**MIDLANDS STATE UNIVERSITY**

**FACULTY OF ARTS**

**DEPARTMENT OF DEVELOPMENT STUDIES**

**INDEGINOUS KNOWLEDGE SYTEMS AND ENVIRONMENTAL MANAGEMENT**

**IN ZIMBABWE: CASE OF BIKITA SOUTH**

**Submitted By**

**PRECIOUS MAWANZA**

**(R111239J)**

**Dissertation submitted in partial fulfilment of the Bachelor of Arts Honours Degree in Development Studies**

**November 2014**

# DECLARATION

I MAWANZA PRECIOUS ,Registration Number (R111239J) do declare that this dissertation is a result of my work and has not been written by any other person(s).Published and unpublished sources used in this dissertation have been clearly acknowledged. Therefore this dissertation is being submitted in the partial fulfilment of the requirement of Bachelor of Arts Honours Degree in Development Studies at the Midlands State University.

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**APPROVAL FORM**

The undersigned certify that they have read and recommend for acceptance to the Midlands State University; the Project: ***Indigenous Knowledge Systems and Environmental management :A case of Bikita South,Masvingo, Zimbabwe*** submitted by Mawanza Precious,in partial fulfilment of the requirements of the Bachelor of Arts Honours Degree in Development Studies.

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**RELEASE FORM**

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DEGREE: BACHELOR OF ARTS HONORS IN DEVELOPMENT STUDIES

YEAR GRANTED: 2014

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# ACKNOWLEDGEMENTS

Every successful learning requires key people to allocate hours to new types of initiatives: reflection, planning, collaborative work and training. I would maintain that thanks are the highest form of thought, and that gratitude is happiness doubled by wonder. This writing could not have seen the light of day ,let alone come out in the presentable quality it is in had l not benefitted immensely from the guidance and mentorship of my supervisor,Mr.C.Munhande.He guided me successfully throughout the writing of this dissertation and provided a source of inspiration. I owe him a world of gratitude.I would like also thank to all the staff of Department of Development Studies for providing with invaluable support and assistance throughout the academic success and dissertation.

# 

**DEDICATION**

This dissertation is dedicated to my lovely mother,Rudo and my caring brothers Feit and Wilford and not forgetting my late father.

**ACRONYMS**

AGRITEX Agriculture Technical Extension

ATR African Traditional Religion

IKS Indigenous Knowledge Systems

TTL Tribal Trust Lands

UNEP United Nations Environmental Programme

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**ASTRACT**

*This study was carried out in Bikita South District in Masvingo Province of Zimbabwe. The purpose of the study was to examine the effectiveness of Indigenous Knowledge Systems (IKS) in environmental management in Bikita South. Targeted population were drawn from Bikita South ward 2 from the traditional leadership of the area, Agriculture extension officer and the general populace using qualitative research method through purposive sampling and snowball. The research found out that the district has got a variety of IKS which are being practised leading to good environmental conservation in the District. The research found out that the use of IKS in environmental management is being hindered by a number of challenges including differences in religious beliefs, lack of integration among the community members, greediness of traditional leaders, lack of participation on among community members in traditional gatherings, negligence, poverty, poor documentation among others in addition to a negative perception of IKS revealed by the community members. This has negatively affected the effectiveness of IKS in environmental management in Bikita South. Suggested solutions or recommendations to the challenges faced through the use of IKS in environmental management include that of the establishment of community libraries, modern and traditional environmental management approaches to be integrated together ,diversify the economy of the District, reduction of population pressure in rural areas through the creation of jobs in towns ,educate the young generation on the importance of IKS and the concept of IKS be a compulsory module or subject to be taught at primary and tertiary learning levels among others.*

# INTRODUCTION

# Background to Study

The study focused on the effectiveness of Indigenous Knowledge Systems (IKS) in environmental management in Zimbabwe case of Bikita South District in Masvingo Province. The concept of Indigenous Knowledge Systems (IKS) is not a new phenomenon; it dates back to the history of the early inhabitants of Zimbabwe which are the Khoi –San during the late Stone Age period. It was part of the African Culture and Zimbabwe was one of the countries which were rich in IKS before the colonial period. The earliest inhabitants of Zimbabwe valued their culture and environment as all their food and tools as well as shelters they use came from animals they hunted, plants and natural resources hence they protect their environment through IKS.They respected their sacred forests, shrines as well as totemic animals, the tools they use harm less the environment hence good environmental management and conservation.

Africa is one of the continents which is rich in the knowledge of IKS in the management of the natural resources environment.Indegenous Knowledge play a positive role in Africa s development but has been relegated. Mahamedbhai (2013) argued that there is a rich body of indigenous Knowledge embodied in Africa’s cultural and ecological diversities and African people have drawn this knowledge for hundreds years to solve developmental and environmental problems. Indigenous people have managed the environments in which they have lived for generations, often without significantly damaging local ecologies (Emery 1996).Indigenous and traditional knowledge in Africa was often passed through shared practice and story-telling and the lack of written record of this puts it at risk of extinction UNESCO (2002).Therefore it can be deduced that IKS has been used in most parts of Africa for instance in Kenya and Swaziland.

Land degradation remain a serious threat to Africa’s development.Defforestation leads to the exposure of the soil to extreme temperatures which break down the organic matter, increase evaporation and make soils vulnerable to soil erosion. According to FAO (1986), thirty-seven hectares of forest and woodlands in Africa are said to be disappearing each year. What exceecebert the problem is the regular removal of trees in farmland and pastures which are very important for the conservation of the environment from soil erosion. Most people in Africa depend more on agriculture as a source of their livelihood hence they clear large pieces of land for agriculture. More so an increases in population growth eccerbert pressure on land for house construction as well as intensification agriculture leading to the extinction of natural resources.

For many years, environmental degradation has been the worst challenge of which most African rural people experience great suffering. It still remain an agenda and a problem for most developing nations including Zimbabwe to involve communities especially community traditional leaders the management of the environment through the use of their local indigenous knowledge. Environmental degradation is caused by poor management and conservation of natural resources tensional or unintentionally. It may be due to human activities and or by natural phenomenon such as volcanic eruptions.

Most communal areas experienced massive depletion of natural resources including water sources,wildlife,trees ,droughts, soil erosion, unreliable rainfall patterns leading to crop failure to mention only a few. The major causes of environmental degradation are centred on agricultural activities as well as the advent of globalisation which leads to provision of modern tools in agriculture and the use of pesticides and fertilisers in enhancing crop productivity thereby disturbing the natural environment. Environmental degradation exposes an area to be vulnerable to different disasters such as floods and drought .Deforestation of dense forests including traditional shrines leads to a decreased evaporate-transpiration hence drought as the will be poor rainfall. Veld fires leads to the exposure of bare surfaces leading to the washing away of fertile soils leading to poor yields resulting to drought. Veld fires also lead to ecosystem imbalance. More so, stream bank cultivation leads to siltation of rivers leading to flooding of river basins. Overfishing leads to the depletion of fish which is also a form of livelihood for other rural poor.

In addition to the above problem, harmful fishing methods such as that of using net (mosquito nets) lead to the poisoning and death of fish and also humans. Poaching also is another problem leading to ecosystem imbalance hence a challenge leading to environmental degradation in Zimbabwe. Again deforestation, overgrazing accompanied with improper agriculture practices leads to a serious environmental degradation. Though the application of IKS was being put in practise by the inhabitants of Bikita still the problem of environmental degradation was seen perpetual.

# PROBLEM STATEMENT

Bikita District is rich in indigenous knowledge for their economic, social and cultural significance. The district is plagued by massive environmental degradation induced by human activities and natural phenomenon. The district is still experiencing food insecurity and water shortages while their livestock are perishing in thousands as a result of shortage of pastures. The problem is emanating from multicultural systems, ignorance and poor management of the environment by local communities. As a result of the lack of economic diversification, most people in the area rely on fishing for their livelihood leading to overfishing which is harmful to the environmental. The exploitative use of wood as the source of fuel and income through selling firewood leading to the degradation of the environment. Like all other African countries, IKS has been used in Zimbabwe to cope with various issues and challenges faced by the local people. IKS has been used by the inhabitants of Bikita District in managing disasters, preparing food, and agriculture as well as spirit mediums in their traditional rain making ceremonies which are held in dense forests where no one is not allowed to pass through or fetch fire wood .As a result some cultural practices, taboos and customs done in Bikita are leads to environmental conservation hence this study seeks to examine the role of IKS in Bikita and environmental management. Despite the district’s richness in African Indigenous Knowledge Systems, still there is a need to assess whether IKS really works in protection of the environment.

# SIGNIFICANCE OF THE RESEARCH

Local knowledge is being excluded in environmental management frameworks of which they are they are also stakeholders. The research findings provide relevant information regarding to the opinion and attitudes of the local people in the community towards the effectiveness of IKS in environmental conservation .The research is also crucial to all institutions of higher and tertiary learning to embrace the concept of IKS in its curriculum. The research findings set the foundation on which further studies will be made .This research attempts to market Midlands State University’s already known core value as a research institute.

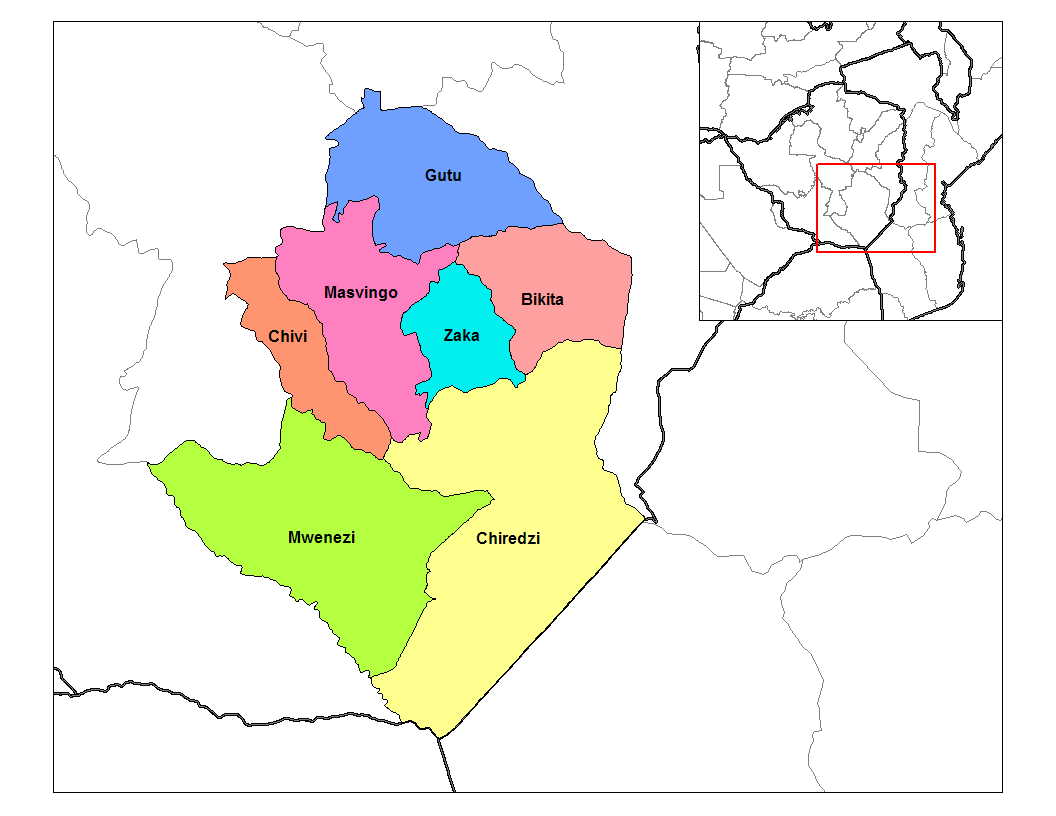
The research provides Midlands State University with information that can be used by other researcher of all faculties not only Development studies in future. The University’s Department of Development Studies to be recognised as one of the best centre of Environmental Management that carry research to solve the problems of extinction of natural resources and related problems and recommend solutions.

This study has significantly contributed to the existing literature on IKS in environmental management Zimbabwe specifically in Bikita district, and helpful for other undergraduates who wish to gap fill what is left in this research. It complement the research efforts done by other academia and pave way for other researchers o this area to explore more information on the concept of IKS.Finally, the study has managed to bring a methodological innovation to the study of IKS and the environment which may be of interest for academicians and practitioners.

# STUDY AREA

The study was carried out in Bikita district in the Masvingo Province of Zimbabwe and its location is about 80km East of Masvingo.Its name was derived from a Shona name *dikita* which means antbear,which describes the shape of a nearby hill. It is a mountainous region characterized by very steep slopes with sandy-loamy soils. Being the third driest district after Chivi and Chiredzi in Masvingo Province, Bikita district is vulnerable to malaria and cholera outbreak and to cope with these perennial diseases, the community ought to adopt some of the indigenous knowledge system to cope with these health catastrophes. It covers an area of approximately 10,000 km², and has a population of around 200,000 people.(Mashore 2013) 81% of the district is classified as belonging to the natural regions (4and 5) with mean annual rainfall ranging from 400mm to 700mm.(ibid). Agriculture is the major livelihood activity in the area with maize being the dominant crop grown (Matthew, 2003 cited in Mashore 2013).Mostcommonindigenoustreespeciesinthedistrictaremuuzhe,mutondo,mupani,marula,muchakata,mutamba,mushozhowa,muzeze,mukomberwa,mususu,baobab,mutondo and muzhanje , Mopani tree, muuyu in some parts of the district to mention but a few. The main dominant economic activity in the district is agriculture. The vegetation cover is characterized by marshes and swamp.

## Fig 1: The Study Area Bikita



***Source: Makwara (2013)***

# CONCEPTUAL FRAMEWORK

Various scholars provides a wide range of definition of Indigenous Knowledge System but for the purpose of this research the researcher used some of the definitions which were suitable in her case study of ward 2 Bikita District. Warren (1991) defines IKS as local knowledge, the knowledge that is unique to a given culture or society. It is defined as the basis of local level decision making in agriculture, health care, food preparation, education, natural resource management and other activities in the rural communities.

Flavier etal (1995) defines IKS as the information base for a society, which facilitates communication and decision making. It is defined as being dynamic and continually influenced by internal creativity and experimentation. According to the UNESCO, this knowledge is passed from generation to generation, usually by word of mouth and cultural rituals, and has been the basis for agriculture, food preparation, health care, education, conservation and the wide range of other activities that sustain societies in many parts of the world.

According to UNEP (2008) IKS is a wide term that covers all forms of technologies, knowledge, skills practices and beliefs that allows the community to achieve stable livelihoods in their environment .Generally IKS can be said to be traditional cultural knowledge that include intellectual, technological, ecological and medical knowledge. (ibid).Therefore having given the above definitions of IKS, it can be summed up that they all leads sustainable environmental management. They are indigenous practices that lead to environmental management.

Environment is defined as the surroundings and everything that distresses an organism during its lifetime. It is the sum total of water, air and land the interrelationship between themselves and also with human beings. According to UNEP (2008), environmental management is a purposeful activity with the aim to sustain and improve the state of the environmental resources affected by human activities. It aims to ensure that ecosystem services are protected and maintained for sustainable development.

# OBJECTIVES

## General Objective

1. To assess the effectiveness of the role of IKS in the conservation of the environment in Bikita South District

## Specific Objectives

1. To identify types of IKS and practices used in the area
2. To explore the importance and influence of these IKS to the community as far as environmental management and conservation is concerned
3. To investigate community perceptions and attitudes on using IKS on environmental management
4. To examine the challenges faced in the implementation of IKS in environmental conservation

# RESEARCH QUESTIONS

1. Which Indigenous Knowledge systems are used in Bikita South District?
2. How are the Indigenous Knowledge systems impacting on the environment of Bikita South District?
3. What is the community perception on IKS in environmental management
4. What are the challenges faced by traditional leader in implementing IKS into practice in the managing the environment as well as maintaining its aesthetic value and for future use as well as recommendations.

# LIMITATIONS OF THE STUDY

In conducting this research, the researcher encounters some challenging during field work; however the researcher has managed to employ mitigation solutions to ensure the success of this study as well as to made the research effective. The researcher faced some challenges in this area of study in Zimbabwe as the is poor documentation of IKS and the researcher had managed to address this through taking literature from other African countries where IKS are being used and documented in its fullest. Language barrier was also another challenge faced by the researcher as some of the elderly people who were the key informants of this research were not familiar with English hence she managed to address this by using their mother local language Shona as the district is dominated by pure Karangas.Lack of information (confidentiality) was also another challenge as some of the places that the researcher was eager to visit are sacred .Getting all information was difficult as some of the traditional leaders were very reluctant to give out their secret sacred information ,the researcher will address this by being sensitive when asking questions during conducting interviews and explaining to them the purpose of the research. Time is was also another constrains in collecting data and the researcher had managed to draft a work plan for good time management.

# RESEARCH METHODOLOGY

## Research Design

The researcher is going to use qualitative research design in this research since the research seeks to investigate human behaviours towards IKS.

## Target Population

This research was targeting the dwellers of Bikita South district from the selected villages of ward 2, comprising of chiefs, traditional leaders and healers, elderly men and woman and Agritex Officers. The research was targeting 5 villages in ward 2 which were randomly selected by casting papers in a bowl in which the traditional leaders, village heads, chiefs, youths and elderly men and women will be picked to represent the whole population.

## Sampling

Purposive sampling and snowball sampling or chain referral sampling were the most suitable techniques for this qualitative type of research. The researcher purposively choose certain groups of traditional leaders who were to represent the rest of the community .This type of sampling was appropriate as the study focused on aspects of culture which some of the community members were not familiar with it. Campbell (1995) argued that in every cultures the are certain people who know more than the average person when it comes to certain cultural domains as traditional healing.Using the snowball method, participants with whom contact has already been made refer the researcher to other people who could potentially participate in or contribute to the study. Some traditional leaders used to refer the researcher to some more traditional leaders who knew better the IKS than others as some village heads young .It was very useful for finding groups of people or population were not easily accessible to researchers through other sampling strategies hence was it was most useful for this particular study as the targeted traditional leaders in Bikita South sometimes had many commitments. It was very difficult for the researcher to visit each and every house hold hence the purposive sampling had managed to solve this.

For the purpose of this research, the researcher consulted the community traditional leaders and healers, elders and village heads as they were the richest segment of the society who are were the custodians of Indigenous Knowledge in Bikita. Zelditch (1962) argued that purposive sample is very useful in documenting events that not everyone can attend including secret events that some people in the community may not know not even be aware of. The researcher realised that it was more practical to interview experts rather than a random sampling of individuals from the whole populace. Convenient sampling was also used by the researcher in choosing the participants for interview on IKS together with purposive. The researcher also used her judgement to observe and pick the appropriate ordinary participants of ward 2 Bikita South.

# Data collection Tools and Procedures

## Interviews

The researcher used personal unstructured/semi-structured open interviews in data collection. This data collection tool was used as it allowed flexibility in asking questions and also in answering them. It allowed the researcher to rephrase the questions in any way she feel is possible to get the required information. These open interviews allowed new ideas to be brought out during the interview by the interviewee. These open interviews were done to the targeted population and they were helpful in solving the challenge of illiterate in filling in the interview guides by the elderly population. The interviews were conducted during fieldwork through face to face interviews. Among the interviewed were the village heads, sub village heads, Agritex Officers, elderly men and woman by snow ball sampling method in Bikita South ward 2. The interviewer had got the freedom in asking any question he or she need to understand, omit or supplement other questions for the purpose that suits research.

## Observation

Gold (1958) defined observation as a systematic data collection approach whereby a researcher uses all of his or her senses to examine people in natural setting. It is the technique of obtaining data through direct contact with a persons or group of persons. As a result the researcher used participant observation in collecting data on IKS in Bikita South .Kothari (2004) describe participant observation as a situation whereby the researcher observes by making him/herself a member of the group he is observing so that he or she is in a position to experience what the members of the group experience. It enables the researcher to gather information which could not easily be obtained if he observes in a disinterested fashion. (ibid).The researcher is also going to use the structured observation as a data collection technique whereby there will be parameters of units to be observed. Hamersley (1995) argues that observation fosters on in depth and rich understanding of a phenomenon, situation and or behaviour of participants. The researcher managed to visualise some IKS practices in environmental management as well as some of the success and challenges of IKS in environmental management in Bikita South.

## Questionnaires

The researcher managed to use questionnaires in conducting this research where by some printed questions were asked to all participants in the sample. Unstructured questionnaires were most suitable for this social research that deals with groups of people relating to same experiences and beliefs that is common knowledge on IKS and their uses. Mixed questionnaire with both closed and open ended questions were used by the researcher in this social research. (Singh, 2013) Questioners were very much relevant as they managed to yield from different participants that are traditional leaders comprising of village heads, ward heads to mention a few. Kothari (2004) argues that before using this data collection tool, it is advisable to conduct a pilot study for testing the questionnaire that is the rehearsal of the main survey. Therefore the researcher managed to carry out the pilot survey to her family members before the actual survey so as to correct the questions on the questionnaire where appropriate.

# Ethical Considerations

In carrying out this study the researcher adhered and respect ethical issues so as to avoid disruptions which end up affecting the research results.Halai (2006) identified confidentiality of the information shared and the anonymity of the research participants as the first principle of ethical consideration during a research. He stressed that it concerned with offering respect and protection to research participants through assurance of confidentiality of information shared and anonymity by not revealing the identity of the individuals and institutions involved. Basically anonymity is provided through the use of pseudonyms. Pseudonyms are false names. (Halai, 2006), thus the researcher had managed to respect the participant’s identity as well as institutions. Real names of participants in this research were omitted by the researcher mainly for ethical issues.

The principle of no harm to participants and beneficence was also another second ethical consideration which was greatly respected throughout this research. Researchers are expected to provide the participants with an outline of the risks and benefits involved to the participants in the study. (Halai, 2006) Therefore, in this research the researcher explained to the participants of this research the importance and benefits of this research to Bikita South district on the importance of respecting and valuing IKS for the protection of the environment so as to limit some minor environmental problems which might arise.

Finally, the researcher managed to use the principle of Informed and Voluntary Consent. The researchers had managed to obtain informed permission first from all the traditional leadership of the district who were directly involved in this area of research. This principle adheres to a larger issue of respect to the participants so that they are not forced into participation and have access to relevant information prior to the consent. (Halai, 2006) In line with this ethical principle, the researcher seeks the permission to visit and photography some of the sacred sites accompanied by a traditional leader for the purpose of participant observation so as to have a deeper insight of the concept of IKS.

# LITERATURE REVIEW

# In this section the researcher explore the relevant literature of what was published by various scholars and researchers on the role of IKS in environmental conservation and management. This literature was guided by the objectives, aims and the problem of this research mentioned above.

The existing literature on IKS varies from place to place as many scholars raised many controversial issues surrounding the definition of IKS. The literature on IKS provides a variety of definition on the notion. Existing scholars does not provide a single definition on the concept of IKS and this is largely due cultural difference between societies. As a result of these varied cultural beliefs and traditions among communities, this research comes in to assess the role played by IKS in environmental management in Ward 2 of Bikita District as the area is so much rich in taboos and shrines for rituals

Warren (1991) denotes that IKS is the local knowledge that is unique to a given culture or society. It contrasts with the International knowledge system generated by universities, research institutes and private firms. It is the basis for local level decision making in agriculture, health care, food preparation, education ,natural resource management and other activities in the rural communities.(ibid) Odora-Hoppers (2002) states that indigenous knowledge systems are ranges from climatic knowledge ,management techniques, technology in agriculture,forest,fishing and resource exploitation. The knowledge circulated in people of the same tribe, totem, language and ethnic group within a society or community

However ,having provided the above definition of IKS, for the aim of this research IKS will be referring to all forms of simple technology in agriculture,skills,taboos in stagnant well rivers that are being used by the inhabitants of Bikita District in the context of environmental management.

The following are some of characteristics of IKS which makes them unique from other types of knowledge.

* Local-It is rooted in particular community; it is a set of experience generated by people living in those communities.
* Tacit-It is undocumented
* Transmitted Orally-It is transmitted through imitation and demonstration
* Experimental rather than theoretical knowledge-Experience and trial and error, tested in the difficult laboratory of the survival in the community
* Learned through repetition
* Constantly changing –being produced and reproduced, discovered as well as lost.(Harris,1996)

To stress the importance of IKS development, the World Bank Action Plan (1998) postulated that indigenous knowledge is an important part of the live of the poor .It is an integral part of local ecosystem. It is a key element, of the social capital of the poor, their main asset to invest in the struggle for survival to produce food, to provide for shelter or to achieve control and their own lives

According to theInternational Institute of Tropical Agriculture, Humid Forest Eco regional Centre (IITA-HFC) in Cameroon, cocoa trees are mainly grown under forest shade and this exposed them to various pesticides. Subject to the nature and density of associated trees inside cocoa agro forest, cocoa can be either attacked by black pod disease (when the shade is heavy) or capsids (when the shade is light) and instead of using pesticides chemicals, farmers used IKS to prevent these pests and diseases in this agroforestry cocoa plantations. These farmers knowledge are generally based on plant/trees extracts that are mixed with synthesize chemicals. As a result this lead to sustainable environmental conservation as it limits pollution on water sources and the soil due to a refrain from the use of chemical pesticides.

According to the Conference paper on Indigenous Knowledge System for Ecological Management (2011), the Kakamega Rainforest exhibits a unique biodiversity and habitat rarity, which makes it a sanctuary for a remarkable diversity of plants, birds, insects and other forms of animal life not found anywhere else in Kenya. The paper claims that, sustainable management of the Forest cannot be guaranteed through continued use of law enforcement alone. Instead, an integrated conservation strategy in which IKS existing among the forest adjacent community forms a key factor to the existing management approach is proposed. The use of IKS from the local people brings a sense of conservation ethic and forest ownership among the local community members. Though the approach may face scientific challenges, traditional ecological knowledge due to its nature and mode of transfer, stands out to be a strong conservation pillar for Kakamega Forest. (ibid).

The UNEP (2oo8) study in Tanzania and Kenya on the Maasai people provides with concrete evidence on the role of IKS in environmental management. The study found out that in the farming technologies, Matego people believe to have lived in the steep slopes of Matego Highlands since the Iron Age had developed a sophisticated system that enable them to grow crops on hillsides while at the same time controlling soil erosion and improving soil moisture and fertility. (ibid)Mixed cropping stabilise yields, preserved soil as well as adding soil fertility is mixed with leguminous plants. The study also find out that in Kenya many IKS approaches to environmental conservation include such technologies and practices like shifting cultivation, intercropping or mixed cropping, minimum tillage and agroforestry were still in existence. All these technologies and practices were used with other methods to provide higher yields while at the same time conserving the environment.

Amira and Mazambara (2013) carried out their research on IKS and their implications on sustainable development in Zimbabwe; their study was focused on the protection of natural resources, wildlife and biodiversity in the ten province of Zimbabwe. They also considered issues such as land management, the conservation of natural resources through taboos and rituals, the role of totem in the protection of biodiversity and the maintenance of clean environment through some human waste disposal practices. Their study revealed that IKS are still prevailing in Zimbabwe they provide alternatives to Western environmental management approaches. The existence of sacred mountains, forests and curves such as Nyanga Mt in Nyanga, Great Zimbabwe Monuments, and Chirinda in Chipinge are some of the sacred forests in Zimbabwe which were revealed by their research.

According to the research by Ngara and Mangizvo (2013) in Gokwe District Zimbabwe on IKS and the conservation of natural resources. Their research was based on religious and cultural practices which are meant to save the extinction of vegetation and particular animals. Their results indicated that the Shangwe IKS in Gokwe was used not only for the protection of animals and deforestation but it was a tool to intensively manage soil erosion.

In Zambia on the poorer soils of the wetter north and northeast, cultivation is mainly of a shifting variety called *chitemene,* whereby trees (or their branches) are cut and then piled in the centre of the clearing for burning, the crop being planted in the ashes and this will decrease the use of fertilizers which are harmful to the environment at large.Moreso, Burger (1990) provides with crucial information on the shifting cultivation as sustainable way of farming. He argued that Shifting cultivation (sometimes called ‘slash and burn’) is a sustainable economic system that need not harm the environment. It is the most commonly practised system among indigenous people of Asia and lowland Latin America, and provides them with a high degree of economic independence and cultural integrity. Given sufficient land and low population density, it is a highly successful way of using the forest. The Karen of Thailand practises this system.

The economy of the Karen people is based almost exclusively on subsistence dry rice production. An area is cleared of trees, undergrowth is burned, rice planted and later harvested. Each year a new site is chosen and the cycle takes seven years to return to the site first cleared. The system permits regeneration of the forest and thin tropical soils, and does not expose the steep slopes to heavy rains, which would eventually wash away the soil in a fixed-field system.

# Summary of Chapter

This introduction gives an insight into what gives the researcher an inspiration to find out more about the problem in Bikita south. It managed to give the objectives, research questions, and statement of the problem and definition of key terms before proceeding to chapter two. The chapter also looked at what was also done by other researcher in this similar research area that is literature review thereby conceptualising the concept of IKS. Despite the various rules and laws by the local government on environmental management in the District, the area is still experiencing massive environmental degradation. The next chapter is literature review in a more detailed format.

# CHAPTERS BREAKDOWN

The work is divided into three chapters. Chapter one clearly looked at concept and dynamics of IKS before, during and after the colonial era in Zimbabwe. Chapter two deals with IKS and environmental management in Bikita South. Finally chapter three consists of challenges of IKS in environmental management as well as recommendations and a conclusion.

# 

**CHAPTER 1: AN OVERVIEW OF INDEGINOUS KNOWLEDGE SYSTEMS IN ZIMBABWE**

**Introduction**

This chapter is going to highlight the concept of IKS .It also provides the nature and uses of IKS in the pre, post-colonial era and present Zimbabwe. The relationship between IKS in the context of environmental management and development is also going to be explained.

**The Concept of Indigenous Knowledge System (IKS)**

IKS terms and usage vary from place to place. In some countries including Africa it is termed African Knowledge, traditional knowledge or local knowledge.Altieri (1995)provides the following terms which are the same as IKS that is traditional knowledge,indeginous technical knowledge, rural knowledge and ethno-science.

Traditional knowledge is defined as the growing body of knowledge, know-how, practices and representations maintained and developed by peoples with extended histories of interaction with the natural environment. These sophisticated set of understandings, interpretations and meanings are part and parcel of a cultural complex that encompasses language, naming and classification systems, resource use practices, spirituality and world-view (ICSU 2002). The term Indigenous Knowledge implies a connection to place and to indigenous or first/original people.

Warren (1991) defines the term Indigenous Knowledge as the local knowledge – knowledge that is unique to a given culture or society. For instance, Zimbabwe comprises of different cultural practices which are very unique from one society to another, the Shona, Shanghan and Ndebele and these cultures are being used in various life issues in societies.IK contrasts with the international knowledge system generated by universities, research institutions and private firms. It is the basis for local-level decision making in agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in rural communities (Warren 1991).

Flavieretal (1995) defines Indigenous Knowledge as the information base for a society, which facilitates communication and decision-making. It is the basic knowledge of any country that encompasses the skills, experiences and perceptions of people applied to maintain their livelihood.Ajibane and Shokemi (2003) assets that the term Indigenous Knowledge is used to describe the knowledge system established by a community as opposed by the scientific knowledge of modern knowledge.Altieri (1995) states that IKSs are forms of knowledge that have originated locally and naturally.

IKS has been used in Africa to administer peace and order amongst people and their physical environment (Mawere,2010).In Zimbabwe it has been used to protect physical environment from extinction due to the sacredness of some terrains for instance the Great Zimbabwe Ruins, Matopos Hill and Nyanga Mt to mention only a few. The indigenous people keep valuable traditional environmental knowledge through interacting with their proximate ecosystem.

# Characteristics of IKS

The following are some of characteristics of IKS which makes them unique from other types of knowledge.

* Locally appropriate-It is rooted in particular community; it is a set of experience generated by people living in those communities. It represents a way of life that has evolved with the nature, so it is specifically adapted to the requirements of local environmental and social conditions.
* Tacit-It is undocumented
* Transmitted Orally-It is transmitted through imitation and demonstration. It is passed from generation to generation through the word of mouth,
* Experimental rather than theoretical knowledge-Experience and trial and error, tested in the difficult laboratory of the survival in the community
* Learned through repetition
* Constantly changing –being produced and reproduced, discovered as well as lost.
* Restraint in resource exploitation: Production is for subsistence needs only, therefore, only what is needed for immediate survival is taken from the environment.
* Respect for nature: Knowledge systems contain a 'conservation ethic’, whereby the land is considered sacred, humans is dependent on nature for survival, and all species are interconnected.
* Flexible: Indigenous and traditional knowledge systems are continually changing and adapting to changing environmental conditions.
* Social responsibility: There are strong family and community ties with inherent obligation and responsibility to preserve the land for future generations.(Harris,1996)

# USES OF IKS

IKS have been used in Zimbabwe by the early inhabitants in various issues in the society .It was used in the management of disasters, enhances food security, health issues, agriculture and in natural resources management. KS contribute to food secure households to the rural poor, orphans, elders who languish in poverty and in times of drought. The community used to contribute their effort towards the chief’s granary from donating seeds, labour and harvesting.Kunnie (2000) argues IKS serve to preserve the well-being of women, children, and the youth, in particular and ensure that nobody goes hungry, unlike in the European capitalist systems where people starve because of lack of money to buy food and no social support networks to support them. For instance in Bikita East ward 2 chiefs encourage people to contribute towards the *zunde ramambo so* as to help the community vulnerable people in drought times.

Furthermore IKS was also used in soil conservation through practices such as intercropping and crop rotation. They relied more on organic manure which was from plants residue or cow dung, chicken wastes and this was environmental friendly. They used not to grow crops all year round which allowed the land to regenerate. These practices are still prevalent in some rural area in Zimbabwe.

IKS in Southern Africa specifically Zimbabwe was used in the management of natural resources (forests and animals).The people of Southern Africa have a rich heritage of managing and living with the environment.Gudhlanga and Makaudza (2012) stress that traditional Shona society deterred people from killing and eating their totemic animals. There was an obligation of food taboos and people were not supposed to eat their totemic animal. For example, the *Ndlovus* would not kill an elephant, the *Sokos* a baboon or a monkey and the Mhumbas rhinoceros. As a result wild animals were preserved; they were not killed as much as in societies where there were no totems.

According to WHO (1993) 80% of the world’s population depend on traditional medicinal practices as their form of health care .Therefore trees are being protected as people value them for their health and cultural value. More so, according to the Gender theory of Ecofeminism ,woman and nature are one as they depend more on the environment to meet their nutritional, health , cultural and economic needs hence they are more concerned with the conservation and preservation of the natural environment.

According to Dannel (1996), chief, senior medium and other traditional leaders in certain tribes are involved in securing divine protection for the environment by maintaining annual contact with the holy sacred objects or sites, Mwari, at the shrines for instance in the Matopo hills Zimbabwe. The chief's environmental duties are most evident in the responsibility for the preservation of the holy groves in the chiefdom. These are called *marimba kutemwa*(refusal to fell trees) and are usually on mountainous terrain comprising entire mountain ranges, where the graves of tribal ancestors are situated.

According to a study carried out recently in Masvingo Province indicated that all chiefdoms contain several holy groves, many of which still have intact closed canopy forests. Traditionally the state of these groves signified the socio-ecological well-being and stability of the whole community (Dannel, 1996) from the above information one can deduce that IKS really plays positive role in the well- being of the natural environment.

Again to deal with challenges of diseases such as cholera outbreak the inhabitants of Zimbabwe especially in Bikita District used to use of ashes to wash their hands to prevent the spread of cholera an indigenous disaster preventive measure. The also burn cow dung (*ndove)* and green tea leaves (*muzimbani)* to prevent mosquito bites that cause malaria. These are some of the uses or role of IKS in Zimbabwe used by the local people to cope with various challenges in their societies.

**NEXUS BETWEEN IKS AND DEVELOPMENT**

Indigenous knowledge can play a very pivotal role in ensuring sustainable development through its intelligent application by the local people. Being the foundation of the local people for decision making, people relied more on it as their problem solving technique and practices .Posey (1985) acknowledges that this indigenous knowledge offers new models for development that are both ecologically and socially sound

Warren (1992) stresses that, Indigenous knowledge systems in the African context, has long been ignored and maligned by outsiders. However, a growing number of African governments and international development agencies are recognizing that local-level knowledge and organizations provide the foundation for participatory approaches to development that are both cost-effective and sustainable. Therefore as a result, the use of indigenous knowledge leads to sustainable development as there will be participation of the local people.Indeginous people are also stakeholders in development therefore taking into account their views by consulting them will lead to development.

It is a grassroots approach to development as the local people will be actively participating in decision making. This will lead to the development of the community and country at large .It leads to development that is sustainable. It does not require technical or financial aspects to implement it hence it is the basis for the rural poor to run and manage their resource as well as maintaining the aesthetic value of the area.

The Brundtland Report (1987) defined sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. UNEP's 15th Governing Council stresses that sustainable development entails progress towards national and international equity, as well as the maintenance, rational use and enhancement of the natural resource base that underpins ecological resilience and economic growth. According to Principle 3 of the Rio Declaration (1992), the right to development must be fulfilled so as to equitably meet development and environmental needs of present and future generations. Therefore the use of IKS in conserving the environment is in line with principle 3 of the Rio Declaration which encourages sustainable development at large.

IKS in environmental conservation promotes tourism industry which leads to development through forex from tourists. Chifamba (2014) asserts that the combination of nature, history, heritage, conservation and local communities will lay the foundation for integral tourism. IKS leads to community based tourism which is integral. The community based tourism’s sustainability is rooted in conservation of Zimbabwe’s natural resources supported by its cultural heritage.Chifamba (2014) further explains that the involvement of local communities removes the competition between man and animal, man and land and thus motivates man to protect the climate by linking his benefit to the sustenance of these natural resources. For example, the Chibvumani Mountain in Bikita which was recently recognized as a national monument (tourist attraction) by the Department of Museum and National Monument. The mountain is believed to be sacred people would get lost in the mountain if they comment negatively or attempt to take things away from that mountain or take unripe wild fruits.

**IKS IN PRE-COLONIAL ZIMBABWE 1890**

The people of present day Zimbabwe first entered this region in the later part of the Iron Age. They were involved in activities such as hunting, agriculture, mining and trade. (Chenje etal, 1998). Zimbabwe was described by Bouchier (1930) as “ a wilderness of bush and native timber ,teeming with game of every variety which found ample feeding ground in the rich valleys and grasslands that abound in all parts of the country” This confirms that the people of Zimbabwe had access to many resources but limited only by their own traditional beliefs, taboos and customs. This clearly reveals that the concept of IKS dates back to the Late Iron Age period.

The region was occupied by the Shona inhabitants who were hunter-gatherers and did not cause any significant change to the environment hence environmental conservation. Resources were used wisely in the pre-colonial era.Chenje etal (1998) highlights some of the wise use of resources during era. Traditional societies in Zimbabwe practised and enforced wildlife conservation through proper hunting of animals and birds, avoiding indiscriminate killing and fostering selectivity.

Societies believed unnecessary killing of animals was punishable by the spirits and as a result control mechanisms are found in traditional taboos, totems and customs. For example the custom of totems forbade people to eat certain animals –such as vultures and hyenas. Taboos forbade the killing of young animals and female in gestation. Hunting on sacred places was also prohibited .The killing of rare species, python and the pangolin could only be done with the permission from the chief. Trees were also protected through traditional taboos and customs .Some trees were not cut because of their cultural importance. Fruit trees were also protected .Debarking was done only on one side and ring barking was prohibited (Chenje etal, 1998).

The respect and belief that human beings had towards the natural world as the habitat of the spiritual world and the provider of foods, mineral and other resources is a phenomenon from which one can understand a manifestation of conservation consciousness among the Shona.Chingono(2010) asserts that sacred shrines, wetlands were considered as spiritual habitat and the bases of survival. The community depended greatly on spiritual world for guidance.Chingono (2010) also alludes that, communication with the spiritual world via the animal kingdom would not be possible if the environment was not favourable. He also asserts that good and bad messages would be transmitted through various sacred species the animals. Special ritual ceremonies were done under specific sacred trees or shrines (Chingono, 2010)

Maradze (2003) states that the pre-colonial communities related with cultural sites for various reasons. Groves, caves, pools and trees were considered as homes of the ancestors. Local chiefs appointed by the ancestral spirits closely monitored activities and behaviour at such places. This safeguarded the value and physical integrity of places like groves and a pool thereby conserving the natural environment.Muringaniza (1998) relates an example of a myth that has led to the survival of a sacred grove in Bikita district. It is believed that the Nerumedzo was born with four eyes and he was chased away by her family members and escaped into the mountain where he was later killed and it is believed that the spirit of Nerumedzo bears (harurwa) stink burgs which most people consume.

The earliest natives of Zimbabwe were hunters and gatherer, their live was sustained by animals they hunted and plants they gathered. They lived in small groups that often moved from place to place and these settlement arrangements were ideal for the protection of the environment from various environmental degradation challenges. This small proportion in population allowed them to migrate from one place to another in search of abundant food supplies and also allows the soil to regenerate nutrients and limits too much erosion.

Furthermore, the indigenous traditional society in the pre-colonial totemic animals was greatly respected as the killing of a totemic animal was prohibited. Chiefs together with their village heads and communities were custodians of land and owner of resources. Resources were used sustainably as there were low livestock and people population densties.The low populations in humans and livestock made it possible for the vegetation and grazing lands to have enough time regenerate without any threat to the natural resources. (Vincent and Thomas, 1960)Vincent and Thomas (1960) also assert that livestock numbers were very low to the extent that there was no problem of overgrazing and its associated problems. This really reflects that these livestock ownership arrangements and management were ideal for environmental conservation in these traditional societies.

People had a unitary system of worship and viewed land and its resources as an inheritance given to them by their ancestors to safe-keep for posterity. Beliefs and social values were under the traditional leadership. Some kind of convergence of purpose in the system of worship, resource allocation and utilisation existed. The common sense of purpose created a framework of common property resource management. At community level via observance and respect of values such as: sacredness of community designated forest areas, sacredness of community designated rivers and water fountains and sacredness of certain tree species within a forest area. The shared beliefs and values as enshrined in their indigenous knowledge systems (IKS) and their wise utilisation by all community members resulted in a non-exploitative resource utilisation in the pre- colonial era Chivandi etal (2010).

**IKS DURING THE COLONIAL ERA**

During the Liberation Struggle, the guerrillas greatly respected the flora and fauna. There are many myths that explain the partnership that had been created between the freedom fighters and the environment. Many species in the animal kingdom life baboon and snakes were most reliable spirit mediums. They could communicate with the spiritual world and transmit instructions that could guide the combatants The combatants would not even kill these animals unless a proper ritual was conducted with the assistance of a spirit medium(Gonese,1999).More so, sacred woodlands ,wetlands and mountains were used as a sanctuary by combatants and masses during the liberation struggle enemy attacks. The forests provide food the freedom fighters and medicinal herbs so that they remain healthier.Chitando (2013) asserts that, the spiritual attachment to the land inspired by indigenous religion and respected by the people ensured a very positive environmental ethic.

The Shona-White invasion took place in 1890 and this created conflicts and competition over the use of resources by the blacks and whites. Libert (2003) argued that the competition for land ownership and its resources control led to the Shona and Ndebele uprisings form 1896-1897 .The defeat of the Shona people meant that they had been denied the powers of land and resource ownership. The white settlers began to chase away the indigenous people from their native land.

The white settlers took advantage through the use of different land acquisition acts to acquire the land which was formerly owned by the Indigenous Zimbabweans.Muchando (1998) states that 50.8% of the land was reserved for the white settlers with bulk of it in arable central high land. This reveals that already the native Zimbabweans had been denied to practice their indigenous rights as land was demarcated by the colonies. The majority Zimbabweans received 30% of the land that belongs to the African Reserve Areas which was then divided into Tribal Trust Lands (TTL)

The colonial era brought about many changes in the traditional society, that lead to the corrosion of indigenous knowledge of protecting the environment. Legislation frameworks concerning land ownership such as the Land Apportionment Act of 1930 and Land Tenure Act of 1959.These Acts were crafted to move the indigenous people to reserves creating space for farming for the white commercial farmers. Some sites of cultural significance became part of white commercial farms there by denying the indigenous people‘s rights to access their cultural sites. For instance the Nharira hills, Tsindi and Mhakwe cave are some of the sacred sites that were affected by the colonial systems of land ownership.

Local people were denied the right of owning their heritage physically and spiritually thereby placing natural resources at risk of extinction. Their contact with activities and ethics that associated them with their ancestors was lost. Colonial government transformed the system of leadership and chiefs became nominated and appointed through their systems. Thus, spirit mediums, who were the protectors of heritage, were being denied to exercise their powers to control and encourage people to adhere to the traditional management systems.

Legislations were put in place to ensure secure archaeological sites around the country, of which most places were considered to be sacred. The Historical Monuments Act of 1937 and the National Museums and Monuments Act of 1972 recognised these sites as state properties.

The protective laws denied indigenous people the right to express themselves and communicate with their ancestors at cultural sites, thereby destroying the implementation of traditional protection systems.

More so, colonialism introduced different religious beliefs such as Christianity which was opposed by the African Indigenous Knowledge System. The missionaries blamed traditional cultural practices, taboos and all other local knowledge. All the traditional ceremonies were denigrated as it was said to be bad an associated with evil spirits. As the result the division of beliefs led to the erosion indigenous management mechanisms erosion though it is still upheld is some parts of the country.

**POST COLONIAL AND IKS**

The attainment of independence in 1980 marked the beginning of another new era in the social, economic and political life of the citizens of Zimbabwe. For the local people, they could felt free and could practice their traditional practises and ceremonies .Some local people still upheld principles and restrictions which pertains their culture for example the Chirinda Forest in Mt Selinda,the Nyanga Mt in Inyanga and Nerumedzo in Bikita District which are still bearing their cultural significance

# In some areas, chiefs have been nominated back into power which they have been limited to use by the white colonial rule. Chiefs were regarded as gurus in trying to uphold the traditional heritage systems in areas where people have been resettled and where indigenous knowledge system have been eroded. It cannot be blamed that the colonial legislation of land ownership had shattered down the indigenous traditional management systems but also the advent of new technology, different norms and beliefs and ignorance among others had led to the suppression of IKS in environmental management.

# Chapter Summary

# This chapter shed light on the understanding of IKS, their characteristics and uses in Zimbabwe not only in environmental management but in food security,disasters,health to mention but a few. It also managed to provide how the white colonies influenced the use of IKS.

# CHAPTER 2: INDIGENOUS KNOWLEDGE SYSTEM AND ENVIRONMENTAL MANAGEMENT IN BIKITA SOUTH

# Introduction

# This chapter to covers the nature of IKS in Bikita South, classification IKS in different environmental areas, as well as the identification of types of IKS in the district and their uses in environmental conservation as well as community perception on IKS.

# NATURE OF INDEGINOUS KNOWLEDGE SYSTEMS IN BIKITA SOUTH

# IKS forms the foundation of local level decision making in Bikita South be it in agriculture, natural resources conservation, and herbal medicinal, fresh water protection, food preservation, and in disaster management. In Bikita South IKS are taboos, norms, technologies, knowledge, practices and skills that are held within the community of the indigenous people. The community respects their traditional cultural gatherings, ritual ceremonies are held annually where every household in the district contribute towards these *mukwerere* rituals (rain making ceremony).IKS in Bikita South is expressed through stories, legends, folklore, traditional ritual, songs and laws through chiefs, village heads, religious leaders and communities to manage natural environment be it land, water, forests or atmosphere.

The district‘s dominant religion is ATR (African Traditional Religion) and most people believe that the spirits of their ancestors whom they believe to be their superior source of life, rains and fortunes live in wilderness. For instance, the Handirinyama Forest where the ancestors of the *Shumba* totemic tribe reside has led to the protection of this forest environment.

In Bikita South the IKS that are meant in protection of the environment range from traditional agricultural practices, sacred forests and mountains, rules pertaining trees used for firewood, herbal indigenous trees and shrubs, taboos surrounding stagnant water bodies such as the VaNangwa fountain and Defe in ward 2 .The researcher noted that some of the IKS that were meant for the conservation of land in Bikita South comprise of rules that discourages the cutting down of trees and against veld fires by chiefs and village heads. There is also the respect of totemic animals as they are not allowed to be consumed, killed or harmed for it is a taboo. For instance the *Dzivas and Beta* totemic groups are not allowed to consume fish and termites respectively for if one consumes it will cause a curse to the whole clan.

In terms of the characteristics, IKS in Bikita is passed from generation to generation through the word of mouth to younger generation by grandparents. Traditional elderly leaders are the most custodians of IKS in Bikita. Elderly women are on the forefront of upholding the significance of IKS that pertains to water bodies and forestry management as women are the ones responsible for the procurement of water for domestic uses and fetching of firewood in the deep forest.

To support the above point from a gender perspective, the theory of Ecofeminism asserts that women depend more on forests for their various resources to meet their nutritional, health and cultural needs. Woman and the environment are one hence women in Bikita South ought to conserve the natural environment as it is their source of life. Women also depend on forests for their social and economic needs. From the interviews carried out in Chengeya Village ward 2, responses given by the elderly women indicates that they know better than other village heads interviewed about IKS that conserve the environment. A couple of the elderly women interviewed confirmed that they believe in IKS as some environmental related IKS played a dual role be it in the provision of economic value to the society, health, cultural and nutritional significance especially to woman.

Studies by Rosen and Vincent (1999) on climate change and women indicates that on average women spend 134 minutes a day fetching water .Their study can be linked to this research. In Bikita South it was confirmed that during periods of dry spells all women spend many hours queuing for water at the three sacred water fountains. These include the Defe,Nangwa and Chipako fountains in Ward 2. Rules pertaining these water bodies are unveiled by elderly women for the wise use of the water and the surrounding environment.

Mr. Murombo as the village head and the custodian of IKS lamented that, IKS has got the risk of being lost if these traditional leaders die .This challenge of the extinction of IKS in Bikita South can be supported by an African proverb which states that, when a knowledgeable old person dies, the whole library disappears (IDRC, 2003).

# Classification of IKS in Environmental Conservation

The researcher managed to found out the extent in which the district is rich with the body of knowledge of IKS in environmental management. The district has vast IKS in forest conservation, followed by land management, water and least in air (atmosphere protection). It was found that the classification of IKS in environmental management in Bikita South is vast in forest management, followed by land management, water and lastly atmospheric protection.

**IDENTIFICATION AND USEFULNESS OF IKS IN DIFFERENT ENVIRONMENTAL AREAS IN BIKITA SOUTH**

Bikita South is a Karanga Speaking community which comprises of the inhabitant who value their culture. The dominant language spoken according to the questionnaires administered is Shona. Like all other communities in Africa, Zimbabwe in particular, Bikita South is one of the districts that are also rich in indigenous knowledge. The following are some of the practices and indigenous Knowledge systems that are being used and followed by the inhabitants of Bikita.

## Sacred mountains

Chipesa, Gwena and Handirinyama mountains are among the sacred mountains in ward 2 of Bikita district. These mountains are of religious significance of especially to the inhabitants of Bikita. These mountains play a religious significant role as it helps the community to predict the onset of a rainy season and the nurture of rainfall to be expected especially the Chipesa Mt. From the interviews done, one of the elderly leaders said, that if you see the rainbow across this mountain it indicates no rains are expected that season. A mist across this mountain indicates a non-violent rain which brings bumper harvest. According to the interviews carried out, the Chipesa Mt was used during the rainmaking ceremonies by the spirit medium of the area. It is believed that the spirit of Zangure, their rainmaker lives in Chipesa Mt, hence it is not was allowed to pass through that mountain or gather firewood. The headman of Chengeya Village said that many people have disappeared in the Chipesa Mountain because they have breached the mountain rules. As a result this religious importance has led to the protection of the mountain as some people were very fearful to pass through this mountain.

More so, the hunting of animals surrounding the Handirinyama Mt was said that it is greatly prohibited by the traditional elderly people. One traditional leader of the community said, sometimes if one breaks the rules of these mountains he or she will be chased or attacked by a lion which was believed to be its den or there will be heard sounds of roaring lions. It is not allowed for one to pass negative comments about the nurture of this hill. The traditional leaders emphasized that it is greatly forbidden for one to farm in these mountains but due to challenge of sand soils in the district people are no longer observing these as important. One of the village head where the mountain is found affirms that people are now growing their crops in the mountain because of lot of fertile soils and manure and they would get bumper harvests. Evidence from the Agritex Officer for the district confirmed that the soil types for the district is characterized by poor water holding capacities, poor drainage as well as water logging conditions. Poor and infertile soil types in the district has made it difficult for to respect some of the sacred mountain to the extent that they ended up cultivating in these mountainous areas for example the Guse Mt in ward 2.One of the peasant farmer confirmed that;

*“…..minda yangu yese yakanyura saka hapana zvandaikwanisa kuita, ndakatoti ndirime mugomo nekuti ndimo munopa,munindimo uye hamuiti murove, ndikasatodero mhuri yangu ingatofa nezhara…….”*

Here the interviewee was trying to confess that all his fields have been drowned by heavy rains and became water logged to the extent that there was no hope to expect a bumper harvest to feed the family.

**Fig 2.1: Someone’s field at the center of Guse Mountain in Ward 2**

*Primary Source*

This clearly indicates that people no longer value the IKS and circumstances forced them to breach these traditional laws that were meant to conserve the biodiversity. According to the information from the district Agritex officer, poor farming practices in the mountains lead to river siltation which is also negative to the environment by erosion down the mountains.Thus one can view that IKS is being meet with challenges in the protection of the environment.

## Stagnant Wells/Fountains/Natural wells

Stagnant wells are still or motionless water features that are found on the earth surface. The district is rich in stagnant wells to the extent that the inhabitants of Bikita value them more as they provide with sources of water during periods of dry spell. The community relies on these two natural wells, the Defe and Nangwa which are found in ward 2 for domestic water uses, livestock drinking point and watering of nutritional gardens for the community. Defe, Nangwa and Chipako are religious sacred water body sites for the district and people ought to respect these sites. According to my observation, there are some fish that stay in these water bodies and they are not allowed to be consumed. The headman Mr. Gari interviewed said, that the consumption of these fish is a taboo as it has religious implications and the water will sinks down so as a result these restrictions lead to the protection of these water bodies thereby conserving the environment.

In addition to the above, the traditional leaders of the community interviewed asserts that, it is not even allowed for one to fetch water using metal or plastic objects, only clay materials and gourds*(mukombe)* are allowed at these water bodies. Materials with ashes are not allowed to be brought to these water bodies as they cause water pollution. It is not allowed using soap or washing near this water sources. Black surfaces materials are also not allowed at this water bodies as these materials and objects offend the mermaid that reside in these wells leading to the demise of water .Snakes and mermaids were believed to have influence over the natural environmental conservation for they represented great spirit deities of an African earth religion (Bernard and Kumalo, 2004).This also supported what the researcher heard and observed about the Bikita South sacred water fountain. These creatures are regarded as powerful constraints to the natural environment abused by the society. It is said that these are wells of fortunes for the community (*madzivaemarombo/mapa)* hence they have to be protected in a sustainable manner. The water from these fountains is accredited with strong medicinal characteristics that have seen it being used by many people from the local community (Chifamba, 2014). One traditional leader confessed that if one breaches the rules of these sites, a very tremendous wind will blow away them and snakes can be seen near the area. It is not allowed for one to comment negative or attempt to take away the fish in the well and it is also not allowed to kill these snakes.Mrs.Muchapa one of the interviewees, gave an example of the woman in the village who died unexpectedly after consuming fish from the Defe natural well. To this end the researcher, concluded that to a greater extent these restrictions were meant to protect the water source and its accompanied creatures. KS has managed to preserve the water bodies to a larger extent though the inhabitant sometimes gets reluctant to adhere to these cultures surrounding water bodies.

## Sacred forests

Bikita district has got a number of sacred forests namely Nerumedzo, BvumaGwena, Handirinyama just to mention a few. These forests are of religious significance to the surrounding communities and they play a significant role in the conservation of natural forests. They provide wild fruits such as *mazhanje, chakata, marula, nhengeni, mazamera* to mention a few which plays a vital role in ensuring food security as well as poverty alleviation through the selling of wild fruits. Some of these forests provide the community with stink burgs *(harurwa)*.These small insects play an important role to the community as they enhance nutrition. They can also be sold hence it provides source of income for the rural poor .Prominent examples of these sacred mountain are the Bvuma Mt in Bikita South and Nerumedzo Mt in BikitaEast. People are not allowed to loiter around these mountains and even to look for firewood. According to the Chronicle of 2nd August (2014) community based management of indigenous forests leads to the conservation of the ecosystem around such places. These conservation efforts have led to the declaration of the Nerumedzo Sacred Forest in Bikita in Masvingo Province as a national heritage site. TheNational Museums and Monuments of Zimbabwe (NMMZ) acknowledged the importance of stink bugs that are found in the forest that have led to the survival of this dense forest.The spirit of the legendary Nemeso is believed to be in the Nerumedzo forest is responsible for the seasonal migration of the stink bug (ibid) .The Nerumedzo mountain has helped the inhabitants of Bikita to be able to enjoy the benefits of their nature leading to an improved quality of life and the sustainable management of resources(Chronicles of 2nd August 2014).As a result of these conservation efforts of IKS by the local citizens of Bikita these forests have been preserved to a larger extent .

## Totemic Animals

Totemic animals in Bikita district are greatly respected. The indigenous knowledge surrounding the issue of totemic object prohibits the inhabitants of Bikita from consuming, killing or poison totemic animals. For instance the researcher found out that the *Beta, Dziva* and *Tsoko* are not allowed to consume termites, fish and monkey respectively. Responses from the elders interviewed showed that it was a taboo for one to consume his or her totemic animal. Baboons and monkeys are a challenge to farmers fields as they destroy all their crops especially maize which is the dominant crop grown in the district. It is not allowed for one to shot or kill that totemic animal for it is a taboo, only to chase them away. The intestine of a monkey is used for medicinal purposes. One of the traditional leaders asserts that the intestine of a monkey is used to stop stomach pains on infants hence monkey were greatly conserved form this purpose. However young people used to hunt and kill these animals, chase them with dogs so as a result these animals tend to migrate to other places. On the other hand the demand for the medicinal purposes has led to the extinction of monkey in Bikita South surrounding mountains as some people used to sell these intestines. Therefore to a larger extent the respect of totems served to protect animals and insects from extinction thereby conserving them and serves to keep the environmental well-being.

## Grave yards

It was found that the people in Bikita value graveyards hence these places tend to be highly protected. The indigenous people long back believe that chiefs and other respected clan elders were used to be buried in caves and it is not allowed to pass through that place, graze animals, fetch firewood or hunt animals .For instance the Ruwii Mt where the biggest spirit medium of Matsai was buried.

In Bikita South, specifically ward 2 such places like Chidamoyo near Mashoko Mission are used as mass grave yards where strange people from different communities and districts who have died at the nearby hospital are buried. People from nearby communities are not allowed to fetch fire wood or graze their animals near this place as it is believed to have evil spirits or else one might disappear anonymously and also swarms of bees might bite those who go against the rules of this grave yards and chase them away. It was found that these places have not been preserved considering some of the indicators of land degradation at this grave site. The researcher concluded that IKS was failing to conserve the environment considering bare surfaces due to overgrazing, cutting down of trees for firewood and construction poles among others hence the respect of graveyards had failed to preserve the natural environment.

## Trees for firewood, fruits and medicinal functions

Indigenous Knowledge also pertain to the uses of trees for medical purposes, provision of food and for religious and traditional uses has led to the survival of many forests in Zimbabwe, Bikita in particular. The survival of trees has played a significant role in the protection of the environment. Trees reduces sheet, wind and gully erosion and provide habitat for the ecosystem organisms. They are vital for the rural women to meet their health needs as supported by the theory of Eco- feminism which states that women and nature are one as they depend more on the environment for their economic and social needs. According to my observation made in Bikita South, certain tree types such as *mushozhowa, mubvamaropa, muchenga* were not used for firewood hence they tend to survive deforestation. These trees species are not allowed to be used for firewood as they bear negative effects to the family if they are gathered for firewood. Mr Chengeya the headman asserts that trees such as *Marula and Muchakata* trees were not allowed to be cut down because of their religious significance for rain making purposes(*mukwerere in Shona*).These trees were not supposed to be cut down or destroyed as they were believed to be raining trees *(miti inonaya).*One traditional leader interviewed emphasizes that if these trees are being cut down there will be prolonged drought induced by rain failure as the ancestors will be angry about this offend. Trees such as *Mukomberwa*,*Muzeze* and green tea shrub *(zimbani)* were conserved for their indigenous medical role and *muuyu* for its medicinal and *munyii,muchakata ,marula tree,* to mention a few as they provide fruits which ensures food security. Therefore these trees tend to survive due to their multi functions in the society hence a positive role of IKS in environmental management.

However lack of economic diversification lead to deforestation as many rural people rely more on firewood as the main source of income for the communities especially those interviewed in Chengeya village ward 2.Chikwanha and Tanyanyiwa (2011) assert that the rise in forest products demand has contributed greatly to forest mismanagement such as deforestation and subsequent degradation of the land. The researcher observed the selling firewood to institutions in the district such as boarding schools, hospitals and mission dwellers. All these lead to cutting of many trees leading to desertification conditions and gullies to prevail in the district. This is evidenced by bare soil surfaces as observed by the researcher.

### Fig2.2 Gullies as a result of deforestation for firewood in Bikita South



*Source: Fieldwork*

## Land use and Agriculture

It was my observation that most of the indigenous people in the district apply various indigenous systems in land use systems and agriculture at large. Agriculture is the growing of crops and keeping of animals for commercial and or subsistence use. Agriculture is the back bone of Zimbabwe economy and farmers have tried to apply their indigenous knowledge in farming and some of their farming practices are good in environmental management. Most rural women relied more on agriculture .The researcher observed that agriculture is the major economic activity for the community. One of the peasant farmers interviewed highlight that most farmers practised mixed cropping(intercropping) so as to limit the intensive use of fertilizers which is harmful to the environment as they combined both cattle rearing and crop production. This farming method reduces run off and erosion thereby protecting the land from being washed away. This indigenous farming practise is meant to ensure soil fertility thereby making sure that soil nutrient and fertility are not depleted by using animal manure hence a good indigenous farming practise which protect the environment at large.

In addition to the above land use practice, the communal people in Bikita District practised crop rotation which is also good to the environment as far land conservation is concerned. Crop rotation reduces intensive use of pesticides and fertilizers which are harmful to the environment. Crop rotation reduces rain drop impact and surface runoff and overland flow thereby reducing soil loss. The following are some of the crops mentioned by the Agritex Officer that are under rotation in the district, maize, groundnuts ,roundnuts, cowpeas, rapoko,finger millet, cotton, sorghum to mention among others. All these indigenous crops and crop farming methods were meant to maintain soil fertility and structure thereby conserving the environment.

Again, land fallowing is one of the indigenous land use practise that was being used by the peasants farmers of Bikita South to allow the land to regenerate or regain fertility hence a good farming practice that was done to protect, maintain and enhances soils fertility.

## Use of organic manure

The use of cattle manure, goat manure, organic manure, poultry wastes and also ashes are used to improve soil fertility. Most rural farmers in Bikita South relied more on the use of organic manure instead of inorganic manure. People used to climb up the mountains for the collection of decayed tree leaves manure as an IK coping mechanism. Anthill soils are also used as manure by the inhabitant of Bikita as an indigenous method of faming to improve soil fertility and its drainage .They used to make compost hips in their fields from the harvested residues to serve as fertilizers. Besides being a valuable source of nutrients, manure also improves the chemical (pH, exchangeable bases) and physical (structure, water holding capacity) structure of the soil(Nnoham and Odurukwe, 1987; Nyamangara et al., 2003 in Nyamangara and Makumire 2010). This type of IKS has helped many rural poor farmers who do not afford to purchase fertilizers and those without beasts for manures. This clearly indicates that the use of organic manure is a cheaper and sustainable IK farming method that protects the natural environment from degradation than using artificial fertilizers

## Rotational Grazing

Rotational grazing is another land management practice that is commonly used in Bikita South which is also vital to avoid overexploitation of vegetation through the use of paddocks. Evidence from the extension officer suggested that, livestock are moved from one place to another to maintain ecological balance. The creation of paddocks has promoted rotational grazing thereby reducing the likelihood of soil erosion due to overgrazing at the same piece of land. This practise is known as land zoning and it avoid maintains the land from overgrazing which might lead to a number of environmental problems. As a result this has managed to protect the environment in Bikita South despite the challenge of overpopulation leading to a demand for more places for settlement posing another challenge of overgrazing of livestock. This had led to the overgrazing and its associated challenges in the district as shown from the pictorial evidence below

### Fig 2.3: Challenge of overgrazing due to overstocking in Bikita South



*Source: Field work*

## Customary Laws

Customary laws have played an essential role in the protection of forests in Bikita South. From the research carried out there are certain customary laws imposed by chiefs which prohibit uncontrollable veld fires. The burning of grass is not allowed as it leads to the death small creature and organisms which have an important role in the ecosystem. Small creatures are important as they help to maintain the ecological balance and helps in the breakdown of the chemical composition. Uncontrolled veld fires lead to degradation of the forest, land as well as the atmosphere. Combustion of carbon gases lead to the formation of acid rain which is also dangerous on plants. Veld fires are not allowed in the summer season as most grassland will be dry hence can easily catch fire resulting in veld fires that destroy the whole environment at large. One of the traditional leader interviewed mentions that under the leadership of Chief Mabika, every person who committed a crime of causing veld fires is punished by brewing traditional beer, purchasing soft drinks and a goat for the chief and his judges as well as village heads for this wrongdoing to the environment. Failure to abide to this law one is forced to leave the area with all his family and property. Therefore one can argue that the use of customary laws has managed to protects many forests from veld fire as forest are believed to be home of the district clans ancestors.

# COMMUNITY PERCEPTIONS AND ATTITUDES ON IKS IN ENVIRONMENTAL CONSERVATION

# In trying to find out the community perceptions and attitudes on the role of IKS in environmental conservation, the researcher interviewed the community members. It is important to note that community members are not a homogeneous group hence their perceptions on the role of IKS in the conservation of the environment tend to differ on the basis of gender, age, race, sex and ethnicity. The study estimated that about 25% of the community believe in IKS in environmental management and these consist of old aged men and woman mainly dominated by traditional leadership members of the community. However 75% of the community which consist of middle and young people have got some negative perceptions on the role of IKS in environmental management. This is because some really did not have relevant knowledge of IKS especially the young generation as stated by one of the traditional leader interviewed.

Forty percent of the community do value IKS and use it as a sustainable way of managing and maintaining the District’s biodiversity. From the interview, the Agritex officer indicated that most farmers which occupies about half of the district prefer the use of organic manure rather than inorganic manure which is locally available hence it is an environmental friendly agriculture practice.

Bikita district consists of two different religious sects, which consist of those who believe in African Traditional Religion (ATR) and those who believe in Christianity. These two different religious sects meant two different worlds. For instance in ward 2 of Bikita South, one of the traditional leaders confessed that churches such as Church of Christ, Apostolic Faith Mission, Seventh Day Adventist ,Mugodhi Apostolic Church and other Pentecostal churches are among some of the churches who go against IKS.These sects do not believe in life after death. They believe in Jesus Christ who communicates to them through prophets, vision and dreams. They believe that God is the only to provide them with issues concerning the environment around them.ATR clashes with Christianity views as they believe in spirit mediums in animals and vegetation, they value nature as the residence if their ancestors hence this religious sect do believe, value and appreciate the role of IKS in environmental management. This had caused conflicts which led to the environmental management using IKS to be a challenge. Christians believe that IKS are evil and associated with demonic spirits hence had no role in the protection of the environment. Christians in Bikita South do not follow and believe in IKS and this has made it difficult to use IKS in the conservation of the environment at large.

From the participants interviewed, only few community members believe in both ATR and Christianity and these are normally middle aged male persons who normally attend traditional rituals. It was said that most woman are not able attend traditional ritual ceremonies due to traditionally responsibilities for household keeping as a result of gender and patriarchy which limits women to have a say on whether to attend the ritual or not.

# Chapter Summary

This chapter has managed to reveal different types of IKS used in Bikita South and how they help in the management of the environment. It has also managed to give the community perception on IKS in environmental management. The next chapter is going to present challenges faced in using IKS in environmental management as stated by the participant of this research as well as recommendation to address some of the challenges faced through the use of IKS. Finally is a conclusion for the whole research.

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**CHAPTER 3: CHALLENGES OF IKS IN ENVIRONMENTAL MANAGEMENT IN BIKITA SOUTH**

**Introduction**

This chapter explores the challenges faced in the implementation of IKS in environmental management as well as provide recommendations for actions. These challenges were stated by the participants during the study of this project as obstacles to the success of IKS in environmental management.

# Challenges Faced in using IKS in environmental Conservation

## Poor implementation and Cooperation

Implementation of IKS for environmental conservation was impeded by lack of incorporation between the traditional leadership and community members and the ineffective compliance and enforcement of law by the traditional leadership. Only few members of the society especially from the ruling family tend to follow these IKS. As a result this has hindered the effectiveness of IKS in environment protection.

## Lack of community Participation

Meaningful and effective community participation is not occurring in implementation of IKS as stated by one traditional leader. Young women and children are not allowed to attend some traditional gatherings such as *mukwerere* where some of the concept of IKS is unveiled. There is no an adequate flow of information to inform interested parties such as young people and new residences due to marriage on the importance and relevant issues on IKS in the protection of the environment

## Ignorance by the community members

Lack of knowledge on the importance of IKS in the community stands as a challenge of using IKS in environmental conservation. Mr Katefe one of the traditional leaders confessed that one of the challenges to comply with IKS for the case of environmental protection was ignorance and negligence. Carelessness among community members was also stated as a major challenge as some community members will just pollute the environment intentionally. For instance some young mothers were said to be on record of polluting water for they used to wash their cloth at sacred water sources using detergents that may cause death of aquatic organisms and extinction of water. From the observation made, the Chipako sacred water source had dried up due to this carelessness on the use of resources hence a challenge.

## Poverty

The lack of viable economic activities that brings income to the rural poor. The traditional leaders interviewed stress that poverty is the worst cause of the ineffectiveness of IKS in the management of natural environment specifically trees (natural vegetation). Lack of off –farm activities has exacerbated the cutting down of trees for business in Bikita South. The type of poverty which was explained by the traditional leaders interviewed was that of the scarcity of means of subsistence. Bikita South faces a challenge of economic diversification as the district rely only on agriculture. There are few prospects of income for these rural people except venturing into the business of selling firewood. Many inhabitants of Bikita South especially in ward 2, tend to rely on the selling of firewood to nearby mission which comprises of a high school, hospital and school of nursing for they use firewood as the source of fuel for cooking and also source of fuel for community. From the observation made, scorers of people brought wheelbarrows and scot carts of firewood to sell to the mission inhabitants for a livelihood and also to address the challenge of power shortages to those who use electricity. One of the leaders interviewed asserted that, people in ward 2 of Bikita South are now no longer valuing the ancestors of the community who believed to be living in sacred mountains such as Handirinyama as they just cut down trees for firewood intentionally. As a result one can argue that poverty remains a challenge to the use of IKS in environmental management in Bikita South as many trees will be used for firewood. This in turn brings another challenge of deforestation thereby exposing the various types of soil erosion such as gullies which are the indicators of poor environmental management. Trees are now sparse due to deforestation for fire wood as well as many degraded environments in form of gullies which might lead to the formation of tributaries which end up being gullies.

### Fig 7: Gullies and exposed roots due to pulling of firewood branches for business and deforestation in addition to the negative effects of heavy rains



***Source: Field work***

## Greediness among traditional leaders

The greediness of some traditional leaders in Bikita South Ward 2, lead to the ineffectiveness of IKS in the management of the environment. This is as a result of people being allocated stands for farming and settlement in environmental sensitive areas. For instance the researcher observed that in ward 2 Bikita South, many settlements are located on wetland of which wetland plays a very important role in the conservation and natural purification of water during dry spells. They provide a reproductive habitat for other animals, birds, and insects to mention but a few. They prevent flooding as they absorb water during storms and whenever water level rise. When the water levels are low wetlands release water as they keep river levels normal. This greediness for money and *chiutsi* led to the allocation of land for settlement and crop cultivation in steep slope areas and even in mountains for instance in Guse Mt.This cause erosion and siltation of rivers downslopes thereby leading to environmental degradation in the district. Ploughing in mountains disturbs the stability of the nature of the relief thereby causing environmental problems. Therefore greediness of traditional leaders negatively affects the success of IKS in maintaining the aesthetic value of the environment in Bikita South.

## Overpopulation

Overpopulation stands as a challenge to IKS in environmental conservation in Bikita South. The current population size of Bikita South is estimated to be at 162,356 (Zimbabwe National Statistical Agency, Population Census 2012) as compared to that of the 1980s which was at 5,250 (USAID Data Dissemination Service).This increase in population means that there will be pressure and competition on every resource. An increase in population size means that there will be also a demand for land for settlement and farming. From interviews with village heads, the researcher found out that overpopulation was stated as a challenge that hinders the success of IKS in environmental management. Traditional leader Mr.Chidafi stated that some formerly sacred places and its associated vegetation were destroyed as people were clearing land for farming and settlement. Some big trees which were meant for the provision of indigenous fruits such as marula tree and *muchakata* trees were cut and burnt during land preparation for farming. This has led to the loss of vegetation cover which plays a role in reducing surface runoff which leads to the formation of gullies.Mabagu and Chitiga (2002) stated that deforestation and overgrazing was a major problem in Zimbabwe Forest cover declined from 57% in 1990 to 49% in 2000 and 44% in 2005. (ibid)All these statistics support the extent to which deforestation due to over population is a challenge in using IKS in environmental management. Those trees that are cut during land preparation were hipped and burnt and the ashes produced are used as fertiliser thereby limiting the use of inorganic fertilisers which might lead to the environmental problem of eutrophication.

## Poor documentation

Lack of documentation of IKS so that if a foreign person reaches the sacred places he or she might know the rules, and taboos of these certain places like natural sacred water bodies and mountains. There is no written information about the IKS practises in Bikita South. This body of knowledge on IKS in well known by the traditional leadership of the district. It is passed through the word of mouth by the traditional leaders. This challenge of poor documentation so that the knowledge reach all people of all ages was stated as a major challenge of using IKS in environmental management as some people do not know this traditional knowledge of IKS that was meant to protect the environment.

## Religious differences

A difference in religions also makes it difficult to implement IKS in environmental management. From the interviews that were carried out in Bikita South with ATR leaders, they believe in life after death. More to it they believe that their gods live in mountains and forest which are then declared sacred areas. People are not allowed to cut down trees in that area or loitering around or fetching firewood. On the other hand Christians believe in Jesus Christ and not any other gods. These in turn pose a challenge in the implementation of IKS in environmental management in the sense that the Christians might not value the importance of the sacred areas. They might even cut trees and fetch firewood in such areas without fear.Maradze (2003) confirmed that the divisions in belief systems led to a dilution of traditional management systems hence there will be a challenge in managing the environment using IKS

## Different cultural practices and technological advancement

The rapid social, cultural and economic changes have been tremendously disadvantageous to natural resources as it brought many changes in the societies. The dilution of cultural beliefs leads to cultural erosion thereby undermining IKS in societies. Technological advancement was also a major threat to the success of IKS in conserving the environment as stressed by one of the traditional leaders. He asserted that due to new technologies and development initiatives some formerly respected sites or forests are now destroyed without consulting the traditional leadership. Maradze (2003) also asserts that the new system of heritage management, however, sought to protect only tangible heritage, and considered modern scientific techniques as the only relevant ways of conservation.One cited example was that of the recent construction of a sewer dam in Mashoko Mission which has led to the loss of a deep sacred forest for Vhimba community. Many development initiatives have led to the extinction of the IKS in Bikita South .For instance the drying up of the Bako sacred reservoir along Chenjere stream in ward 2 which used store water for an extended period dried up when the community construct a nutritional garden. Therefore globalisation and development initiatives are done in improper way without the consultation of traditional leadership.

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**RECOMMENDATIONS** This section provides recommendations to challenges that have been noted above. The participants of this research come up with some of the recommendations while the researcher also comes up with some of the recommendations from the challenges faced in using IKS in environmental management.

The is need for an effective communication, environmental education and raise awareness of IKS on environmental management to people, in both Zimbabwe’s urban and rural areas of both ages especially the young generation so as to ensure smooth flow of IKS information to people of all generations.

There is need to discuss with the communities how they can use traditional and customary law to protect the environment and also traditional leaders to tighten their customary laws

Traditional and modern environmental approaches should be integrated to form a new environmental conservation strategy

There is need for development agencies to consult or work hand in glove with traditional leadership in development initiatives so as to conserve IKS in the management of natural environment and prevent harming the environment.

The is need for the initiation of community libraries

The concept of IKS should be a compulsory subject or module to primary, secondary and tertiary education level so that everyone has the basic knowledge of IKS importance in environmental management and promote student field trips to sceneries and sacred places where they will be meeting with traditional leadership.

The is need for the government and other stakeholders to support rural communities’ with more income generating projects to alleviate poverty to prevent the selling of firewood for them to earn a livelihood. Off-farm income or income diversification should be promoted by the government so as to ensure the effectiveness of IKS.

Institutions such as boarding school and hospital in the district must find other alternative sources of fuel such as gas or charcoal instead of using firewood.

The is need for the initiation of libraries at community, district and at district levels to ensure proper documentation and smooth flow of the information on IKS in environmental management to everyone at all levels written in mother language.

ATR and Christianity to be integrated together to avoid religious clashes when it comes to the concept of IKS in environmental management as encouraged by traditional leaders to ensure sustainable environmental management.

The is need for farmers to be capacitated with more indigenous knowledge farming practices which are meant to conserve the environment and natural resources departments must integrate or work together for the conservation of natural environment through IKS.

The is also need for the government to implement rural electrification in rural area including Bikita South so as to provides an alternative source of fuel to enable the effective role of IKS in the conservation of forest environment.

The is need of promoting the role of culture, indigenous knowledge in agriculture and rural development as far as environmental management is concerned.

The is need to reduce population pressure in Bikita South and by providing employment opportunities and encourage rural-urban migration.

**Chapter Summary**

This chapter has managed to explore the challenges faced by IKS in environmental management in Bikita South which were stated by the participants of this research as impediments to the success of IKS in managing the environment. It also managed to provide recommendations to address these faced through the use of IKS.

**CONCLUSION**

In the study it has been revealed that the district is reach with variety types of IKS meant for the conservation of the natural environment. The knowledge of IKS is being implemented by the inhabitants of Bikita South as a local means to cope with various environmental challenges. IKS is a useful strategy as it compliments government efforts through the use of various legislations in managing the environment. Despite being a local sustainable environmental management strategy, IKS have not fully been effective in managing the environment as the majority of the community have negative perceptions on IKS through the lack of knowledge. The existence of massive environmental degradation prevailing in the district shows that IKS is not all that effective in conserving the environment. It also noted a number of challenges mentioned in the previous chapters greatly contributed to the ineffective of the role of IKS in environmental management in Bikita South. The challenges of lack of economic diversification, ignorance, overpopulation, lack of integration, poor documentation to mention but a few. All these contributed to the failure of IKS in the conservation of the natural environment as revealed by the study. Therefore the research had to wind up by recommending solutions to these challenges.

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**APPENDICES**

**APPENDIX A**

**MIDLANDS STATE UNIVERSITY**

**QUESTIONNAIRE**

*Good day. My name is Precious Mawanza.I am a final year student at Midlands State University Bachelor of Art In Development Studies Honours Degree. I am doing a research on the role of Indigenous Knowledge Systems in Environmental Conservation in Bikita South am kindly asking you to respond to the following few questions honestly .I assure you that all the information provided will be for academic purposes only. Thank you*

**Topic: Role of IKS in environmental conservation**

**SECTION A: ADMINSTRATIVE SECTION**

Respondent Name………………………………………………...............................

Date of Interview…………………………………………………………………….

Place ………………………………………………………………………………....

**1.0 SECTION B: DEMOGRAPHIC SECTION (Tick where appropriate)**

1. Sex

Male Female

2. Age

20- 30  30-40  40-60+ 

3 .Citizenship

Zimbabwean  Others 

**SECTION C: INFORMATION SOUGHT SECTION**

1. How would you describe IKS?
2. What is its nature or characteristic in the context of Bikita?
3. Where or what is the origins of IKS?
4. How is IKS transmitted in your community?
5. Who are the custodians of IKS in your area?
6. In what sectors does IKS exist in your community?
7. How does IKS work in promoting good environmental management in Farming?
8. How does IKS work in forestry conservation?
9. How does it work in water management? What would you do if you experience an environmental challenge beside the application of Environmental Management Act in your area?
10. As traditional leaders what is community perception in environmental management?
11. What made it difficult to use IKS in environmental management?
12. What is the relationship between IKS in environmental management and the advancement of new technologies?
13. What are your general comments, suggestions or views on the role of IKS in environmental management in Bikita South?

Thank you

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**APPENDIX B**

**MIDLANDS STATE UNIVERSITY**

**Interview guide for Traditional Leaders**

**Topic: IKS in Environmental Management**

1. How would you describe IKS?
2. Do you have any used the conservation of your environment?
3. If any ,what are those IKS used in the following that are meant for the protection of the environment :Land conservation, Forest conservation, Wildlife conservation, Water conservation and Air
4. How important is IKS to your community and environmental management in your area?
5. What is the community perception on the use of IKS in environmental management?
6. Do people of your area really value the IKS for the case of protecting the environment?
7. What challenges did you face in trying to use IKS in environmental management in your area?
8. What challenges do the community face in conserving the environment through the use of IKS?
9. If any, what recommendations or solutions do you suggest in trying to address these challenges?
10. Basically what can you say about the influence and role of IKS in the protection of the environment? Does it really works or not?

Thank you

# APPENDIX C

**MIDLANDS STATE UNIVERSITY**

**Interview guide for the Agritex Officer**

**Topic: IKS in Environmental Management**

1. How do you describe IKS in agriculture?
2. Do you have any form of IKS in agriculture that are meant for the conservation of land?
3. If any, can you state and explain its roles or importance in land management?
4. How effective are these forms of IKS in the management of the environment.
5. Basically what is the soil type for the district?
6. What can you say about its water holding capacity?
7. What types of manure does most farmers uses in the district?
8. What are the farmer’s perceptions and attitudes on the use of IKS in farming as far as environmental management is concerned?
9. What challenges are being faced by the district in using IKS in farming in line with environmental management?
10. Does IKS really work in farming as far as environmental management is concerned?
11. What do you recommend on the use of IKS in agriculture for the conservation of land in the district?

# APPENDIX D

**MIDLANDS STATE UNIVERSITY**

**Observation Guide**

**Topic: IKS in Environmental management**

1. Types and practices of IKS used in Bikita South District
2. Community perception on IKS
3. Sources of Income
4. Challenges of using IKS in environmental management
5. Evidence of the success or failures of IKS in the conservation the natural environment
6. Source of water, fuel