

## **INDIGENOUS KNOWLEDGE SYSTEMS AND THEIR IMPLICATIONS FOR SUSTAINABLE DEVELOPMENT IN ZIMBABWE**

Jemitias Mapira and Philip Mazambara

Great Zimbabwe University

### **ABSTRACT**

Indigenous knowledge systems (IKS) are part of Africa's heritage, which dates back to the pre-colonial era when they were developed in order to address various survival challenges. They are home-grown and they have survived the test of time. However, European settlers who colonized the continent in the late 19<sup>th</sup> century sought to destroy, denigrate or marginalize them and replace them with Western views and approaches, which were in line with their goals of imperialism. Zimbabwe was colonized by the British in 1890. However, since the demise of colonial rule more than three decades ago, there has been a renewal of interest in IKS as they are regarded as a source of pride, dignity and possible solutions to some nagging challenges. This paper, based on a questionnaire survey conducted in May 2013 targeting 200 citizens drawn from the ten provinces of Zimbabwe, focuses on IKS, which were geared at protecting the natural environment, wildlife resources and biological diversity. The paper argues that although it is not possible for the country to revert to the pre-colonial past, policy makers can draw some lessons from and incorporate them in their quest for sustainable development (SD).

**Keywords:** Indigenous, Knowledge, Systems, Sustainable, Development, Zimbabwe

## INTRODUCTION

During the post-colonial era in Africa, there has been a growing interest in the restoration of lost or dying IKS. According to Jary and Jary (1995), colonial rule in many parts of the world led to the destruction or marginalization of some cultural norms and values as colonial administrators imposed their authority on native tribes who often resisted their influence. Laws were passed in order to subjugate these people and marginalize their cultural heritage. IKS were often despised in order to promote Western forms of knowledge such as natural science. But modern research has demonstrated that IKS are neither inferior nor backward as they were derived from centuries of accurate observation and experiments (Ward, 1989). For example, the Great Zimbabwe Monuments, a product of the country's ancient culture, are renowned as a world class heritage that is comparable to the pyramids of Egypt (Mapira, 2001).

However, colonial masters could not ascribe them to the work of indigenous people since that would undermine their false claim or belief that Africans were primitive and inferior to Europeans as the following quotation from historians, Mpofu, Muponda, Mutami and Tavuyanago (2009:8-9) confirms:

*'Early European accounts erroneously attributed the construction of Great Zimbabwe to non-Africans. Their argument was that Africans had not developed the technological capacity to build such a magnificent structure. Archeological studies have however proved beyond any doubt that local Shona-speaking people were responsible for the construction of the stone walls. Objects found at the site show that its origin was indigenous as the art and craft found at the site is similar to the work of recent Shona people'.*

According to Ward (1989), IKS in Africa are known by various names such as:

- a) People's science
- b) Ethno-science
- c) Folk-ecology
- d) Village science, and
- e) Local knowledge.

They cover virtually all aspects of life including: ecology, climate, agriculture, animal husbandry, botany, linguistics, medicine, clinical-psychology and craft skills. For example, Masocha and Kariaga (2001), discuss the value of IKS in the field of herbal medicine in the Mutirikwi Communal area of Zimbabwe. Their study identifies and records medicinal plants, which have been used for centuries to treat human abdominal diseases in the area. However, in spite of their diversity and versatility, IKS have been neglected in most academic and non-academic disciplines. The main reasons for their marginalization by outsiders (Webster, 1990) include:

- a) Lack of documentation
- b) Cultural prejudice
- c) Professional pride
- d) Problems of language
- e) Political power exercised by outsiders, and
- f) The gap between practitioner and academic cultures.

Matsika (2012, 209-210) defines indigenous knowledge (IK) as:

*‘the traditional and local knowledge that exists and is developed through the experiences of the local community in the process of managing the conditions or context that challenge the people’s everyday life’.*

Consequently, it is a complex body of knowledge, skills and technology, which belongs to a particular geographical community (Ndangwa, 2007). Since it is based on practical experiences, it can be preserved and harnessed for the benefit of both present and future generations, which live in these communities. Matsika (2012) goes further to list the main characteristics of IK as:

- a) A home grown form of knowledge, which is derived from the solution of everyday life problems
- b) It is part and parcel of a community’s cultural practices and ways of life
- c) Often it is not documented but has passed from one generation to another through oral history
- d) It is used in solving the immediate problems that confront the community
- e) As a dynamic form of knowledge, it changes in line with events that may be taking place in a society, and
- f) It is always under scrutiny since it is valued for its ability to solve prevailing problems.

For the above reasons some developing countries have included it in their environmental policies and the school curricula. Zimbabwe’s environmental policy document, in keeping with global trends, has incorporated IKS as part of its strategy aimed at restoring this cultural heritage. Guiding Principle 27 of the policy states that *‘Indigenous technical knowledge and traditional practices have a valuable contribution to make to the management and sustainable use of natural resources’*. (GoZ, 2009: 16). Its strategic direction seeks to achieve two goals, namely: to *‘promote wider application of indigenous knowledge and practice in managing and using natural resources sustainably, particularly where they are integrated to local culture’*, and to *‘encourage the documentation, dissemination and use of indigenous technical knowledge on management and sustainable use of natural resources’*.

Guiding Principle 28 of the policy document claims that *‘Communities and individuals have the sovereign right to retain or share their indigenous technical knowledge and practices concerning the properties and uses of natural*

*resources, and should therefore benefit equitably from any use of that knowledge*' (GoZ, 2009: 16). In its strategic direction, the Government has three goals:

- a) Develop and implement adequate measures, including codes of practice, for the protection of indigenous and intellectual property rights of local communities
- b) Promote the equitable sharing of benefits arising from the use of indigenous technical knowledge and practices, and
- c) Establish the means to monitor and enforce equitable sharing of benefits.

Finally, Guiding Principle 29 (GoZ, 2009: 16) states that *'Individuals or communities with unique indigenous technical knowledge or practices concerning natural resources should be fully informed beforehand, and understand, the economic and other implications of granting consent for the use of such information'*. Its strategic directions include:

- a) Establishing requirements and procedures for enforcing the principle of Prior Informed Consent,
- b) Empowering local people to request the necessary information about the intended uses and likely benefits of the collection of genetic or other biological resources from their lands, thereby enabling them to give their consent in the full knowledge and understanding of the implications, and
- c) Encouraging full disclosure of information about new products or knowledge developed from the collected materials.

Zimbabwe's Environmental Education (EE) Policy document, on the other hand, recommends the incorporation of IKS in the teaching of EE in schools, colleges and universities (GoZ, 2003). The country's seventh objective of the formal education sector seeks to protect and promote IKS with a view to achieving SD at both local and national levels. Three strategies are recommended, namely:

- a) Building on IKS with local communities
- b) Identifying appropriate aspects of IK and integrating them in the formal education curricula
- c) Involving local communities in EE programs and educational institutions.

Six actions are designed to achieve the objective, including:

- a) Setting up an EE council in each institution
- b) Producing a calendar of EE activities together with the community
- c) Researching, documenting and selecting IK that is supportive of sustainable living practices
- d) Incorporating appropriate IK in the formal education curricula at all levels
- e) Holding regular meetings to share ideas on the integration of IK materials, and

- f) Including traditional leaders in EE processes in order to uphold cultural and traditional values.

Zimbabwe's EE objectives are in line with the New Partnership for Africa's Development (NEPAD) vision, which was promulgated in Lusaka (Zambia) in 2001. According to Matsika (2012), the objectives of NEPAD with respect to IKS include:

- a) A review of the indigenous content of the current curriculum in the African countries and then finding ways of integrating IK into formal education
- b) Holding workshops on how best to integrate IK into existing curricula, and
- c) Integrating IKS into the formal education sector.

Duri and Mapara (2008) examine how pre-colonial Zimbabweans conserved their natural resources such as land, water and wildlife through the use of IKS. These practices were quite effective in environmental conservation even though they did not make sense to colonial masters who came later. This study seeks to contribute to the on-going research and debate on the practical value of IKS in Zimbabwe's quest for SD. It focuses on four issues:

- a) Land management practices
- b) Environmental conservation,
- c) Biodiversity preservation, and
- d) Maintaining clean environs.

## **RESEARCH METHODOLOGY**

Zimbabwe has a rich body of cultural traditions, which date back to the pre-colonial era. Though un-documented, they have been transmitted orally from one generation to another and constitute the country's IK heritage. Although they are similar in some ways, their diversity reflects the unique environments in which they developed and evolved over the centuries. The information used in this study was derived from a questionnaire survey that was conducted in May 2013. It targeted 200 respondents who were randomly selected from the country's ten provinces, which include: Bulawayo, Harare, Manicaland, Mashonaland Central, Mashonaland East, Mashonaland West, Matebeleland North, Matebeleland South, Masvingo and Midlands. In each province, ten men and an equal number of women were selected in order to maintain gender balance. They were all black, of African origin and Zimbabwean citizens who ranged from the age of 20 to over 70. As such, they were well informed about traditional beliefs and practices in their areas. Since they were drawn from various tribes (such as Shona, Ndebele and minority groups), a national coverage was achieved.

## RESULTS AND DISCUSSION

This section discusses the main research findings in the light of the goals of the study, which were outlined previously.

### Land management practices

In pre-colonial Shona society, there were three broad types of land use:

- a) Arable land (*minda*)
- b) Grazing land (*mafuro*), and
- c) Un-inhabited forests (*masango*).

While the first type was devoted to the cultivation of crops, the second one provided grazing for domesticated animals like cattle, goats and sheep. There were specific areas for grazing and over-stocking was rare due to the abundance of land compared to livestock numbers (Riddell, 1978). According to Duri and Mapara (2007), livestock would be moved from one area to another in search of greener pastures (transhumance). Mpofu, et.al (2009: 10), corroborate this point as the following quotation shows:

*'The people of Great Zimbabwe maintained large herds of cattle that they took to different grazing areas during different times in the year. In summer, the cattle were grazed on the fresh grasses of the high veld and in winter, they moved them to the low veld. Cattle were culled as they passed through Great Zimbabwe'.(Members of the ruling class often distributed their cattle to their) 'subjects through a system of kuronzera where those without cattle were loaned some'.*

Even during severe droughts, cases of livestock mortality due to starvation were rare. Un-inhabited forests, on the other hand were used for activities such as: game hunting and the collection of wild fruits, honey and edible insects.

In traditional Shona society, there was no individual ownership of land. Although the chief or king was the custodian of all land in his area of jurisdiction, he exercised that right on behalf of his people since the land belonged to the whole kingdom or community (Ncube, et.al, 1997). Communal ownership gave every member use rights and ensured that no individual could be landless. Although colonialism brought new types of land tenure into the country such as individual and corporate ownership, communal ownership has been preserved in most parts of Zimbabwe (Whitlow, 1988). In the absence of communal ownership, some peasants could be reduced to landless citizens thereby accentuating poverty levels in the country.

Although it is a sustainable form of land tenure, communal tenure has been blamed for encouraging environmental degradation throughout the country. Open access promotes un-controlled exploitation of resources among peasants. For example, over-population and overstocking in most communal areas of Zimbabwe have led to massive soil erosion, deforestation and land degradation (Magadza, 1992). During the pre-colonial era such problems were rare due to the abundance of land compared to the population, which was stagnant as high birth and death rates kept it in balance. For example, at the time of colonization in 1890, the country had less than a million inhabitants (CSO, 2002).

Arable land was conserved through cow dung manuring, terracing and rotation or shifting cultivation (Duri and Mapara, 2007). These practices maintained an ecological balance until the advent of colonial rule when land dispossession took place resulting in the overcrowding of some communal areas (Riddell, 1978). Overstocking was quite rare during the pre-colonial era due to small livestock numbers and high mortality rates caused by such diseases as rinder pest, tick borne, and foot and mouth.

### **Environmental conservation**

Pre-colonial Zimbabweans conserved some natural resources through the use of taboos. A taboo is '*any ritual prohibition on certain activities...It may involve the avoidance of certain people, places, objects or actions*' (Jary and Jary, 1995:677). Some places were regarded as sacred and could not be molested by human activities. Taboos were used in order to protect or safeguard certain resources against possible damage. Consequently, they were kept in their natural state for centuries without being degraded by human interference. Examples drawn from this study include: mountains, rivers and water bodies, forests, caves and veld resources.

#### *Mountains*

Respondents in this study cited several examples of mountains, which are still regarded as sacred today (Table 1). Most of them are regarded as the homes of ancestral spirits. Durika in Chipinge is believed to be characterized by mysterious sounds of drums. Before iron ore mining commenced in 1952, Buchwa

**Table 1: Some ‘sacred’ mountains in Zimbabwe**

<b>Name of mountain</b>	<b>Location</b>
Chamagona	Zvishavane
Chiramba	Chimanimani
Durika	Chipinge
Dungugwi	Mwenezi
Guruguru	Shurugwi
Hanyanya	Bikita
Bangure	Mwenezi
Buchwa	Mberengwa
Madaulo	Bet Bridge
Gondoyi	Masvingo
Nyanga	Nyanga
Rungai	Chivi
Nyarushangwe	Chivi
Rasa	Gutu
Matopo	Bulawayo
Shamba	Shurugwi
Vumba	Mutare
Zihwa	Chivi
Zungwi	Zvishavane
Zhanje	Mwenezi

*Source:* Questionnaire Survey

was also considered as sacred with reports of the disappearance of transgressors. Nyanga, Hanyanya and Guruguru have similar reports and are regarded as sacred by local communities. In some cases people are not allowed to climb these mountains without conducting some rituals. In others, such as Rasa in Gutu visitors should avoid negative language or speech. Some mountains are considered so sacred that they should not be climbed at all. This is the case with Nyarushangwe in Chive District, Masvingo Province. Although these beliefs lack scientific validity, they have been instrumental in the conservation of the mountainous environments for centuries.



Open access to them would have led to degradation and damage of natural ecosystems leading to the disappearance of endangered forms of flora and fauna (Chenje and Johnson, 1994).

### *Forests*

Some forests are also believed to be sacred (Table 2). Examples include: Gonakudzingwa, Chipangai, Chirinda, Chiumbulu, Chisere, and Umguza. Visitors to Chiumbulu are not allowed to divulge what they see lest they risk madness. At Chisere, they should avoid the use of vulgar language, gossip, plucking down fruits or using smelly soap when bathing. They should also clap their hands before drinking water and never smile as long as they are in the forest. Chirinda Forest is ever green due to its rainy climate. This is because its ecosystem has not been disturbed by human activities.

The forest around the Great Zimbabwe Monuments near the city of Masvingo is also regarded as sacred and is protected against human interference. Consequently, its vegetation is more natural compared to that in surrounding communal areas, which are overcrowded, overgrazed and deforested.

**Table 2: ‘Sacred’ forests in Zimbabwe**

<b>Name of forest</b>	<b>Location</b>
Gonakudzingwa	Gonarezhou National Park
Chiumbulu	Triangle
Umguza	Matebeleland North
Great Zimbabwe Monument	Masvingo
Chisere	Mwenezi
Chipangai	Mwenezi
Chirinda	Chipinge
Nyanga	Nyanga

*Source:* Questionnaire Survey

### *Rivers, water bodies and natural caves*

Some rivers, water bodies and natural caves are also regarded as sacred. Rivers include: Save (Buhera), Runde (Mwenezi), Mvumvumvu (Chimanimani), Musirizwi (Chipinge) and Musairezi (Shurugwi). Water bodies such as: Lake Kariba (Zambezi River), Lake Chivero (near Harare), Manjerenje Dam (Chiredzi) and Lake Mutirikwi (Masvingo) are also believed to be sacred as they are associated with mermaids. People who violate their taboos risk mysterious disappearance into the water bodies. Consequently these natural resources have to be treated with

great caution and respect, a fact which accounts for their preservation. Waterfalls, which are regarded as sacred in Zimbabwe are: Victoria (Zambezi River), Bridal Veil (Chimanimani) and Chizindima (Chipinge).

Perhaps the most 'sacred' caves in Zimbabwe are located in the Chinhoi area. According to local tradition, talking in the caves is prohibited and those who violate this norm risk disappearance in the pool that is located at the centre of the caves and is believed to be the abode of mermaids and ancestral spirits. As mentioned previously, traditional norms and beliefs have been instrumental in the conservation of natural resources including mountains, rivers, water bodies, forests and some caves. As part of IKS, they have proved to be an effective tool of natural resource conservation since the pre-colonial era.

### **Biodiversity preservation**

One of the most common traditions in Zimbabwe is totemism, which has been defined as the '*practice of symbolically identifying humans with non-human objects (usually animals or plants). The classic case of totemism is when a clan claims an animal as a mythological ancestor, however, the term has been used to cover a wide range of symbolic practices*' (Jary and Jary, 1995:692-3). Sociologists hold different views on the value of totems in society. While functionalists regard them as symbols of group solidarity, structuralists view them as expressions of vital '*features of human experience and are thus used to construct a mythology of the concrete*' (Jary and Jary, 1995:693). However, from an ecological point of view, totemism can be valued for its role in the preservation of biodiversity in a given area.

In the case of hunting and gathering communities, it reduces competition for some edible animals, birds, reptiles, insects or plants (Table 3). This is because it is '*taboo for one to eat his or her totem animal; one risked losing teeth or some catastrophe would befall him or her for violating this taboo*' (Duri and Mapara, 2007:106). For example, during hunting operations, members of the 'zebra' clan would not kill zebras as they were considered as sacred to them. The same applied to those who venerated the buffalo, eland, lion, elephant, baboon, kudu, birds, snakes and ants. Consequently, totemism encouraged selective rather than indiscriminate hunting thereby preserving any endangered species from possible extinction.

In pre-colonial Shona society, strict taboos were used to discourage people from transgressing these norms. Some of the calamities, which were believed to afflict transgressors included: bad luck, tooth decay or loss, madness, sickness and disease, infertility, death and the loss of ancestral protection. Transgressors would also be punished through the payment of fines to the head of the clan or chief. In some cases, they would be banished from their communities. Such penalties were effective in the conservation of various natural resources and species.

**Table 3: Some common totems in Zimbabwe**

<b>Totem</b>	<b>Object/creature venerated</b>
Nzou/Zhou	Elephant
Nyati	Buffalo
Mhofu	Eland
Hove	Fish
Shumba	Lion
Moyo/Sithole	Cattle Heart
Shoko/Soko	Monkey or Baboon
Ngwenya	Crocodile
Shiri	Birds
Hungwe	Great Zimbabwe Bird
Dube	Zebra
Ngara	Porcupine
Gumbo	Legs of any animal
Beta	Ants
Mlilo	Fire

*Source:* Questionnaire Survey

### **Maintaining clean environments**

In an attempt to maintain clean environments, human waste was disposed in bushes or buried in the grounds surrounding homesteads. This reduced the spread of diseases through vectors such as flies. Burial places for human corpses were located either close to homes or far away while strict rules on safeguarding sources of drinking water such as wells and springs were enforced. Often wooden fences were erected around them in order to prevent water contamination from children and livestock. Some water bodies were considered as sacred thereby preventing swimming, bathing and other activities, which could pollute them. Fishing was prohibited in sections of some rivers while veld fires were controlled using water or tree branches. Although veld fire was occasionally used during hunting excursions, it was controlled in order to protect pastures and the environment in general.

Overstocking and overgrazing were reduced through strategies such as loaning some cattle to friends and relatives, transhumance and trading out surplus cattle. Forests were conserved in various ways including designating some of them as sacred places, which were protected against human activities like settlement, cultivation and deforestation. Respect for the natural environment and its conservation was reflected by some practices as shown by Duri and Mapara's (2007, 105) study:

*'Institutional prohibitions such as taboos were designed to develop positive societal attitudes towards the environment. This also involved restricting the cutting and using of certain types of vegetation. Among the Manyika, for example, it was taboo to cut a muchakata tree (*Parinari curatellifolia*) (as some) village rituals were conducted under this tree'.*

## **IMPLICATIONS FOR SD**

Some IKS in Zimbabwe were geared at promoting environmentally friendly ways of life. Examples include: land management practices, natural resource conservation methods and environmentally sustainable traditions such as totemism, which protected and preserved biological diversity as this study has shown. However, colonialism, which brought capitalism and materialism, encourages greed thereby undermining SD at both local and national levels. Today Zimbabwe experiences numerous environmental problems including: overpopulation, land degradation, deforestation, overgrazing, massive biodiversity loss, an increase air and water pollution, and waste disposal problems in towns and cities (Lopes, 1996). There are no easy solutions to most of these problems.

Miller (1996) recommends several strategies, which humankind can adopt in order to protect the global environment against further degradation thereby attaining SD:

- a) Slow the rate of population growth
- b) Reduce poverty
- c) Shift to more dependence on locally available renewable energy from the sun, wind, flowing water and biomass
- d) Help sustain the Earth's biodiversity with emphasis on protecting vital habitats for wild species
- e) Use potentially renewable resources such as water, soil, plants, and animals no faster than they are renewed
- f) Modify economic and political systems to develop a mix of economic incentives, taxes, and regulations that reward Earth-sustaining behavior and that discourage Earth-degrading behavior
- g) Make goods that last longer and are easier to re-use, recycle and repair
- h) Reduce the waste of matter and energy resources, and
- i) Put more emphasis on pollution prevention and waste reduction.

The incorporation of IKS in Zimbabwe's Environmental and EE policies reflects the country's commitment in its quest for SD at both local and national levels. As the study has shown, several strategies are already in place in order to promote the preservation of IKS in the country. The EE policy document, on the other hand, identifies the national goal as making *'sustainable development a national priority, to take a pro-active role in environmental issues and to respond to environmental challenges facing Zimbabwe at the personal, local, national, regional, and global levels through education and communication processes'* (GoZ, 2003:7). The policy document goes further to outline the objectives, which the country should use in pursuit of the national goal:

- a) To identify and mobilize resources to support self-sustaining EE activities
- b) To integrate EE in teaching, learning, training and extension programs in the formal, non-formal and informal sectors of education
- c) To protect and promote the use of IKS
- d) To raise public awareness of environmental issues and promote holistic management of the environment in all sectors of the community
- e) To facilitate development of knowledge, skills, attitudes and values necessary for environmentally sustainable behavior
- f) To promote SD through the use of all channels of communication
- g) To encourage sustainable livelihoods within communities not usually reached by formal channels of education and communication
- h) To support private and public initiatives in EE research and
- i) To ensure monitoring and evaluation of EE programs and activities in all sectors.

The country plans to establish EE centers in all provinces thereby making the dissemination of information to the public more efficient. According to the policy document, formal institutions such as schools, colleges and universities should play a key role in the provision of EE while being complemented by traditional leaders and government ministries (Agriculture and Mining), and departments such as the Environmental Management Agency (EMA), the Forestry Commission (FC), Parks and Wildlife Management Authority (PWMA). Supportive organizations include: the media, non-governmental organizations (NGOs), Arts and Cultural groups. Concerted efforts among all these organizations can help the country to preserve IKS which are valuable in the protection of the environment so that SD can be achieved at local and national levels.

In terms of wildlife, the country is *'endowed with a rich diversity of life forms. At species level, the country supports an estimated 4 440 vascular plant species, 214 of which are found only in Zimbabwe (i.e. are endemic); 672 bird species, 450 of which breed in Zimbabwe, though none are strictly endemic; 196 mammal species, 156 reptile species, 57 species of amphibians, 132 fish species, and uncounted numbers of species in other groups...At the broader level, there are 25 recognized main vegetation types and a wide diversity of landscape features of both scientific and aesthetic importance. Considerable genetic diversity is also apparent in the varieties of form, color and behavior of many of these species, though that diversity still remains to be comprehensively documented'* (GoZ, 2009:7).

As a signatory to the United Nations Convention on Biological Diversity, Zimbabwe has an obligation to demonstrate its commitment. Guiding Principle 9 of the Environmental Policy document states that the biodiversity of Zimbabwe is the foundation of the natural heritage of the country. Its strategic goals include:

- a) Developing and coordinating the implementation of an integrated strategy for biodiversity conservation in Zimbabwe
- b) Promoting the adoption of the Ecosystem Approach, as formulated by the Convention of Biological Diversity, as the principle framework for integrated environmental conservation and management
- c) Draw up a clear legislative framework for the conservation of biodiversity in Zimbabwe
- d) Maintain its commitment to research on the nature, extent and functioning of biodiversity
- e) Support the development of a comprehensive biodiversity inventory of all species and the monitoring systems needed to document this diversity and its change, and assessments of the conservation measures
- f) Continue to identify and schedule those species of plants, animals and the range of genetic stocks within each species that need to be specially protected
- g) Assess the potential threats to biodiversity conservation posed by modifications and transformations of both land and aquatic systems and commercial exploitation, and take appropriate measures to minimize the loss of biodiversity
- h) Ensure fair and equitable access by all Zimbabweans to opportunities that support the aims of biodiversity conservation
- i) Promote the development of a code of conduct governing the collection and use of potentially valuable biological material
- j) Develop an integrated strategy to build environmental awareness and improve the understanding of the importance of biodiversity through education and training at all levels, and
- k) Work with other countries to develop, promote and support international treaties and conventions that are consistent with Zimbabwe's policies on conservation and sustainable use of biodiversity for the benefit of

all without compromising the right of Zimbabweans to be the primary beneficiaries of the biodiversity within the country.

Researches in West and East Africa have shown that many practices of African communities that were derived from IKS and which were once regarded as primitive or misguided are now recognized as both sophisticated and appropriate (Ward, 1989). Examples include: wildlife conservation, sparing tillage, shifting cultivation and mixed cropping. Ezaza (1997, 201-202) claims that *'Throughout the past centuries, African societies have lived side by side with wildlife. It is only recently that, these resources have been wastefully exploited as a result of contact with greedy outside influence'*. On the other hand, though previously despised by scientists, mixed cropping has been discovered to have several advantages compared to mono-cropping:

- a) Different rooting systems exploit different levels in the soil profile for moisture and nutrients
- b) One crop may provide a favorable micro-climate for another
- c) Nitrogen-fixing plants fertilize non-nitrogen fixing plant
- d) Crops, which are scattered among others are less vulnerable to pests
- e) More moisture is retained in the soil
- f) Mixed cropping supplies a mixed diet, and
- g) There is less risk of total crop failure.

It took agricultural research experts many years to discover these important facts thereby proving that Eurocentric or modern approaches are not always superior to indigenous systems. With reference to the role of IKS in the field of herbal medicine, Masocha and Kariaga (2001, 3), note that *'before Zimbabwe's colonization in 1890, the people of Mutirikwi as elsewhere in Zimbabwe practically depended on herbal therapy to combat human diseases. However, this valuable knowledge is gradually being lost even at a time when modern medicine is failing to cope with the health needs of the people particularly the rural folk and the poor who cannot afford the cost of modern medicine'*. Zimbabwe's quest for SD through the use of legislative instruments (policies) and IKS, which were geared at land management, environmental conservation, biodiversity preservation and the maintenance of clean and safe environments, is commendable. Indeed the two approaches (modern and traditional) are complementary and should continue to work together in the country's quest for SD at both local and national levels.

## **CONCLUSION**

This paper has discussed the positive role of IKS in natural resource conservation and their implications for SD in Zimbabwe. Issues, which were considered included: land management, the conservation of natural environments through taboos and rituals, the role of totems in the protection of biodiversity and the maintenance of clean

environments through some human waste disposal practices. Pre-colonial societies in the country and elsewhere in Africa lived in harmony with natural ecosystems due to their environmentally friendly lifestyles, which were embedded in their IKS. However, colonialism brought new approaches in the form of natural science, capitalism and materialism, which triggered massive environmental degradation and biodiversity loss in many parts of the continent. Today, the continent is plagued by numerous environmental problems including: overpopulation, overstocking, desertification, deforestation, chronic droughts, air, and water pollution. There are no easy solutions to these problems. But one thing is certain, that is, there is need for societies to change their lifestyles from consumerism to environmentally friendly habits that are more sustainable. Although IKS date back to the pre-colonial era, they are still relevant to the present situation as they provide an alternative to Western models of environmental management, which have caused much damage to ecosystems throughout the African continent. Colonial masters sought to destroy IKS with the goal of promoting their Western ideas and approaches to environmental management. However, during the post-colonial era, there has been a growing interest in the restoration of IKS hoping that they may hold clues in solving some of the environmental problems the continent is facing in its quest for SD at local and national levels. This paper argues that although it is impossible for them to go back to the past, Zimbabweans can benefit from the fusion of IKS and modern approaches in the country's quest for environmental sustainability. The findings of this study are based on a nationwide questionnaire survey, which was conducted in May 2013, involving 200 ordinary citizens drawn from all the ten provinces of the country.

## REFERENCES

- Chenje, Munyaradzi and Johnson Phyllis, 1996. *The State of the Environment in Southern Africa*, IUCN, Harare
- CSO, 2002. *Census: Zimbabwe Preliminary Report*, Central Statistical Office, Harare
- Duri, Fidelis and Mapara, Jacob, 2007. 'Environmental Awareness and Management Strategies in Pre-colonial Zimbabwe' *Zimbabwe Journal of Geographical Research Volume 1 No.2*: 98-111.
- Ezaza, William, 1997. In Otiende, James, Ezaza, William and Boisvert, Raymond (eds), *An Introduction to Environmental Education*, Nairobi University, Nairobi
- GoZ, 2003. *Zimbabwe National Environmental Education Policy and Strategies*, Ministry of Environment and Tourism, Harare
- GoZ, 2009. *National Environmental policy and Strategies*, Ministry of Environment and Natural resources, Harare
- Jary, David and Jary, Julia, 1995. *Collins Dictionary of Sociology*, Harper Collins Publishers, Glasgow
- Lopes, Carlos, (ed) 1996. *Balancing Rocks: Environment and Development in Zimbabwe*, SAPES Books, Harare
- Magadza, Christopher, 1992. *Conservation for Preserving the Environment*, Mambo Press, Gweru
- Mapira, Jemitias, 2001. *Urban Geography Module GED 204*, Zimbabwe Open University, Harare



Mararike, Claude, 1999. *Survival Strategies in Rural Zimbabwe: The Role of Assets, Indigenous Knowledge and Organizations*, Mond Books, Harare

Masocha, Mhosis and Kariaga, Billy, 2001. 'The Identification of Medicinal Plants used in the Treatment of Abdominal Diseases: The Case of Mutirikwi Communal Area of Masvingo, Zimbabwe', *Geographical Journal of Zimbabwe*, No.32: 1-10

Matsika, Chrispen, 2012. *Traditional African Education: Its Significance to Current Education Practices with Special Reference to Zimbabwe*, Mambo Press, Gweru

Miller, Tyler, JR, 1996. *Living in the Environment: Principles, Connections and Solutions*, Wadsworth Publishing Company, Belmont

Mpofu, TG, Muponda, ZM, Mutami, N and Tavuyanago, B, 2009. *O'Level Southern African History*, Priority Projects Publishing, Harare

Ncube, Welshman, Stewart, Julie, Dengu-Zvobgo, Kebokile, Donzwa, Beatrice, Gwaunza, Elizabeth, Kazembe Joyce and Nzira, Tsitsi, 1997. *Paradigms of Exclusion: Women's Access to Resources in Zimbabwe*, WLSA, Harare

Ndangwa, N.2007. 'Indigenous Education Systems and their relevance for Sustainable Development: A Case of Southern Africa' In *Tribe and Tribals, Special Volume Number 1*: 167-172

Riddell, Roger, 1978. *The Land Reform in Rhodesia: Alternatives for the Future*, Mambo Press, Gwelo

Ward, H.G.1989. *African Development Reconsidered: New Perspectives from the Continent*, Phelps-Stokes Institute Publications, New York

Webster, A. 1990. *Introduction to the Sociology of Development*, MacMillan Press Ltd, London

Whitlow, Richard, 1988. *Land Degradation in Zimbabwe: A Geographical Study*, Department of Natural Resources, Harare

## **ABOUT THE AUTHORS**

Jemitias Mapira is a lecturer in Geography and Environmental Science at Great Zimbabwe University in the city of Masvingo.

Philip Mazambara is a lecturer in Religious Studies at Great Zimbabwe University in the city of Masvingo.