziland.

Community action is however seriously threatened by community members' unwillingness to accept change, failure to attend in meetings as well as inability to participate in community project activities. Other noted threats include the lack of transparency among NRMCs on the money obtained and spent from selling forest resources, failure to convene meetings for deliberating on progress on the community forest project, and theft of fence and forest resources. In addition, community action is threatened by poor community leadership engagement in the management of resources; chieftaincy disputes and absence of substantive Chiefs; bio-trade (cross-border transfer of wood products for medicinal purposes); absence of a Land Policy; unclear ownership of land on Swazi nation Land (SNL) and forests; poor law enforcement; poor or lack of Environment Impact Assessment (EIA) reports; sugar cane expansion; forest encroachment; invasive alien plant species (IAPS); wildfire; land degradation; loss of biodiversity; climate change; poverty and unemployment; lack of financial resources and land for forest related projects since almost all available land is allocated for settlement due to rapid population growth. These threats are a matter of urgency, and if not addressed would adversely jeopardize sustainable management of the environment.

Overall, the threats translate into precarious conflicts in the management of community forests and in controlling land degradation. Such conflicts could be customarily resolved through fining the perpetrators; by-laws; formulation of a Land Policy; having clear land ownership rights; raising environment funds; enhancing law enforcement; presenting clear EIAs reports; community sensitization on FPA; reporting Chiefs and community members who are illegally burning and harvesting forests to SEA and to the police; as well as a collaborations between traditional authorities, Forestry Department, LMB and SEA.

Regarding land degradation, the gullies are particularly rehabilitating at Ezikhotheni chiefdom subsequent to establishment of the plantation-style community forests. Despite that the gully is advancing at Ngcayini chiefdom, the community forest is also increasing something which raises hope that if community members can mount and maintain a fence around the forest, as well as plant the Vetiver grass species in conjunction with the trees the problem of land degradation could be arrested.



Another positive indicator is the increasing mean NDVI values between 2008 and 2017 depicting an improvement in vegetation cover in the case study sites. It must however, be noted that the increase in NDVI values may be ushered in by an increase of invasive alien plant species (IAPS) which are a form of land degradation. Therefore, there is a need for a study that will specifically focus on the spread of invasive plant species in the study sites over the years in order to diagnose their actual contribution in the NDVI. In particular the increase in size of the plantation-style community forest alongside an advancing gully depicts that the forest is expanding away from the gully instead of increasing towards it. The gully advancement is also likely to be driven by the erosivity of the soil properties in the respective chiefdoms, hence the need for future research on erosivity of soil properties in severely eroded areas in Swaziland. Such research would yield information that would lead to application of appropriate remedial strategies.

Based on the insights discussed in this section it is reasonable to highlight the new knowledge provided by the findings to the understanding of community forest management in Swaziland. First and foremost, from the findings it emerges that there are trainings conducted on forest resource management at the community level, which however often community members miss due to ignorance emanating from inability to attend in community meeting and participate in forest activities. This extends to non-involvement in decision making on the distribution and utilization of proceeds derived from the sale of plantation-style community forests resources. Moreover, it emerges that in addition to what is currently done in land degradation rehabilitation activities it is important to also use grasses such Vetiver due to its advantages highlighted in chapter eight. Furthermore, it emerges from the findings that NRMCS exists in the communities, but their mandate is not clear hence the clash of interest with traditional authorities. Also, it emerges that there is community action in the management of community forest, which is however compromised by a general poor leadership in the management of resources in the communities. In addition, it emerges from the findings that communities have limited knowledge of environmental policies and legislation due to lack of induction by responsible organizations such as SEA. This is also compounded by the fact that government departments and parastatals' visibility in the chiefdoms is very limited compared to that of NGOs. Finally,

the findings have yielded a proposed framework for CBNRM in Swaziland as explained under Section 9.3.

## **9.2 Scaling up Insights from the Case Studies to Community Resources in Swaziland**

Insights gained from the case studies based on the management of community forests can be scaled up to the entire country (Swaziland) and to community resources in general. Considering the success of NRMCS and traditional authorities in controlling access to resources in plantation-style community forests, such a practice could be scaled up to all community resources in the country. As it is the case in plantation-style community forests, the control of access to other community resources could be ensured through requesting for permission or buying from designated authorities.

More so, working relationships between NRMCS and traditional authorities must be harmonized in order to strengthen collaborations between them and the entire community members. Invariably, there must be collaborations between all stakeholders in formulating and enforcing rules governing management of community resources. The rules must complement environmental policies and legislation in the country. For example, a follow up on the sale of fuel wood derived from natural forests along the roads in Swaziland by SEA and MTEA in the year 2017 temporarily halted the practice. Therefore, it is important that more human and financial resources are availed to the organizations concerned to execute their responsibilities effectively, which is a practice applicable to all community resources in addition to forests.

The harmonization of the working relationships between NRMCS and traditional authorities could be attained through eliminating overlaps in their roles and responsibilities. If that is properly executed it reduces the workload for traditional authorities and foster good working relations between all stakeholders. For instance, ideally, access to community resources ought to be controlled by NRMCS. If well constituted, the NRMCS must comprise more women than men. This is primarily because unlike men who are often away on wage-based employment, women are normally readily available and heavily involved in

environmental resource management on a daily basis. In particular, women are responsible for gathering fuel wood, collecting water as well as maintaining fields and homesteads while men are away on wage-based employment. Therefore, women are normally close to the environment than men on a daily basis.

The findings also revealed that there is a need for funding to establish more community forests and undertake gully rehabilitation. This equally applies to other community resources such as water and grazing lands which needs to be managed in a sustainable way. For instance, from the findings it transpired that IAPS are a serious threat to community forests. In fact, IAPS are a problem to almost all community resources. For instance, they deplete water resources, as well as encroach on grazing and crop lands. Therefore, solving the problem of IAPS in relation to forest resources is equally beneficial to the other resources. Another notable problem regarding management of community forests is that of forest fires. Whenever, there are forest fires, grazing lands are equally affected and sometimes even the area around fields is also not spared from destruction by fire. For instance, often time's wild fires have resulted in massive destruction of human property. Therefore, prevention of fire saves a number of resources as well as reducing the accumulation of carbon dioxide in the atmosphere.

The depletion of natural forests and woodlands was also found to be associated with poverty among community members and Chiefs. Notably, poverty is a serious problem the world over; hence, Sustainable Development Goal 1 states 'End poverty in all its forms everywhere'. In Swaziland in particular, poverty coupled with rapid population growth has increased dependence on environmental resources especially plants and water. For instance, people extract grasses from wetlands namely *Incoboza* (*Cyperus spp.*), *Lukhwane* (*Cyperus*), and *Umtsala* for making sleeping mats. They also extract medicinal plants, edibles (plants and fruits), honey, logs and fuel wood from forests.

The resources are extracted for domestic use and for sale. Therefore, in the quest of eradicating poverty there is a need to encourage sustainable usage of the resources. This implies that as much as they are allowed to use the resources, they have to make sure that

they are not depleted. This applies to all community resources since they are naturally finite. It is a fact that there are renewable and non-renewable resources. It is however, important to note that renewable resources may end up being non-renewable if they are exploited at a rate that is beyond their natural capacity to replenish themselves. Due to poverty, Chiefs are compelled to allocate marginal land and sensitive sites such as wetlands for settlement to land seekers. This in turn perpetuates the degradation of the environment. To alleviate the resultant mismanagement of the environment, there is a need to remunerate Chiefs for administering chiefdoms in the country.

The findings also disclosed that there is a need to train communities on sustainable utilization of indigenous trees and on alternative sources of energy. Sustainable utilization of resources applies to all community resources for the sake of posterity. The use of alternative sources of energy is crucial in view of diminishing natural forests and woodlands as well as climate change, which has an effect on the production of hydro-electric power. Also, climate change contributes to the loss of biodiversity through rapid spread of invasive alien plant species, which results in extinction of indigenous species.

Moreover, expansion of sugar cane production coupled with unclear ownership of land and resources on SNL are serious threats to community action in resource management. These threats touch on all land resources in the country. Therefore, it is hoped that formulation of a Land Policy would probably address the challenge of land tenure on SNL. Regarding clearing of land in the preparation of sugar cane production, the study indicate that there is a need for clear and detailed EIAs reports that would enable SEA to only allow projects whose positive impacts outweigh the negative impacts on the environment. Also, considering that all developments takes place on the environment; formulation of a Land Policy would be a solution to numerous problems which are currently responsible for mismanagement of environmental resources.

The absence of substantive Chiefs was perceived as a serious threat to sustainable management of community resources. This is mainly because it encourages a 'tragedy of the commons' in the utilization of community resources. Notably, this not only affects

forests but almost all community resources. Therefore, it is hoped that installation of substantive Chiefs would contribute positively in the management of community resources. The study also revealed that transparency in the distribution and utilization of financial resources derived from the sale of resources in community forests is crucial in enlisting support of community members. That is to say, people are normally satisfied if provided with a detailed and clear breakdown of the amount accrued, used and the balance rather than a blanket statement. This is a principle that applies to distribution and utilization of any community resource in the country.

Considering the importance of forest resources in general, there is a need for formation of NRMCs in all communities to manage all community resources in addition to forests. The NRMCs should be responsible for mapping of forest resources in order to resolve and prevent conflicts over forest boundaries among community members. At the same time, mapping of forest resources would assist in preventing the spread of forest resources to grazing lands and water resources. The NRMCs should be mandated to source funds from potential donors in order to develop and maintain community resources such as afforestation projects and other land degradation rehabilitation activities. In addition, considering the spread of invasive alien plant species the NRMCs should oversee the setting of woodlots in order to avoid their spread to other community resources such as water catchments and pastures, as well as arable land.

### **9.3 Proposed Framework for CBNRM in Swaziland**

The results of the research have highlighted that Community-Based Natural Resource Management (CBNRM) in Swaziland is facing a number of challenges, many of which have already been discussed. This has prompted a re-think, and has led to the proposed framework for CBNRM in Swaziland as shown in Figure 9.1. Above all, there is a need for capacity building among communities on management of natural resources, which has to be carried out by Non-Governmental Organizations (NGOs) and the private sector (companies), the Ministry of Agriculture (MoA) Ministry of Tourism and Environmental Affairs (MTEA), Swaziland Environment Authority (SEA) as well as Swaziland National Trust Commission (SNTC) (Figure 9.1). Upon building the capacity, the organizations

particularly NGOs and the private sector, MoA, MTEA, SEA and SNTC have to provide the communities with tree seedlings and fencing material.

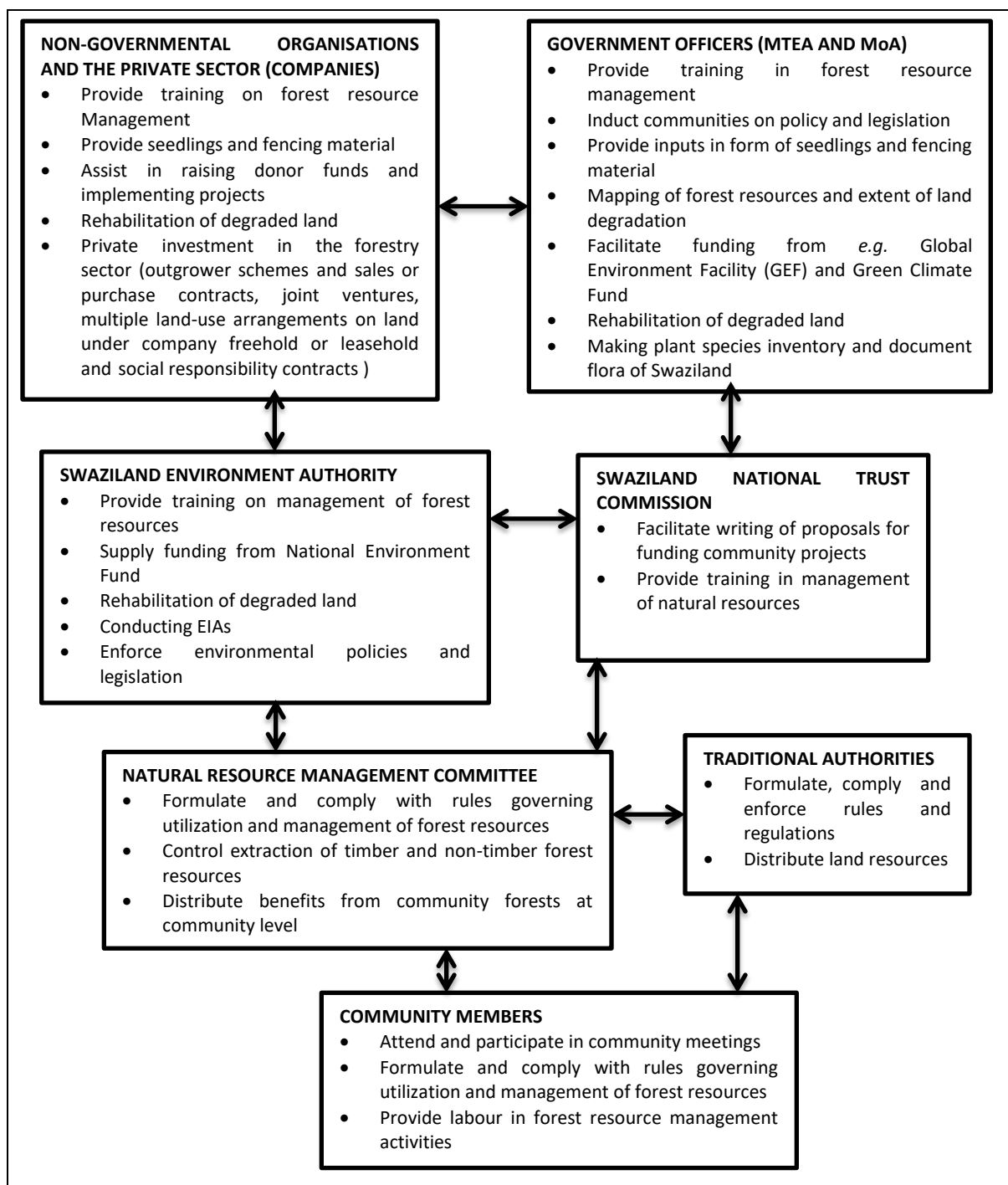


Figure 9.1: Proposed framework for CBNRM in Swaziland

The Ministry of Agriculture (MoA) is generally obliged to ensure household food security and increased sustainable agricultural productivity through diversification and enhancement of commercial agricultural activities. In addition to that the Ministry is also responsible for the development and promotion of appropriate technologies and efficient extension services while ensuring stakeholder participation and sustainable development and management of natural resources in the country. The SNTC is responsible for conserving the natural and cultural heritage of Swaziland through sustainable utilisation of these resources and promotion of environmental awareness throughout the nation. Then the Forestry department in the MTEA is particularly responsible for ensuring that the country has an up-to-date database on forest resources through periodically mapping them and making plant species inventories as well as documenting the flora of the country.

The NGOs and the private sector are also key stakeholders in forests resource management as they have to assist and guide the communities in the course of planning and implementation of resource management projects such as rehabilitation of degraded land or establishment of community forests. This is to guarantee community ownership and sustainability of the projects. For instance, in the course of planning and implementation of the projects the organizations have to also assist and guide communities in establishing NRMCS which are solely for overseeing the management of resources in the community. At the same time the private sector can assist communities through private investment in the forest sector. This may involve out-grower schemes and sales or purchase contracts, where small scale farmers grow trees on their own plots with support from the company in the form of technical advice, seed stock, fertilizers, pesticides tools, harvesting as suggested by Cairns (2000) and Nawir *et al.* (2002). Such support may also extend to guaranteed purchase and at times at guaranteed prices. In terms of joint ventures, companies and communities may embark on capital co-investments in goods or service projects, probably sharing management activities as suggested by Mayers (2000) and (Ojwang (2000). In this case the community may invest through land and labour, with the company putting in the finances. In multiple land-use arrangements on land under company freehold or leasehold, again the companies and communities may venture into co-investments, where the latter may benefit through being granted access to NTFPs in former's forests as suggested by

Morsello (2006). Finally, social responsibility contracts may involve the companies being allowed to operate within environmental and cultural limits set by the community as suggested by Panwar and Hansen (2008).

Considering that such a project requires funds, it is the responsibility of the respective organizations to assist communities in raising funds as well as in writing proposals for funding (Figure 9.1). In all these activities, the organizations liaise closely with the NRMCs which in turn collaborate with traditional authorities and the community at large. In the collaboration, NRMCs together with traditional authorities and the general community formulate and comply with rules and regulations governing utilization and management of natural resources.

In particular, traditional authorities are further responsible for enforcing the rules and regulations, as well as distributing land resources. The NRMCs are entrusted with the responsibility of controlling extraction of timber and NTFPs as well as distributing benefits derived from community forests at the community level. Community members are expected to attend and participate in community meetings, as well as provide labour in resource management activities.

## **9.4 Policy Recommendations for the Improvement of CBNRM in Swaziland**

The study has highlighted several key issues informing policy emerging in the research findings. These issues, previously discussed in chapters 8 and 9, are as follows:

*Issue 1:* Natural Resource Management Committees (NRMCs) are a product of establishment of community forests and they have a significant role in forest management matters. The concept of NRMCs is novel, hence the clash of interests with traditional authorities who feel threatened by their existence. Notably, NRMCs are an ideal structure for management of community resources compared to traditional authorities.

*Recommendation:* It is recommended that more NRMCs be formed and their working relations with traditional authorities be harmonized.



*Issue 2:* Rapid population growth coupled with poverty has forced Chiefs to allocate marginal land for settlement. This in turn promotes deforestation and land degradation. Noteworthy, in allocating marginal land Chiefs are often driven by hunger and poverty, since most of them are unemployed.

*Recommendation:* It is recommended that there must be an incentive for Chiefs in the form of a monthly allowance. Then a stringent legislation should be enacted to guard against Chiefs who will perpetrate mismanagement of the land even when they are remunerated.

*Issue 3:* Natural forests and woodlands are diminishing due to deforestation and over-exploitation, hence land degradation. Deforestation is mainly induced by the expansion of sugar cane production and encroachment of IAPS.

*Recommendation:* It is recommended that more nurseries be established for purposes of propagating more valuable and threatened indigenous tree species in addition to those already propagated at Ezikhotheni.

*Issue 4:* At present the rehabilitation of degraded areas in the country mainly involve planting of trees such as *Eucalyptus spp.* due its noted advantages of fast growth and coppicing abilities.

*Recommendation:*

It is recommended that tree species be used in conjunction with Vetiver (*Chrysopogon zizanioides*) grass in the rehabilitation of degraded land.

*Issue 5:* The findings of the study indicate that there is a need to create awareness among community members on sustainable utilization of indigenous trees and on alternative sources of energy other than fuel wood.

*Recommendation:* It is recommended that rural economic empowerment programs and projects that would train community members on how to sustainably use indigenous trees be mounted. At the same time, it is recommended that alternative sources of energy other than fuel wood be promoted to relieve pressure on natural forests and woodlands.

*Issue 6:* There is heavy reliance on medicinal plants in the communities for both domestic purposes and for sale, a practice that is responsible for loss of biodiversity culminating in land degradation since the species are not harvested in a sustainable manner.

*Recommendation:* It is recommended that all community members including traditional healers and herbalists be trained on the best practices in extraction of medicinal plants.

*Issue 7:* There is involvement and cooperation of community members (community action) in the management of community forests which have to be extended to the management of other communal resources such as grazing land and water.

*Recommendation:* It is recommended that effective education, awareness raising and capacity building programs on natural resource management for natural forests and woodlands to curb deforestation and land degradation be formulated and implemented.

*Issue 8:* Although there are rules prohibiting cutting of fruit, medicinal and royal tree species some community members are illegally harvesting them.

*Recommendation:* It is recommended that a Forest Act that would strictly prohibit the felling of edible, medicinal and royal tree species be enacted and enforced.

*Issue 9:* The current insecure land tenure is the main driver behind loss of biodiversity, depletion of critical ecosystems and destruction of wetlands as it perpetuates a free-for-all scenario, where no one is held responsible for unsustainable actions on the environment.

*Recommendation:* It is recommended that a Land Policy be formulated that will lead to enacting a Land Act that will correct the free-for-all scenario which contributes to mismanagement of the land and its resources.

## **9.5 Opportunities for Further Research**

The foregoing research has highlighted several problem areas related to CBNRM and Community Forestry. This points the way for potential future research emanating from the case study at Ezikhotheni and Ngcayini chiefdoms. It is therefore suggested that research in the future could focus on the following:

- ✓ Community action on fire prevention in rural areas.

Fire is a serious threat to environmental resources in particular and property in general. Therefore, communities should collaborate in the prevention of fire to avert environmental degradation.

- ✓ The spread of invasive plant species in the study sites over the years in order to diagnose their actual contribution in the Normalized Difference Vegetation Index (NDVI).

Invasive plant species are replacing indigenous plants and depleting water resources hence land degradation. This therefore, necessitates research on their spatial coverage and also devising of effective strategies to eradicate them.

- ✓ Land use in relation to land degradation in the respective chiefdoms.

The manner in which land is used in rural areas in particular contributes extensively on land degradation, since land use is often not determined by land suitability.

- ✓ Mapping of gullies and quantification of soil loss.

Land degradation is an on-going process resulting in a loss of tonnes of soil to neighbouring rivers and dams and ultimately to the sea during rainstorms. Knowledge on gully sizes and the amount of soil loss would sensitize land users on the importance of conserving the soil as per the British slogan which was used across former colonies including Swaziland 'soil is our greatest asset help conserve it'. In the quest of mapping and soil loss quantification there is also a need for research on the erosivity of the soil properties in the case study sites as well as the rest of the eroded areas in the country. Once again this would aid in devising appropriate remedial strategies for combating soil erosion in Swaziland.

- ✓ Long term studies on using Vetiver grass in rehabilitating degraded land. This is in view of that it produces a massive root system that grows straight down rather than out from the plant, hence it does not become invasive as observed by (Cindy, 2015). Instead it creates a sort of curtain beneath the soil, which taps sediments and slows down the movement of water in accordance to (Cindy, 2015). Evidence has shown that using trees alone in rehabilitating degraded land is not always effective since trees often expand away from the gullies thus resulting in the gullies also advancing towards the trees. At the same time, the ever increasing demand for forest resources counters the afforestation measures implemented to rehabilitate degraded land. This

is because the plantation-style forests established are often heavily exploited by community and non-community members.

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## APPENDICES

### Appendix 1: Work Plan

**Table 4.2: Proposed Work Plan**

<b>Steps</b>	<b>Dates</b>
Chapter 1 Introduction	<i>March 2014 - June 2014</i>
Chapter 2 The environmental and legal context of community action in community resource management	<i>July 2014 - September 2014</i>
Chapter 3 Community action research and its application to forest resources	<i>Continuous from March 2014</i>
Chapter 4 Understanding community action in managing forest resources	<i>October 2016</i>
Questionnaire design	<i>January 2017</i>
Pre-testing of questionnaire	<i>June 2017</i>
Collection of data	<i>June 2017 - August 2017</i>
Inputting data	<i>September 2017 - November 2017</i>
Chapter 5 The experiences of internal stakeholders in the management of community forests	<i>December 2017 - February 2018</i>
Chapter 6 Insights gained from external stakeholders on the management of community forests	<i>March 2018 - April 2018</i>
Chapter 7 The extent of resource utilization and of land degradation	<i>May 2018</i>
Chapter 8 Review of the details of the findings in the respective chiefdoms	<i>June 2018</i>
Chapter 9 Conclusion and recommendations	<i>June 2018</i>
1 <sup>st</sup> draft	<i>July 2018</i>
2 <sup>nd</sup> draft	<i>September 2018</i>
Corrections/Comments	<i>October 2018</i>
Final submission	<i>November 2018</i>

## **Appendix 2: Data Collection Instruments**

### **Appendix 2.1: Application for ethics approval**

#### **UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)**

##### **APPLICATION FOR ETHICS APPROVAL For research with human participants**

##### **INFORMED CONSENT RESOURCE FORM**

This form was completed after the researcher has given details about the study and explained the significance of the heads of households' (mostly heads of households, natural resource management committee members, community leaders, and officers) participation and assistance (*Lelifomu lagcwaliswa ngemuva kwekutsi lochuba lucwaningo achaze kabanti mayelana nekubaluleka kwekutinikela nelusito lwalabacwaningwako (tinhloko temakhaya, emakomidi labuke kunakelelwa kwetemvelo, bandlancane nemisumpe, kanye nalabafundzela ngekunakelela emahlatsi) kulolucwaningo*). The specific assistance or participation was fully explained to the respondents (*Labacwaningwako bachazelwa kabanti mayelana nelusito lolucelwa kubo*). The researcher also provided assurance that permission to undertake the study was solicited from the local traditional authorities and leaders of participating institutions (*Lochuba lolucwaningo unikete siciniseko kusti invume yekucwaninga kulenzawo uyitfole kubaholi bemumango kanye nakulabo labahola timphiko tahulumende letitsintsekako kulolucwaningo*).

##### **The researcher (*Lochuba lucwaningo*)**

Mr/Mrs participant I am **Saico Sibusiso Singwane** from the University of Swaziland who is a PhD student in the University of Kwa-Zulu Natal (Pietermaritzburg). My contact details are as follows:

(*Wena wekunene libito lami ngingu Saico Sibusiso Singwane losuka e University of Swaziland kepha longumfundzi lowenta ticu tebu dokotela e University of Kwa-Zulu Natal (Pietermaritzburg). Imininingwane yami ngunayi lelandzelako:*)

University of Swaziland

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Kwaluseni

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You are being invited to consider participating in a study on **community action in the management of community resources and the associated control of land degradation in Swaziland: the case of community forests.**

(*Ngiyacela kutsi ube yincenye yalolucwaningo lolumayelana nekubambisana kwemumango ekunakeleleni emahlatsi emumango*).

##### **The aim of the research (*Inhloso yalolucwaningo*)**

The aim of the research is to assess the effectiveness of community action in the management of community resources in Swaziland with a specific focus on community forests (*Inhloso yalolucwaningo kubuketa kubaluleka kwekubambisana kwemumango ekunakeleleni imvelo emimangweni lapha kaNgwane ikakhulu emahlatsi emumango*). In order to realize this aim the objectives of the study are as follows (*Kute kufinyelelwe kulenhloso imigomo yalolucwaningo ngulena lelandzelako*):

#### Objectives (*Imigomo*)

1. To analyse the extent of resource utilization and determine the extent of land degradation through the use of case studies (*Kuhlathiya lokusetjentiswa kwemahlatsi kanye nekunyukubeteka kwemvelo kusetjentiswa tindzawo letikhetsiwe*).
2. To assess the management of community resources by internal and external stakeholders through focusing mainly on forest resources and the governance determining such management (*Kubuketa indzima ledlalwa takhamiti kanye nebantfu labangesito takhamiti ekunakeleleni emahlatsi kanye nemitsetfo leyengamele kunakelelwa kwemahlatsi*).
3. To assess how benefits from community resources are distributed and utilized (*Kubuketa kutsi inzuzo yabiwa kanjani kanye nekutsi isebenta kanjani*).
4. To review the role of community action in the management of community resources in Swaziland based on case studies (*Kubuketa indzima ledlalwa kubambisana kwemumango ekunakeleleni emahlatsi emumango kaNgwane ngekusebentisa tindzawo letikhetsiwe*).
5. To assess the opportunities and threats for community action in management of community forests in Swaziland based on case studies (*Kubuketa ematfuba kanye netingcinamba mayelana nekubambisana kwemumango ekunakeleleni emahlatsi emumango kaNgwane ngekusebentisa tindzawo letikhetsiwe*).
6. To assess the extent to which insights gained from the case studies and (from focusing on forest resources) can be scaled up to Swaziland as a whole and to community resources in general (*Kubuketa kutsi lwati lolutawutfolakala ekucwaningeni kuletindzawo letikhetsiwe lungasetjentiswa kanjani kubuketa simo eveni lonkhe laka Ngwane kanye nasemvelweni yokhe jikelele*).
7. To make recommendations for the improvement of CBNRM in Swaziland (*Kwenta tincomo tekutfufukisa indlela yekunakelela imvelo eveni laka Ngwane*).

The study is expected to enrol heads of households from Ngcayini and Ezikhotheni chiefdoms as well as traditional authorities (inner council members, ward elders, Bucopho and members of the Natural Resource Management Committee. The research further involve professional in forest resource management from government and non-governmental organizations, namely Forestry Department in the MTEA, SEA, *World Vision* and *Conserve Swaziland*

The target population in this study is heads of households (men or women) in the homesteads from the two chiefdoms. In terms of population distribution, according to a personal interview with the Individual chiefdom councillors (*Bucopho*) during the field reconnaissance survey it was observed that Ngcayini has 103 homesteads (three (3)



homesteads being new arrivals), while Ezikhotheni has 508 (eight (8) homesteads being new arrivals) (Field reconnaissance survey, 2017). In terms of selecting respondents, since at Ngcayini there were 100 eligible homesteads, they were all included in the study. At Ezikhotheni on the other hand, where there were 500 eligible homesteads 40 per cent, which is 200 homesteads were selected through simple random sampling for inclusion in the study. The selection was executed through following the rules of random number tables for in-depth interviews guided by a questionnaire. The use of simple random sampling technique is mainly because it ensures that all homesteads in this case have an equal chance of being selected for the sample Strydom (2005b). It is worth noting that the varying sizes in the number of homesteads in the two chiefdoms prompted the research to sample at Ezikhotheni while at the same time include all homesteads at Ngcayini. All in all, the sample comprises 300 homesteads with 100 from Ngcayini and 200 from Ezikhotheni.

*(Lolucwaningo lufaka ekhatsi kucwaninga emakhaya ase Ngcayini kanye nase Zikhotheni. Labatsintsekako tinhloko temakhaya, baholi bemumango (bandlancane, imisumpe ne bocopho) kanye nemalunga elikomidi lemvelo. Luphindze lufake ekhatsi labafundzele mayelana nekunakelela emahlatsi labavela ematikweni ahulumende kanye nasetinhlanganweni letingekho ngaphansi kwahulumende. Labatsintsekako kulolucwaningo ngunaba: Forestry Department phansi kwelitiko letekuvakasha kanye netemvelo, SEA, World Vision kanye na Conserve Swaziland. Ezikhotheni kunemiti lengu 508 bese kutsi e Ngcayini iba ngu 103. Kulemiti lengu 508 Ezikhotheni lesiphohlongo ngulesatsandza kukhontiswa ngako-ke kute batfu labahlala kuyo ngoba kuleminye kusakhiwa kantsi kuleminye kusengakacali nekwakha kepha seliboshiwe lifindvo. Kanjalo nase Ngcayini kulemiti lengu 103 lemitsatfu ngulesatsandza kukhontiswa ngako-ke kute batfu labahlala kuyo ngoba kulaleminye kusakhiwa kantsi kuleminye kusengakacali nekwakha kepha seliboshiwe lifindvo. Lokusho kutsi imiti lenelilungelo lekuba yincenye yalolucwaningo ingu 500 Ezikhotheni bese iba ngu 100 e Ngcayini. Nekubuka lokushiyana kwelinani lemiti kulemiphakatsi lemibili lolucwaningo lwancoma naku lokulandzelako mayelana nekukhatsa labo labatawuba yincenye yalo. Ngako-ke lolucwaningo lufaka ekhatsi incenye lengemashumi lamane ekhulwini yemiti (40%) yase Zikhotheni (200) kanye nayo yonkhe lemiti lelikhulu (100) yase Ngcayini. Lokusho kutsi seyiyonkhe imiti leyincenye yalolucwaningo ingu (300.)*

The research involves face to face interviews guided by a questionnaire for heads of households, traditional authorities, as well as officers.

*(Lolucwaningo lutawuchutjwa ngendlela yekuhambela emakhaya lapho umcwaningi utawube aphetse luhla lwemibuto latayibuta tinhloko temakhaya. Kutawuphindze kube nalolunye luhla lwemibuto lolucondzene nebaholi bemumango kanye nalolucondzene nalabafundzele mayelana nekunakelela emahlatsi.)*

The process of data collection (conducting interviews) is expected to last for one month (July 2017). It must be noted that the study is self-sponsored since I am a part-time student and therefore sponsoring my studies.

*(Kubhekeke kutsi lohambela emakhaya kanye nemahhovisi ahulumende kanye nalawo langedkho ngephansi kwahulumende kutsatse sikhatsi lesingaba yinyanga yinye. Ngicela*

*kukwatisa kutsi tindleko tekuchuba lolucwaningo tiphuma kimi ngoba ngingumfundzi lotibhadalelako timali tekufundza.)*

I commit myself to keep the information provided confidentially. To ensure confidentiality names of respondents will not be required nor recorded so that responses remain anonymous. Moreover, the study will not use photographs for respondents. Finally, **the study will not use any audio-recording to record interviews**. The staff has a right to withdraw at any point of the study, for any reason, and without prejudice, and the information collected will be turned over to them. There are no known risks from being in this research. Participating in the study is absolutely voluntary.

*(Ngiyetsembisa kutsi kute bungoti bekubayincenye yalolucwaningo. Kwenta siciniseko sekutsi labatawuba yincenye yalolucwaningo bayavikeleka angeke abhalwe emabito abo kute kungabongakali kutsi letimpendvulo tivena kabani. Lokunye futsi kutsi lolucwaningo angeke lutisebentise titfombe talabo labatawuba yincenye kulo. **Lolucwaningo angeke luyisebentise imishini yekutfwebulwa tinkulumo**. Umuntfu akakaphocceleleki kutsi abe yincenye yalolucwaningo futsi unelilungelo lekuphuma kulolucwaningo umangabe eva kungatsi akusamholi kutsi achubeke anikete lwati mayelana nalolucwaningo.)*

Regarding benefits that may be derived from this study, there are no financial benefits but the research will contribute knowledge to the existing body of information on resource management, particularly community forests.

*(Mayelana nenzuzo, lolucwaningo kute inzuzo lengaba yimali lolutayiletsa kepha lutawengeta lwati mayelana nekunakelelwa kwemcebo wemvel ikhakhulu emahlatsi emumango.)*

In terms of feedback to respondents on the outcome of the study, the researcher has reached an agreement with the gatekeepers that on completion of the study a booklet or article detailing the findings will be sent to participating chiefdoms and institutions, where interested respondents can have access to it.

*(Mayelana nembiko wekutsi lucwaningo lutfoleni kulemimango letsintsekako ngekuvumelana nebaholi bemumango ngitawubhala bhukwana ngimletse endlunkhulu lapho sive sitawutfolela khona litfuba lekutsi singafuwundza khona. Lobhukwana utawuphindze atfunyelwe nakuletimphiko letingephansi kwahulumende kanye naleto letingekho ngephansi kwahulumende letitsintsekako kulolucwaningo, kuze kutsi labo labangatsandza kwati kabanti mayelana nemphumela walolucwaningo bakhone kufundza ngawo.)*

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number: HSS/0729/017D).

*(Lolucwaningo luhloliwe kutsi kute yini bungoti lolungabenta kulabo labatawuba yincenye yalo lwaphasiswa likomidi lenyuvesi lelibitwa ngekutsi yi UKZN Humanities and Social Sciences Research Ethics Committee lase lilunika nayi inombolo : HSS/0729/017D lefakazela kutsi luhloliwe.)*

In the event of any problems or concerns/questions you may contact the researcher, supervisor, and the UKZN Humanities & Social Sciences Research Ethics Committee and the contact details are as follows:

*(Uyatiswa kutsi umangabe kukhona tinkinga noma imibuto mayelana nalochuba lucwaningo noma lolucwaningo ngekwalo uvumelekile kutsi ungachumana na thishela wami longiceceshako noma likomidi lelihlole lolucwaningo kuletinombolo letilandzelako:)*

**Humanities & Social Sciences Research Ethics Administration**

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**Research respondent (*Locwaningwako*)**

I fully understand the purpose of my participation and areas and instances where my participation would be required in the research.

*(Ngiyayicondza inhloso yekutinikela kwami kanye netigaba laphe kundzingeka kutsi ngisite khona kulolucwaningo.)*

I am aware of the benefits (materially, in kind and otherwise) that would accrue to me for participating in the study both in the short and in the long term.

*(Ngiyati kutsi ngitawuzuzani ngekutinikela kulolucwaningo esikhatsini samanje kanye nalesitako.)*

I understand that anonymity will be guaranteed and I am comfortable with that since it will not be possible for my identity to be established.

*(Ngiyacondza kutsi konke lengitakusho angeke kwatiwe ngulabanye bantfu ngoba emabito ami kanye netifombe tami angeke kusetjentiswe kulolucwaningo.)*

The data or information I provide will be handled appropriately (*Lwati lengitaluniketa kulolucwaningo lutawugcineka ngendlela lefanele*). If the need arises, the data or information would be archived in coded form in the institutions I am associated with *i.e.* University of Swaziland (UNISWA), and University of Kwa-Zulu Natal (KZN), Pietermaritzburg campus (*Umangabe kunesidzingo lolwati lutawuginwa ngendlela lengakhombisi labaluniketile futsi loko kutawentiwa eNyuvesi yaka Ngwane nase Nyuvesi yase Kwa-Zulu Natal e Pietermaritzburg*). Data that is not archived will be disposed of according to appropriate means and procedures which are shredding and

incineration (*Lwati lolungete lugcinwe lutawulahlwa ngetindlela letifanele njenge kocotjwa kwemaphepha kanye nekuwashisa*).

I agree that I have met the researcher **Saico Sibusiso Singwane** and further agree that he includes me in the research (*Ngiyavuma kutsi ngihlangene nalochuba lolucwaningo longu Saico Sibusiso Singwane futsi ngakwemukela kuba yincenye yalabancwaningwako*).

I agree that I have consented to give information at my free will and that I have neither been paid, enticed nor coerced, and acknowledge that I am aware of my right to withdraw from participation in the research in the event I feel uncomfortable for any reason whatsoever (*Ngiyavuma kutsi ngikwemukele kuniketa lwati ngaphandle kwekucindzelwa nekutsi futsi angikabhadalwa, noma ngidizelwe nomake ngiphocelwe, kantsi futsi ngiyalati nelilungelo lami lekuphuma kulolucwaningo umangabe ngiva ngingasakhululeki noma ngasiphi sizatfu*).

My particulars are (*Nayi imininingwane yami*):

Gender (*Bulili*): Male (*Wesilisa*) ☐ Female (*Wesifazane*) ☐

Name of area (*Ligama lendzawo*): \_\_\_\_\_

Date (*Lusuku*): \_\_\_\_\_

Signature: \_\_\_\_\_

#### **Declaration by the Researcher (*Sifungo salochuba lucwaningo*)**

I have answered all questions the respondents raised truthfully and with honesty (*Ngiyiphendvule ngeliciniso nangekwetsembeka yonkhe imibuto lebutwe ngulocwaningwako*).

The respondent agreed to participate in the research voluntarily and further appended his/her signature above, demonstrating consent to participate in the research (*Locwaningwako uvumile ngephandle kwekucindzelwa kuba yincenye yalolucwaningo, wase uyasayina lapha ngenhla kufakazela kutsi uyakwemula*).

I undertake to use the data only for the agreed purposes which are using the data/information for academic research and publication purposes (*Ngiyetsembisa kutsi lonkhe lwati lengilutfole kulabancwaningwako ngitalusebentisa njengeba sivumelene nabo lokukufundza kanye nekubhala emaphepha kanye netincwadzi tekufundza*).

I commit myself to respect the privacy of my respondents and remain truthful and honest in the use of data/information collected from them for publication purposes (*Ngiyatnikela kutsi ngitawuciniseka futsi ngetsembeke ngaso sokhe sikhatsi ngekutsi lonkhe lwati lengilutfolile angeke ngilubhale ngendlela letawenta kutsi kubanakale kutsi luvela kubani*). The data will be stored in soft copies, and the hard copies of the questionnaire will be identifiable only by reference number (*Lonkhe lolwati lengitalutfole ngitalugcina ngetindlela tekusebentisa bongcondvomshina kanye nangemaphepha endzaweni lephephile futsi angeke kwateke kutsi lwaniketwa ngubani*).

I commit myself to abide by, and adhere to all ethical considerations within the confines of this research (*Ngiyatinikela kutsi ngitawetsembeka ngilandzele yonkhe imigomo yekuhlonipha emalungelo abo bonkhe labatsintsekako kulolucwaningo*).

Signature: \_\_\_\_\_

Date (*Lusuku*): \_\_\_\_\_

Thank you (*Ngiyabonga*)!

**Appendix 2.2: Luhla lwemibuto-Tinhloko temakhaya (Interview schedule – Heads of households)**

**Inombolo yelikhaya kulolucwaningo (Household number).....** [Kwentelwa kwati kutsi semangakhi emakhaya lasahanjelwe kulolucwaningo (Only for records purposes)]

**SIGABA (SECTION) A: Imibuto lemayela neminingwane yenhloko yelikhaya nekutsi baphila kajanjani (Demographic and socio-economic information)**

1. *Umumango* (Chiefdom)  
.....
2. *Lusuku* (Date)..... *Sikhatsi* (Time of interview)  
.....
3. *Siciniseko* *sekutsi* *likuphi* *likhaya* (GPS coordinates)  
.....
4. *Iminyaka yenhloko yelikhaya* (Age of respondent).  
21-30 years [ ] 31-40 years [ ] 41-50 years [ ] 51-60 years [ ]  
61-70 years [ ] 71-80 years [ ] 81+ years [ ]
5. *Bulili benhloko yelikhaya* (Gender of respondent.)  
*Wesilisa* (Male) [ ] *Wesifazane* (Female) [ ]
6. *Likuphi likhaya mayelana nelhlatsi lemumango* (Location of homestead in relation to community forest) *Lidvutane* (Near) [ ] *Likhashane* (Away) [ ]
7. *Bekisa kusti kulibanga lelingakanani kusuka ekhaya uye ehlatshini lemumango* (Estimate distance to community woodlot).  
*Kungephansi kwa* (Less than) 500m [ ] 500m to 1km [ ] *Kungetulu kwa* (Above) 1km [ ]
8. *Likhona yini lihlatshi lalapha ekhaya?* (Ownership of a homestead / household woodlot).  
*Likhona* (Yes) [ ] *Kute* (No) [ ]
9. *Linani lebantfu labahlala kulelikhaya* [Family size (number of people in household)].  
*Bangephansi kwalabasihlanu* (Less than 5 people) [ ] 5-9 people [ ]  
10-14 people [ ] *Balishumi nesihlanu kuya etulu 15 and above* [ ]
10. *Itfolakala ngayiphi indlela imali kulelikhaya* (Source of income).  
*Ngicashiwe* (Wage-based employment) [ ] *Ngiyatisebenta* (Self-employed) [ ]  
*Ngiphiwa bantfu* (Grants) [ ] *Kute* (None) [ ]

**SIGABA (SECTION) B: Kunakelelwa kemahlatsi takhamiti nalabangasito takhamiti kanye nemitsetfo leyengamele kusebenta kwemahlatsi (Management of forest resources by internal and external stakeholders and the governance determining such management)**

11. *Takhamiti tiyayihlala yini imihlangano tidzingidze tindzaba letiphatselene nekunakelelwa kwemahlatsi emumango* (Do community members hold meetings to discuss issues pertaining to management of community forests in the chiefdom)?  
*Tiyayihla* (Yes) [ ] *Atiyihlali* (No) [ ]
12. *Umangabe tiyayihlala, besilisa babangakanani kulemihlangano* (If yes, how is the attendance of the meetings by male members of the community)?  
*Banengi* (Good) [ ] *Bancane* (Poor) [ ]
13. *Chaza kutsi loku kubangelwa yini* (Explain why)?  
.....  
.....
14. *Umangabe tiyayihlala, besifazane babangakanani kulemihlangano* (If yes, how is the attendance of the meetings by female members of the community)?  
*Banengi* (Good) [ ] *Bancane* (Poor) [ ]
15. *Chaza kutsi loku kubangelwa yini* (Explain why)?

- .....  
 16. *Kulemihlangano besilisa bayayifaka yini imibono* (In the meeting's proceeding how do men participate)?

*Bayayifaka* (Active) [ ]      *Abayifaki* (Passive) [ ]

17. *Chaza kutsi kubangelwa yini* (Explain why)?  
 .....

18. *Kulemihlangano besifazane bayayifaka yini imibono* (In the meeting's proceeding how do women participate)?

*Bayayifaka* (Active) [ ]      *Abayifaki* (Passive) [ ]

19. *Chaza kutsi kubangelwa yini* (Explain why)?  
 .....

20. *Baholi bemumango babakhona yini emhlanganweni* (Do community leaders/traditional authorities attend the meetings)?

*Babakhona* (Yes) [ ]      *Ababikhona* (No) [ ]

21. *Umangabe babakhona, bayayifaka yini imibono* (If yes, how do they participate)?

*Bayayifaka* (Active) [ ]      *Abayifaki* (Passive) [ ]

22. *Chaza kutsi kubangelwa yini* (Explain why)?  
 .....

23. *Yini indzima ledlalwa besilisa nebesifazane ekunakeleleni emahlatsi emumango* (What are the roles of males and females in the management of community forests)?

<i>Besilisa</i> (Males)	<i>Besifazane</i> (Females)

24. *Takhamiti tiyafundziswa yini mayelana nekunakelelela emahlatsi emumango* (Are the community members trained on management of community forests)?

*Tiyafundziswa* (Yes) [ ]      *Atifundziswa* (No) [ ]      *Angati* (Do not know) [ ]

25. *Umangabe tiyafundziswa, tifundziswa ngubani atifundzise ini* (If yes, who train them and on what specifically)?

<i>Umuntfu noma litiko lelifundziso</i> (Person or institution responsible for training)	<i>Lokufundiswako</i> (Specific area of training)

26. *Chaza kutsi lokufundiswa kwetakhamiti yintfo levame kwenteka nini* (How often do community members receive training)?  
 .....

27. *Takhamiti tiyakukhutsalela yini kubayincenye yekunakelela emahlatsi emumango* (Are people motivated to participate in the management of community forests)?

*Tiyakukhutsalela* (Yes) [ ]      *Atikukhutsaleli* (No) [ ]      *Angati* (Do not know) [ ]

28. *Umangabe tiyakukhutsalela, chaza kutsi tikhutsatwa yini* (If yes, what motivates people to participate in the management of community forests)?

- .....
- .....
29. *Likhona yini likomidi lelibuke kunakelela imvelo kulomumango* (Is there any Natural Resource Management Committee (NRMCM) in your chiefdom)?  
*Likhona* (Yes) [ ] *Kute* (No) [ ]
30. *Umangabe likhona, lakhiwa nini* (If yes, when was it established)?  
 .....
31. *Lakhiwa ngubani* (Who established the NRMCM)?  
 .....
32. *Yini indzima ledlalwa likomidi lemvelo ekunakeleleni emahlatsi emumango* (What are the roles and responsibilities of the NRMCM members in the management of community forests)?  
 .....  
 .....  
 .....
33. *Ekudlaleni indzima yalo lelikomidi liyakukhutsata yini kutsi takhamiti tibeyincenye yekunakelela emahlatsi emumango* (In the execution of its roles and responsibilities does the NRMCM encourage community participation)?  
*Liyakukhutsata* (Yes) [ ] *Alilikukhutsata* (No) [ ]
34. *Umangabe likukhutsata, nguyiphi indzima lapho kukhutsatwa khona takhamiti kutsi tibeyincenye yekunakelela emahlatsi emumango* (If yes, in which roles and responsibilities does the NRMCM encourage community participation)?  
 .....  
 .....
35. *Lelikomidi liyatsatsisa yini etakhamitini* (Does the NRMCM consult with community members)?  
*Liyatsatsisa* (Yes) [ ] *Aliyatsatsisa* (No) [ ]
36. *Umangabe liyatsatsisa, litsatsisa mayelana nani* (If yes, on what specifically does the NRMCM consults with the community members)?  
 .....  
 .....
37. *Likomidi liyafundziswa yini mayelana nekunakelela emahlatsi emumango kanye nekonga imvelo* (Do the NRMCM members receive any training on management of community forests and the control of land degradation)?  
*Liyafundziswa* (Yes) [ ] *Alifundziswa* (No) [ ] *Angati* (Do not know) [ ]
38. *Umangabe liyafundziswa, liyalwendlulisela yini lolwati etakhamitini* (If yes, do the NRMCM members pass on the knowledge they receive in training to the rest of the community members)? *Liyalwendlulisela* (Yes) [ ] *Alilwendluliseli* (No) [ ]
39. *Umangabe liyalwendlulisela, lilwendlulisa kanjani* (If yes, how is the dissemination of the knowledge to community members carried out)?  
 .....  
 .....
40. *Yini indzima ledlalwa baholi bemumango ekunakeleleni emahlatsi emumango* (What are the roles and responsibilities of the traditional authorities in the management of community forests)?

<i>Bandlancane nemisumpe</i> (Inner council members and ward elders)	<i>Indvuna</i> (Headman)	<i>Sikhulu</i> (Chief)



41. *Tikhona yini tinhlango letingekho ngephansi kwahulumende letisita kulomumango mayelana nekutfukisa emahlatsi kanye nasekongeni imvelo* (Are there any Non-Governmental Organizations (NGOs) that assist in forest development and control of land degradation in this chiefdom)? *Tikhona* (Yes) ☐ *Kute* (No) ☐

42. *Umangabe tikhona, Ngutiphi* (If yes, name the NGOs)

.....

.....

43. *Chaza kutsi yini letiyentile naletiyentako mayelana nekutfukisa emahlatsi kanye nekonga imvelo* (Outline what they have done and they are doing in terms of forest development and control of land degradation).

<i>Kutfufukisa emahlatsi</i> (Forest development)	<i>Konga imvelo</i> (Control of land degradation)

44. *Chaza kutsi buyini buhle nebubi belusito lolulwetfwa tihlangano letingekho ngephansi kwahulumende* (What are the advantages and disadvantages of assistance provided by NGOs)?

<i>Buhle</i> (Advantages)	<i>Bubi</i> (Disadvantages)

45. *Lukhona yini luphiko lwahulumende lolusita kulomumango mayelana nekutfukisa emahlatsi kanye nasekongeni imvelo* (Is there any Government department that assists in forest development and control of land degradation in this chiefdom)?

*Lukhona* (Yes) ☐ *Kute* (No) ☐

46. *Umangabe lukhona, chaza kutsi nguluphi nekutsi lwenteni kanye nekutsi lwentani mayelana nekutfufukisa emahlatsi kanye nekonga imvelo* (If yes, list the department(s) and what they have done and they are doing in terms of forest development and control of land degradation)?

<i>Luphiko</i> (Department)	<i>Kutfufukisa emahlatsi</i> (Forest development)	<i>Konga imvelo</i> (Control of land degradation)

47. *Ikhona yini imitsetfo kulomumango leyengamele kunakelela emahlatsi emumango* (Are there any rules governing the management of community forests in the chiefdom)?

*Ikhona* (Yes) ☐ *Kute* (No) ☐

48. *Umangabe ikhona, chaza kutsi nguyiphi nekutsi yakhiwa kanjani nekutsi ilandzelelwa kanjani ngubani* (If yes, list the rules and explain how they are formulated as well as how they are enforced and indicate who enforce them).

<i>Imitsetfo</i> (Rules)	<i>Yakhiwa kanjani</i> (How they are formulated)	<i>Ilandzelelwa kanjani</i> (How they are enforced)	<i>Ilandzelelwa ngubani</i> (Who enforce them)

49. *Isebenta kahle yini lemitsetfo ekunakeleleni emahlatsi emumango* (Are these rules effective in the management of community forests)?

*Isebenta kahle* (Yes) ☐ *Ayisebenti kahle* (No) ☐

50. *Umangabe isebenta kahle, chaza kutsi kwenteka njani* (If yes, how)?

.....  
.....  
.....

51. *Umangabe ingasebenti kahle, chaza kutsi kubangelwa yini* (If no, why)?

.....  
.....

52. *Kukhona yini imitsetfo yelive loyatiko leyengamele kunakelelwa kwemahlatsi kulelive laka Ngwane* (Do you know any laws and policies governing management of forest resources in the county)? *Ikhona* (Yes) ☐ *Kute* (No) ☐

53. *Umangabe ikhona, chaza kutsi nguyiphi nekutsi itsi akwentekeni* [If yes, list them and state what they say (provisions)].

<i>Imitsetfo yelive</i> (Laws and policies)	<i>Itsi akwentekeni</i> (Provisions)

54. *Walutfola kuphi lwati mayelana nalemitsetfo yelive* (How did you learn about these laws and policies)?

.....  
.....

**SIGABA (SECTION) C: Inzuzo letfolakala emahlatsini emumango nekutsi yabiwa kanjani (Benefits from community forests and how they are distributed and utilised)**

55. *Chaza kutsi kwentiwa njani uma udzinga lokutigodvo kanye nalokungasito tigodvo lokusehlatsini lemunango wentanjani* (Explain how timber/wood resources and NTFPs are accessed from community forests)?

<i>Lokutigodvo</i> (Timber/wood resources)	<i>Lokungesito tigodvo</i> (NTFPs)

56. *Ukhona yini umehluko mayelana nendlela yekutfola lilungelo lekusebentisa emahlatsi emumango kufeza tidzingo tasekhaya noma kutsengisa* (Is there a difference in the manner of accessing resources for domestic use and for sale)?

*Ukhona umehluko* (Yes) ☐ *Kute umehluko* (No) ☐ *Angati* (Do not know) ☐

57. *Umangabe ukhona umehluko, chaza kutsi uyini* (If yes, explain the difference).

.....  
.....

58. *Niketa luhla lwalokutigodvo lokutfolakala emahlatsini emumango kusetjentiswe ekhaya noma kutsengiswe* (List timber/wood resources extracted from community forests for domestic use or for sale).

<i>Lokutigodvo lokutfolakala ehlatini lemunango</i> (Resources extracted)	<i>Lokusetjentiswa ekhaya</i> (Domestic use)	<i>Lokutsengiswako</i> (For sale)

59. *Niketa luhla lwalokungesito tigodvo lokutfolakala emahlatsini emumango kusetjentiswe ekhaya nome lokutsengiswako* [List Non-Timber Forest Products (NTFPs) resources extracted from community forests for domestic use and for sale].

<i>Lokunesito tigodvo lokutfolakala ehlatini lemumango</i> (Resources extracted)	<i>Lokusetjentiswa ekhaya</i> (Domestic use)	<i>Lokutsengiswako</i> (For sale)

60. *Kulokutfolakala ehlatini lemumango kutsengiswe chaza kutsi yini inzuzo letfolwa bantfu ngamunye kanye naletfolwa ngumumango* (For the resources harvested for sale, the list benefits accrued by individuals and the community).

<i>Inzuzo yemuntfu</i> (Individuals)	<i>Inzuzo yemumango</i> (Community wide)

61. *Kulenzuzo letfolwa ngumuntfu ngamunye, ukhona yini umehluko lomayelana nebulili* (At the individual level is there a difference in the benefits amassed on the basis of gender)?

*Ukhona umehluko* (Yes) ☐ *Kute umehluko* (No) ☐

62. *Umangabe ukhona umehluko, chaza kutsi nguyiphi inzuzo letfolwa besilisa futsi nguyiphi letfolwa besifazane* (If yes, list the benefits on the basis of gender).

<i>Besilisa</i> (Males)	<i>Besifazane</i> (Females)

63. *Kulenzuzo letfolwa ngumuntfu ngamunye ukhona yini umehluko mayelana nekutsi unjingile noma uphuyile* (At the individual level is there a difference in the benefits amassed on the basis of socio-economic status)?

*Ukhona umehluko* (Yes) ☐ *Kute umehluko* (No) ☐

64. *Umangabe ukhona umehluko, chaza kutsi nguyiphi inzuzo letfolwa ngulabanjingile futsi nguyiphi letfolwa nulabaphuyile* (If yes, list the benefits on the basis of socio-economic status).

<i>Labanjingile</i> (Well-off/rich)	<i>Labaphuyile</i> (Poor)

65. *Ngubani lobuke kwabiwa kwenzuzo kumuntfu ngamunye kanye nekwabiwa kwenzuzo yemumango* (Who is responsible for disbursing the benefits to individuals and the community at large)?

<i>Inzuzo yemuntfu</i> (Individuals)	<i>Inzuzo yemumango</i> (Community wide)

66. *Emahlatsi emumango abalulekile yini etilwaneni* (Are the community forests important to animals)? *Abalulekile* (Yes) ☐ *Akabaluleki* (No) ☐

67. *Umangabe abalulekile, abaluleke kanjani* (If yes, how).

.....  
 .....

68. *Niketa luhla lwetilwane letifuyiwe kanye netesiganga letizuzako emahlatisini emumango* (List domestic and wild animals which depend on the community forests in the chiefdom)?

<i>Tilwane letifuyiwe</i> (Domestic Animals)	<i>Tilwane tesiganga</i> (Wild animals)

69. *Umangabe angakabaluleki etilwaneni, chaza kutsi loko kubangelwa yini* (If no, why)?

.....  
 .....

70. *Ikhona yini indzima ledlalwa ngemahlatsi emumango mayelana nekuvikeleka kwetindzawo lapho kusuka khona imifula* (Are the community forests important in protecting water catchments)? *Ikhona* (Yes) [ ] *Kute* (No) [ ]

71. *Umangabe ikhona, chaza kutsi ngutiphi letindzawo letivikelwe ngemahlatsi emumango* (If yes, which water catchment(s) are protected by community forests in the chiefdom)?

.....  
 .....  
 .....

72. *Umangabe kute, chaza kutsi kubangelwa yini loko* (If no, why)?

.....  
 .....  
 .....

73. *Niketa luhla lwetihlahla letisetjentiswa emiphakatsini nasebukhosini nemisebenti yato letitfolakala kulomumango* (List the tree species which are used in Chiefs royal kraals and the King's royal kraal in this chiefdom).

<i>Ligama lesihlahla</i> (Name of tree species)	<i>Umsebenti wesihlahla</i> (Use of tree species)

74. *Chaza kutsi letihlahla tivikelwa kanjani kulomumango wakini* (Explain how they are protected in your chiefdom)?

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 .....  
 .....

**SIGABA (SECTION) D: Indzima ledlalwa kubambisana kwemumango ekunakeleleni emahlatsi (Role of community action in the management of forest resources)**

75. *Uyati kutsi kuyini kubambisana kwemumango ekunakeleleni emahlatsi* (Do you have an idea of what is community action in forest resource management)?

*Ngiyati* (Yes) [ ] *Angati* (No) [ ]

76. *Umangabe uyati, chaza kutsi yini kubambisana kwemumango ekunakeleleni emahlatsi* (If yes, what is community action in forest resource management)?

.....  
 .....  
 .....

77. *Kukhona yini kubambisana kwemumango ekunakeleleni emahlatsi kulomumango* (Is there any community action in the management of community forests in the chiefdom)?

*Kukhona* (Yes) [ ] *Kute* (No) [ ]

78. *Umangabe kukhona, chaza kutsi kwasungulwa ngubani kulomumango* (If yes, who came up with the idea of community action in the management of community forests in the chiefdom)?



**Appendix 2.3: Baholi bemumango nemalunga elikomidi letemvelo (Key informants – Community leaders and NRMC members)**

**SIGABA (SECTION) A: Imibuto lemayelana neminingwane yemholi wemumango (Demographic and socio-economic information)**

1. *Sigaba semholi emumangweni* (Designation of respondent in the community) .....
2. *Umumango* (Chiefdom) .....
3. *Lusuku* (Date)..... *Sikhatsi* (Time of interview).....
4. *Siciniseko sekutsi lwentelwa kuphi lolucwaningo* (GPS coordinates) .....

**SIGABA (SECTION) B: Kunakelelwa kemahlatsi takhamiti, nalabangasito takhamiti kanye nemitsetfo leyengamele kusebenta kwemahlatsi (Management of forest resources by internal and external stakeholders and the governance determining such management)**

5. *Niyayihlala yini imihlangano netakhamiti nidzingidze tindzaba letiphatselene nekunakelelwa kwemahlatsi emumango* (Do you hold meetings with community members to discuss issues pertaining to management of community forests in the chiefdom)?  
*Siyayihlala* (Yes) [ ] *Asiyihlali* (No) [ ]
6. *Umangabe niyayihlala, tibangakanani takhamiti kulemihlangano* (If yes, how is the attendance of the meetings by members of the community)?  
*Tibatinengi* (Good) [ ] *Tibatincane* (Poor) [ ]
7. *Chaza kutsi loku kubangelwa yini* (Explain why)?  
.....  
.....
8. *Kulemihlangano takhamiti tiyayifaka yini imibono* (In the meeting's proceeding how do they participate)? *Tiyayifaka* (Active) [ ] *Atiyayifaki* (Passive) [ ]
9. *Chaza kutsi loku kubangelwa yini* (Explain why)?  
.....  
.....
10. *Baholi bemumango babakhona yini emhlanganweni* (Do community leaders/traditional authorities attend the meetings)? *Babakhona* (Yes) [ ] *Ababikhona* (No) [ ]
11. *Umangabe babakhona, bayayifaka yini imibono* (If yes, how do they participate)?  
*Bayayifaka* (Active)[ ] *Abayayifaki* (Passive) [ ]
12. *Chaza kutsi kubangelwa yini* (Explain why)?  
.....  
.....
13. *Yini indzima ledlalwa takhamiti (besilisa nebesifazane) kanye nebaholi bemumango (bandlancane ne misumpe, indvuna ne sikhulu) ekunakeleleni emahlatsi emumango* [What are the roles of community members (males and females) and traditional authorities (inner council and ward elders, headman, and chief) in the management of community forests]?

Takhamiti (Community members)		Bandlancane ne misumpe (Inner council and ward elders)	Indvuna (Headman)	Sikhulu (Chief)
Besilisa (Males)	Besifazane (Females)			

14. *Takhamiti tiyafundziswa yini mayelana nekunakelelela emahlatsi emumango* (Are the community members trained on management of community forests)?  
*Tiyafundziswa* (Yes) [ ] *Atifundziswa* (No) [ ] *Angati* (Do not know) [ ]

15. *Umangabe tiyafundziswa, tifundziswa ngubani atifundzise ini* (If yes, who train them and on what specifically)?

<i>Umntfu noma litiko lelifundzisa</i> (Person or institution responsible for training)	<i>Lokufundziswa</i> (Specific area of training)

16. *Chaza kutsi lokufundziswa kwetakhumiti yintfo levame kwenteka nini* (How often do community members receive training)?

.....

17. *Njengemholi yini loyentako kukhutsata takhamiti kutsi tibe yincenye yekunakelela emahlatsi emumango* (What do you do to encourage community members to participate in the management of community forests)?

.....

18. *Yini indzima ledlalwa likomidi lemvelo ekunakeleleni emahlatsi emumango* (What are the roles and responsibilities of the NRMC members in the management of community forests)?

.....

19. *Likomidi lemvelo liyafundziswa yini mayelana nekunakelela emahlatsi emumango* (Do the NRMC members receive any training on management of community forests)?

*Liyafundziswa* (Yes) [ ] *Alifundziswa* (No) [ ] *Angati* (Do not know) [ ]

20. *Umangabe liyafundziswa, liyalwendlulisela yini lolwati etakhumitini* (If yes, do the NRMC members pass on the knowledge they receive in training to the rest of the community members)? *Liyalwendlulisela* (Yes) [ ] *Alilwendluliseli* (No) [ ]

21. *Umangabe liyalwendlulisela, lilwendlulisela kanjani* (If yes, how is the dissemination of the knowledge to community members carried out)?

.....

22. *Niketa luhla lwetinhlangano letingekho ngaphansi kwahulumende letisita kulomumango mayelana netfutukisa emahlatsi kanye nekonga imvelo* (Outline any Non-Governmental Organizations (NGOs) that assist in forest development and control of land degradation in this chiefdom and what they have done)?

<i>Inhlangano</i> (Name of NGO)	<i>Indzima ekutfutukiseni emahlatsi</i> (Role in forest development)	<i>Indzima ekongeni imvelo</i> (Role in the control of land degradation)

23. *Niketa timphiko tahulumende letisita kulomumango mayelana nekutfutukisa emahlatsi kanye nasekongeni imvelo* (Outline any Government departments that assist in forest development and control of land degradation in this chiefdom and what they have done)?

<i>Luphiko lwahulumende</i> (Name of department)	<i>Indzima ekutfutukiseni emahlatsi</i> (Role in forest development)	<i>Indzima ekongeni imvelo</i> (Role in the control of land degradation)

24. *Niketa luhla lwemitsetfo kulomumango leyengamele kunakelelwa kwemahlatsi emumango nekutsi yakhiwakanjani nekutsi ilandzelelwa kanjani futsi ngubani* (Outline any rules governing the management of community forests in the chiefdom and how they are formulated as well as how they are enforced and indicate who enforce them)?

<i>Imitsetfo</i> (Rules)	<i>Yakhiwa kanjani</i> (How they are formulated)	<i>Ilandzelelwa kanjani</i> (How they are enforced)	<i>Ilandzelelwa ngubani</i> (Who enforce them)

25. *Isebenta kahle yini lemitsetfo ekunakeleleni emahlatsi emumango* (Explain the effectiveness of the rules in the management of community forests).

.....

26. *Kukhona yini imitsetfo yelive loyatiko leyengamele kunakelelwa kwemahlatsi kulelive laka Ngwane* (Do you know any laws and policies governing management of forest resources in the county)? *Ikhona* (Yes) [ ] *Kute* (No) [ ]

27. *Umangabe ikhona, chaza kutsi nguyiphi nekutsi itsi akwentekeni* [If yes, list them and state what they say (provisions)].

<i>Imitsetfo yelive</i> (Laws and policies)	<i>Itsi akwentekeni</i> (Provisions)

28. *Walutfola kuphi lwati mayelana nalemitsetfo yelive* (How did you learn about these laws and policies)?

.....

**SIGABA (SECTION) C: *Inzuzo letfolakala emahlatsini emumango nekutsi yabiwa kanjani* (Benefits from community forests how they are distributed and utilised)**

29. *Chaza kutsi kwentiwa njani uma udzinga lokutigodvo kanye nalokungesito tigodvo lokusehlatsini lemumango lotawukusebentisa ekhaya noma ukutsengise* (Explain how timber/wood resources and NTFPs are accessed from community forests for domestic use and for sale)?

<i>Lokutigodvo</i> (Timber/wood resources)		<i>Lokungesito tigodvo</i> (NTFPs)	
<i>Lokusetjentiswa ekhaya</i> (Domestic use)	<i>Lokutsengiswako</i> (For sale)	<i>Lokusetjentiswa ekhaya</i> (Domestic use)	<i>Lokutsengiswako</i> (For sale)

30. *Niketa luhla lwalokutigodvo nalokungesito tigodvo lokutfolakala emahlatsini emumango kusetjentiswe ekhaya noma kutsengiswe* (List timber/wood and Non-Timber Forest Products (NTFPs) resources extracted from community forests for domestic use and for sale).

<i>Lokutigodvo</i> (Timber/wood resources)		<i>Lokungesito tigodvo</i> (NTFPs)	
<i>Lokusetjentiswa ekhaya</i> (Domestic use)	<i>Lokutsengiswako</i> (For sale)	<i>Lokusetjentiswa ekhaya</i> (Domestic use)	<i>Lokutsengiswako</i> (For sale)



31. *Kulokutsengisiwe yabiwa kanjani inzuzo kubantfu kanye nasemumangweni* (For the resources harvested for sale how the benefits are distributed to individuals and the community at large)?

<i>Kubantfu</i> (Individuals)	<i>Emumangweni</i> (Community wide)

32. *Ngubani lobuke kwabiwa kwenzuzo kubantfu kanye nasemumangweni* (Who is responsible for distributing the benefits to individuals and the community at large)?

<i>Kubantfu</i> (Individuals)	<i>Emumangweni</i> (Community wide)

33. *Tilwane tesiganga kanye naletifuyiwe tizuzani emahlatsini emumango* (How do wild and domestic animals benefit from community forests)?

<i>Tilwane letifuyiwe</i> (Domestic Animals)	<i>Tilwane tesiganga</i> (Wild animals)

34. *Niketa luhla lwetihlahla letisetjentiswa emiphakatsini nasebukhosini kanye nemisebenti yato letifolakala kulomumango* (List the tree species which are used in Chiefs royal kraals and the King's royal kraal in this chiefdom).

<i>Ligama lesihlahla</i> (Name of tree species)	<i>Umsebenti wesihlahla</i> (Use of tree species)

35. *Chaza kutsi letihlahla tivikelwa kanjani kulomumango wakini* (Explain how they are protected in your chiefdom)?

.....  
 .....

**SIGABA (SECTION) D: Indzima ledlalwa kubambisana kwemumango ekunakeleleni emahlatsi (Role of community action in the management of forest resources)**

36. *Chaza kutsi kuyini kumbambisana kwemumango ekunakeleleni emahlatsi* (What is your understanding of community action in forest resource management)?

.....  
 .....

37. *Ngubani lowasungula lomcondvo wekubambisana kwemumango ekunakeleleni emahlatsi emumango* (Who came up with the idea of community action in the management of community forests in the chiefdom)?

.....  
 .....

38. *Chaza kutsi ngukuphi lapho kubambisana kwemumango kuphumelele khona nalapho kwehluleke khona kulomumango* (What are the success and failures of community action in the chiefdom)?

<i>Lapho kuphumelele khona</i> (Successes)	<i>Lapho kwehluleke khona</i> (Failures)

**SIGABA (SECTION) E: Ematfuba netingcinamba mayelana nekubambisana kwemumango (Opportunities and threats of community action)**

39. *Niketa luhla lwematfuba ekutfufukisa kubambisana kwemumango lapha kulomumango* (Outline any opportunities for improving community action in the chiefdom)?

.....  
 .....

40. *Niketa luhla lwetingcinamba mayelana nekubambisana kwemumango lapha kulomumango* (Outline any threats for community action in the chiefdom)?

.....  
 .....

41. *Chaza kutsi kuyini kucabana lokukhona mayelana nekunakelelwa kwemahlatsi emumango kanye nekutsi kulungiswa kanjani* (Outline any conflicts which arise pertaining to management of community forests in this chiefdom and how they are resolved)?

<i>Luhlobo lwekucabana</i> (Nature of conflict)	<i>Kulungiswa kanjani</i> (How it is resolved)

**Appendix 2.4: Labafundzele kanye nalabasebenta kunakelela emahlatsi (Key informant – Officers)**

**SIGABA (SECTION) A: Imibuto lemayelana neminingwane ngemsebeni walofundzele nalosebenta kunakelela emahlatsi (Demographic and socio-economic information)**

1. *Ligama lenhlangano noma luphiko lwahulumende* (Name of institution)  
.....
2. *Lusuku* (Date)..... *Sikhatsi* (Time of interview).....
3. *Sigaba sakhe emsebenini* (Position held in the institution)  
.....
4. *Yini injongo yenhlangano noma luphiko lwahulumende lawusebenta khona* (What is the vision of your institution)?  
.....  
.....
5. *Yini intsandvo noma simiso senhlangano noma luphiko lwahulumende lawusebenta khona* (What is the mission statement of your institution)?  
.....  
.....
6. *Yini imigomo yenhlangano noma luphiko lwahulumende lawusebenta khona* (What are the objectives of your institution)?  
.....  
.....
7. *Yini umsebeni wakho* (The main responsibilities of the officer)  
.....  
.....
8. *Yini tifiso tenhlangano noma luphiko lwahulumende lawusebenta khona mayelana nemsebeni wakho nekuwenta kwakho* (What are the future plans of your institution regarding your mandate and effectiveness)?  
.....  
.....

**SIGABA (SECTION) B: Kunakelelwa kemahlatsi takhamiti, nalabangasito takhamiti kanye nemitsetfo leyengamele kusebenta kwemahlatsi (Management of forest resources by internal and external stakeholders and the governance determining such management)**

9. *Lapho usebenta khona kuyagcugcutelwa yini kutsi emahlatsi onkhe akongelwe situkulwane lesikhona kanye nalesitako* (Does your institution promote sustainable management of forests in general and community forests in particular)?  
*Kuyagcugcutelwa* (Yes) [ ] *Akugcugcutelwa* (No) [ ]
10. *Uma ngabe kuyagcugcutelwa, yini leyentiwako mayelana nemahlatsi asa onkhe kanye nemhlatsi emumango ngalokukhetsekile* (If yes, what does it specifically do to promote sustainable management of forests in general and community forests in particular)?

<i>Emahlatsi onkhe</i> (Forests in general)	<i>Emahlatsi emumango</i> (Community forests in particular)

11. *Uma ngabe akugcugcutelwa, kubangelwa yini loko* (If no, why)?  
.....  
.....
12. *Lapho usebenta khona kuyagcugcutelwa yini kuvikela kanye nekonga imvelo emimangweni* (Does your institution promote the prevention and control of land degradation in communities)?  
*Kuyagcugcutelwa* (Yes) ☐ *Akugcugcutelwa* (No) ☐
13. *Uma ngabe kuyagcugcutelwa, chaza kutsi yini leyentiwako mayelana nekuvikela kanye nekonga imvelo emimangweni* (If yes, what does it specifically do to prevent and control of land degradation in communities)?  
.....  
.....
14. *Uma ngabe akugcugcutelwa, chaza kutsi kubangelwa yini loko* (If no, why)?  
.....  
.....
15. *Ngelwati lwakho mayelana nekusebentisana nemimango, kukhona yini kubambisana ekunakeleleni emahlatsi emumango kanye nasekuvikeleni nekonga imvelo* (From your experience in working with communities, are they cooperative in the management of community forests as well as prevention and control of land degradation)?  
*Kuyabanjiswa* (Yes) ☐ *Akubanjiswa* (No) ☐
16. *Uma ngabe kuyabanjiswa, chaza loluhlobo lwekubambisana* (If yes, describe the nature of cooperation).  
.....  
.....
17. *Uma ngabe akubanjiswa, chaza kutsi kubangelwa yini loko* (If no, why)?  
.....  
.....
18. *Lapho usebenta khona kusetjentiswa miphi imikhambatsi uma kudzingidwa tindzaba letiphatselene nekunakelelwa kwemahlatsi emumango kanye nekongiwa kwemvelo emimangweni* (Which forums does your institution use to deliberate on issues related to management of community forests and control of land degradation with communities)?  
.....  
.....
19. *Kulokudzingidwa kwetindziba letiphatselene nekunakelelwa kwemahlatsi emumango kanye nekongiwa kwemvelo, takhamiti tiyayifaka yini imibono* (In the deliberations on issues pertaining to management of community forests and control of land degradation, how is the participation of community members)?  
*Tiyayifaka* (Active) ☐ *Atiyifaki* (Passive) ☐ *Angati* (Do not know) ☐
20. *Chaza kutsi loko kubangelwa yini* (Explain why)?  
.....  
.....  
.....
21. *Ngelwati lwakho mayelana nekusebentisana nemimango ekunakeleleni emahlatsi emumango kanye nekonga imvelo, nguyiphi indzima ledlalwa baholi bemumango* (From your experience in working with communities on issues pertaining to management of community forests and control of land degradation what is the role of traditional authorities)?  
.....  
.....  
.....
22. *Chaza kutsi baholi bemumango bayidlala kahle kangakanani ledzima yabo nekutsi kubangelwa yini loko* (How well do they execute their role and why)?

- .....
- .....
- .....
23. *Nisabentisana nemimango ekunakeleleni emahlatsi emvelo kanye nalawo emumango, tikhona yini tinsayeya lenibhekana nato* (Are there any challenges faced by your institution in working with communities on management of forests in general and community forests in particular).  
*Tikhona* (Yes) [ ]      *Kute* (No) [ ]
24. *Uma ngabe tikhona, chaza kutsi ngutiphi* (If yes, what are these challenges)?  
 .....  
 .....  
 .....
25. *Lapho usebenta khona ayafundziswa yini emakomidi emvelo mayelana nekunakelela emahlatsi emumango kanye nekonga imvelo* (Does your institution provide training to NRMC members on management of community forests and the control of land degradation)?  
*Ayafundziswa* (Yes) [ ]      *Akafundziswa* (No) [ ]      *Angati* (Do not know) [ ]
26. *Chaza kutsi lokufundziswa kwemakomidi emvelo yinfo levame kwenteka nini* (If yes, how often is this training offered)?  
 .....  
 .....  
 .....
27. *Chaza kutsi afundziswa ini lamakomidi mayelana nekunakelela emahlatsi emumango kanye nekonga imvelo* (Explain the nature of training given to NRMC members on management of community forests and the control of land degradation).  
 .....  
 .....  
 .....
28. *Uma ngabe akafundziswa, kubangelwa yini loko* (If no, why)?  
 .....  
 .....  
 .....
29. *Lapho usebenta khona tiyafundziswa yini takhamiti mayelana nekunakelela emahlatsi emumango kanye nekonga imvelo* (Does your institution provide training to community members on management of community forests and the control of land degradation)?  
*Tiyafundziswa* (Yes) [ ]      *Atifundziswa* (No) [ ]
30. *Chaza kutsi lokufundziswa kwetakhhamiti yinfo levame kwenteka nini* (If yes, how often is this training offered)?  
 .....  
 .....  
 .....
31. *Chaza kutsi tifundziswa ini letakhhamiti mayelana nekunakelela emahlatsi emumango kanye nekonga imvelo* (Explain the nature of training given to community members on management of community forests and the control of land degradation).  
 .....  
 .....  
 .....
32. *Uma ngabe atifundziswa, kubangelwa yini loko* (If no, why)?  
 .....  
 .....  
 .....
33. *Lapho usebenta khona niyayisita yini imimango ekukhetseni luhlobo lwetihlahla letingahlanyelwa emahlatsini emumango* (Does your institution assist communities on choosing tree species to be planted in community forests)?  
*Iyakhetsiswa* (Yes) [ ]      *Ayikhetiswa* (No) [ ]

34. *Lapho usebenta khona, niyayisita yini imimango ngetitfombo tetihlahla tekuhlanyelwa emahlatsini emumango* (Does your institution provide communities with seedlings to be planted in community forests)?

*Iyaniketwa* (Yes) ☐ *Ayiniketwa* (No) ☐

35. *Lapho usebenta khona iyasitwa yini imimango ekwakheni imitsetfo leyengamele kusetjentiswa kwemahlatsi emumangweni* (Does your institution assist communities in formulating rules governing the use of forest resources)?

*Iyasitwa* (Yes) ☐ *Ayisitwa* (No) ☐

36. *Uma ngabe iyasitwa, niketa luhla lwemitsetfo levamile leyengamele kusetjentiswa kwemahlatsi emumangweni* (If yes, list some of the most common rules governing the use of forest resources in communities).

.....  
 .....  
 .....

37. *Lapho usebenta khona iyafundziswa yini imimango ngemitsetfo yelive leyengamele kunakelelwa kwemvelo kulelive laka Ngwane* (Does your institution educate communities on environmental legislation governing management of the environment in the country)?

*Iyafundziswa* (Yes) ☐ *Ayifundziswa* (No) ☐

38. *Uma ngabe iyafundziswa, chaza kutsi kugcizelelwa miphi imitsetfo leyengamele kunakelelwa kwemvelo nekutsi leni* (If yes, list the environmental laws which are emphasised in this case and explain why)?

<i>Umtsetfo welive</i> (Environmental legislation)	<i>Tizatfu tekuwugcizelela</i> (Reasons for emphasising on it)

39. *Kukhona yini lokwentiwako lapho usebenta khona mayelana nekulandzelela imitsetfo yelive leyengamele kunakelelwa kwemvelo* (Is your institution doing anything regarding enforcement of the environmental laws)?

*Iyalandzelelwa* (Yes) ☐ *Ayilandzelelwa* (No) ☐

40. *Uma ngabe iyalandzelelwa, chaza kutsi kwentiwa ini* (If yes, what is being done)?

.....  
 .....  
 .....

41. *Bangakhi bantfu labalandzelela imitsetfo yelive leyengamele kunakelelwa kwemvelo lapho usebenta khona* (How many officers are responsible for enforcing environmental laws in your institution)?

.....  
 .....  
 .....

42. *Ngelwati lwenu mayelana nekusebentisana nemimango ekunakeleleni emahlatsi emumango kanye nekonga imvelo, chaza kutsi emakomidi emvelo abambisana kanjani nebaholi bemumango kanye netakhamiti* (From the experience of your institution in working with communities, describe nature of cooperation if any between NRMC, traditional authorities and community members in the management of community forests and control of land degradation).

.....  
 .....  
 .....  
 .....

**SIGABA (SECTION) C: *Ematfuba netingcinamba mayelana nekubambisana kwemumango* (Opportunities and threats of community action)**

43. *Ngelwati lwakho mayelana nekusebentisana nemimango chaza kutsi ngumaphi ematfuba netingcinamba mayelana nekutfufukisa kubambisana kemumango ekunakeleleni emahlatsi kulelive laka Ngwane* (Form your experience in working with communities indicate possible opportunities and threats for community action in forest resource management in the country).

<i>Ematfuba</i> (Opportunities)	<i>Tingcinamba</i> (Threats)

44. *Ngelwati lwakho mayelana nekusebentisana nemimango chaza kutsi kuba luhlobo luni lwekucabana lolubakhona nekutsi kulungiswa kanjani* (From the experience of your institution in working with communities, describe the nature of conflicts in the management of community forests and explain how they are normally resolved in communities).

<i>Luhlobo lwekucabana</i> (Nature of conflict)	<i>Kulungiswa kanjani</i> (How it is resolved)

### **Appendix 3: Letters to Gatekeepers, Response Letters from Gatekeepers and Approval from the Research Ethic Committee**

#### **Appendix 3.1: Letters to Gatekeepers / access points**

c/o Saico Sibusiso Singwane  
University of Swaziland  
Department of Geography,  
Environmental Science and Planning  
Private Bag 4  
Kwaluseni, M201  
Swaziland

20<sup>th</sup> June 2017

The Executive Director  
Swaziland Environment Authority  
P.O. Box 465  
Mbabane

Dear Sir/Madam,

#### **Re: Permission to interview your staff**

I am a PhD student at the University of Kwa-Zulu Natal assessing the effectiveness of community action in the management of community resources in Swaziland with a specific focus on community forests.

I am inviting your staff to participate in the research because of the valuable contribution they can make in the management of community forests since your organisation is an overseer of environmental issues in the country. If you grant permission, I would like to interview your staff between June and July 2017.

I commit myself to keep the information provided confidentially. The staff has the right to withdraw at any point of the study, for any reason, and without prejudice, and the information collected will be turned over to them. There are no known risks from being in this research. Participating in the study is absolutely voluntary.

I would greatly appreciate appreciation of your staff in this study. If you or your staff has any questions about the study itself, you are most welcome to contact me, my supervisor or the University Research Office at as reflected below.

Thanking you in advance for your cooperation.

Yours sincerely,

Saico Sibusiso Singwane



Tel: (+268) 2517 0253  
Cell: (+268 7611 3115)  
Email: [saicos@uniswa.sz](mailto:saicos@uniswa.sz)

**Supervisor:** Professor Heinrich Reinhard Beckedahl  
Tel: (+268) 2517 0425  
Cell: (+268 7646 2307)  
Email: [hbeckedahl@gmail.com](mailto:hbeckedahl@gmail.com)

**University Research Office:**  
Mr Premlall Mohun - Senior Administrative Officer  
Email: [mohunp@ukzn.ac.za](mailto:mohunp@ukzn.ac.za)  
Tel: 031 260 4557

Ms Phumelele Ximba - Administrative Officer  
Email: [XIMBAP@ukzn.ac.za](mailto:XIMBAP@ukzn.ac.za)  
Tel: 031 260 3587

Ms Mariette Snyman - Assistant Administrative Officer  
Email: [Snymanm@ukzn.ac.za](mailto:Snymanm@ukzn.ac.za)  
Tel: 031 260 8350

c/o Saico Sibusiso Singwane  
University of Swaziland  
Department of Geography,  
Environmental Science and Planning  
Private Bag 4  
Kwaluseni, M201  
Swaziland

20<sup>th</sup> June 2017

The Principal Secretary  
Ministry Tourism and Environmental Affairs (Forest section)  
P.O. Box 2652  
Mbabane

Dear Sir,

**Re: Permission to interview your staff**

I am a PhD student at the University of Kwa-Zulu Natal assessing the effectiveness of community action in the management of community resources in Swaziland with a specific focus on community forests.

I am inviting your staff to participate in the research because of the valuable contribution they can make in the management of community forests since institution and in particular the forest section is responsible for environmental issues in the country. If you grant permission, I would like to interview your staff between June and July 2017.

I commit myself to keep the information provided confidentially. The staff has the right to withdraw at any point of the study, for any reason, and without prejudice, and the information collected will be turned over to them. There are no known risks from being in this research. Participating in the study is absolutely voluntary.

I would greatly appreciate appreciation of your staff in this study. If you or your staff has any questions about the study itself, you are most welcome to contact me, my supervisor or the University Research Office at as reflected below.

Thanking you in advance for your cooperation.

Yours sincerely,

Saico Sibusiso Singwane  
Tel: (+268) 2517 0253  
Cell: (+268 7611 3115)  
Email: [saicos@uniswa.sz](mailto:saicos@uniswa.sz)

**Supervisor:** Professor Heinrich Reinhard Beckedahl

Tel: (+268) 2517 0425  
Cell: (+268 7646 2307)  
Email: [hbeckedahl@gmail.com](mailto:hbeckedahl@gmail.com)

**University Research Office:**

Mr Premlall Mohun - Senior Administrative Officer  
Email: [mohunp@ukzn.ac.za](mailto:mohunp@ukzn.ac.za)  
Tel: 031 260 4557

Ms Phumelele Ximba - Administrative Officer  
Email: [XIMBAP@ukzn.ac.za](mailto:XIMBAP@ukzn.ac.za)  
Tel: 031 260 3587

Ms Mariette Snyman - Assistant Administrative Officer  
Email: [Snymanm@ukzn.ac.za](mailto:Snymanm@ukzn.ac.za)  
Tel: 031 260 8350

c/o Saico Sibusiso Singwane  
University of Swaziland  
Department of Geography,  
Environmental Science and Planning  
Private Bag 4  
Kwaluseni, M201  
Swaziland

20<sup>th</sup> June 2017

The Chief  
Ngcayini Royal Kraal  
P.O. Box 436  
Manzini

Babe Chief,

**Re: Imvume yekwenta lucwaningo kutakhamiti letingephansi kwakho  
endzaweni yase Ngcayini**

Ngingumfundzi lowenta ticu tebudokotela (PhD) eNyuvesi iKwa-Zulu Natal eSouth Africa. Ngicwaninga mayelana nebubambisana kwemumango ekunakeleleni emahlatsi emvelo kanye nalawo lahlanye lelwe kulwa nekunyukubeteka kwemvelo emumanagweni.

Babe Chief ngekutitfoba lokukhulu ngicela futsi ngiphindze ngincuse takhamiti tase Ngcayini kutsi ngitibute imibuto mayelana nalolucwaningo. Labatsintsekako kulolucwaningo bafaka ekhatsi naba labalandzelako; ngubandlancane wakho, imisumpe, tihloko temakhaya, kanye nemakomidi labuke kunakelelwa kwemvelo emumangweni.

Babe Chief bengifisa kutsi ngihambe kuletakhamiti tase Ngcayini ekhatsi neHlaba (June) kanye na Kholwane (July) 2017. Ngiyetsembisa kutsi lonke lwati lengitalutfolela keletakhamiti ngitawulugcina lube yindzaba lesekhatsi kwami kanye netakhamiti tase Ngcayini. Ngicela kusho Babe Chief kutsi lalabatsintsekako kulolucwaningo abaphocelelwa kepha kuya ngekutinikela kwabo, kantsi futsi kute nebungoti lobukhona kulolucwaningo.

Ngitawukutfokotela kakhulu kubambisana nami kanye nekutinikela kwetakhimiti taseNgcayini kulolucwaningo. Babe Chief ngicela kusho kutsi nakungenteka kube khona imibuto leningaba nayo nikanye netakhamiti ningangitsintsa mine, noma longifundzisako (Supervisor), noma lihhovisi lelengamele telucwaningo (Research Office) kuletinombolo letikhonjiswa ngentansi kulencwadzi.

Ngimi lotitfobako

Saico Sibusiso Singwane

Tel: (+268) 2517 0253

Cell: (+268 7611 3115)

Email: [saicos@uniswa.sz](mailto:saicos@uniswa.sz)

**Supervisor:** Professor Heinrich Reinhard Beckedahl

Tel: (+268) 2517 0425

Cell: (+268 7646 2307 or +27 8282 60565)

Email: [hbeckedahl@gmail.com](mailto:hbeckedahl@gmail.com)

**University Research Office:**

Mr Premlall Mohun - Senior Administrative Officer

Email: [mohunp@ukzn.ac.za](mailto:mohunp@ukzn.ac.za)

Tel: 031 260 4557

Ms Phumelele Ximba - Administrative Officer

Email: [XIMBAP@ukzn.ac.za](mailto:XIMBAP@ukzn.ac.za)

Tel: 031 260 3587

Ms Mariette Snyman - Assistant Administrative Officer

Email: [Snymanm@ukzn.ac.za](mailto:Snymanm@ukzn.ac.za)

Tel: 031 260 8350

c/o Saico Sibusiso Singwane  
University of Swaziland  
Department of Geography,  
Environmental Science and Planning  
Private Bag 4  
Kwaluseni, M201  
Swaziland

20<sup>th</sup> June 2017

The Chief  
Ezikhoshoeni Royal Kraal  
P.O. Box 48  
Manzini

Babe Chief,

**Re: Imvume yekwenta lucwaningo kutakhamiti letingephansi kwakho  
endzaweni yase Zikhoshoeni**

Ngingumfundzi lowenta tiku tebudokotela (PhD) eNyuvesi iKwa-Zulu Natal eSouth Africa. Ngicwaninga mayelana nebubambisana kwemumango ekunakeleleni emahlatsi emvelo kanye nalawo lahlanyelelwe kulwa nekunyukubeteka kwemvelo emumanagweni.

Babe Chief ngekutitfoba lokukhulu ngicela futsi ngiphindze ngincuse takhamiti tase Zikhoshoeni kutsi ngitibute imibuto mayelana nalolucwaningo. Labatsintsekako kulolucwaningo bafaka ekhatsi naba labalandzelako; ngubandlancane wakho, imisumpe, tihloko temakhaya, kanye nemakomidi labuke kunakelelwa kwemvelo emumangweni.

Babe Chief bengifisa kutsi ngihambele kuletakhamiti tase Zikhoshoeni ekhatsi neHlaba (June) kanye na Kholwane (July) 2017. Ngiyetsembisa kutsi lonke lwati lengitalutfole keletakhamiti ngitawulugcina lube yinzaba lesekhatsi kwami kanye netakhamiti tase Zikhoshoeni. Ngicela kusho Babe Chief kutsi labatsintsekako kulolucwaningo abaphocelelwa kepha kuya ngekutinikela kwabo, kantsi futsi kute nebungoti lobukhona kulolucwaningo.

Ngitawukutfokotela kakhulu kubambisana nami kanye nekutinikela kwetakhimithi tase Zikhoshoeni kulolucwaningo. Babe Chief ngicela kusho kutsi nakungenteka kube khona imibuto leningaba nayo nikanye netakhamiti ningangitsintsa mine, noma longifundzisako (Supervisor), noma lihhovisi lelengamele telucwaningo (Research Office) kuletinombolo letikhonjiswa ngentansi kulencwadzi.

Ngimi lotitfobako

Saico Sibusiso Singwane  
Tel: (+268) 2517 0253  
Cell: (+268 7611 3115)

Email: [saicos@uniswa.sz](mailto:saicos@uniswa.sz)

**Supervisor:** Professor Heinrich Reinhard Beckedahl

Tel: (+268) 2517 0425

Cell: (+268 7646 2307)

Email: [hbeckedahl@gmail.com](mailto:hbeckedahl@gmail.com)

**University Research Office:**

Mr Premlall Mohun - Senior Administrative Officer

Email: [mohunp@ukzn.ac.za](mailto:mohunp@ukzn.ac.za)

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Tel: 031 260 3587

Ms Mariette Snyman - Assistant Administrative Officer

Email: [Snymanm@ukzn.ac.za](mailto:Snymanm@ukzn.ac.za)

Tel: 031 260 8350

Appendix 3.2: Response Letters from Gatekeepers / access points

EZIKHOTHENI ROYAL KRAAL  
P.O. BOX 48  
MHLOSHENI  
21st JUNE, 2017

WENA WEKUNENE

UMPHAKATSI WASEZIKHOTHENI KUBABE SIKHULU:  
ZWIBE NXUMALO

IMBUNA: MBUDZI VILANE IBEMKELE SICELO SA  
SAICO SIBUSISO SINGWANE SEKWENTIA LUWATINGO  
MAYELANA NEKUNAMELELWA KUENIAHLATSI EMMAINGO.

LENDUNKHULU IMVUMELE KUTSI ACHUBEKE MALOLUWANI-  
NGO

LOTITFOBAKO: TERBULE BOY SANGWENI  
MABHALANE WEMPHAKATSI  
ESAMENI LENDUNKHULU





Ngcayini Royal Kraal

P. O. Box 436

Manzini

22 June 2017

Mphatsi

wena wekunene Indlunkhulu yase Ngcayini  
iyakubingelela mphatsi. Indlunkhulu iyamati  
Sibusiso Saico Singware lochamuka enyuvesi  
i Kwa Zulu Natal e South Africa.

Siyindlunkhulu yase Ngcayini siyamemukela  
kutsi asochuba luwango ngemantshi  
kulommango wakitsi.

Siyetsembe kutsi asochuba lomsebenzi kokhe  
kuthamba kahle nesive Sakitsi Sitobamisa  
raze. Ngoko Singware Indlunkhulu yakitsi  
iyamemukela ngendlela letimhlophe.

Siyabonga lobhalile

~~Mphatsi~~  
Majalimare Gama Induna yase Ngcayini ngaphansi  
kwa Chief Mandanda Mtsheni Induna  
Mkhetha de Blamini





## MINISTRY OF TOURISM AND ENVIRONMENTAL AFFAIRS

Tel: +268 404 6420 / 404 1714/8  
Fax: +268404 5415/4046  
Email: [ps\\_tourism@gov.sz](mailto:ps_tourism@gov.sz)

P. O. BOX 2652  
MBABANE H100  
SWAZILAND

20<sup>th</sup> June 2017

**Saico Sibusiso Singwane**  
**University of Swaziland**  
**Department of Geography Environmental**  
**Science and Planning**  
**Private Bag 4**  
**Kwaluseni, M201**  
**SWAZILAND**

### **RE: APPLICATION TO INTERVIEW THE FOREST DEPARTMENT STAFF**


Reference is made to your letter dated 20<sup>th</sup> June 2017, "Permission to Interview your Staff".

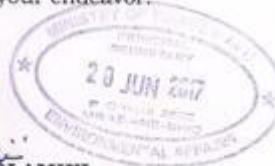
In consideration of your invitation to our staff, in particular the forest Department, you are hereby granted permission to interview them on the basis of the brief terms and conditions outlined in your letter.

You are directed to contact Mr. Solomon Gamedze or his representative to identify the relevant staff for your interview. Please make appointment with Mr. Gamedze or his representative through my office.

The Ministry wishes you the best of luck in your endeavor.

Yours Sincerely,

  
**EMMANUEL D. DLAMINI**  
**PRINCIPAL SECRETARY**





## SWAZILAND ENVIRONMENT AUTHORITY

RHIS Office Park  
Lot 195, Karl Grant Street  
Mbabane

P.O. Box 2662  
Mbabane, Swaziland  
Tels: 2404 6960/7893 Fax: 2404 1719  
Email: reception@sea.org.sz or contact@sea.org.sz  
www.sea.org.sz

Our Ref: SEA/INFO 7.4

22<sup>nd</sup> June 2017

Att: Saico Sibusiso Nsingwane  
University of Swaziland  
Department of Geography Environmental Science and Planning  
Private Bag 4  
Kwaluseni, M201  
Swaziland

Dear Sir,

### RE: PERMISSION TO INTERVIEW SEA STAFF FOR RESEARCH PURPOSES

The Swaziland Environment Authority (SEA), a parastatal under the Ministry of Tourism and Environmental Affairs has granted you permission to interview SEA staff regarding your research on the Effectiveness of community action in the management of community resources in Swaziland.

We hope the outcomes of your study will bridge the knowledge gap in the subject matter and contribute to the country's efforts of trying to manage natural resources.

Yours Sincerely,

**SHIRLEY C. KENNY-MOTSA**  
ACTING EXECUTIVE DIRECTOR

*Ensuring the integration of environmental concerns into Swaziland's development*

### Appendix 3.3: Approval from the Research Ethic Committee



UNIVERSITY OF  
KWAZULU-NATAL  
INYUVESI  
YAKWAZULU-NATALI

5 July 2017

Mr Seloo Sibusiso Singwane 214580818  
School of Agricultural, Earth and Environmental Sciences  
Pietermaritzburg Campus

Dear Mr Singwane

Protocol Reference Number: HSS/0729/017D  
Project Title: Community action in the management of community resources and the associated control of land degradation in Swaziland: The case of community forests

Full Approval – Expedited Application

In response to your application received 7 June 2017, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully



Dr Shenuka Singh (Chair)  
Humanities & Social Sciences Research Ethics Committee

/pm

cc Supervisor: Dr HR Beckedahl  
cc Academic Leader Research: Professor Ontsimo  
cc School Administrator: Ms Marsha Manjoo

---

Humanities & Social Sciences Research Ethics Committee  
Dr Shenuka Singh (Chair)  
Westville Campus, Govan Mbeki Building  
Postal Address: Private Bag X34001, Durban 4000  
Telephone: +27 (0) 31 260 3587/3592/4567 Facsimile: +27 (0) 31 260 4609 Email: [ethics@ukzn.ac.za](mailto:ethics@ukzn.ac.za) / [shenuka@ukzn.ac.za](mailto:shenuka@ukzn.ac.za) / [pm@ukzn.ac.za](mailto:pm@ukzn.ac.za)  
Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)

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● Eshowe ● Howard College ● Medical School ● Pietermaritzburg ● Westville

## Appendix 4: Tables for findings

Table 5.1a: Heads of households' views on the source of income in the household

Source of income		Name of chiefdom		Total
		Ezikhotheni	Ngcayini	
Wage-based employment	Frequency	54	7	61
	% within the two chiefdoms	88.5%	11.5%	100.0%
	% within each chiefdom	<b>27.0%</b>	<b>7.0%</b>	<b>20.3%</b>
Self-employed	Frequency	30	28	58
	% within the two chiefdoms	51.7%	48.3%	100.0%
	% within each chiefdom	<b>15.0%</b>	<b>28.0%</b>	<b>19.3%</b>
Grants	Frequency	97	17	114
	% within the two chiefdoms	85.1%	14.9%	100.0%
	% within each chiefdom	<b>48.5%</b>	<b>17.0%</b>	<b>38.0%</b>
None	Frequency	3	46	49
	% within the two chiefdoms	6.1%	93.9%	100.0%
	% within each chiefdom	<b>1.5%</b>	<b>46.0%</b>	<b>16.3%</b>
Wage-based employment and grants	Frequency	12	0	12
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	<b>6.0%</b>	<b>0.0%</b>	<b>4.0%</b>
Self-employed and grants	Frequency	3	2	5
	% within the two chiefdoms	60.0%	40.0%	100.0%
	% within each chiefdom	<b>1.5%</b>	<b>2.0%</b>	<b>1.7%</b>
Wage-based employment and Self-employed	Frequency	1	0	1
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	<b>0.5%</b>	<b>0.0%</b>	<b>0.3%</b>
Total	Frequency	200	100	300
	% within the two chiefdoms	66.7%	33.3%	100.0%
	% within each chiefdom	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Table 5.2a: Heads of households' views on family size (number of people in the household)

Family size (number of people in household)		Name of chiefdom		Total
		Ezikhotheni	Ngcayini	
Less than 5 people	Frequency	91	35	126
	% within the two chiefdoms	72.2%	27.8%	100.0%
	% within each chiefdom	<b>45.5%</b>	<b>35.0%</b>	<b>42.0%</b>
5-9 people	Frequency	98	45	143
	% within the two chiefdoms	68.5%	31.5%	100.0%
	% within each chiefdom	<b>49.0%</b>	<b>45.0%</b>	<b>47.7%</b>
10-14 people	Frequency	11	18	29
	% within the two chiefdoms	37.9%	62.1%	100.0%
	% within each chiefdom	<b>5.5%</b>	<b>18.0%</b>	<b>9.7%</b>
15 and above	Frequency	0	2	2
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>2.0%</b>	<b>0.7%</b>
Total	Frequency	200	100	300
	% within the two chiefdoms	66.7%	33.3%	100.0%
	% within each chiefdom	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Table 5.3aa: Heads of households' views on reasons for active participation of males in meetings proceedings

Reasons for active participation		Name of chiefdom		Total
		Ezikhothereni	Ngcayini	
Interested in the success of the project	Frequency	7	2	9
	% within the two chiefdoms	77.8%	22.2%	100.0%
	% within each chiefdom	<b>10.0%</b>	<b>14.3%</b>	<b>10.7%</b>
Have agricultural and forestry knowledge	Frequency	51	7	58
	% within the two chiefdoms	87.9%	12.1%	100.0%
	% within each chiefdom	<b>72.9%</b>	<b>50.0%</b>	<b>69.0%</b>
They are leaders and thus have to guide development	Frequency	6	5	11
	% within the two chiefdoms	54.5%	45.5%	100.0%
	% within each chiefdom	<b>8.6%</b>	<b>35.7%</b>	<b>13.1%</b>
They need the forest resources for construction purposes	Frequency	6	0	6
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	<b>8.6%</b>	<b>0.0%</b>	<b>7.1%</b>
Total	Frequency	70	14	84
	% within the two chiefdoms	83.3%	16.7%	100.0%
	% within each chiefdom	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Table 5.3bb: Heads of households' views on reasons for active participation of females in meeting's proceedings

Reasons for active participation		Name of chiefdom		Total
		Ezikhothereni	Ngcayini	
They are affected by a shortage of fuel wood in the community	Frequency	19	0	19
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	<b>27.5%</b>	<b>0.0%</b>	<b>23.2%</b>
They like development	Frequency	40	3	43
	% within the two chiefdoms	93.0%	7.0%	100.0%
	% within each chiefdom	<b>58.0%</b>	<b>23.1%</b>	<b>52.4%</b>
They are key stakeholders in forest maintenance and they get firewood	Frequency	10	2	12
	% within the two chiefdoms	83.3%	16.7%	100.0%
	% within each chiefdom	<b>14.5%</b>	<b>15.4%</b>	<b>14.6%</b>
They always want to get clarity on issues	Frequency	0	8	8
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>61.5%</b>	<b>9.8%</b>
Total	Frequency	69	13	82
	% within the two chiefdoms	83.3%	16.7%	100.0%
	% within each chiefdom	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Table 5.4aa: Heads of households' views on the role of males in management of community forests at Ezikhotheni and Ngcayini Chiefdoms

What are the roles of males in the management of community forests		Name of chiefdom		Total
		Ezikhotheni	Ngcayini	
Pruning, mending fence and harvesting	Frequency	19	0	19
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	9.5%	0.0%	6.3%
Planting, pruning and making fire breaks	Frequency	11	0	11
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	5.5%	0.0%	3.7%
Pruning and harvesting	Frequency	49	1	50
	% within the two chiefdoms	98.0%	2.0%	100.0%
	% within each chiefdom	24.5%	1.0%	16.7%
Pruning, mending fence and making fire breaks	Frequency	15	1	16
	% within the two chiefdoms	93.8%	6.2%	100.0%
	% within each chiefdom	7.5%	1.0%	5.3%
Pruning and mending fence	Frequency	7	0	7
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	3.5%	0.0%	2.3%
Planting, pruning and harvesting	Frequency	28	0	28
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	14.0%	0.0%	9.3%
Planting and fencing	Frequency	4	2	6
	% within the two chiefdoms	66.7%	33.3%	100.0%
	% within each chiefdom	2.0%	2.0%	2.0%
Reporting any illegal activities carried out in the forest to community leaders	Frequency	0	13	13
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	13.0%	4.3%
Do not know	Frequency	67	71	138
	% within the two chiefdoms	48.6%	51.4%	100.0%
	% within each chiefdom	33.5%	71.0%	46.0%
Attending meetings in order to comply with rules governing community forests	Frequency	0	3	3
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	3.0%	1.0%
Selective harvesting of forest resources in natural forests	Frequency	0	6	6
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	6.0%	2.0%
Destruction of alien invasive plant species	Frequency	0	3	3
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	3.0%	1.0%
Total	Frequency	200	100	300
	% within the two chiefdoms	66.7%	33.3%	100.0%
	% within each chiefdom	100.0%	100.0%	100.0%

Table 5.4bb: Heads of households' views on the role of females in management of community forests at Ezikhotheni and Ngcayini chiefdoms

What are the roles of females in the management of community forests		Name of chiefdom		Total
		Ezikhotheni	Ngcayini	
Pruning, mending fence and harvesting	Frequency	17	1	18
	% within the two chiefdoms	94.4%	5.6%	100.0%
	% within each chiefdom	8.5%	1.0%	6.0%
Planting, pruning and making fire breaks	Frequency	14	0	14
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	7.0%	0.0%	4.7%
Pruning and harvesting	Frequency	45	1	46
	% within the two chiefdoms	97.8%	2.2%	100.0%
	% within each chiefdom	22.5%	1.0%	15.3%
Pruning, mending fence and making fire breaks	Frequency	13	0	13
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	6.5%	0.0%	4.3%
Pruning and mending fence	Frequency	4	0	4
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	2.0%	0.0%	1.3%
Planting, pruning and harvesting	Frequency	10	0	10
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	5.0%	0.0%	3.3%
Planting and fencing	Frequency	3	1	4
	% within the two chiefdoms	75.0%	25.0%	100.0%
	% within each chiefdom	1.5%	1.0%	1.3%
Pruning	Frequency	9	0	9
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	4.5%	0.0%	3.0%
Reporting any illegal activities carried out in the forest to community leaders	Frequency	0	5	5
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	5.0%	1.7%
Do not know	Frequency	67	79	146
	% within the two chiefdoms	45.9%	54.1%	100.0%
	% within each chiefdom	33.5%	79.0%	48.7%
Attending meetings in order to comply with rules governing community forests	Frequency	0	2	2
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	2.0%	0.7%
Watering, pruning and harvesting	Frequency	18	0	18
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	9.0%	0.0%	6.0%
Collecting only dry wood for fuel wood	Frequency	0	11	11
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	11.0%	3.7%
Total	Frequency	200	100	300
	% within the two chiefdoms	66.7%	33.3%	100.0%
	% within each chiefdom	100.0%	100.0%	100.0%



Table 5.5a: Heads of households' views on institutions responsible for training community members on management of forest resources

If yes, who train them		Name of chiefdom		Total
		Ezikhotheni	Ngcayini	
Natural Resource Management Committee	Frequency	1	0	1
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	2.1%	0.0%	1.5%
Non-Governmental Organizations	Frequency	22	0	22
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	45.8%	0.0%	32.8%
Forest department from MTEA	Frequency	17	0	17
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	35.4%	0.0%	25.4%
Swaziland Environment Authority	Frequency	1	0	1
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	2.1%	0.0%	1.5%
Inner council members	Frequency	0	18	18
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	94.7%	26.9%
Non-Governmental Organizations and Forest department	Frequency	2	0	2
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	4.2%	0.0%	3.0%
Agriculture extension officers	Frequency	1	0	1
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	2.1%	0.0%	1.5%
Forest department from MTEA and Agriculture extension officers	Frequency	2	0	2
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	4.2%	0.0%	3.0%
Forest department from MTEA and SEA	Frequency	2	0	2
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	4.2%	0.0%	3.0%
University of Swaziland	Frequency	0	1	1
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	5.3%	1.5%
Total	Frequency	48	19	67
	% within the two chiefdoms	71.6%	28.4%	100.0%
	% within each chiefdom	100.0%	100.0%	100.0%

Table 5.6a: Community leaders' views on strategies to encourage community members to participate in the management of community forests

What do you do to encourage community members to participate in the management of community forests		Name of chiefdom		Total
		Ngcayini	Ezikhotheni	
Nothing due to fear of conflicting with NRM	Frequency	0	1	1
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>9.1%</b>	<b>4.5%</b>
Assisting the NRM by organizing people to work on the project	Frequency	0	1	1
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>9.1%</b>	<b>4.5%</b>
Participating in all community projects work and encouraging others	Frequency	1	2	3
	% within the two chiefdoms	33.3%	66.7%	100.0%
	% within each chiefdom	<b>9.1%</b>	<b>18.2%</b>	<b>13.6%</b>
Encouraging community members' participation in the project during community meetings	Frequency	0	5	5
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>45.5%</b>	<b>22.7%</b>
Summoning and encouraging community members who do not participate in community projects	Frequency	1	1	2
	% within the two chiefdoms	50.0%	50.0%	100.0%
	% within each chiefdom	<b>9.1%</b>	<b>9.1%</b>	<b>9.1%</b>
Organizing community meetings and encouraging people to participate in projects	Frequency	0	1	1
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>9.1%</b>	<b>4.5%</b>
Nothing since there are no community forests meetings where people can be trained	Frequency	3	0	3
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	<b>27.3%</b>	<b>0.0%</b>	<b>13.6%</b>
Encouraging community members to comply with the community forest rules	Frequency	6	0	6
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	<b>54.5%</b>	<b>0.0%</b>	<b>27.3%</b>
Total	Frequency	11	11	22
	% within the two chiefdoms	50.0%	50.0%	100.0%
	% within each chiefdom	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Table 5.7a: Heads of households' views on existence of a Natural Resource Management Committee (NRM) at Ezikhotheni and Ngcayini chiefdoms

Is there any Natural Resource Management Committee (NRM) in your chiefdom		Name of chiefdom		Total
		Ezikhotheni	Ngcayini	
Yes	Frequency	133	5	138
	% within the two chiefdoms	96.4%	3.6%	100.0%
	% within each chiefdom	<b>66.5%</b>	<b>5.0%</b>	<b>46.0%</b>
No	Frequency	66	95	161
	% within the two chiefdoms	41.0%	59.0%	100.0%
	% within each chiefdom	<b>33.0%</b>	<b>95.0%</b>	<b>53.7%</b>
Do not know	Frequency	1	0	1
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	<b>0.5%</b>	<b>0.0%</b>	<b>0.3%</b>
Total	Frequency	200	100	300
	% within the two chiefdoms	66.7%	33.3%	100.0%
	% within each chiefdom	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Table 5.8aa: Heads of households' views on non-timber forest products (NTFPs) extracted for domestic use

List Non-Timber Forest Products (NTFPs) resources extracted from community forests for domestic use		Name of chiefdom		Total
		Ezikhotheni	Ngcayini	
Honey, wild fruits, and edible plants	Frequency	10	6	16
	% within the two chiefdoms	62.5%	37.5%	100.0%
	% within each chiefdom	<b>5.0%</b>	<b>6.0%</b>	<b>5.3%</b>
Medicinal plants	Frequency	6	3	9
	% within the two chiefdoms	66.7%	33.3%	100.0%
	% within each chiefdom	<b>3.0%</b>	<b>3.0%</b>	<b>3.0%</b>
Grass for making nests and thatching	Frequency	75	0	75
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	<b>37.5%</b>	<b>0.0%</b>	<b>25.0%</b>
None	Frequency	79	3	82
	% within the two chiefdoms	96.3%	3.7%	100.0%
	% within each chiefdom	<b>39.5%</b>	<b>3.0%</b>	<b>27.3%</b>
Honey, wild fruits, edible plants and medicinal plants	Frequency	5	5	10
	% within the two chiefdoms	50.0%	50.0%	100.0%
	% within each chiefdom	<b>2.5%</b>	<b>5.0%</b>	<b>3.3%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Umtsanyelo, Liphephetse ( <i>Athrixia phylicoides</i> )	Frequency	0	27	27
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>27.0%</b>	<b>9.0%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Liphephetse ( <i>Athrixia phylicoides</i> ), and Inkakha ( <i>Momordica</i> spp.)	Frequency	0	4	4
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>4.0%</b>	<b>1.3%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Liphephetse ( <i>Athrixia phylicoides</i> ) and medicinal plants	Frequency	0	23	23
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>23.0%</b>	<b>7.7%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Liphephetse ( <i>Athrixia phylicoides</i> ), Lusololo ( <i>Bauhinia galpinii</i> ) and herbs	Frequency	0	2	2
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>2.0%</b>	<b>0.7%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Lusololo ( <i>Bauhinia galpinii</i> ), Lukhwane ( <i>Cyperus</i> ), Lutindzi and Incoboza ( <i>Cyperus</i> spp.)	Frequency	0	18	18
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>18.0%</b>	<b>6.0%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Liphephetse, medicinal plants, Intfocwane ( <i>Peddiea africana</i> ), Mafodlwane, Intokolovu	Frequency	0	6	6
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>6.0%</b>	<b>2.0%</b>
Grass for fodder and medicinal plants	Frequency	25	3	28
	% within the two chiefdoms	89.3%	10.7%	100.0%
	% within each chiefdom	<b>12.5%</b>	<b>3.0%</b>	<b>9.3%</b>
Total	Frequency	200	100	300
	% within the two chiefdoms	66.7%	33.3%	100.0%
	% within each chiefdom	100.0%	100.0%	100.0%

Table 5.8bb: Community leaders' views on non-timber forest products (NTFPs) extracted for domestic use

List Non-Timber Forest Products (NTFPs) resources extracted from community forests for domestic use	Name of chiefdom		Total
	Ngcayini	Ezikhotheni	
Honey, wild fruits, and edible plants	Frequency	0	3
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>27.3%</b>
Thatching grass and medicinal plants	Frequency	0	4
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>36.4%</b>
None	Frequency	0	4
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	<b>0.0%</b>	<b>36.4%</b>
Honey, wild fruits, edible plants and medicinal plants	Frequency	1	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	<b>9.1%</b>	<b>0.0%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Umtsanyelo, Liphephetse	Frequency	1	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	<b>9.1%</b>	<b>0.0%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), and Liphephetse	Frequency	3	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	<b>27.3%</b>	<b>0.0%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Liphephetse and medicinal plants	Frequency	3	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	<b>27.3%</b>	<b>0.0%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Liphephetse, Lusololo ( <i>Bauhinia galpinii</i> ) and medic	Frequency	1	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	<b>9.1%</b>	<b>0.0%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Lusololo ( <i>Bauhinia galpinii</i> ) and Incoboza ( <i>Cyperus</i> spp.)	Frequency	1	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	<b>9.1%</b>	<b>0.0%</b>
Imphepho ( <i>Helichrysum rugulosum</i> ), Liphephetse, medicinal plants, Intfocwane ( <i>Peddiea africana</i> ), Mafodlwane, Intokolovu	Frequency	1	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	<b>9.1%</b>	<b>0.0%</b>
Total	Frequency	11	11
	% within the two chiefdoms	50.0%	50.0%
	% within each chiefdom	100.0%	100.0%

Table 5.9a: Heads of households' views on tree species which are used in Chiefs royal kraals and the King's royal kraal at Ezikhotheni and Ngcayini chiefdoms

List the tree species which are used in Chiefs royal kraals and the King's royal kraal in this chiefdom	Name of chiefdom		Total
	Ezikhotheni	Ngcayini	
<i>Umhlume</i> ( <i>Adina</i> spp.), <i>Imbondvo lemnyama</i> ( <i>Combretum molle</i> ), <i>Umncaka</i> , <i>Inhlangishane</i> and <i>Imfice</i>	Frequency	3	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	1.5%	0.0%
<i>Imbondvo lemnyama</i> ( <i>Combretum molle</i> )	Frequency	36	5
	% within the two chiefdoms	87.8%	12.2%
	% within each chiefdom	18.0%	5.0%

<i>Lusekwane (Dichrostachys cinerea)</i>	Frequency	82	6	88
	% within the two chiefdoms	93.2%	6.8%	100.0%
	% within each chiefdom	41.0%	6.0%	29.3%
<i>Imbondvo lemnyama (Combretum molle)</i> and <i>Lusekwane (Dichrostachys cinerea)</i>	Frequency	33	2	35
	% within the two chiefdoms	94.3%	5.7%	100.0%
	% within each chiefdom	16.5%	2.0%	11.7%
<i>Umdlume (Adina spp.)</i> and <i>Imbondvo lemnyama (Combretum molle)</i>	Frequency	7	37	44
	% within the two chiefdoms	15.9%	84.1%	100.0%
	% within each chiefdom	3.5%	37.0%	14.7%
<i>Lusekwane</i> and <i>Umlazembe (Dichrostachys cinerea)</i>	Frequency	11	1	12
	% within the two chiefdoms	91.7%	8.3%	100.0%
	% within each chiefdom	5.5%	1.0%	4.0%
<i>Umdlume (Adina spp.)</i> , <i>Liklolo (Grewia caffra)</i> , <i>Umpahla (Brachylaena spp.)</i> and <i>Sicandza matje</i>	Frequency	0	4	4
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	4.0%	1.3%
<i>Umdlume (Adina spp.)</i> , <i>Umpahla (Brachylaena spp.)</i> and <i>Lusekwane (Dichrostachys cinerea)</i>	Frequency	0	5	5
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	5.0%	1.7%
<i>Umdlume (Adina spp.)</i> , <i>Liklolo (Grewia caffra)</i> , <i>Umpahla (Brachylaena spp.)</i>	Frequency	0	12	12
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	12.0%	4.0%
<i>Umdlume (Adina spp.)</i> , <i>Umpahla (Brachylaena spp.)</i> and <i>Lugagane</i>	Frequency	0	8	8
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	8.0%	2.7%
<i>Umdlume (Adina spp.)</i> , <i>Umpahla (Brachylaena spp.)</i> and <i>Imbondvo lemnyama (Combretum molle)</i>	Frequency	0	6	6
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	6.0%	2.0%
<i>Imbondvo lemnyama (Combretum molle)</i> and <i>Lugagane</i>	Frequency	20	2	22
	% within the two chiefdoms	90.9%	9.1%	100.0%
	% within each chiefdom	10.0%	2.0%	7.3%
<i>Umlcuma (Olea spp.)</i>	Frequency	3	0	3
	% within the two chiefdoms	100.0%	0.0%	100.0%
	% within each chiefdom	1.5%	0.0%	1.0%
Do not know	Frequency	5	7	12
	% within the two chiefdoms	41.7%	58.3%	100.0%
	% within each chiefdom	2.5%	7.0%	4.0%
<i>Lusekwane (Dichrostachys cinerea)</i> and <i>Mangololo</i>	Frequency	0	1	1
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	1.0%	0.3%
<i>Masweti (Manonhotaxis caffra)</i>	Frequency	0	3	3
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	3.0%	1.0%
<i>Umlahlabantfu (Zizyphus mucronata)</i>	Frequency	0	1	1
	% within the two chiefdoms	0.0%	100.0%	100.0%
	% within each chiefdom	0.0%	1.0%	0.3%
Total	Frequency	200	100	300
	% within the two chiefdoms	66.7%	33.3%	100.0%
	% within each chiefdom	100.0%	100.0%	100.0%

Table 5.9b: Community leaders' views on tree species which are used in Chiefs royal kraals and the King's royal kraal at Ezikhotheni and Ngcayini chiefdoms

List the tree species which are used in Chiefs royal kraals and the King's royal kraal in this chiefdom	Name of chiefdom		Total
	Ngcayini	Ezikhotheni	
<i>Umdlume (Adina spp.)</i> , <i>Imbondvo lemnyama (Combretum molle)</i> , <i>Umncaaka</i> , and <i>Inhlangishane</i>	Frequency	0	1
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	0.0%	9.1%
<i>Imbondvo lemnyama (Combretum molle)</i>	Frequency	0	2
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	0.0%	18.2%
<i>Lusekwane (Dichrostachys cinerea)</i>	Frequency	0	1
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	0.0%	9.1%
<i>Imbondvo lemnyama (Combretum molle)</i> and <i>Lusekwane (Dichrostachys cinerea)</i>	Frequency	1	3
	% within the two chiefdoms	25.0%	75.0%
	% within each chiefdom	9.1%	27.3%
<i>Lusekwane (Dichrostachys cinerea)</i> and <i>Umdlume (Adina spp.)</i>	Frequency	0	1
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	0.0%	9.1%
<i>Umdlume (Adina spp.)</i> and <i>Imbondvo lemnyama (Combretum molle)</i>	Frequency	0	1
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	0.0%	9.1%
<i>Lusekwane</i> and <i>Umsilazembe (Dichrostachys cinerea)</i>	Frequency	0	1
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	0.0%	9.1%
<i>Lusekwane</i> and <i>Umsilazembe (Dichrostachys cinerea)</i> , <i>Inhlangishane</i> and <i>Lugagane</i>	Frequency	0	1
	% within the two chiefdoms	0.0%	100.0%
	% within each chiefdom	0.0%	9.1%
<i>Umdlume (Adina spp.)</i> , <i>Liklolo (Grewia caffra)</i> , <i>Umphahla (Brachylaena spp.)</i> and <i>Sicandza matje</i>	Frequency	1	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	9.1%	0.0%
<i>Umdlume (Adina spp.)</i> , <i>Umphahla (Brachylaena spp.)</i> and <i>Lusekwane (Dichrostachys cinerea)</i>	Frequency	3	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	27.3%	0.0%
<i>Umdlume (Adina spp.)</i> , <i>Liklolo (Grewia caffra)</i> , <i>Umphahla (Brachylaena spp.)</i>	Frequency	2	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	18.2%	0.0%
<i>Umdlume (Adina spp.)</i> , <i>Umphahla (Brachylaena spp.)</i> and <i>Lugagane</i>	Frequency	1	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	9.1%	0.0%
<i>Umdlume (Adina spp.)</i> , <i>Umphahla (Brachylaena spp.)</i> and <i>Imbondvo lemnyama (Combretum molle)</i>	Frequency	3	0
	% within the two chiefdoms	100.0%	0.0%
	% within each chiefdom	27.3%	0.0%
Total	Frequency	11	11
	% within the two chiefdoms	50.0%	50.0%
	% within each chiefdom	100.0%	100.0%

## **Appendix 5: Paper Sent for Review and Publication**

### **Community forest resource utilization and associated land degradation in Eswatini – the case of Ezikhotheni and Ngcayini chiefdoms**

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#### **Abstract**

This paper focuses on an assessment of community forest resource utilization and associated land degradation in Eswatini using Ezikhotheni and Ngcayini chiefdoms as case studies. Therefore, the main issues of concern are the extent of plantation style community forests and of associated land degradation from 2008 to 2017. This is in view of that between 2001 and 2003 at Ezikhotheni and Ngcayini there was an establishment of plantation style community forests as an intervention to land degradation. The paper also portrays the Normalized Difference Vegetation (NDVI) from 2008 to 2017 in order to deduce whether there has been an improvement or decline in vegetation cover in the case study chiefdoms. Data were collected through mapping and calculating the area of plantation style community forests and gullies on Google Earth image for 2008, 2013 and 2017. The findings indicate that erosion in the form of gullyng was active and advancing at Ngcayini, whereas at Ezikhotheni it was diminishing due to successful rehabilitation following the planting of trees. Plantation style community forests were generally increasing from 2008 to 2017 in both chiefdoms; signaling effectiveness of the afforestation intervention. The Normalized Difference Vegetation Index (NDVI) depicts a general increase from 2008 to 2017 in both chiefdoms; which is as well indicative of the effectiveness of the afforestation intervention.

**Key words:** Community forests, land degradation, Normalized Difference Vegetation Index, afforestation intervention

#### **Introduction**

Swaziland is located between longitudes 30° and 33° degrees East and latitudes 25° and 28° degrees South in the south-eastern part of Africa (Figure 1) (Brown, 2011; Magagula, 2003) with a population of about 1 093 238 people with annual population growth of 0.7%

(Government of the Kingdom of Swaziland, 2017). The country is landlocked, covering an area of 17 364 km<sup>2</sup>, and population density of 63 inhabitants per km<sup>2</sup>.

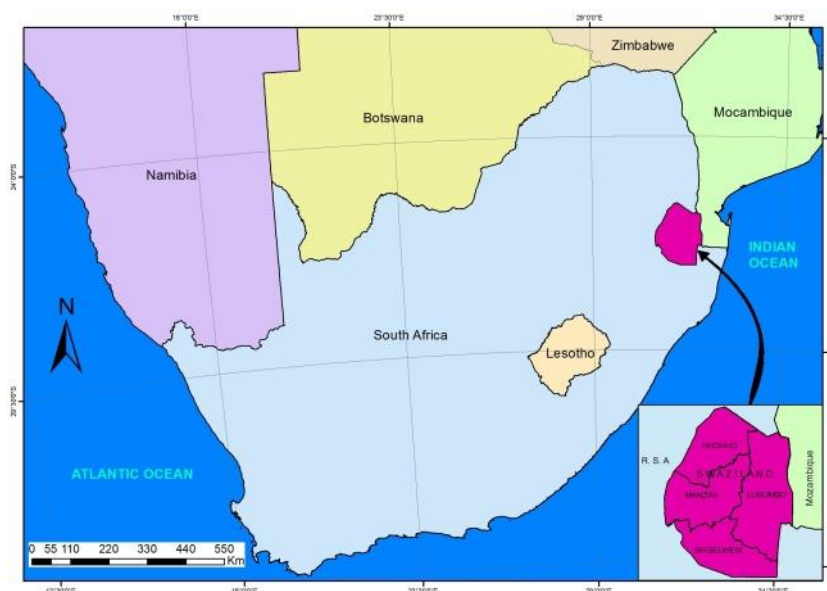


Figure 1.1: Location of Swaziland in Southern Africa

Source: University of Swaziland (UNISWA), Department of Geography, Environmental Science and Planning (GEP) (2018)

The country is characterized by six distinct agro-ecological regions (Figure 2), which are clearly distinguished on the basis of elevation, topography, climate, geology and soils (Rommelzwaal, 1993; Government of Swaziland, 2005). These zones are Highveld (33%), Upper Middleveld (14%), Lower Middleveld (14%), Western Lowveld (20%), Eastern Lowveld (11%) and Lubombo Range (8%) (Government of Swaziland, 1997).

Eswatini is faced with a host of environmental challenges such as deforestation and forest degradation (Kissinger *et al.*, 2012); excessive hunting, overgrazing, soil degradation, and limited potable water (World Population Review, 2016). Despite the fact that many of these challenges are probably interrelated (especially given the high level of poverty of 63% of the population living below the poverty line as observed by World Food Programme (2016)) collectively they hinder the economic growth of the country. Therefore, in the quest of fighting against poverty people rely on vegetation for a livelihood, and the vegetation itself relies on geology and soil for its survival.



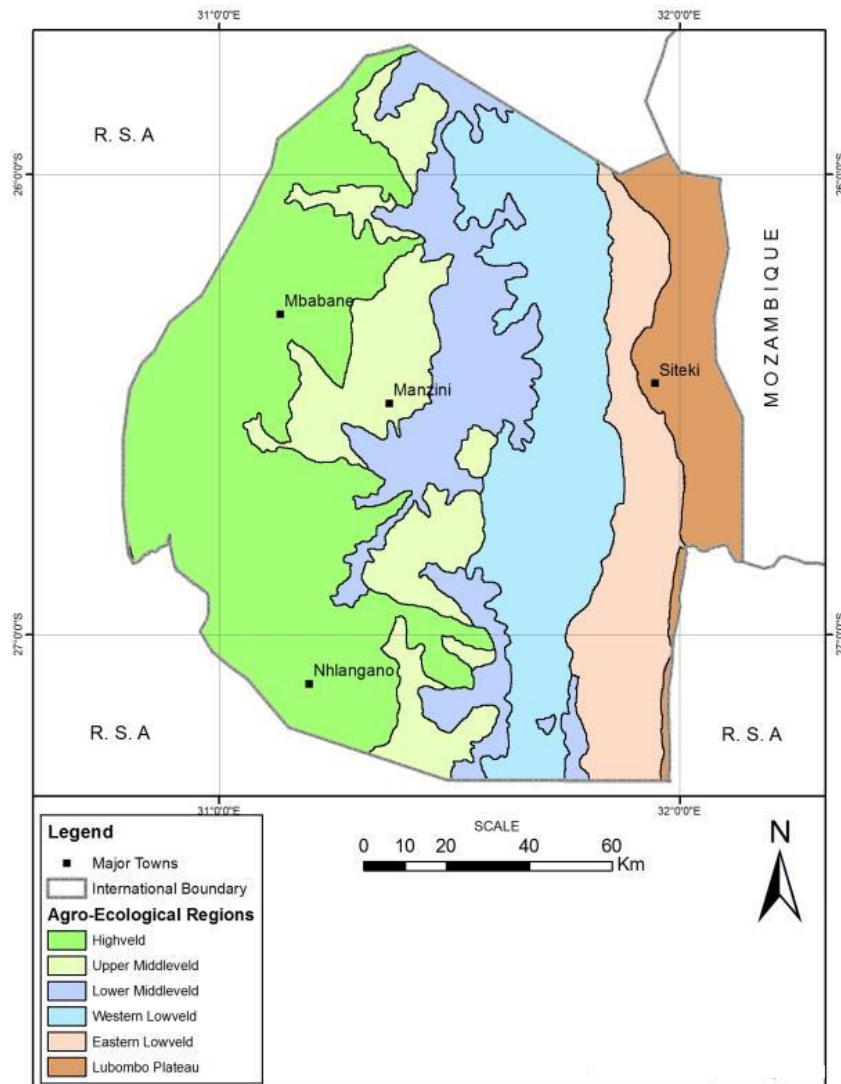


Figure 2: The agro-ecological regions of Swaziland

The diversity in landscape, geology and climate has an effect on the distribution of forests in the country. For instance, while the Highveld and part of the Middleveld is conducive to the growth of forest plantations, the other regions are mainly dominated by natural forests and woodlands.

According to The National Forest Policy, community forestry refers to the participation of community members in the planning, implementation, and management of forests in the local environment (Government of Swaziland, 2002). A community forest *per se* is a village level forestry activity, decided on collectively and implemented on communal land,

where local populations participate in the planning, establishing, managing, and harvesting of forest resources and therefore receive a major proportion of the socio-economic and ecological benefits from the forest (Kafle, undated; Sillah, 2003). Community forests' areas provide a myriad of basic inputs; free of direct cost to local homesteads such as fuel wood and timber, animal fodder, green manure and fruits, as well as medicinal products.

According to World Overview of Conservation Approaches and Technologies (WOCAT) (2007:18), degraded land is defined "as land that, due to natural processes or human activity is no longer able to sustain properly an economic function and/or the original function". Components of land degradation include soil degradation, vegetation degradation, water degradation and losses to urban/industrial development. Worth noting is that all these components contribute to a decline in agricultural production and other ecosystem services (WOCAT, 2007). According to Manyatsi (1997), about 55% of the communal land in Swaziland suffers from some form of land degradation. Manyatsi and Maseko (2010) point out that the dominant forms of land degradation in the country include; soil degradation, vegetation and biodiversity degradation, with soil erosion being the most noticeable form of soil degradation.

Land degradation as such deprives poor people of the most critical environmental services namely; food (crops and edible wild plants), medicinal plants; forage for livestock, wood for fuel, as well as healthy and sufficient water on which they must depend (Tfwala *et al.*, 2012). It is therefore important that the causes and impacts of land degradation are well understood by community members in order to facilitate its control.

In Swaziland, due to heavy reliance on forest resources, forest lands continue to be degraded; while grasslands are overgrazed; and most wild animal species being exterminated with some protected in the country's conservation areas. Consequently, the local populations who depend on natural resources are becoming poorer and poorer and their ability to redress land degradation is being hampered by poverty and the impact of HIV and AIDS that is decimating many rural communities (Government of Swaziland, 2005). For example, in some rural areas such as Ngcayini and Ezikhotheni, afforestation

programs have been carried out as a form of rehabilitating degraded land and supplementing timber products' requirements. In this case, *Eucalyptus spp.* (gum trees) were planted on degraded areas to promote soil conservation and augment the supply of timber resources, respectively.

The choice of Ezikhotheni and Ngcayini chiefdoms is motivated by the fact that they have badly degraded areas where interventions through establishment of community forests were undertaken between 2001 and 2003. There is however, a dearth of information on the effectiveness of the interventions made. Therefore, the present study determines the change in land cover and the extent of land degradation over time at Ngcayini and Ezikhotheni in order to determine the effectiveness of the interventions in controlling land degradation. Notably, in this study effectiveness is denoted by an increase in the size of the plantation style community forest and rehabilitating gully. On the other hand a decrease in size of the plantation style community forest and non-rehabilitating gully denotes ineffectiveness of the interventions in controlling land degradation in the study sites.

#### **The approach used to collect data in the study**

Data were collected through mapping and calculating the area of plantation style community forests and gullies under rehabilitation using Google Earth images for the years 2008, 2013 and 2017 respectively. The choice of these years (2008, 2013 and 2017) was motivated by availability of Google Earth images and the fact that the plantation style community forests in question were only established between 2001 and 2003. Also, Landsat satellite images for the years 2008, 2013 and 2017 were used to calculate the Normalized Difference Vegetation Index in the two chiefdoms under study.

Mapping involved the use of a Global Positioning System (GPS) to capture the coordinates signaling the location and boundaries of the community forests planted to alleviate land degradation, as well as boundaries of gullies where these forests were established. The coordinates were plotted on Google Earth images where the boundaries of community forests as well as of gullies were drawn. This was done in order to indicate whether these features (plantation style community forests and gullies) were increasing or decreasing. This was ascertained through calculating the area of the plantation style community forests

and gullies in the different time periods. Worth noting is that an increase in the spatial extent of community forests is a positive attribute although it may also be due to a spread of alien invasive plant species such as *Lantana camara*, *Chromolaena odorata*, and *Psidium guajava*. Notably, the tree species planted for controlling land degradation namely; wattle (*Acacia mearnsii*) and *Eucalyptus spp.* are also invasive so it is likely that they also spread disproportionately. An increase in the size of the gullies is however a negative attribute, as it depicts that the gully is not rehabilitating.

The Normalised Difference Vegetation Index (NDVI) was used to determine changes in vegetation cover over the years (2008; 2013; and 2017) at Ngcayini and Ezikhotheni chiefdoms. Normalised Difference Vegetation Index (NDVI) is a technique for monitoring surface vegetation and changes in vegetation of the entire Earth in accordance to James (2005). The NDVI is calculated as a ratio of measured reflectivity in the red and near-infrared portions of the electromagnetic spectrum (James, 2005). Calculated values for NDVI ranges from minus one (-1) to plus one (+1) where high NDVI values indicate healthier vegetation, while low NDVI values depicts less or no vegetation (Weier and Herring, 2000). For instance, very low NDVI values (0.1 and below) correspond to barren areas, while moderate values (0.2 to 0.3) represent shrubs and grasslands, with high values (0.6 to 0.8) indicative of temperate and tropical rainforests (Weier and Herring, 2000). It is worth noting that, a zero depicts that there is no vegetation. On the other hand, negative NDVI values indicate presence of water bodies. In this study the mean and a median of the NDVI for the years 2008, 2013 and 2017 was calculated using Landsat satellite images (Landsat 5, 7 and 8 with a resolution of 30m) to portray changes in vegetation cover. The images were processed using Google Earth Engine (maps produced using ArcGIS 10.5). This was undertaken to highlight the effectiveness of the intervention made through establishment of plantation style community forests in the study sites. For instance, an increase in the NDVI values over the years indicates that the degradation is rehabilitating.

## Findings and discussion

The findings are presented and discussed on the basis of the extent of gully erosion in association with community forests, and Normalized Difference Vegetation Index (NDVI) at Ezikhotheni and Ngcayini chiefdoms.

### The extent of land degradation in association with community forests

Above all, it is important to mention that Ngcayini and Ezikhotheni chiefdoms are severely threatened by land degradation. For instance, Plate 1 depicts the nature of land degradation that is affecting the case study chiefdoms. Of note at Ezikhotheni there is grass in the gully which indicates that the gully is rehabilitating. At Ngcayini there are scattered shrubs in the gully which are sliding into the gully as it widens, depicting that the gully is not rehabilitating but expanding.

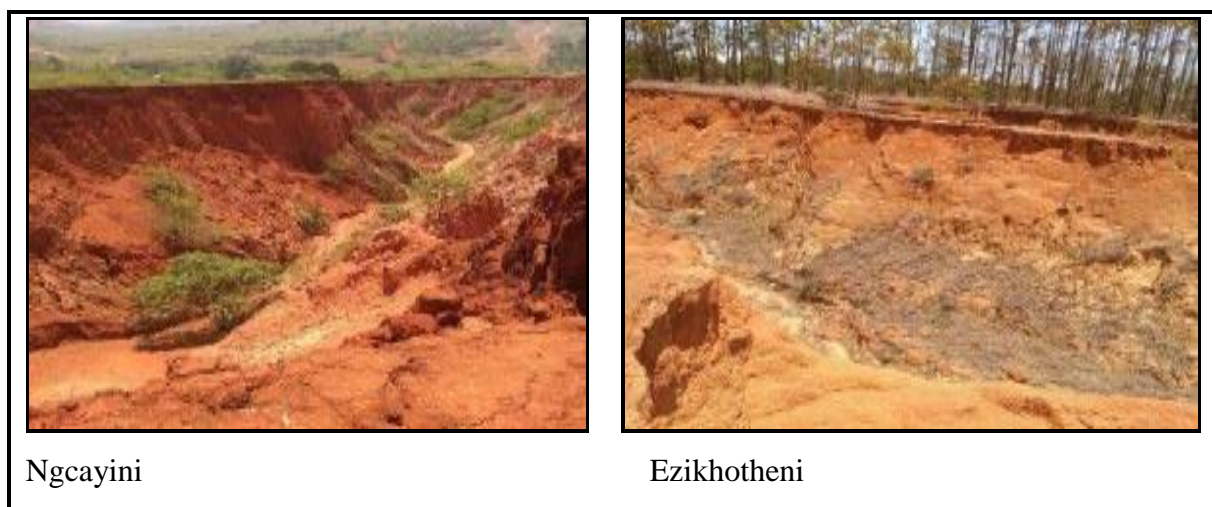


Plate 1: Soil erosion at Ngcayini and Ezikhotheni chiefdoms

In view of the severity of land degradation at Ezikhotheni and Ngcayini chiefdoms it is gratifying that there are interventions that have been made towards its control. For instance Plate 2 depicts plantation style community forests that were established to alleviate degradation in these chiefdoms.



Plate 2: Plantation style community forest intended to alleviate degradation at Ngcayini and Ezikhotheni chiefdoms (Note the poor ground cover in the foreground)

The plantation style community forests in these chiefdoms were established between the years 2001 and 2003. To calculate the area of the forests and gullies under rehabilitation Google Earth images for the years 2008, 2013 and 2017 were used. The findings indicate that the area under plantation style community forests has been increasing in both communities. For instance, at Ezikhotheni the forest increased from 4.48 hectares in 2008 to 6.42 hectares in 2013 and 7.15 hectares in 2017 (Table 1) and (Plates 3a, 3b and 3c). Likewise, at Ngcayini the forest increased from 0.35 hectares in 2008 to 0.40 hectares in 2013 and 0.48 hectares in 2017 (Table 1) and (Plates 4a, 4b and 4c). This is a positive attribute since it denotes effectiveness of the intervention made in an effort to rehabilitate degraded land and augment the supply of forest resources.

Table 1: Extent of plantation style community forests and gullies in the study sites

Year	Area of forest (ha)		Area of gully erosion (ha)	
	Ezikhotheni	Ngcayini	Ezikhotheni	Ngcayini
2008	4.48	0.35	9.78	2.14
2013	6.42	0.40	8.8	2.56
2017	7.15	0.48	9.37	2.59



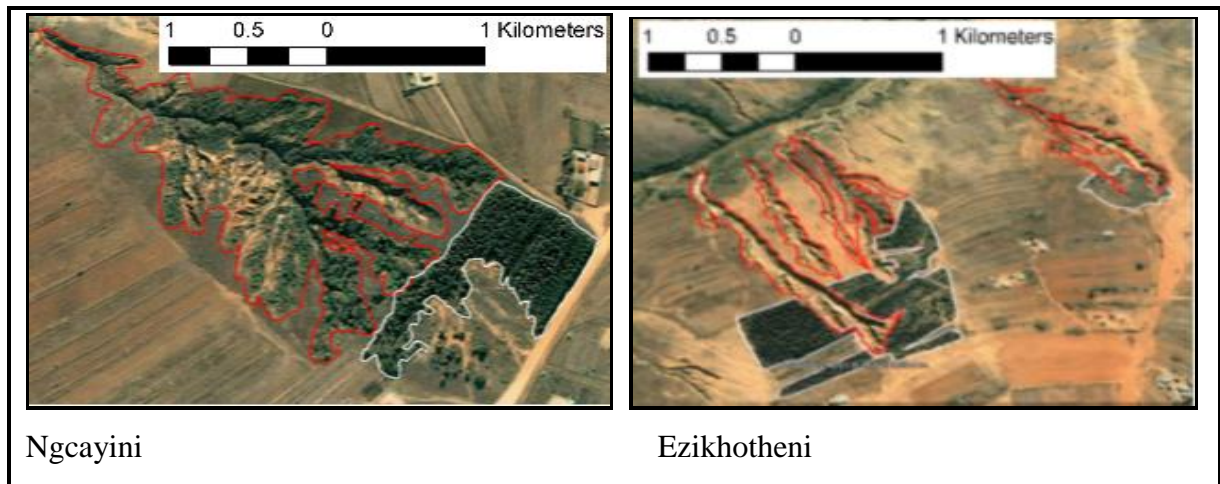


Plate 3a: Plantation style community forests and gullies at Ezikhotheni in 2008

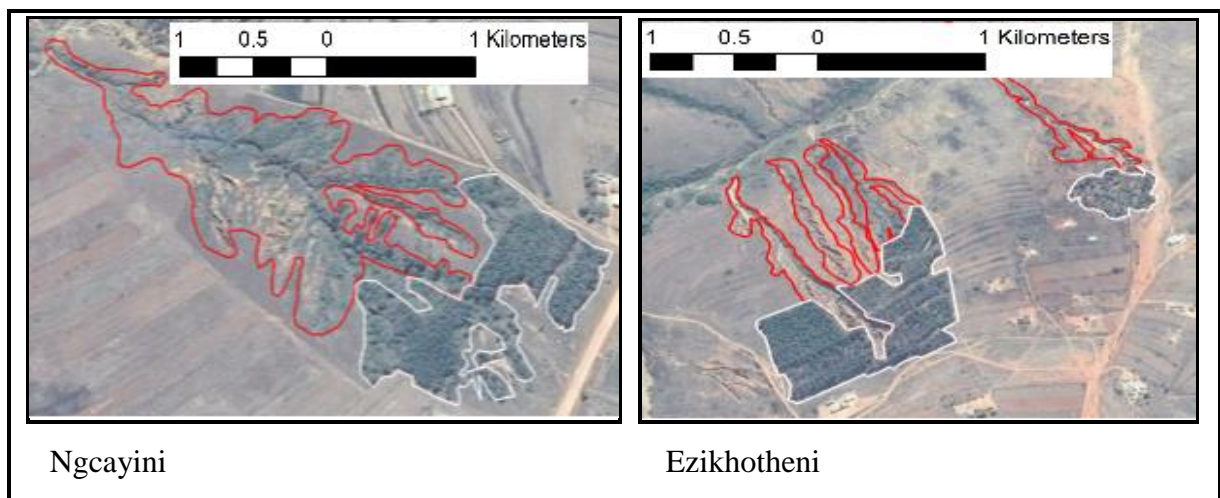


Plate 3b: Plantation style community forests and gullies at Ezikhotheni in 2013

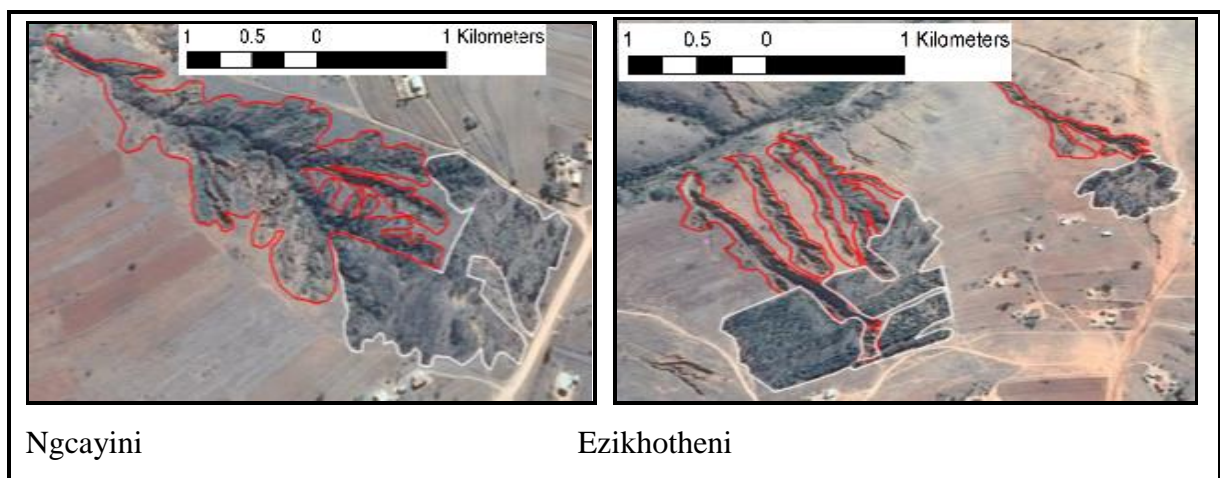


Plate 3c: Plantation style community forests and gullies at Ezikhotheni in 2017



Plate 4a: Plantation style community forest and gully at Ngcayini in 2008

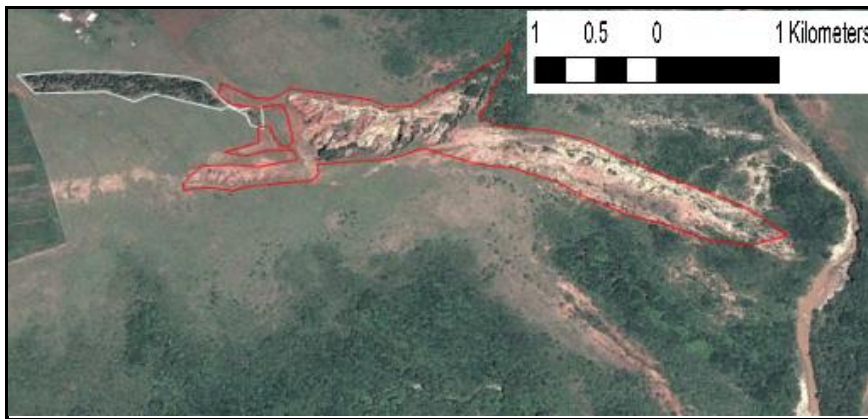


Plate 4b: Plantation style community forest and gully at Ngcayini in 2013

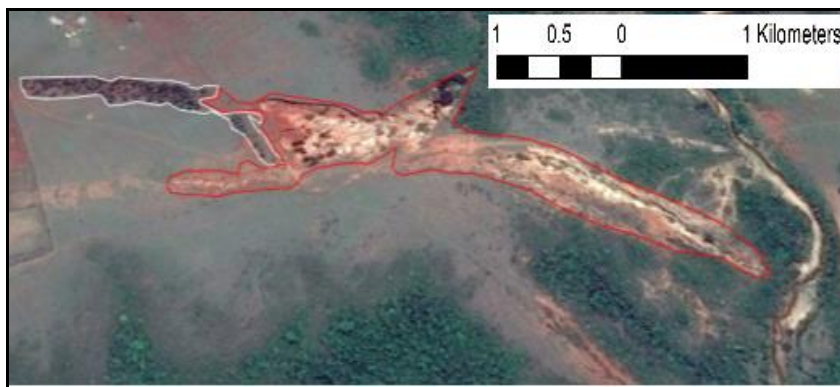


Plate 4c: Plantation style community forests and gully at Ngcayini in 2017

With respect to gully size, the findings reflect that it was fluctuating at Ezikhotheni while increasing at Ngcayini. For instance, at Ezikhotheni the gully was 9.78 hectares in 2008 and



then decreased to 8.8 hectares in 2013, but then increased to 9.37 in 2017 (Table 1) and (Plates 3a, 3b and 3c). Despite the noted variations in the gully size over the years, there is an element of rehabilitation which is being indicated. Noteworthy, the increase in the gully size in 2017 can be attributed to a number of factors which include climatic conditions and harvesting of forest resources. According to a personal communication with the chairperson of the Natural Resource Management Committee (NRMC) a large portion of the plantation style community forest was harvested for sale through the program of commercializing of timber in rural areas. Furthermore, in the year 2015/2016 there was a country wide drought which resulted in very low rainfall received in most parts of the country. Ezikhotheni is one area which was hard hit by drought such that fields were not cultivated during the year 2015/2016 and thus livestock were allowed to graze in the plantation style community forests even during the summer season due to shortage of fodder.

According to a personal communication with the chairperson of the NRMC, livestock are only allowed to graze in the plantation style community forests during the winter season when there is inadequate fodder in the grazing lands and fields. On this WOCAT (2007), indicates that in Ethiopia, the national Soil and Water Conservation (SWC) programme initiated a grazing land management project in response to rapid population growth which resulted in communal grazing areas being converted into cropland, hence overgrazing. The project involved delineating of the grazing land and fencing it off to exclude open access. Out of this project land users, benefited through cutting fodder to stall-feed livestock and cutting grass hay which is stored to feed animals during the dry season. At the same time, absence of rains implies a heavy reliance on forest resources as a safety net. At Ngcayini, the size of the gully has been increasing from 2.14 hectares in 2008 to 2.56 hectares in 2013 and 2.59 hectares in 2017 (Table 1) and (Plates 4a, 4b and 4c). Basically, this indicates that the gully is active and therefore not rehabilitating. A compounding factor is the destruction of the fence surrounding the forest and the gully, which has resulted in uncontrolled grazing and destruction of tree seedlings. The destruction of seedlings through grazing and trampling by animals during the establishment period was also observed by WOCAT (2007) in South Africa in the Working for Water Programme where *Acacia mearnsii* is replaced by palatable grass species.

### The Normalized Difference Vegetation Index (NDVI) in the chiefdoms

To corroborate the findings regarding changes in land cover in the chiefdoms studied, a mean Normalized Difference Vegetation Index (NDVI) was calculated for the years 2008, 2013 and 2017 (Table 2). Based on the Normalized Difference Vegetation Index (NDVI) the vegetation cover has been generally increasing in the study sites from 2008 to 2017 (Table 2). For instance, the mean NDVI at Ezikhotheni was 0.34 in 2008 increasing to 0.45 in 2013, and only decreasing to 0.43 in 2017 (Table 2) and (Figure 3). The noted decline can be attributed to harvesting of community forests and the 2015 to 2016 drought which strike the country resulting in areas such as Ezikhotheni being unable to even cultivate their fields. At Ngcayini on the other hand, the mean NDVI values increased from 0.33 in 2008 to 0.55 in 2013 and 0.56 in 2017 (Table 2) (Figure 4). The increase in NDVI values on the one hand, corresponds with the noted increase in the size of the plantation style community forest pointed out in the preceding section. On the other hand, the increase could be attributed to the spread of alien invasive plant species such as *Lantana camara* and *Psidium guavana* which are more dominant in the area. Regarding this, the Government of Swaziland (2001) indicates that overgrazing together with extensive tree cutting for fuel wood has led to a spread of alien invasive plant species such as guava (*Psidium guavana*), *Syringia* (*Melia azedorach*), *Sesbania punicea* and *Lantana spp.*

Table 2: NDVI values (mean and median) in the study sites

Year	Mean		Median	
	Ezikhotheni	Ngcayini	Ezikhotheni	Ngcayini
2008	0.34	0.33	0.33	0.31
2013	0.45	0.55	0.44	0.53
2017	0.43	0.56	0.42	0.55

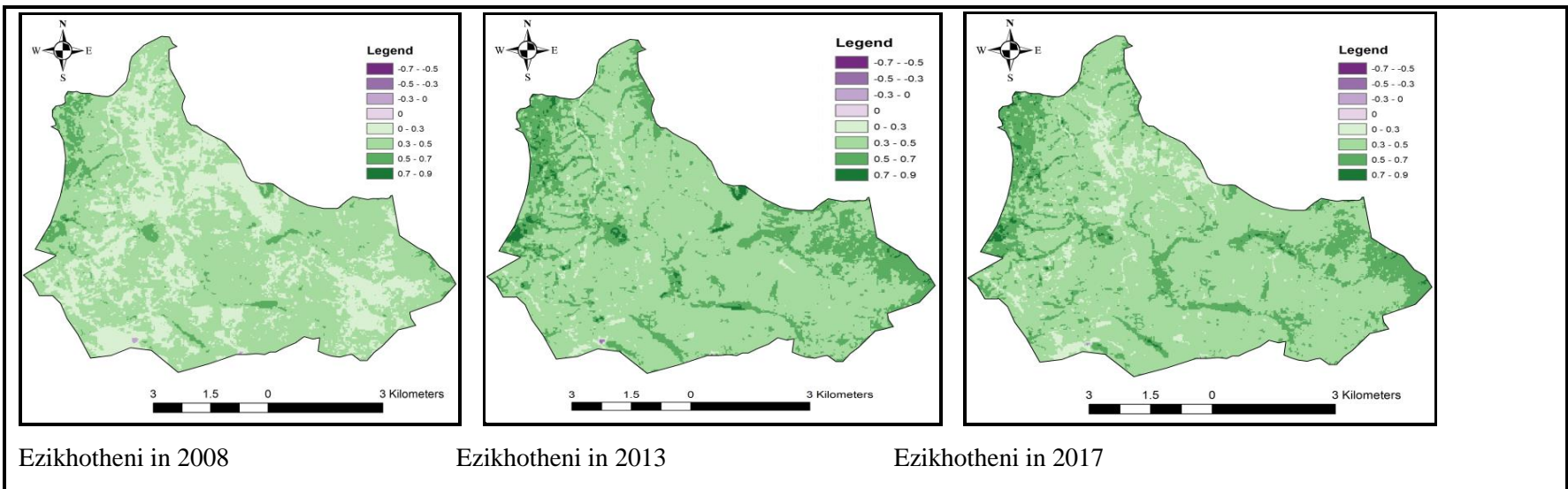


Figure 3: Normalized Difference Vegetation Index (NDVI) for Ezikhotheni in 2008, 2013 and 2017

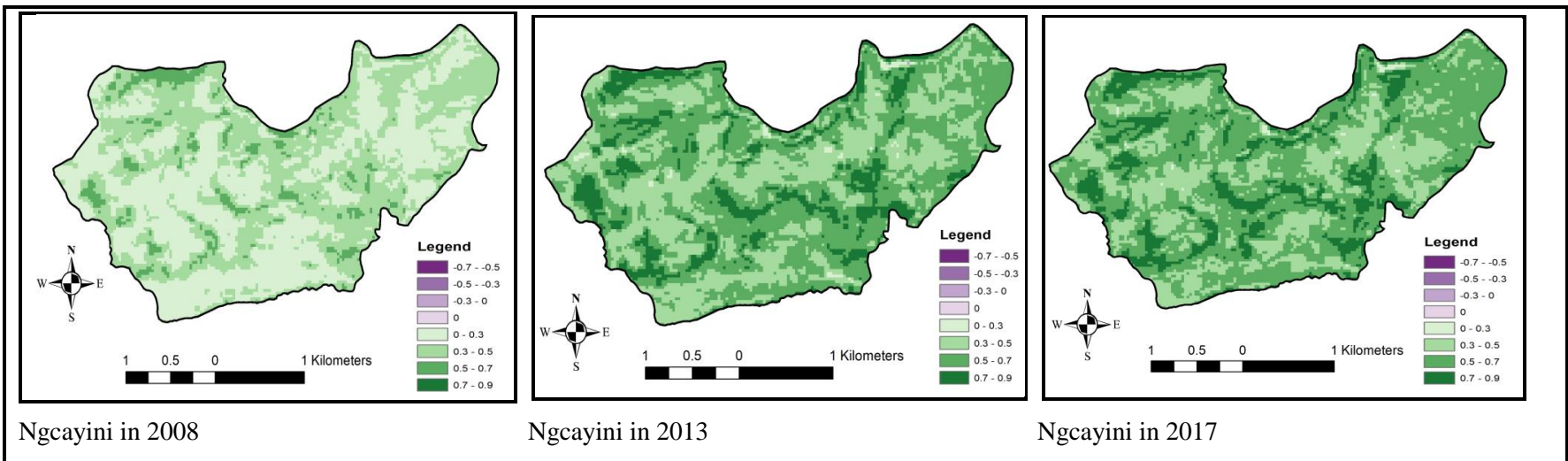


Figure 4: Normalized Difference Vegetation Index (NDVI) for Ngcayini in 2008, 2013 and 2017

## Conclusion

In a nutshell, there is a need for capacity building among community members on the importance of sustainable management of the environment. This it is hoped will inculcate the attitude of perceiving oneself as part of the environment and thus embracing environmental ethics. This for instance could be manifested through refraining from reckless cutting of trees and theft of fence surrounding areas under rehabilitation. There is also a need for more of interventions to the alleviate land degradation, which will not only involve trees but also grass species such as Vetiver (*Chrysopogon zizanioides*). Briefly about Vetiver, it is a clumping type grass, which is non-invasive and does not produce viable seeds (Cindy, 2015). Despite that the native habitat of Vetiver is in low, damp sites such as swamps and bogs; it is now being used on dry hillsides to control erosion. It is noteworthy that Vetiver is ideal for controlling soil erosion because it produces a massive root system that grows straight down rather than out from the plant, hence it does not become invasive (Cindy, 2015). According to Cindy (2015), Vetiver creates a sort of curtain beneath the soil, which taps sediments and slows down the movement of water.

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