

**MIDLANDS STATE UNIVERSITY**



**FACULTY OF ARTS**

**DEVELOPMENT STUDIES DEPARTMENT**

**The impact of environmental change on rural livelihoods in Zimbabwe. The case of  
Hurungwe District Ward 13 (2006-2014)**

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**APPROVAL FORM**

The undersigned certify that they have read and recommend to the Midlands State University for acceptance a dissertation entitled: *The impact of environmental change on rural livelihoods in Zimbabwe. The case of Hurungwe District Ward 13 (2006-2014)*, submitted by **Emmaculate Mudimu R104063F** in fulfillment of the requirements of a Bachelor of Arts Honours Degree in Development Studies.

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## **DEDICATION**

To all those who dream and care for the betterment of human lives.

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May the Almighty continue to bless your paths and endeavors.

Last but not least, I am forever grateful to the Almighty God for having such great plans for my life, may thy will be done for the fulfillment of your plans for me.

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## **ABSTRACT**

The research investigated the impact of environmental change on rural livelihoods in Zimbabwe using the case study of Hurungwe Ward 13 using the qualitative research method which was complimented by the quantitative method. Focus Group Discussions, questionnaires and direct observations were used to gather information on how environmental change impacts on the livelihoods of the people in the area under study. Semi-structured interviews were also used to get information from key informants like AREX officials and Environmental Monitors from within the Ward. Both underlying and direct causes of environmental change were clearly articulated in the text. Results from the research revealed that there are serious negative impacts on livelihoods as a result of environmental change since soil degradation and climate change have lowered agricultural yields leading to poverty and food insecurity. Depletion of natural resources like vegetation and gold has also affected income earned from the exploitation of these resources and water pollution has led to health problems in both human beings and livestock. The research established that the situation has been worsened by over-reliance on the deteriorating natural resource base which is due to lack of livelihood diversification. It is important for the government and other relevant stakeholders to employ strategies to improve environmental management and livelihood diversification in order to ensure sustainable livelihoods in the country.

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## **INTRODUCTION**

The natural environment has always been a major source of livelihood resources like the soil, water, trees, rivers and minerals that form the backbone of the Zimbabwe's rural livelihoods. Both large scale resettled farmers and small scale communal peasants depend on it for food and financial income. However, environmental changes which have been gradually rising during the 20<sup>th</sup> Century and escalated with the intensification of the economic meltdown experienced in the country during the period between 2006 and 2014 are proving to be serious threats to these livelihoods through undermining the crucial natural resource base. The rise in unemployment in the country since 2006 led to over-exploitation and over-extraction of natural resources as people sought survival from the only freely accessible source of livelihood, the natural environment. Activities like gold panning, tobacco curing using firewood, stream bank cultivation and other poor farming methods have since led to the degradation of the environment such that it can hardly sustain livelihoods in most of the country's rural areas. This is being worsened by lack of economic diversification within the rural areas where people rely on agriculture only and climate change which is causing droughts in the country. This has had far reaching negative consequences on the living standards of Zimbabwe's rural population and on development at large.

According to the 2012 census, Hurungwe is the highest populated district among all of Zimbabwe's rural districts. The District's Ward 13 lies along one of the country's big rivers, Sanyati the residents are communal farmers who grow maize for subsistence, cotton and tobacco as cash crops which they grow under contract basis. They also practice gardening using water from Sanyati River and its numerous tributaries during the dry winter season. Gold panning and fishing also takes place along the river during this season. The Ward's livelihoods, like the rest of the country, can be said to be entirely environment-based with only a few people employed in small scale enterprises at its Business Centers. Livelihoods in the Ward have been sustainable until recently when lack of sustainability of the natural

resource base due to population increase, harsh economic conditions and climate change are affecting its livelihood strategies negatively leading to deteriorating living standards and unsustainable livelihoods.

## **BACKGROUND TO THE STUDY**

Environmental change is fast becoming one of the major threats to world development especially with resultant climate change and its various effects on global economic development. There are various Conventions and Protocols like the UNFCCC and the Kyoto Protocol that try to promote environmental management at global level. The Brundtland Commission of 1987 emphasized the unity between the environment and development and went on to add environmental sustainability as the third pillar of development, showing that environmental change has become a major problem globally. According to Sample (2007), it is estimated that up to 40% of the world's agricultural land is seriously degraded. Environmental degradation has impeded on global socio-economic development notably in developing countries whose economies are environment-based. Developing economies rely on agriculture and natural resource extraction and exploitation because industrialization is still low in developing countries. This poses the problem of environmental degradation during the extraction process and also of increasing the incidence of climate changes which is a result of land and atmospheric degradation. The World Bank (2009) estimates that developing countries will have to shoulder 75 to 80% of costs of damages caused by climate change and this shows the impact of environmental changes on development prospects for these countries.

Sub-Saharan Africa is one of the regions that have been greatly affected by environmental change probably because of the severity of poverty and droughts in the region which lead to over-dependence on natural resources and reduced capabilities to cope with shocks and stresses. According to Anderson et

al (2010), rain fed agriculture provides a third of the region's GDP and jobs for two thirds of its population. Climate change is affecting agriculture and consequently livelihoods of these people and development prospects for the region. Desertification, pollution of rivers and agricultural land degradation are some of the environmental changes that are affecting rural livelihoods as they impact negatively on farming activities and livestock production, the major livelihood strategies in the region where the majority live in rural areas and depend on agriculture.

This is particularly so in Zimbabwe where the economic meltdown has seen industries closing down leaving millions of people jobless and reliant on natural environment-based employment like agriculture and illegal mineral extraction as their major livelihood strategies. Alterations to the environment as a result of these activities is posing great danger to the livelihoods in the country's rural areas where lack of economic diversification is leading to over-reliance on and over-exploitation of the environment. The situation is worsened by climate change, another form of environmental change which the country is failing to cope with. Land degradation, the effects of climate change, pollution and siltation of water bodies are some of the environmental changes that are threatening rural livelihoods in Zimbabwe. According to Makwara and Gamira (2012), Whitlow (1988) contends that 1 848 000 hectares of land in all agro-ecological regions in Zimbabwe are eroded and an average of 76 tonnes of soil is lost per hectare through soil erosion. The soil that is left after erosion is usually of poor quality that cannot support plant growth, leading to low yields. That is why most of the country's rural populations are perennial recipients of relief food and remain poverty stricken

Hurungwe is one of Zimbabwe's rural districts which have been greatly affected by environmental change. The district's ward 13 received an influx of people migrating from urban areas and other districts seeking survival from its previously unexploited natural resources like land, forests, wildlife,

water and gold found along Sanyati River and a fair amount of rainfall. People living in the Ward have been prospering from agriculture and natural resource exploitation until 2005 but with the intensification of economic problems, natural resource exploitation became excessive and reckless leading to changes to the environment which consequently is impacting negatively on the district's livelihood resources and strategies. Gold panning along Sanyati River is damaging the river system, affecting supply of fresh water and tobacco production is also leading to deforestation and its numerous effects. Living standards are deteriorating and efforts being made by the government and NGOs to improve the quality of lives in the district reflect a lack of understanding of the toll that environmental change has taken on rural livelihoods in the country since they hardly seek to address environmental management issues and promoting sustainable livelihoods.

### **STATEMENT OF THE PROBLEM**

The majority of Zimbabwe's rural population depends on the environment for livelihood resources. People in Ward 13 of Hurungwe district used to produce very high yields from a sustainable environment but this has recently changed due to a deteriorating natural resource base. As the environment continues to deteriorate, livelihood strategies fail and so does living standards and human well-being. There is need for more research on the toll that environmental change has taken on rural livelihoods in order to understand its implications so that environmental management is practiced for the achievement of sustainable livelihoods.

### **SIGNIFICANCE OF THE STUDY**

The completion of this research will result in direct and indirect assistance to different institutions and individuals. It shall reflect the importance of environmental management in achieving sustainable rural livelihoods especially in communal areas where the land tenure system promotes environmental degradation. It shall provide critical findings that will be used by different development actors like the

Government, NGOs and Civil Society Organizations in the achievement of sustainable rural livelihoods and environmental management. It shall also enrich the Midlands State University library and help other students in their studies. The case study will also show the impacts of gold panning along rivers and of tobacco production on the environment and consequently on rural livelihood resources and outcomes in Zimbabwe. The researcher will also improve on research skills and acquire knowledge throughout the research.

### **RESEARCH AIM**

- To investigate the impact of environmental change on rural livelihoods in Zimbabwe.

### **RESEARCH OBJECTIVES**

- To find out the causes and indicators of environmental change in Ward 13 Hurungwe.
- To analyze the different livelihood strategies within Ward 13 Hurungwe.
- To investigate how environmental change impacts on livelihoods in Ward 13 Hurungwe.

### **RESEARCH QUESTIONS**

#### **Main Question**

- What is the impact of environmental change on rural livelihoods in Ward 13 Hurungwe?

#### **Sub-questions**

- What are the causes and indicators of environmental changes affecting livelihoods in Ward 13
- What are the different livelihood strategies in Ward 13?
- How does environmental change affect livelihood strategies in Ward 13 Hurungwe?

### **ASSUMPTIONS**

The research was done under the assumptions that:

- Environmental change has a profound impact on the livelihoods of Ward 13 Hurungwe.
- Environmental management policies are being implemented in resettlement areas and urban areas, leaving the marginalized over-populated communal areas where land degradation is affecting livelihoods.

## **CONCEPTUAL FRAMEWORK**

**Environmental change:** The term environmental change has a broad meaning as it can cover changes to the social, economic, political and biophysical environment. For the purpose of this paper environmental change will refer to the changes occurring on the biophysical or natural environment only. Therefore Environmental change can be defined as any alterations to the marine (water), atmospheric and terrestrial (land) environment and it includes climate change and land degradation.

**Rural livelihoods:** According to Scoones (1998), the Institute of Development Studies defined sustainable rural livelihoods as comprising of capabilities, assets and activities required for a means of living. These livelihoods should be sustainable, that is they should be able to cope with and recover from shocks and stresses, maintain or enhance capabilities and assets while not undermining the natural resource base. The element of a sustainable environment is very important in promoting sustainable livelihoods that eventually lead to sustainable development.

**Livelihood resources:** According to Scoones (1998), these are the basic material and social, tangible and intangible assets that people have in their possession or the capital base from which productive streams are derived from which livelihoods are constructed. Examples include natural capital (soil, water, air), human capital (skilled labor, knowledge, good health), financial capital (cash, credit, savings) and social capital (social networks, associations and affiliations). These must be combined for a successful pursuit of livelihood strategies.

**Livelihood strategies:** These are means of securing the necessities of life through utilizing a combination of livelihood resources, which are often heavily reliant on the natural resource base in most rural areas.

**Livelihood outcomes:** These are results or trade-offs of sustainable livelihoods. They must also be sustainable and lead to sustainable development.

## **LIMITATIONS**

Lack of resources especially financial and technical support that may result in inadequate information obtained or a less detailed statistic review for a more detailed research is one of the limitations to this research. Finance was required for transport to travel around the Ward for interviews, questionnaire administration and conducting focus group discussions. It was also required for typing and printing questionnaires and interview questions. Technical support was required for the interpretation and analysis of data obtained from the respondents. However the researcher made a budget to overcome financial problems and sought technical support for data analysis and interpretation from Midlands State University staff. Limited time to carry out the research fully was another limitation to the study which the researcher overcame by carrying out research activities during the semester break to supplement the time available for the research.

## **DELIMITATIONS**

The research was confined to Ward 13 of Hurungwe District with a population of 22 797 people and 4 840 households.

## **LITERATURE REVIEW**

Most researches on land degradation focus on the proximate causes of land degradation without examining the underlying causes. Proximate causes of land degradation are the direct causes of degradation like poor land cover, changes in climatic conditions and unsustainable land use while underlying causes are the indirect causes of degradation like land tenure systems, poor agricultural extension services and lack of access to markets. According to Nkonya et al (2011), underlying causes of land degradation affect and lead to the proximate causes for example, poor or lack of extension services lead to unsustainable land use. Researches on land degradation by scholars like Makwara (2012), Mutekwa (2009) look at the proximate causes of land degradation without an in-depth study of the factors behind these proximate causes of land degradation. This lack of depth leads to poor unsustainable policy responses on degradation since the underlying problems are not solved and degradation continues to undermine rural livelihoods. This study focused on both proximate and underlying causes of land degradation in order to promote sustainability of both environmental management and rural livelihoods.

Climate change has been a major area of study in most recent studies because of its dire effects on food security and livelihoods in the country but this research included it as a form of environmental change because of the complex interactions between the two. Scholars like Chigwada (2005), Mano and Nhemachena (2007) and Dube and Phiri (2013) have studied the impact of climate change on livelihoods in Zimbabwe but these focused on effects of climate change only, leaving out the effects of other environmental changes like siltation and water pollution due to gold panning, an activity that has resulted from climate change. According to Pender et al (2009), climate change and environmental change are related through interactions between the land surface and the atmosphere and these interactions flows in both directions. He says that climate change cause extreme events like rainfall



variability and high temperatures that lead to changes on the environment like desertification which in turn contribute to climate change. FAO (1976) argues that the word “land” has a wider meaning than just soil and goes on to include climate as a part of land thus making climate change a form of land degradation. From this perspective, this research included climate change as a part of environmental change instead of treating it as an independent variable because of its impacts on the environment and consequently on rural livelihoods.

There are several factors that contribute to sustainable rural livelihoods apart from the natural environment as mentioned by Chimhowu and Hulme (2006) but a critical analysis of these still shows that their sustainability lie on the natural environment. This is largely because of the economic problems facing the country and lack of economic diversification in rural areas that make people reliant on natural capital, the only livelihood resource that is accessible for free. Chimhowu and Hulme(2006) cited public policies such as resettlement and household strategies as contributory factors to the lack of sustainability of rural livelihoods but one can argue that the effect of these policies on the environment lead to the eventual lack of sustainability of livelihoods. Recent research by scholars like Adams, Sibanda and Turner (2000) and Ellis and Biggs(2001) has concentrated on the impact of socio-economic and political policies on livelihoods without taking into consideration the impact of environmental change on livelihoods in Zimbabwe and that is why this research seeks to address the issue. Thus this research looked at how the policies and lack of livelihood sustainability lead to alterations on the natural environment on environmental and livelihood sustainability.

According to Mutekwa (2009), although there are numerous recent regional and national studies of economic and agricultural productivity impact of climate change and variability, or the risk of it, and adaptation strategies in Zimbabwe and other southern African countries, there has been little focus on the views and perceptions of the smallholder farmers about climate change and variability and their

effect on specific agricultural activities. This shows that views of the marginalized small scale communal areas are left out in researches on the impact of environmental changes on rural livelihoods and therefore sustainable development policies and strategies exclude the specific views and needs of these people. In Zimbabwe there has been focus on the resettled farmers while communal farmers in former tribal trust lands are left out yet there is gross environmental changes brought about by the land tenure system which promotes the tragedy of the commons. Nkonya et al (2001) says that commonly shared resources are crucial to sustaining livelihoods of millions of people in India but he argues that they have long been neglected in policies and programs that aim to restore natural resources. This could be true for the area under study which is a remote and marginalized communal area and this research sought to establish whether environmental management policies are being implemented in Ward 13 in order to sustain livelihoods.

ActionAid International (2006) also postulates that policy responses to climate variability have been mainly driven by debates among scientists whilst insights of the poor people living on the frontline have been neglected. This leads to top-down policies that lead to alienation and land degradation as stated by Nkonya et al (2011). In the case study environmental change has been caused by the tragedy of the commons whereby there is no restriction or control over natural resource use and exploitation while implementation of government environmental protection policies and strategies do not cover the area probably because of its remoteness. This research included the views of these marginalized people with the aim of helping policy formulation and adaptive measures that include all level including the poor.

Most studies on the impact of environmental changes on livelihoods focus on its impacts on assets and activities leaving out its impacts on capabilities like resilience and adaptation methods. Factors such as self-esteem, security, happiness, stress, vulnerability, power, exclusion as results of sustainable livelihoods must be included when examining the impact of environmental change on rural livelihoods.

Scoones (1998) says that assessing resilience and the ability to positively adapt or successfully cope requires an analysis of a range of factors, including an evaluation of historical experiences of responses to various shocks and stresses. This study looked at the effects of environmental change on activities and assets as well as on capabilities as factors of livelihoods.

Studies on environmental change have been focused on areas where agriculture is the predominant land use whilst leaving the other livelihood strategies like extraction of minerals and other natural resources for sale. Illegal gold panning has grown to be a significant livelihood strategy in most of Zimbabwe's rural areas with some practicing it along rivers where the mineral has been deposited by water and some doing it on land. Water from the rivers is used to separate the mineral from mud and this is usually done using chemicals like mercury inside the rivers resulting in water pollution and its impacts on people, livestock and river ecosystems. According to Dube and Phiri (2013), livelihoods differ according to regions as they are ecologically dependent so there is need to examine the impacts of environmental change on different livelihood strategies rather than focusing on agriculture only.

## **RESEARCH METHODOLOGY**

Avison (2005) defined research methods as strategies of inquiry which moves from the underlying philosophical assumptions to research design and data collection. Therefore in undertaking this research, the researcher employed the qualitative research paradigm as the main paradigm and triangulated it with the quantitative method so that quantitative data can support qualitative research to oversee the weaknesses associated with using a single method. These techniques helped improve the accuracy of judgments by collecting different kinds of data through different techniques bearing on the same phenomenon thus, enhancing the belief that results are valid and not a mere methodological artifact.

## **RESEARCH DESIGN**

According to Best and Khan (2003), research design is the plan, structure and strategy of investigation conceived so as to obtain answers to a research control variance. The researcher used the case study technique for this research. This is because the case under study reflects what is taking place in most of the country's rural areas with environment degrading activities such as gold panning along rivers, stream bank cultivation and tobacco curing using wood leading to the deterioration of livelihoods. It is also experiencing the problems associated with land degradation that are being experienced in the whole country. The research therefore employed this technique with the belief that the case study will reflect the situation in the whole country.

## **SAMPLING**

According to Kumar (2011), sampling is the process of selecting a few from the bigger group and thus gives rise to the sample population. Cooper and Schindler (2006), state that the basic idea of sampling is that, through the selection of members of the population, the researcher may draw conclusions regarding the entire population, where sampling refers to the process of selecting elements to observe. For the current research, the sample included residents of Ward 13 Hurungwe district, AREX officials as environmental management actors in agriculture and environment monitors like village heads and other village members from within the Ward who monitor environmental degradation and enforce environmental protection laws.

### **Sampling Procedure**

In this research study, the process was done in three ways, cluster sampling, purposive sampling and simple random sampling techniques. The size of the sample was 75 people, 70 were residents of Ward 13 who were interviewed in 5 different Focus Group Discussion (FGD) sessions per village, each

session consisting of at least 12 respondents. Questionnaires were also administered to 50 residents. All respondents were chosen one per household so that information gathered represented a household's livelihood experience. The others were 2 AREX officials and 3 Environment Monitors from within the Ward.

### **Cluster Sampling**

This involves dividing the population into a number of units or clusters each of which is made up of individuals whose sub-population is then chosen for inclusion in a study. This technique is particularly useful when the population is widely dispersed and large, requiring a great deal of effort to get the survey information. This study employed this sampling method because the Ward is large, consisting of villages that are quite big. The clusters were made up of these villages and participants for Focus Group Discussions were selected randomly from within these villages and the discussions were held in sessions at each village.

### **Purposive Sampling**

In purposive sampling an individual sample with a purpose in mind, usually one would have one or more predefined groups. According to Kumar (2011), purposive sampling can be very useful for situations where one need to reach a target sample. A particular case is chosen because it reflects some features or processes that fit the interests of a particular study. Purposive sampling was used on AREX officials and Environment Monitors for interviewing as they have expert knowledge on environmental issues affecting the area.

## **Simple Random Sampling**

In selecting questionnaire respondents, the simple random sampling technique was used. Cooper and Schindler (2003) define it as a design in which the cases that will make up the sample are chosen in a single process of selection from the sampling frame that covers the entire target population. In this investigation the researcher opted to use simple random sampling which involves selecting the respondents at random from the sampling frame using random number tables. The researcher chose to use simple random sampling because each sample population has an equal chance of being selected and it is the only method of sampling that is without bias. This was used in selecting respondents from Ward 13 residents for questionnaire administration.

## **DATA COLLECTION**

### **Interviews**

The researcher used interviews as a way to obtain information. Gilbert (1993) defines interviews as sessions in which pre-association and hidden sources of feelings are discussed generally through a very close, unstructured question guide administered by a skilled interviewer. Semi-structured interviews were used by the researcher. Semi-structured interviews are informal and were used to explore a general area of the research with an in-depth probing and further questioning for clarification which enhanced the researcher to getting much information which interviewees might not have divulged. Interviews were aimed at Environmental Monitors and AREX officials and this tool had the advantage of getting information from people who have knowledge on the subject who have a proper understanding of the concepts under research.

## **Questionnaires**

The researcher also employed questionnaires as a method to obtain data. A questionnaire according to Williamson (1996) is a set of questions designed to generate the data necessary for accomplishing the objectives of the research project. Questionnaires were administered personally by the researcher to residents of Ward 13. This had the advantage that the researcher was be there to help in case the respondents encounter problems in interpretation of the questions. The researcher chose questionnaires because the questions are designed to gather information specific to the objectives of the research.

## **Direct observation**

This technique was used to support or complement the other techniques used to collect data. Observation had the advantage of validating information gathered in interviews and Focus Group Discussions. It is also a direct technique as the researcher simply observed and recorded activities and events for analysis.

## **Focus group discussions**

These were done with residents of Ward 13 through sessions per village. This helped the researcher to save time by enabling her to gather views from many people from one session. It was also easy to explain the aim of the research and the major concepts to a group instead of explaining to individuals which is time consuming. Discussions also enabled the elderly and the illiterate to participate since there was no need to read or write.

## **Secondary Data Sources**

A study of secondary data sources was also one of the methods that was used in the research in order to obtain information. Information was obtained from libraries, documentaries that were done by previous

researchers and scholars. The internet was also another source of information since a lot of organizations have regular online publications. This helped the researcher to gather information from previous studies by other scholars to support the research.

### **Pilot study**

The questionnaires were given to other students and the research supervisor before administration and distribution. This helped to detect inappropriate wording, poor language and poorly structured questions. It helped the researcher to eliminate errors and omissions and to determine the relevance of information to be gathered.

## **CHAPTER 1: AN OVERVIEW OF ENVIRONMENTAL CHANGE IN ZIMBABWE**

### **1.0 INTRODUCTION**

The chapter will present a detailed overview of environmental change as a phenomenon in Zimbabwe by discussing the direct and underlying causes of the aspect. Evidence of environmental change in the



country will also be highlighted within the discussion of the causes so that its existence is appreciated. The chapter will also give a brief account of how environmental change affects livelihoods on a national scale.

### **1.1 CAUSES OF ENVIRONMENTAL CHANGE IN ZIMBABWE**

Environmental change refers to any alterations to the environment due to natural events and human activities. These alterations consequently have negative impacts on the lives of people. Environmental change is an interdisciplinary problem which means its effects cover social, economic, environmental and political aspects of human lives. Makwara and Gamira (2012) say that soil erosion, a form of environmental change should not be viewed in a narrow geographical and historical framework for this is dangerously myopic. They say that only when physical and social processes combined, in the past and at present, are fully understood can contemporary patterns of soil erosion be understood and this also applies to environmental change. The continued degradation of the environment in any one location is a function of, not only physical factors, but, the cumulative land use decisions made by individuals within the context of their broader social, economic, political and cultural environments according to Makwara and Gamira (2012). These physical and social processes can further be divided into proximate or immediate causes and underlying causes of environmental change. There is a complex relationship between the proximate and underlying causes of land degradation and this implies that one underlying factor is not, in itself, sufficient to address land degradation. Rather, a number of underlying factors need to be taken into account when designing policies to prevent or mitigate land degradation according to Nkonya et al (2011). These changes are a result of numerous factors or a combination thereof, including anthropogenic (human-related) activities such as unsustainable land management practices and climatic variations. Land degradation and depletion of natural resources is a result of both natural and anthropogenic causes (International Food Policy Research Institute, 2011).The underlying and

proximate causes of land degradation and their impact on the environment and consequently on rural livelihoods in Zimbabwe are discussed in detail below.

### **1.1.1 Direct causes of environmental change in Zimbabwe**

As postulated by Nkonya et al (2011), proximate causes of land degradation are those that directly cause land degradation and these are further divided into biophysical factors and unsustainable land management practices. Biophysical factors can cause environmental change on their own if they are severe but most of the times, they are perpetuated by unsustainable land use practices and underlying causes. The proximate causes of the environmental degradation are discussed in detail below.

#### **(a) Unsustainable land use practices**

Biophysical factors lead to environmental degradation but it is anthropogenic activities that often trigger or exacerbate such ecological land degradation (Barrow 1991). These anthropogenic activities include unsustainable land use practices which perpetuate biophysical factors in causing environmental change. The most common and serious unsustainable land use practices and their effects on the environment in Zimbabwe are described in the following discussion;

#### **(i) Land clearing, deforestation and overgrazing**

These are common unsustainable land use practices in Zimbabwe with people clearing more land to extend their farmlands and to accommodate the increasing human population. Land clearing and overgrazing remove land cover thereby exposing land to both wind and water erosion. . According to

Makwara and Gamira (2012), in Zaka district land has to cope with the ever increasing population of both people and livestock resulting in the all too well known erosion effect. Tobacco farming which was previously done by large scale farmers has been taken up by smallholder farmers who are clearing more land for the crop and also to get firewood for curing the tobacco. Land clearing contributes significantly to deforestation and loss of habitats in Zimbabwe. Loss of biodiversity is also another significant result of these practices as both plant and animal species are lost when land is cleared or due to overgrazing.

According to FAO land clearing results in the reduction of biotic resources and lowering of productive capacity of forests through human activities. Deforestation has become one of the major environmental problems in Zimbabwe due to extensive clearing of farming land, use of firewood in tobacco curing and the use of wood as the major source of fuel in rural households. According to Masara (2012), as far back as 1997, the United Nations Development Programme (UNDP) reported that deforestation was a major problem facing Zimbabwe, where between “70,000 to 100,000 ha of forest cover [was] declining at a rate of 1.5% per year” and as a result, from 1990 to 2005, Zimbabwe endured a decline of about 21% in its forest cover, which amounts to approximately 312,900 hectares. He goes on to allude that the most unfortunate part is that indigenous trees take a long time to grow to maturity , between 75 and 150 years, unlike the exotic eucalyptus trees. Thus, when indigenous trees are cut at ground level, as is usually the case, they are lost forever. This shows that deforestation is indeed an ongoing problem which is posing a threat to the country’s indigenous tree species.

Tobacco farming has also been blamed for driving the process of deforestation as pointed out by Masara (2012). According to Chifamba and Chikwati (2012), the majority of smallholder tobacco farmers in Zimbabwe rely solely on firewood to cure their tobacco since coal and electricity, and the associated infrastructure is beyond the reach of smallholder farmers, thus the farmers are left with no option other than indigenous forests. In 2011, an estimated 46,000 hectares of forest had been cleared,

and about 1.38 million cubic metres of firewood burnt to cure part of a 127 million kg tobacco output as stated by Thornycroft (2011). These figures are expected to grow as the production of the crop and the number of tobacco farmers continues to expand due the lucrative prices offered for the crop and the fall of cotton prices on the Zimbabwean market. The newly resettled farmers use mainly firewood to cure their tobacco because they cannot afford to buy and maintain the coal burners that were previously used by white farmers. Tobacco curing using firewood thus poses a great danger on Zimbabwe's forests as some areas are nearly suffering from desertification due to deforestation.

### **(ii) Stream bank cultivation and improper waste management**

These are other significant causes of concern on the environment in Zimbabwe as they are proving to be hazardous practices that have been taking place for many years without any remedies being implemented to curb them. The release of toxic contaminants like chemicals from industries and wastes from sewerage systems and dumpsites into water systems by human activities are some of the most common improper waste management practices that are causing environmental change in Zimbabwe. Improper waste management has been blamed for the deteriorating water quality in the Manyame catchment, which includes Mukuvisi River, and Lake Chivero according to Taruvinga et al.

Also, water pollution is being caused by contamination by agricultural chemicals like pesticides and fertilizers because of stream bank cultivation. People grow their crops along watercourses because they retain moisture for longer periods and some practice gardening along river banks and stream banks for easy access to water during the winter season and some of them dispose empty pesticide containers by throwing them into the rivers. According to FAO (1996), runoff of nutrients especially phosphorous causes odor in public water supply and excess algae growth leading to deoxygenating of water and kills water life. Algae growth is a threat in Zimbabwe's water reservoirs like Lake Chivero whose choking

problem is believed to be a result of agricultural runoff according to The Herald (2011). Choking leads to the depletion of nutrients for aquatic plants resulting in poor plant growth which disturbs the oxygen cycle in the water resulting in the disruption of water ecosystems and reduces the storage capacity of water bodies. Pesticide runoff leads to contamination of surface water and biota, dysfunction of ecological system by loss of predators due to growth inhibition and reproduction failure and leaching of chemical pollutants into the ground also make groundwater unsafe for human consumption.

Stream bank cultivation also leads to siltation of water bodies through the deposition of soil eroded from the nearby cultivated lands into water bodies. According to the herald (2011), most of Zimbabwe's major rivers like the Save and Mazoe Rivers are threatened by extinction because of siltation. People cultivate along rivers because of the fertile soils found on flood plains and also because the soils are still virgin since they were never used for agricultural purposes before. When the rivers get flooded, the loosened soil on the flood plains is eroded into the rivers and this causes siltation which reduces the quantity of water for household, agricultural and industrial use. Siltation is a result of the deposition of soil particles into water bodies usually through water erosion and choking results from the draining of chemicals that contain excessive nitrogen and sulphates which are needed by plants into river systems leading to rapid growth of aquatic plants in water bodies.

### **(iii) Illegal gold panning**

This has recently impacted negatively on both the terrestrial and the marine environment in Zimbabwe since it is being practiced both on land and along rivers. On land, gold panning is leading to loss of arable land since the gold panners do not reclaim or restore the land by filling up the holes that they dig during the panning activities. The biggest impact is on the marine environment where they dig out holes

along the rivers, excavating sand which they do not replace and which eventually leads to siltation which fills up major pools that used to retain water during the winter season. According to The Herald (2011), siltation is becoming endemic in Zimbabwe especially where there is acute illegal gold panning where rivers are being reduced to rivulets. This is affecting major rivers like the Mazoe River and the Save River whose majesty is now a story of folklore and historians as stated in The Herald (2011). Siltation leads to the shrinking of water bodies thereby reducing their carrying capacity and consequently the availability of water for consumption throughout the year.

Some of the illegal gold panners pump water out of big pools in order to get gold deposited on the beds of the pools thereby disturbing water ecosystems thriving in the pools and their pumps leak fuel which contaminates the water. Moreover, gold panners use chemicals like mercury to separate gold from the sludge. They use water from the rivers in doing this and they dump the sludge containing the chemicals into the water, polluting the water with mercury which affects fish and consequently pose health threats on people who eat the fish according to the Herald (2011) According to Taruvinga et al, heavy metals in water and sediments are of particular concern because of their potential toxicity to human beings and aquatic life even at very low concentration.

#### **(iv) Cultivation on steep slopes**

This practice is gradually becoming a major cause of environmental concern in Zimbabwe. Mountain slopes, hills and vleis were once deemed land unsuitable for cultivation but recently these are being used for human settlement and cultivation. Despite the Land Reform Programme, it seems there is still pressure on the land which is leading to this practice. According to Makwara and Gamira (2012) land pressure in Zaka District has become so high that marginal or unsuitable land has been and is still being brought into cultivation and since field extension is done at the expense of mountain slopes, vleis and grazing lands, it means there is overgrazing. This practice is rampant in Masvingo and Manicaland

provinces and also in other parts of Zimbabwe and it is a major cause of soil erosion and land degradation in the country. Cultivation of steep slopes means the clearing of trees for cultivation which further removes plant cover and loosens the soil leaving the slopes vulnerable to erosion.

Cultivation of steep slopes leads to deforestation and is consequently a major cause of soil erosion which causes loss of arable land and depletion of soil fertility. Soil erosion is a major problem that has profound effects on the environment particularly on soil fertility in Zimbabwe. According to Kariaga (2000), there is little, if at all any effort made to compensate nutrient loss and unfavorable physical soil properties that result from the process of soil erosion. This has resulted in the decline in soil fertility as the fertile topsoil that is washed away during erosion is the most fertile soil. Whitlow (1988) says that the rate of soil formation in Zimbabwe is approximately 400kg per hectare per year and this cannot compensate for the 76 tonnes of soil that he says is lost through soil erosion per year. Gullies and dongas are common features in all of the country's agro-ecological regions as a result of soil erosion which exists in all its forms from splash, sheet, rill to gully erosion. Farmers in Zimbabwe usually do not make any efforts to reclaim land affected by soil erosion but they leave the affected areas and go on to clear more land for farming. A Zimbabwean study of soil nutrient loss through erosion found that an erosion rate of 30t/ha /year, typical of many communal subsistence farmers, removed half the applied fertilizer. The replacement of these lost nutrients at national level would cost \$2.540 million each year (<http://www.sardc.net/imercsa>).

#### **(v) Bush burning**

Vegetation loss as a result of bush burning has far reaching consequences on the environment which include wind and water erosion due to poor land cover, desertification and loss of biodiversity that thrive on natural vegetation. Destruction of natural vegetation directly leads to reduced residues from plants,

leading to organic matter loss (FAO 1994) and consequently a decline in soil nutrients and physical structure. Makwara and Gamira (2012) state that by removing vegetation, fires take away organic matter which would otherwise have improved the soil and removed protection from the rain and sun. They also say that burning also tends to seal the soil surface and this increases resistance to water penetration which means there is less infiltration into the soil and more run-off that causes soil erosion. In Zimbabwe vegetation loss is a result of deforestation, veld fires, overgrazing and droughts and high temperatures due to climate change.

Bush burning is a serious problem in Zimbabwe, most of them being human-induced. Most of them are a result of land clearing for agricultural purposes or for hunting and recklessness by smokers while some occur by mistake. Bush fires have deadly effects on the environment because they cause vegetation degradation, loss of some plant species and leaving soils susceptible to both water and wind erosion. Animal habitats are also destroyed and food for browsers is destroyed resulting in loss of wildlife species and destruction of ecosystems.

### **(b)Biophysical factors**

These are natural and biological processes that lead to environmental change through their negative impacts on the environment (Nkonya et al (2011). These usually cause environmental degradation due to poor adaptation to the hazards that they pose and lack of proper management of resources affected by the processes. The biophysical proximate causes of land degradation include;

#### **(i) Topography**

Soil erosion is a function of slope length, land cover, and steepness according to Voortman, Sonneveld and Keyzer (2000). Steep, long slopes are vulnerable to both water and wind soil erosion especially if



they have poor land cover with no physical barriers to prevent erosion. The severity of water- and wind-induced soil erosion is higher if land clearing is done on mountain slopes as is the case in Zimbabwe's Masvingo and Manicaland provinces where mountain slopes are being cleared for settlement and for cultivation. Lands located in dry land or areas prone to extreme weather and geological events (such as volcanic activity, hurricanes, storms, and so on)—show low resilience and are thus vulnerable to erosion, salinization, and other degradation processes according to Safriel and Zafar (2005) as quoted by Nkonya et al (2011). Some areas in Zimbabwe are prone to storms, hurricanes have affected the Eastern Highlands though at a small scale and cyclones (cyclone Eline) have affected Manicaland and Masvingo provinces with the usual consequences on the environment.

## **(ii) Climate**

According to Nkonya et al (2011) climate directly affects terrestrial ecosystems, for example, dry, hot areas are prone to naturally occurring wildfires, which, in turn, lead to soil erosion, loss of biodiversity, carbon emission, and other forms of land degradation. They go on to say that strong rainstorms lead to flooding and erosion, especially if such rainstorms occur during the dry season in areas with poor land cover. Safriel and Zafar (2005) cited by Nkonya et al (2011) postulate that low, infrequent and erratic rainfall lead to a low soil-moisture content which leads to reduced plant productivity and high runoffs, resulting in erosion and salinization since salts in the soil surface are not leached into deeper soil layers. Other consequences of climate change include reduced rainfalls, which lead to changes in land use or to a reduction in land cover due to prolonged droughts. All these climatic events are occurring in Zimbabwe with the above mentioned results on the environment.

Climate variability is expected to intensify land degradation and affect land management practices in maintaining land and water resources according to Pender et al (2009). Zimbabwe is experiencing

climate change principally through shifting rainfall patterns and extreme events like the frequent occurrence of droughts and floods. These shifting rainfall patterns include a shift in the rainy season and the occurrence of low and erratic rains that is increasing the incidence of drought in the country according to Dube and Phiri (2013) who quoted a villager from one of their focus group discussions in Matobo as saying “ ... it’s like gambling. In some years it is possible to start early and the crops wilt and die while those who started late may be able to reap ... it is unpredictable.” They go on to say that climate change has altered the physical geography of the Matobo area leading to a disappearance of flora and fauna and other natural habitat that constituted the livelihoods of the local people. The DFID Zimbabwe (2009) reports that other potential changes include increased temperatures especially in the dry season and decreased/varying river flow that is affecting the quantity of water available for household, agricultural and industrial use.

### **(iii) Soil vulnerability**

This refers to the lack of capacity to resist erosion by some soil types due to their properties. Soil vulnerability is determined by different factors that include among them climate and soil properties like size of soil particles and soil texture. Some soils are easily eroded than others so the soil type of a particular area determines the rate of erosion. According to Nkonya et al (2011), soils vary by climate due to the impacts of temperature, precipitation, vegetation type, nutrient and organic matter content, degree of leaching, etc. Wind erosion is more common in arid and semi-arid climates, and in periods of drought and water erosion is more common in areas with less permeable soils under less plant cover that receive high rainfall or floods. There are some areas that are prone to erosion due to their soil types which are vulnerable to wind and soil erosion.

### **1.1.2 Underlying causes of environmental change in Zimbabwe**

Underlying causes of environmental change affect the environment in an indirect manner. This may be through putting stress on the environment by making it handle more than it can without any upgrading systems, for example the high population density which depends on the environment for survival in Zimbabwe's rural areas. Policy and institutions, although most often thought of as the response to mitigate such change, may also drive environmental change and impact directly on human vulnerability according to UNEP (2010). Other socio-economic factors like poverty affect the proximate causes of land degradation through perpetuating unsustainable land use and also through poor implementation and non-implementation of land management strategies. Underlying factors are responsible for environmental change to a greater extent in Zimbabwe and they affect the environment as discussed below.

#### **(a) National Policies**

According to Nkonya et al (2011), policies have a large impact on land management practices since policies could have a direct or indirect impact on land users' behavior. Policies with a top-down approach lead to degradation of land and its natural resources. In Zimbabwe there are several policies that directly or indirectly affect environmental management either through poor implementation or through non-implementation in certain areas. For example, if the environmental Management Act is not implemented in marginal remote rural communal areas where there is gross mismanagement of natural resources this leads to environmental change in these areas. Also, the Land Reform Programme did not include environmental management education for the newly resettled farmers and this leads to cutting down of trees indiscriminately since smallholder tobacco farmers rely solely on firewood to cure their tobacco according to Chifamba and Chikwati (2012). These farmers may also pollute water reservoirs,

overfish and intoxicate soils through incorrect fertilizer use. Nkonya et al (2011) say that fertilizer subsidies have also led to overuse of input or other farmer behavior, which have been harmful to the environment. In Zimbabwe the government has been availing fertilizers to farmers for free and this might pose the problem of fertilizer over-application showing that such farmer behavior is influenced by national-level policies.

### **(b) Local environmental management institutions**

Land management institutions are important drivers of land management practices. Strong local institutions with a capacity for land management are likely to enact national policies, bylaws and other regulations that could enhance sustainable land management practices as pointed out by FAO (2011). In Zimbabwe environmental change is exacerbated by the failure to implement environmental management and protection practices by local environmental management institutions like the Environmental Management Agency and Local Authorities among other institutions. The actions of these institutions should prevent and mitigate the impacts of the proximate causes of environmental change but their inaction promotes and leads to environmental degradation.

### **(c) Lack of access to Agricultural Extension Services**

Access to agricultural extension services enhances the practice of sustainable land management. Lack of extension services in Zimbabwe may lead to environmental degradation since most smallholder farmers do not have proper land management know-how. They do not have knowledge on how to maintain soil fertility, curb soil erosion and overgrazing and the importance of maintaining forests and wildlife. According to Kassie et al (2010) cited by Nkonya et al (2011), extension services, public research, and trainings do not always require the introduction of new technical solutions; rather, sometimes the

encouraged use of simplified techniques, such as vegetation barriers and stone buds can have large impacts. This shows the importance of agricultural extension services even without technology as characteristic in less developed countries like Zimbabwe

#### **(d) High Population Density**

According to UNEP (2010), each year, the number of people increases, but the amount of natural resources with which to sustain this population, to improve the quality of lives and to eliminate poverty remains finite, increasing the challenge of sustainable development. Despite the fast-track Land Reform Programme in Zimbabwe, there is evidence of pressure on land due to population increase. This evidence is in the form of cultivation on steep mountain slopes which are unsuitable for cultivation countrywide. A growing population has an increasing need for financial income and food, things that are dependent on land use in Zimbabwe. According to Nkonya et al (2011), rapidly declining per capita land area is associated with the conversion of forest land and other land use into cropland. They say that expansion into more fragile land has also been a common challenge accompanying declining per capita arable land area. Giller et al. (1997) points out that increasing pressure on agricultural land have resulted in much higher nutrient outflows and the subsequent breakdown of many traditional soil-fertility maintenance strategies, such as bush-fallow cultivation and the opening of new lands. Fallow periods have decreased, and soil regeneration through long-term fallow can no longer be maintained.

#### **(e) Land Tenure Systems**

Diverse systems of landownership, tenure, and land rights exist in Zimbabwe, with different degrees of tenure security. The most common land tenure system in Zimbabwe's rural areas is communal land ownership whereby land is commonly owned by a community under traditional leadership by chiefs and

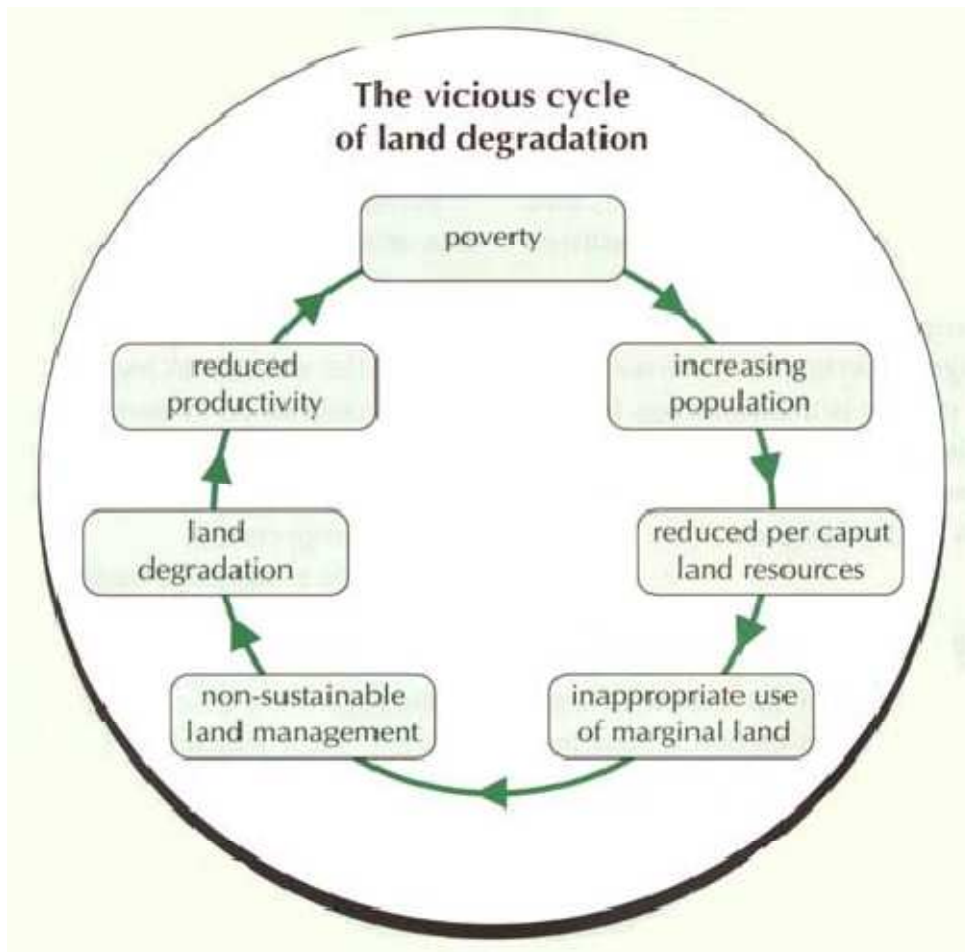
village heads. This type of land tenure is problematic in that the resources are owned by everyone so everyone has control over the use and abuse of the resources. According to Nkonya et al (2011), secure land tenure is vital for providing an incentive to invest in soil and water conservation measures but insecure land tenure can lead to the adoption of unsustainable land management practices. According to Chimhowu and Hulme (2006), land permits in Zimbabwe offer a bundle of resource use rights that the state can withdraw at its pleasure. They pointed out that a state appointed commission of inquiry into tenure arrangements made the observation that tenure insecurity introduced uncertainty and risk that affected the livelihood gains that extra land provided (Government of Zimbabwe, 1994). This suggests that there is a positive correlation between land tenure security and proper management and conservation of natural resources especially land.

#### **(f)Poverty**

The relationship between poverty and land degradation is a chicken-egg issue. According to Nkonya et al (2011), one school of thought posits the vicious cycle of poverty–land degradation, which states that poverty leads to land degradation and that land degradation leads to poverty (Way 2006). In what Reardon and Vosti (1995) termed *investment poverty*, poor land users lack the capital required to invest in land improvement. They lack the capita to invest in conservation and reclamation of land lost due to degradation. They also do not have funds to buy fertilizers and tools needed to boost productivity and in resource conservation and this puts pressure on marginal lands, which are cultivated to add to the family income. Safriel and Adeel (2005) in Nkonya et al (2011) describe this process as a downward spiral of low productivity and land degradation in which “poverty is not only a result of desertification but a cause of it” (Safriel and Adeel 2005: 646). UNEP (2010) posits that the lack of employment and other livelihood opportunities, as well as setbacks in education, health and other capabilities in developing

countries, may mean that these people will have increased natural resource dependence and pose new threats to the sustainability of marine and terrestrial ecosystems. Degraded environments may spur further social and economic conflicts and hardships thereby increasing poverty. The relationship between poverty and land degradation is summarized in the diagram in **Figure 1.1** below.

**Figure 1.1. The cycle of processes leading to and perpetuating land degradation**



Source: FAO (2006)

## **1.2 ENVIRONMENTAL CHANGE AND LIVELIHOODS IN ZIMBABWE**

Environmental change is becoming a serious cause of concern in Zimbabwe to such an extent that it is becoming a hazard on livelihoods especially in rural areas that heavily rely on the biophysical environment for survival. It undermines the capacity of rural populations to cope with and adapt to its effects as well as undermining their resilience in the face of poverty and food insecurity (FAO, 2006). Adaptation, resilience, poverty reduction and wellbeing enhanced are the outcomes and therefore indicators of sustainable livelihoods according to Scoones (1998). Lack of livelihood diversification is leading to difficulties in coping with the effects of the different forms of changes on the environment like climate change and soil degradation in the country (UNEP, 2010). The coping capacity of human society is a combination of all the natural and social characteristics and resources available in a particular location that are used to reduce the impacts of hazards (IATFDR 2001). Environmental change is degrading the natural characteristics and resources that enhance coping capacities and resilience of livelihoods in rural areas leaving the people vulnerable to unsustainable livelihoods. This has had far reaching negative consequences on the living standards of Zimbabwe's rural population and development at large.

Changes on the environment also affect the activities and resources that are required for a means of living in Zimbabwe. Chigwada (2005) says that changes in rainfall and temperature associated with climate change increases the risk of livelihood systems failing to produce adequate food and seed, or to provide sufficient income to purchase adequate food and seed to meet household needs. The natural resource base is also experiencing changes and its sustainability is under threat. UNEP (2010) is of the opinion that the degradation of the natural resource base impinges on the livelihoods of all, but particularly rural, communities. The sustainability of the natural resource base is both a requirement and



an outcome of sustainable livelihoods according to Scoones (1998). The effects of environmental change on Zimbabwe's rural livelihoods will be fully outlined in the next chapter with evidence from the case study, Ward 13 Hurungwe District.

## **CONCLUSION**

The chapter highlighted and discussed the various factors behind environmental change in Zimbabwe. These factors were divided into underlying factors and direct or proximate factors which were further divided into biophysical factors and unsustainable land use practices which either occur due to natural processes or are human induced (anthropogenic). It further highlighted that underlying factors influence and perpetuate the direct causes of environmental change. During the discussion, various forms of change that have occurred on the environment in the country have been highlighted and these include loss of arable land depletion of soil nutrients, loss of biodiversity, water pollution and climate changes. A brief account of the effects of environment change on the livelihoods of Zimbabwe's rural population which is going to be expanded in the next chapter was also given.

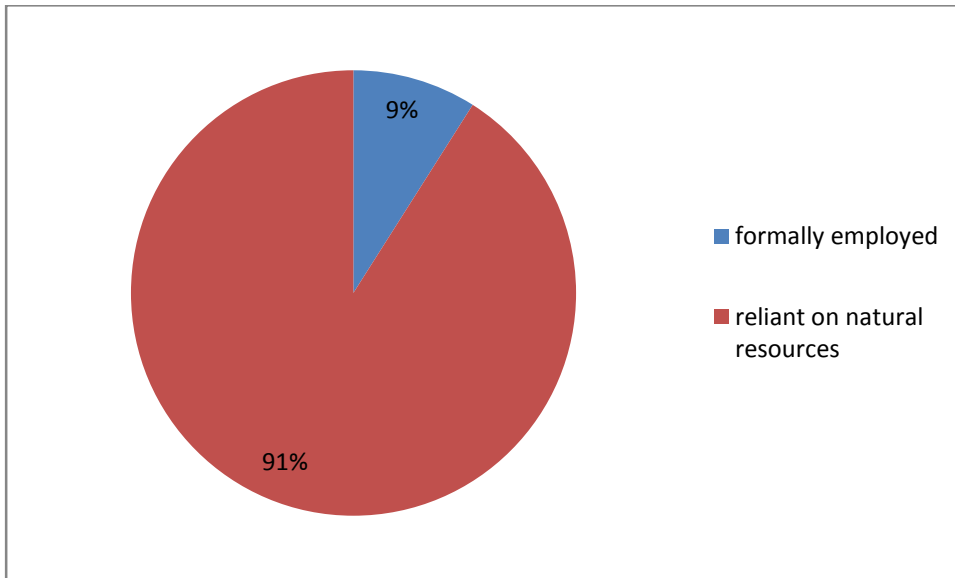
## **CHAPTER 2: ENVIRONMENTAL CHANGE AND RURAL LIVELIHOODS IN HURUNGWE DISTRICT WARD 13**

### **2.0 INTRODUCTION**

This chapter will present a detailed outline of the effects of environmental change on rural livelihoods while focusing on the case study, Ward 13 Hurungwe district. The effects of environment change will be analyzed in this chapter according to how they affect the livelihood strategies of the people in Ward 13 to make a living while basing on the perceptions of respondents to this research.

### **2.1 LIVELIHOOD STRUCTURES IN WARD 13 HURUNGWE**

Information gathered in this study showed that there is acute lack of livelihood diversification in the area under study since most of the respondents were unemployed and their household incomes are based on agricultural activities. Information gathered during FGDs showed that people in Ward 13 rely on natural capital like the soil for agricultural activities, rivers and streams provide water for human and livestock consumption, trees provide fuel energy and food, fish and wild animals supplement food and income from agriculture and gold panning also supplements agricultural income. As presented in **Figure 2.1** on page 37, 68 out of 70 (91%) sampled respondents rely on the natural environment especially land as their main source of livelihood and even the formally employed 7 (9%) respondents also practice agriculture which means that the natural capital is the basic livelihood resource for a means of living in the area. It was also established that the people's economic capital comes from the exploitation of natural resources and the degradation of these resources has led to the deterioration of living standards in the area.



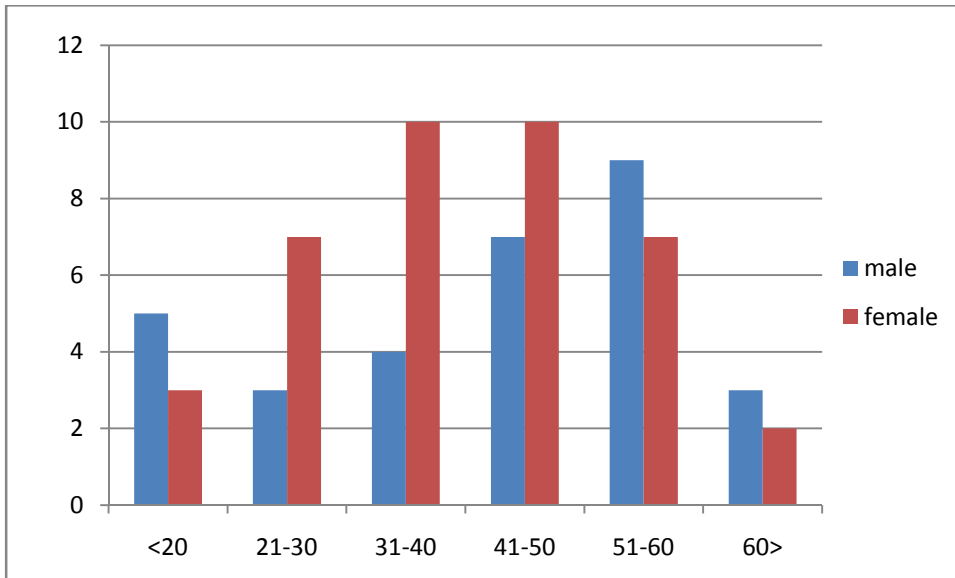
**Figure 2.1: respondents' occupation in Ward 13 Hurungwe**

Only a few of the residents of Ward 13 have been able to diversify into retail businesses like grocery and clothing shops and grinding mills at the local Business Centers within the Ward. However these few retailers also practice agriculture as a means of survival with retailing as a supplementary activity since they sometimes close these businesses to concentrate on farming during the rainy season. These retail businesses have been unable to provide employment for many as the owners and their family members operate them. Income from these retail businesses is also dependant on agriculture since the customers get their income from agriculture. According to one of the retailers at Batanai Business Center who is also a farmer,

“This is not profitable at all, sometimes we end up using money from agriculture to buy goods for resale since the business cannot sustain itself. I cannot afford to pay a worker so I open the shop myself when I come back from the fields.”

This shows that economic diversification for the area is nearly impossible since there is no other lucrative economic activity to diversify into or to employ people besides agriculture.

Due to lack of livelihood diversification, the demographic trend of Ward 13 has also been affected by environmental change. The majority of the male respondents were from the 41-50 years, 51-60 years and the 60 years and above range and most of the 21-40 years range are women as shown in **Figure 2.2** on page 39 below. This shows that the area is largely settled by women and the elderly men and respondents said that this is because the young men have moved to other areas to seek employment and greener pastures as the environment can no longer sustain them and their families. These emigrants however leave their wives and families to take care of their homes and to make sure that their pieces of land are not reallocated in case they have to come back. These wives and families receive remittances in form of cash and other basic goods like clothes and building material to maintain the homes and family members left behind. Thus environmental change has intensified lack of livelihood diversification leading to the migration of the productive and reproductive young men from the area under study thereby undermining livelihoods by lowering production.



**Figure 2.2: age-sex ratio of respondents showing demographic trends in the area**

## **2.2 LOCAL PERCEPTIONS ON ENVIRONMENTAL CHANGE AND LIVELIHOODS**

The natural environment is crucial to the realization of sustainable livelihoods such that if there are negative changes to the environment they will impact negatively on these factors and consequently on the livelihoods that depend on it. Environmental change affects rural livelihoods in many different ways since rural populations are dependent on the natural environment and its resources according to Scoones (1998). This is true for the area under study whose livelihoods are depended on the natural environment. This research found out that there is lack of livelihood diversification in Ward 13 due to the fact that the livelihoods are mainly based on natural resource exploitation. Livelihood activities in the area include crop production, livestock production, and illegal gold panning and other natural resource extraction activities. The following are perceptions of people of Ward 13 of how environmental change has affected the given livelihood activities.

### 2.2.1 Crop Production

Crop production which respondents listed as one of the major activities that are practiced to earn a living in Ward 13 has been greatly affected by environmental change. According to an elderly member of the area during a Focus Group Discussion, people used to produce high maize and cotton yields such that some people lived on income from the sale of these crops and also as middlemen in the sale of these crops. However this is no longer taking place as poor soil fertility has greatly lowered yields. Also, FGDs revealed that living standards have been deteriorating since 2006 due to low yields from agriculture as a livelihood strategy. Financial income and food security from agriculture is also reported to be declining since yields are also declining due to soil degradation and droughts. One FGD respondent said,

“Taisienda kuKarozi kunotengera vana hembe nezvekudya nemari yecotton  
asi mumakore apfuura aya takungotenga pamagiroso apa nekuti kukwira  
bhazi kwatova kutambisa mari sezvo mari yacho yaashoma, minda yacho  
haichabhadhari. Hatichakwanise kukohwa zvekudya zvakakwana uye mari  
yekuendesa vana kuchikoro yakunetsa kuwana, vazhinji havachatoendi kuchikoro”

According to this respondent, agricultural production has lowered due to poor soil fertility to the extent that it cannot meet the food needs of families and it has become pointless to travel to town to purchase goods since financial income from agriculture has declined.

There has been gross degradation of natural resources in Ward 13 especially on land. Soil erosion has led to the deterioration of soil fertility through the washing away of the fertile topsoil leaving the less fertile subsoil which cannot support plant growth. It has also led to the loss of arable land as large tracts

of land is rendered unusable as they are turned into gullies and rivulets as observed and shown on page 34 in **plate 2.1** . This loss of fertile soil and previously arable land has led to lower yields and a reduction of the people’s capabilities to adapt and eradicate poverty and impaired their resilience in the face of poverty.



**Plate 2.1 soil erosion in Ward 13 Hurungwe**

Crop production has also been affected by changes in climatic conditions that have been noted during the Focus Group Discussions. Respondents said that there has been an increase in the frequency of droughts in the area and shifts in the rainy season which is said to be shortening by the residents of Ward 13. Several respondents alluded that the rainy season was coming in late and ending early thereby prolonging the dry season, causing low yields and food insecurity since the growing period for crops is shortened. Climate change was also noted in form of the absence of off-season rains as pointed out by one elderly FGD respondent who was quoted as saying,



“ makore ano hakuchina vana Mavhurachando, Gukurahundi nana Bumharutsva. Taisidyara cotton kuma 20 October asi ikozvino mvura inogona kusvika kuma 20 December isina kunaya.....”

This shows that rainfall patterns have been affected by climate change through the absence of some off-season rains and late rains that has affected agricultural production through short rainy seasons and long dry winter seasons.

According to interviews conducted with AREX extension officers, they promote crop production through providing information on sustainable land use practices in agriculture like agricultural intensification to reduce deforestation through extensive land clearing, avoiding overgrazing and use of organic material to improve soil structure and fertility. They also help control soil erosion by helping farmers construct contour ridges. However, both officials interviewed said that the main challenge to improving production has been the inability of the farmers to adapt and cope with the effects of climate change on their farming activities. They said that despite the provision of inputs by the government, agricultural production has not improved as some people have to sell these inputs to get money to buy food because of the food insecurity which has been dogging the area due to perennial droughts experienced during the past two decades.

Production from vegetable and fruit gardening along the Sanyati River and its tributaries is also another important livelihood activity carried out in the Ward that is reported to have been affected by environmental change. Gardening was listed as a livelihood activity by all of the questionnaire respondents and the fruits and vegetables produced are used for household consumption and are also sold for financial income. However, the river and its tributary streams have been greatly affected by siltation as a result of streambank cultivation. FGD respondents have decried the effect of siltation

especially along the Sanyati River, their main source of water for consumption and irrigation of tobacco seeds and vegetable gardens. They said that siltation has resulted in the disappearance of major pools that used to retain water throughout the dry winter season, now the water can no longer last the season because the pools have filled up with sand. Illegal gold panners also use water pumps to empty big pools in order to pan their beds thereby reducing the quantity of water for watering these gardens.

### **2.2.2 Livestock production**

Livestock keeping is another livelihood in Ward 13 that has been affected by environmental change. Livestock kept in the area include cattle, goats, sheep and poultry include turkeys, ducks and chicken. Information gathered from FGDs said that these provide draught power, meat, milk and they are sold or traded for other livelihood necessities like food especially in the light of perennial drought and low yields that have been characteristic of the area in the last decade. Cattle are the most important livelihood asset as well as the only form of draught power used in the area and loss of them means declining agricultural productivity. It also means increasing poverty among the people since cattle are sold or exchanged for other basic necessities like food and money to maintain health in the families.

However, according to FGD responses, livestock herds in the area have declined in both quality and quantity due to climate change related droughts and diseases like tick borne diseases and tsetse fly. This was confirmed in an interview with an official from the Veterinary Services Department in the area who said that there has been an increase in the tick worry disease among livestock in the area. He said that ticks cause loss of blood, retarded growth and loss of weight among livestock and this result in high mortality levels and reduced milk supply. He said that this results from the conditions created by the changing climatic conditions that are favourable for the diseases. He also said that climate change was

affecting livestock production in the area through droughts that lead to inadequate food especially during the elongated winter season when the grass dries away. The Veterinary Services officer said,

“There has been an increase in diseases related to climate change in the area and it seems as if the local cattle breeds have failed to adapt to prevailing climatic conditions. There are also disease vectors that favour hot temperatures that has made the situation worse.”

The shortage of food is worsened by overgrazing in the gradually shrinking communal grazing lands which are being put under cultivation as population density is increasing in the area.

### **2.2.3 Illegal gold panning**

Illegal gold mining along Sanyati River is also another off-farm income earning activity that is practiced in the area during the winter season when the residents are not farming. As many as 90% of questionnaire respondents listed gold panning as one of their sources of household income. FGD respondents said that recently the local people have been panning as contract workers for illegal gold panners who use pumps to drain water out of pools in order to access the gold deposited on the river bed. The locals work as labourers in pumping water and separating gold from sludge for money while some still do it the traditional way of digging the river bed and washing out gold from mud. Respondents said that this gold is sold to local middlemen operating along the river who are locally called “*mabuyer*” who then sell it to other illegal gold dealers in urban areas. Thus illegal gold panning is a source of livelihood for both the panners and the middlemen in the area.

However gold panning is no longer sustainable since the resource has been depleted as noted by respondents who say its availability is low since it is now found on the beds of big pools and

underground unlike before when it was available along riverbanks and on the surface. One FGD respondent who is a renowned gold panner in the area was quoted during a session as saying,

“goridhe raimbobhadhara zvekuti kare kwangu ndaisarima cotton nekuti ndaibata

mari yaikwana kutengera mhuri yangu hembe neshuga asi mazuvano haa

hamusisina chinhu munaSanyati umu, zvangova zvekukiyakiya”

This shows that the depletion of gold means the disruption of livelihoods for many people in Ward 13 and more reliance on agriculture only since gold panning was the main alternative for most of the people.

#### **2.2.4 Fish and Wildlife**

FGD respondents have also decried the reduction in the amount and size of fish that used to be abundant along the Sanyati River. The elderly FGD respondents said the amount and size of fish has decreased due to overfishing by people who use fishing nets and the breaking of taboos that used to be followed when fishing. They said that there were traditional rules that they used to follow when fishing that are no longer being observed by the current generation. These include not fishing in breeding grounds and throwing small fish back into the water. They also largely blame illegal gold panners for pumping water out of pools that used to be taboo and were reported to be inhabited by mermaids and they allege that the gods are angry and have therefore removed fish from these pools. The illegal gold panners also deposit chemicals like mercury in the water and this kills fish and affects their breeding and growth rates. The people in the area rely on the river’s fish for protein and for income from selling fish. Some families reportedly barter fish with maize, mealie meal and cow peas to ensure food security so the depletion of this resource is impacting negatively on their livelihoods.

Wild animals have also not been spared as they have been hunted out and displaced from what used to be their territory by people who settled in the area. An elderly man was quoted during an FGD saying,

“This area was full of elephants when I first settled here in 1965. They had their maternity area along the banks of Sanyati River and they came seasonally to give birth. They moved out of the area in the late 1980s when the volume of people increased and now there is none left, even my eldest grandson has never seen a live elephant”

Environment monitors in the Ward say this is due to poaching of elephants for meat and for ivory which is being privately sold to unknown dealers from outside the area. Land clearing, bush fires and droughts have also been blamed for the loss of wildlife because they cause food scarcity and destroy habitats for the animals. As the researcher observed, the area has large tracts of bare land due to land clearing for cultivation such that there is no forest cover for wild animals to live under. Wild animals have been always a source of meat or families for centuries and the people in the area under study said that they used to rely on game meat for protein but now there are no longer any wild animals left in the area. Thus livelihoods have been disrupted due to depletion of fish and wildlife as sources of food for families.

### **2.2.5 Water and sanitation**

The provision of safe drinking water and proper sanitation for human beings is crucial since this promote human well-being and capacities for sustainable livelihoods. FGD and questionnaire respondents said that many people in the area under study rely on the Sanyati River as their main source of drinking water since many boreholes in the area have broken down and some run dry in the dry winter season. However the pollution of water in the river has become a major cause of concern since it

makes the water unsafe to drink. Many respondents said that the quality of water in Sanyati River, the main source of drinking water is getting poor due to pollution by illegal gold panners who are said to use the river for sanitary purposes on top of polluting the water with their fuels and chemicals according to FGD respondents. Illegal gold panning was also listed by questionnaire respondents as a cause of degradation and by FGD respondents as the leading cause of water pollution.

According to questionnaire responses, well-being has also deteriorated in the area due to increased cases of health problems due to poor drinking water quality and related diseases like cholera which hit the area in 2008 very badly. Most households in the area do not have toilets and they use the bush system which is usually along Sanyati River's tributaries. They also wash clothes and bath in the river thereby polluting the water with soap. Cases of malaria have also been noted during FGDs as prevailing mainly due to high temperatures and stagnant water in Sanyati River's numerous tributaries. Respondents said that the area is prone to malaria which they said is high during the wet and hot summer season. These health problems reduce livelihood sustainability by lowering the productive and reproductive capacity of human capital in the area.

## **CONCLUSION**

The chapter discussed how environmental change affects the different livelihood strategies while basing on the research findings from the case study, Ward 13 Hurungwe District. It analysed how the people in Ward 13 perceive their livelihoods and livelihood strategies in the light of the prevailing changes to the environment. It was found out that the people in the area under study are heavily reliant on the natural environment for livelihoods due to lack of diversification of livelihood strategies. It was also established within the chapter that livelihoods have been affected by climate change, soil degradation and water pollution and this is has resulted in deteriorating living standards among the people due to reduced income, food insecurity and health problems. Environmental change was therefore found to pose a negative impact on livelihoods of people in Ward 13.

## **CHAPTER 3: CHALLENGES AND PROSPECTS**

### **3.0 INTRODUCTION**

This chapter will present the various challenges or problems faced by people in Zimbabwe's rural areas that make it difficult to maintain an environment that can sustain their livelihoods as reflected by the case study. It also outlines the prospects or recommendations for the overcoming of these challenges so that the effects of environmental change on livelihoods are mitigated. These challenges and prospects will help in formulating policies and interventions that promote sustainable environments and livelihoods for Zimbabwe's rural population.

### **3.1 CHALLENGES**

The challenges to sustainable environmental management for sustainable livelihoods are the various problems that are encountered by rural communities in preventing changes to the environment that affect their livelihoods negatively. The challenges identified in the area under study range from economic problems, institutional problems to demographic problems. These problems affect the environment and livelihoods either by making coping, adaptation and resilience difficult or by making effort to protect the environment ineffective eventually leading to lack of livelihood sustainability.

Economic problems that are worsened by unemployment are one of the major challenges to sustainable environmental management for sustainable livelihoods in Zimbabwe. Unemployment leads to over-reliance on the natural environment for survival and this leads to over-exploitation of natural resources and unsustainable land use practices like stream bank cultivation and illegal gold panning. These were identified by the researcher as the major problems affecting sustainability of livelihood activities in the area and economic problems and high unemployment are the forces behind the problems. Economic problems are also responsible for the lack of effectiveness of institutional processes on environmental



management as environment monitors are taking bribes from people who violate environmental protection laws and are also practicing unsustainable land use practices in order to solve their own economic problems instead of leading by example. Lack of funds for building toilets has also led to the use of streams for sanitary purposes which pollutes water sources and impinges on human well-being, a crucial outcome of sustainable livelihoods according to Scoones (1998).

Lack of livelihood diversification is also posing a threat to the environment and consequently on livelihoods in Zimbabwe as reflected in the area under study. There is over-reliance on natural resources due to lack of other forms of employment besides natural resource exploitation. For the area under study, this is probably because of its remoteness since it is far away from the nearest town, Karoi and Magunje growth point. As UNEP (2010) posits in support of this, the lack of employment and other livelihood opportunities, as well as setbacks in education, health and other capabilities, may mean that the youths will have increased natural resource dependence and pose new threats to the sustainability of marine and terrestrial environments. Lack of livelihood diversification has led to the over-exploitation of the natural environment which has eventually led to its inability to sustain livelihoods in rural areas. Rural areas in Zimbabwe lack any economic activities besides the marketing of agricultural produce and local barter trade. Retailers at business centers do not employ people since they do the work themselves and they also rely on agriculture with retailing being supplementary sources of income. This lack of diversification puts pressure on the natural environment which then fails to sustain livelihoods.

Another challenge is ineffective institutional processes and organisational structures on environmental management that have made livelihoods unsustainable in the country. Services by AREX officials do not sufficiently cover sustainable land use and the officials concentrate on technical farming methods and the use of technology and inorganic fertilisers instead of the use of traditional farming methods like zero tillage and the use of organic manure that sustain the environment and are cheap. Many farmers in

the country have adopted the new technical farming methods like using tractors and ox-drawn ploughs for tillage which disturbs soil structure and bring up the infertile subsoil to the top and this has lowered yields. Incorrect use of fertilizers leads to the deteriorating of soil fertility, a notion that was supported by Nkonya et al (2011) who said incorrect use of fertilizers is harmful to the soil. ARES officials have also failed to cover all of the country's farming communities in providing extension services as in the case study. This is because some of the areas are too big and they do not have transport to cover them especially those whose terrain is mountainous and hard to navigate, making some areas unreachable. This has made sustainable land management difficult leading to poverty due to livelihood unsustainability since agriculture, the main livelihood strategy is being affected negatively.

Another cause for concern in the country is the issue of illegal gold panning along major rivers which has taken a dangerous twist whereby water is pumped out of major water retaining pools in order to access gold at the bottom of the pools. This has led to water shortages for communities that use the water for domestic purposes, gardening and for livestock. The illegal gold panners also pollute water in the river through using the river for sanitation purposes and with the chemicals that are deposited into the water during pumping and processing sludge to get gold. The people who own the pumps and panning projects come from towns and cities and the locals only work as contract workers in the pumping and sludge processing. These people were polluting the environment and depleting the resources yet the locals do not get anything. Worst of all the locals do not know how to stop them and in the case study some of the illegal gold panners claim that they are working with important people so they say that no one can stop them. Local leaders and environment monitors have not been doing anything about these people thereby confirming their claims or showing lack of interest in environmental management. EMA and other environment protection agencies have not done anything regarding the problem therefore the people's livelihoods and well-being remains at risk.

Also, high population density has also made environmental management difficult in most communal areas by putting too much pressure on the environment as people try to sustain their livelihoods. Population is growing as the youths are getting married and need homes and pieces of farming land for themselves. There is a serious shortage of land for both farming and settlement as evidenced by farming and settlement on mountain slopes, a practice that is unsustainable since it leads to and worsens soil erosion. There has been a rise in reported cases of disputes over boundaries as people fight to extend and protect their pieces of land in the area under study and village heads are running short of land to allocate to the growing number of young families from within the area. The shortage of farming land leads to poverty and reduces human well-being as farming is the main source of financial income as well as food. Too much pressure on the land also leads to lack of livelihood sustainability and increases poverty in the area as the livelihood resources that sustain livelihood strategies are degraded.

### **3.2 PROSPECTS**

The prospects for environmental sustainability for the achievement of sustainable livelihoods are chances or opportunities for the mitigation of environmental change and the promotion of sustainable livelihoods. They result from the implementation of various recommendations and ideas that seek to address the challenges to sustainable environments and sustainable livelihoods. The prospects include recommendations that mitigate environmental change since it affects livelihoods negatively and ideas that mitigate the effects of environmental change on livelihoods.

Economic empowerment projects to address the challenge of economic problems and unemployment especially among the youths are one of the ways of achieving livelihood sustainability in rural areas. This will reduce over-reliance on the natural environment and the over-exploitation of natural resources for survival that is reducing natural resource sustainability and that consequently affects livelihood sustainability negatively. These empowerment projects include vocational training in skills such as

metal work, building, dressmaking and carpentry so that the youth can get involved in other forms of employment instead of relying on agriculture and illegal gold panning only as is the case in the area. Vocational training and empowerment projects like poultry and sewing projects also improve livelihood diversification as there will be other forms of income generating activities besides natural environment based activities that are no longer sustainable due to degradation. This is supported by Nkonya (2011) who says that in order to build reliable livelihoods, it is important for communities to diversify their livelihoods and this diversification is especially important if the alternative livelihoods do not depend on rainfall. These will reduce pressure on the natural environment; reduce poverty and vulnerability, increase adaptation, coping and resilience by diversifying livelihoods.

Infrastructural and economic development reduces the marginalization and remoteness of rural areas. This improves livelihood diversification, reduces poverty and enhances the people's capabilities to improve their livelihoods since remoteness and marginalization makes it impossible for rural populations to access services such as bank loans, vocational training and formal employment in other economic sectors besides the agriculture sector. Transport and communication networks need to be improved to enable easy access to markets by rural populations. Nkonya (2011) drawing from Pender, Place and Ehui, (2006) said that land users in areas with good market access are likely to receive higher produce prices and to buy agricultural inputs at lower prices, which could create an incentive to invest in land management. People in Hurungwe Ward 13 have to climb hilltops and trees to access telecommunication network and there is no electrical energy in the larger part of the Ward. This lack of infrastructural development makes the area inaccessible and unfavorable to the outer business world and respondents said that its remoteness makes environmental management agencies neglect the area. Infrastructural development and economic empowerment is therefore one of the ways to make rural

people less vulnerable to poverty and do away with lack of livelihood diversification and lack of environmental sustainability.

The building of stronger and more effective institutions and organizational structures is also another way to improve both environmental management and livelihood sustainability in Zimbabwe. There is need to improve extension service delivery by AREX especially on agricultural land management and on sustainable farming methods. Agritex is also urged to provide more extension officers so that they can cover all the farming communities and also to provide suitable transport like motorbikes to navigate difficult terrain so that services will be more effective. EMA should also provide incentives for environment monitors so that they will get motivated to do their jobs and so that they do not fall prey to corruption. EMA officials are also urged to make occasional trips to check on the status of the environment and to monitor changes on the environment instead of leaving everything to the local environment monitors. They are urged to take stringent measures especially with the issue of illegal gold panners who are damaging the country's major rivers. Organizations and institutions also need to work hand in hand with the local people in environmental management since they are the everyday custodians of the natural environment. Their participation instills a sense of responsibility and ownership that will mitigate human-induced environmental degradation and also improve the effectiveness of institutional processes since the people will be co-operating. Stronger and effective institutions help in maintaining sustainable livelihoods by keeping the environment as a source of livelihood resources sustainable and by improving livelihood strategies.

Another prospect for achieving sustainable livelihoods in the face of environmental change is through the resettlement of some of the people in other less populated areas. This will help to relieve pressure on the environment through reducing the population density of communal areas. According to UNEP (2010), land is a finite degradable resource that does not expand to accommodate the ever-expanding

human needs and demands and this has been the case in the country's communal areas where the rising population and its ever-rising demands can no longer be sustained by the available natural resources. Resettlement will relieve this population pressure and make environmental sustainability possible thereby leading to sustainable livelihoods since the environment will be able to meet the people's socio-economic needs.

## **CONCLUSION**

The chapter looked at the challenges affecting livelihoods in Ward 13 Hurungwe as a result of environmental change and those affecting environmental sustainability. These challenges were given from the point of view of the research respondents and they covered both social and economic aspects affecting the environment and their livelihoods. The prospects for sustainable livelihoods as a result of a sustainable environment were also given in the chapter as recommended by the respondents. Economic problems and lack of livelihood diversification were identified as the major challenges and economic empowerment was recommended as a key aspect in achieving sustainable livelihoods.

## **GENERAL CONCLUSION**

The research outlined the various causes of environmental change in the country and discussed how these have impacted on livelihood resources like soil, water sources, forestry and wildlife. Immediate and underlying factors were found to be playing a complementary role in causing land degradation as underlying factors perpetuate unsustainable land use which is a direct cause of environmental change. Some underlying factors also lead to lack of livelihood diversification and over-reliance on the natural environment which result in land degradation and consequently in lack of livelihood sustainability. The research brought out what the people in Ward 13 perceive to be the challenges to the attainment of sustainable livelihoods and also put forward their recommendations for ensuring a sustainable environment for sustainable livelihoods.

Moreover, the research also found out that environmental change has serious negative impacts on the livelihoods of people in Ward 13 Hurungwe. These impacts are results of the negative consequences of changes on the biophysical environment like climate change, soil degradation, depletion of natural resources and water pollution. The research findings also show that these changes to the environment have reduced agricultural productivity and also reduced yields from natural resource extraction activities like gold panning, fishing and hunting. They also show that water pollution has also deprived people in the area understudy of one of the most important basic necessity, safe drinking water leading to health problems that have reduced human well-being.

It can therefore be concluded that due to both underlying factors and direct factors, environmental change has impacted negatively on the livelihoods of people in Ward 13 Hurungwe. This has been made possible by lack of livelihood diversification within the Ward which makes people reliant on an environment that is suffering from changes and degradation.



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## APPENDICES

### Appendix 1

**Semi-structured Interview Schedule for AREX officials in Ward 13 Hurungwe District on the  
Research Topic: The impact of environmental change on rural livelihoods: the case of Ward 13  
Hurungwe district (2006-2014)**

1. How long have you worked in Ward 13?
2. Which department of extension work do you specialize in?
3. Do you think there have been any changes on the environment since you started working here?
4. If yes what are these changes?
5. What are the causes of these changes?
6. Which natural resources are mostly affected?
7. What has your department done to mitigate these changes?
8. Are these mitigatory measures working? If no why?
9. In what ways do you think environmental change has affected the lives of people in this area?
10. What do you think should be done to mitigate the effects of environmental change on livelihoods in Ward 13?

## Appendix 2

### **Semi-structured Interview Schedule for Environment Monitors in Ward 13 Hurungwe District on the Research Topic: The impact of environmental change on rural livelihoods: the case of Ward 13 Hurungwe district (2006-2014)**

1. How long have you lived in this area?
2. How long have you been an environment monitor?
3. What changes have you noticed on the environment since 2006?
4. What do you think are the causes of these changes?
5. What have you done to mitigate these changes?
6. Are the efforts to mitigate these changes working? If no why?
7. What do you recommend in order for these efforts to work?
8. In what ways do you think environmental changes have affected the livelihoods of people in this area?
9. What do you think should be done to mitigate the effects of environmental change on rural livelihoods?

### Appendix 3

**Semi-structured Focus Group Discussion Schedule for residents of Ward 13 Hurungwe District on the Research Topic: The impact of environmental change on rural livelihoods: the case of Ward 13 Hurungwe district (2006-2014)**

1. Do you think there have been any changes on the environment?
2. If yes what are these changes?
3. What do you think are the causes of these changes?
4. Have there been any efforts to mitigate these changes by the government or any other development actors?
5. Have any of these efforts worked? If no why?
6. What are the major livelihood activities for people in this area?
7. How have environmental changes affected the livelihoods of people in this area?
8. What do you think should be done to mitigate the effects of environmental change on the livelihoods of people in this area?



## Appendix 4

### Questionnaire for households

My name is Emmaculate Mudimu. I am an undergraduate student doing a BA in Development Studies Honours Degree at Midlands State University. I am requesting your participation in this survey by responding to the questions scheduled below. *The purpose of this study is to assess the effects of environmental change on rural livelihoods. The case of Ward 13 Hurungwe District.* The findings are essentially for academic purposes only.

Questionnaire number

Village .....

#### **SECTION A: Background Information (Tick where appropriate)**

1. Sex

Male  Female

2. Age

<20  21-30  31-40  41-50  51-60  60>

3. Marital status

Single  Married  Widowed  Divorced

4. Period stayed in the community

1-5yrs  6-10yrs  11-15yrs  16-20yrs  20yrs>

5. Occupation

Formal  Self employed  Unemployed  other (specify)

6. Main source of household income

Livestock rearing	Gold panning	Fishing	Crop production	Gardening	Other(specify)

**SECTION B: To identify the causes of environmental change in Ward 13 Hurungwe District.**

7. (a). Which land and natural resources are in your area?

Trees  Gold  Soil  Fish and Wild animals  Rivers and streams

(b). If any other specify.....  
 .....

8. (a). Which of these resources are mostly affected by degradation?

Trees  Rivers and Streams  Gold  Fish and Wild animals  Soil

(b). If any other, specify.....  
 .....

9. (a).Which of the following factors are leading to degradation of these resources?(*tick where appropriate*)

Veldt fires	
Illegal gold panning	
Stream bank cultivation	
Droughts	
High rainfall	
Tobacco curing using firewood	

(b). If any other, specify.....  
 .....  
 .....

10. In what ways do environmental monitors and AREX officials promote the mitigation of environmental changes that affect livelihoods in the area?

.....  
 .....  
 .....

11. (a) Are these ways effective in mitigating environmental changes that affect the livelihoods in this area? (tick where appropriate)

Yes

No

(b) If no, why

.....

.....

**SECTION C: To assess the effects of environmental change on livelihoods in Ward 13 Hurungwe**

12. What are your views pertaining to the effects of environmental change on the following? Where A means severe, B means moderate and C means not severe. (*tick where appropriate*)

Capability	Before 2006			After 2006		
	A	B	C	A	B	C
Poverty reduction						
Wellbeing enhancement						
Adaptation to changes						
Resilience to changes						

13. What was the status of the following natural resources and assets before 2006? (*tick where appropriate*)

<b>Assets</b>	Very good	Good	Degraded	Very degraded
Trees				
Soil and arable land				
Wild animals				
Rivers and streams				
Livestock				
Food yields				
Cash income				

14. What was the status of the following natural resources and assets from 2006 to date as a result of environmental change? (*tick where appropriate*)

	Very good	Good	Degraded	Very degraded
Trees				
Soil and arable land				
Wild animals				
Rivers and streams				
Livestock				
Food yields				
Cash income				

15. What is your comment about the yields from natural resources extraction since 2006 to date?

.....

.....

.....

16. What is your comment about the quality and quantity of agricultural yields since 2006 to date?

.....

.....

.....

17. What do you think should be done to mitigate the effects of environmental change on your livelihoods?

.....

.....

.....

.....

***Thank you***