

# **Choosing between environmental conservation and survival: Livelihoods and the environment risks in rural Zimbabwe.**

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## **ABSTRACT**

This study explores how the livelihood strategies of people in the Chivi district in Zimbabwe impact on the environment. In addition, the study examines how humans have interacted with the environment during this era of limited sustainable livelihood options in Zimbabwe. This study employed a qualitative research methodology. Data was gathered through face to face in-depth semi-structured interviews and data was analysed through thematic analysis. Findings from this study suggest that poor communities have resorted to environmentally hazardous activities to earn livelihoods. Illegal mining of minerals such as gold and chrome, sand mining, brick moulding, and traditional craft making were found to be very common among the rural poor who are facing high levels of unemployment. Additionally, there are gaps in environmental regulation and protection to enable sustainable livelihoods. This study recommends a bottom-up formalisation in the extraction of natural resources to enable effective environmental regulation, rehabilitation and protection.

**Keywords: Environment; sustainable livelihoods; mining; deforestation; Zimbabwe**

## **INTRODUCTION**

Zimbabwe has endured a serious economic downturn that has persisted for nearly two decades (2000-2018). During this period, the country has experienced an exponential rise in unemployment rates. Zimbabwe's unemployment rate has been estimated to be over 80% (Rusvingo 2015). In addition, the country has endured recurrent droughts that have stifled subsistence farming which is the main source of livelihoods in rural Zimbabwe (Belle et al. 2017; Ncube et al. 2017; Mutsvangwa-Sammie et al. 2018). In the absence of gainful employment and sufficient food production through subsistence farming, many Zimbabweans have been forced to find alternative livelihood strategies. Millions migrated to neighbouring countries and others scattered all over the world (Crush et al. 2015; Nzima and Moyo 2017). There have been estimations that close to three million Zimbabweans are resident in South Africa (Makina 2012). While only a given number could afford migration, many others sought livelihood alternatives within the country. Millions flocked into the informal economy working as hawkers (Rogerson 2016; Tawodzera et al. 2017). Others, particularly women, engaged in traditional craft making for survival (Dumbu and Chadamoyo 2012). In addition, given the wealth of natural mineral resources in the country, many people, particularly young men engaged in artisanal mining (Dube et al. 2016). Livelihood creation often has a direct impact on the environment hence the persistent advocacy for sustainable livelihoods. According to Serrat (2017: p 21) "a livelihood comprises the capabilities, assets, and activities required for a means of living. It is deemed sustainable when it can cope with and recover from stresses and

shocks and maintain or enhance its capabilities, assets, and activities both now and in the future, while not undermining the natural resource base.” Given the foregoing, it is important to examine how communities in Chivi district have interacted with the environment during this era of limited sustainable livelihood options in Zimbabwe.

Environmental protection is currently a global policy priority. This is exacerbated by the growing global concerns about climate change. Ecological factors such as excessive heat waves and recurrent droughts are manifestations of climate change (Belle et al. 2017; Ncube et al. 2017). These have had a direct effect on agricultural production and thus constitute a serious threat to food security in poor countries such as Zimbabwe. Therefore, scholars have argued that climate change has affected the livelihoods of the poor and the most vulnerable in society (Rurinda et al. 2014; Dube et al. 2016). As a result, there has been growing research focusing on climate change adaptation (Dodman and Mitlin 2015; Makate et al. 2016). In addition, several studies have suggested environmental protection as a means of reducing the devastating effects of climate change (Rurinda et al. 2014; Dube et al. 2016; Makate et al. 2016). As such, Zimbabwe has various institutional platforms and programmes concerned with environmental protection. These include the Environmental Management Agency (EMA) whose primary concern as a statutory body is ensuring the sustainable management of natural resources and protection of the environment, the prevention of pollution and environmental degradation. In addition, Zimbabwe also has programmes such as Campfire whose sole purpose is to protect the environment to preserve and protect wild life (Murombedzi 1999; Frost and Bond 2008). However, while there are environmental protection measures that are in place, the country continues to face challenges. These ensue from the growing population, scarcity of resources and joblessness. As a result, human activities continue to threaten the environment as people seek to expand and diversify their livelihood options.

A lot of attention on anthropogenic causes of climate change and environmental damage has focused on reducing greenhouse gas emissions by large industries and other machines (de Moraes Sá et al. 2017; Gustavsson et al. 2017; Wang et al. 2017). These are by far the biggest contributors to environmental damage. However, local activities aimed at securing livelihoods also pose a real threat. Climate change adaptation has often meant finding alternative means in the face of excessive drought. This has been understood to mean the adoption of climate smart agriculture or finding livelihood alternatives other than agriculture (Lopez-Ridaura et al. 2018; Apraku et al. 2018). These alternatives almost always involve some degree of interaction with the environment in one form or another. In Zimbabwe, the environment has been affected by population growth which saw many people being resettled in areas that were reserved for grazing and wild life (Mapira 2017). This happened because of the scarcity of land to resettle people in rural areas. In addition, there was a fast track land reform that resulted in massive resettlement in areas that were uninhabited nor used for agricultural purposes (Scoones et al. 2012; Mapira 2017). This resulted in deforestation as people cleared virgin land for building homes and for cultivation and other agricultural needs (Chivuraise et al. 2016). In addition, the high unemployment forced people to engage in alternative livelihoods that were detrimental to the environment such as craft making, mining minerals and sand amongst others (Ncube-Phiri et al. 2015). These livelihood activities put a strain on the environment. Therefore, this study explores how the livelihood strategies of people in the Chivi district in Zimbabwe impacted on the environment. The main source of livelihoods in the district is communal farming but rain fed agriculture is highly vulnerable to the vagaries of climate change. Given the foregoing, land

and forest resources as part of the commons are prone to destruction. The communities in Chivi district are expected to rely on limited environmental resources for their livelihoods. While the natural resource base is the only option available to communities, authorities must grapple with problems of regulation to ensure environmental protection while ensuring livelihoods for the poor. Therefore, this study aims to explore how the livelihood strategies of people in the Chivi district in Zimbabwe impact on the environment. This is done through the examination of how humans have interacted with the environment during this era of limited sustainable livelihood options in Zimbabwe.

## **METHODOLOGY**

### ***Study site***

This study was conducted in Chivi District, in the Western part of Masvingo Province, in the Southern parts of Zimbabwe. The district has a total population of approximately 166 277 inhabitants comprising 36 382 households (Central Statistics Office 2012). The area covers a total of 3195km<sup>2</sup> and is semi-arid classified under Agro-ecological natural region IV and V. 39% of the district falls under Agro-ecological natural region IV while sixty-one percent falls in Agro-ecological natural region V. Generally, the regions have low, unevenly distributed rainfall, on average, between 500 and 600mm per year (Anderson et al. 1993). The temperatures sometimes reach a scorching 38°C and drop to only 15°C in the coldest month (Anderson et al., 1993). Subsistence farming forms the predominant livelihood activity throughout much of the District, but it is often augmented by marketing of surplus, production of cash crops and selling of woodcrafts (Mandondo 2001). Given the foregoing, the key to food security in the District is the capacity of households to earn enough cash to purchase food and to rely on their immediate environment. Opportunities for employment are varied and they include local seasonal labour as well as temporal or permanent migration to Mwenezana Estates, the Murowa Diamond Mines or towns within Zimbabwe and South Africa (Bush 2010). The district has widespread poverty that compels the residents to exploit environmental resources.

### ***Research Methods***

This study adopted a qualitative approach. This allowed for the study of everyday life for different groups of people and communities in their natural setting in the Chivi district. This approach was chosen because it allows for an interpretive, naturalistic approach to its subject matter and attempts to make sense of or interpret a phenomenon in terms of meaning people bring to them (Denzin and Lincoln 2011). In other words, the approach gives the researcher an insider perspective. Data for this study was gathered through face to face in-depth semi-structured interviews with 50 participants within the district of Chivi. The primary study population were the residents and individuals who held positions of authority in Chivi District, in Zimbabwe. Therefore, the sample comprised of officers and individuals who are involved in environmental management, traditional leaders, farmers, people involved in mining, traditional artefact sellers and other community members. These people were deemed knowledgeable about different livelihood strategies and their impact on the environment in the district. Given the foregoing, study participants were selected using purposive sampling and snowball sampling. Purposive sampling was used to identify the initial respondents. The initial

respondents then referred others with similar characteristics and thus setting in motion the snowballing process.

All interviews were conducted by the first author who has the same cultural background as the study participants. Interviews were conducted in Shona and English languages and they lasted between 45 minutes to an hour. The participants chose the language of their preference for the interview.

### ***Research Ethics***

In conducting this study, the ethics guidelines prescribed by the University of KwaZulu Natal for dealing with human subjects in research were strictly followed. Interviews were conducted in private in participants homes or place of work as suggested by the respondents. This was done to ensure confidentiality and anonymity. In addition, informed consent was given prior to the interviews. All participants were asked to sign an informed consent form to indicate that they agreed to participate in the study. Additionally, interview recordings were conducted after consent was sought and granted by the respondents. The researcher also explained to the respondents that the solicited information was going to be kept strictly confidential in password protected servers and would only be used for academic purposes. Most importantly, participants were assured that no real names will be used in reporting findings. As such, pseudo names were used to protect the identity of the respondents. Thus, assuring that respondents remain anonymous. Ethical approval for the study was obtained from the University of KwaZulu-Natal.

### ***Data analysis***

Qualitative data that was collected for this study was analysed through thematic analysis. Interview recordings were transcribed and translated from Shona to English by the first author. Verbatim transcriptions were then coded and categorised according to emerging themes. Emerging themes that were recurrent within and between interviews and enhanced researcher understanding of the research problem were considered significant. The authors read and reflected on the transcripts and coding disagreements were resolved through peer discussions. The following themes namely, livelihood activities, environmental hazards caused by livelihood activities and barriers to effective regulation were the major recurrent themes identified during data analysis.

## **FINDINGS**

### **Livelihood strategies**

Findings from this study suggest that poor people have resorted to various environmentally hazardous activities as a means of earning livelihoods. This was in response to the low economic opportunities in Chivi district that was exacerbated by the continued economic downturn in Zimbabwe. In addition, this was driven by the erratic rainfall which severely reduced yields from subsistence farming which is the main source of livelihoods in the district. Illegal mining of minerals such as gold and chrome was found to be very common among the youth who are facing unemployment in Chivi district. An illegal miner in Chikofa village pointed out that:

“This is our only livelihood option; we mine so that we get money. If I do not engage in illegal mining, how will my children survive, do you want me to steal to

fend for my family. EMA and RDC should leave us alone because their government did not employ us (Mr Y, personal interview, 2016)”

People who survive on mining are desperate and frustrated by the efforts made by the Environmental Management Agency (EMA) and the Rural District Council (RDC) in regulating their activities. Owing to high unemployment, those involved in illegal mining view this as the only livelihood option available. Therefore, there is a general sense that authorities must not intervene in their livelihood seeking activities.

This study also found that many people in Chivi District are involved in the mining of sand and clay for different purposes. The main purpose is the moulding of farm bricks and construction. The following interview excerpt shows that there has been a growing demand for these farm bricks.

“...the dollarisation era has seen the economy of Zimbabwe slightly recovering from the economic decline which has hit the nation hard. This has resulted in a lot of infrastructural development which has seen many shops, houses and offices being constructed using farm bricks. The affected wards are 6, 8, 12, 15, 26 and 30 (Environmental officer 1, 2016).”

Dollarization was a period in 2009 when Zimbabwe adopted a multi-currency system with the United States dollar used as the main trading currency. This study finds that this development led to an infrastructural boom in Chivi district. As a result, a lot of people engaged in the business of farm brick moulding, and in a relatively short space of time, this was being done at a large scale. Despite the destructive nature of the livelihood activity to the environment, people who participated felt justified to continue due limited livelihood options. The following interview excerpt shows the need for desperate survival among the poor in Chivi District.

“I am a father with a family to take care of and I am expected to bring food home, to provide clothing for my children, to pay their fees as the term begins. I had to do something to help sustain our livelihoods. It is better for me to survive on something that is environmentally unfriendly rather than being involved in criminal activities. Who cares about the environment when there is no food for the family (Mr X, personal interview, 2016).

These findings suggest that people involved in brick moulding in Chivi District are aware of the environmental hazards caused by their livelihood activities. However, they are more concerned about their immediate needs to earn a livelihood for their families in the face of poverty and limited livelihood opportunities.

This study also found that other environmental hazardous livelihood activities common in Chivi district are selling of firewood, and craft making.

“In wards 17 and 20, there are many traditional artifact sellers but community members have to follow proper channels for cutting trees in selected areas which still exist such as Mindamikova Forest. In Ward 17, a Mahogany tree was cut down by craftsmen who came from Sese and Gwitima for making artifacts to sell to tourists along the highway (Environmental Officer 3, 2016).”

The findings of the study suggest that, the high presence of tourists and the close proximity of craft centres have fuelled demand for curios. As a result, a lot of people are now engaged in craft making. In addition, there are people from other areas who have moved to Chivi district

in pursuit of the demand for curios. Therefore, this suggests that craft making has become a lucrative livelihood strategy in Chivi district.

### **The environmental hazards caused by livelihood activities**

#### ***Mineral, sand and clay mining***

The findings of this study suggest that uncontrolled illegal mining activities in Chivi district are causing severe land degradation. Illegal gold and chrome miners are leaving behind open shafts that are a danger to people and animals. In addition, people who are involved in clay and sand mining are deliberately contravening the provisions of the law. The following interview excerpts illustrates the effects of rapid extraction of minerals, sand and clay on the land in Chivi district.

“Uncontrolled extraction of these resources has resulted in massive land degradation. The affected areas are left unrehabilitated, with deep pits which are a threat to roaming animals and people. Lack of rehabilitation of the affected areas has also paved way for the development of gullies, for example, the gravel extracted for Chivi Grain Marketing Board construction in Ward 15, Rungano village, near a homestead.” (Environmental Officer 2, 2016)

“Women are digging clay soils from different areas in the village, especially in grazing areas, near Chikofa shops, and also on stream banks to make pottery. This has affected the soil and the place is now degraded. In Chikofa, Wadawareva and Zvavatonga villages, villagers have dug pits near public roads, which is a threat to the lives of the people” (Headman A, 2016)

There has been a massive development of gullies that are a serious environmental hazard in the district. This study found that while, there are registered sites for pit sand extraction for example. These are also showing massive signs of degradation due to non-adherence to the Environmental Management Plan. This study found that while regulations require that the depth of pits must not exceed a certain limit to enable easy rehabilitation. However, most pits dug by producers of farm bricks and contractors in Chivi district have a depth that exceeds the specified limit.

This study also found that illegal mining activities are done in a haphazard manner. This was found to be largely influenced by gold rushes. As a result, mining could occur in any place where gold was discovered at any point. The following interview excerpt reveals the environmental impacts of mining activities in a river in Chivi district.

“The mine is in the middle of the river and they are leaving gullies and the cyanide affects the river which supports people from Chikofa down to Nemauzhe, they do not care where the water goes and no Environmental Impact Assessment (EIA) was done before the project was implemented” (Headman A, 2016)

In addition to land degradation, mining activities in Chivi district pose other threats such as river pollution and siltation. Mining activities taking place in the middle of the river are disturbing the flow of water in the river. Moreover, they cause the siltation of rivers and nearby dam which increases the risk of water shortages. Most worrying is the threat of pollution. Most illegal gold miners use cyanide to process their gold. This is a very poisonous chemical which could be fatal if consumed by humans and animals. This study found that village headmen were worried about the safety of villagers and the need to protect water bodies.

### ***Farm brick moulding and craft making***

This study also found that the livelihood activities in Chivi district also contribute immensely to the destruction of forest resources. The spontaneous mining activities result in the rapid clearing of trees. Most notably, the findings of this study suggest that people who are involved in farm brick moulding destroy important trees that are a source of livelihood for other poor people in the area. The following interview excerpt reveals.

“The destruction of the amarula tree is a threat to the livelihoods of the people. It is a fruit tree and a number of people in the District rely on it for food. The communities are also getting an income from the same tree, for example, the Marula Zimbabwe Co-operation project in wards 16, 18 and 26 in which female farmers in the district process jam and oil from the marula nut and sell the products for survival.” (Forestry Commission Officer B, 2016)

This study found that the people involved in farm brick moulding cut down valued trees such as the marula tree to heat their farm bricks. Given, the growing demand for farm bricks in the district, fruit trees are under a serious threat. As a result, other people whose livelihoods are dependent on these trees are severely affected. The study found that while authorities had issued licenses to farm brick producers in the year 2013, it emerged that producers were abusing natural resources and producing the bricks for commercial purposes. To avert the stress on natural resources authorities withdrew licenses in the year 2014. Despite this, illegal farm brick production persists and thus further deforestation.

This study also found that the craft industry in Chivi District also worsens deforestation, particularly, in the areas near craft centres. The following interview excerpt gives further details.

“The district has four Craft Centres, namely, Danhamomombe Turn off at Sese, Ngundu and Lundi Business centres and at Gwitima Turn off. The craftsmen at these centres use a number of tree varieties which include endangered and protected species such as mahogany and amarula trees...There was also destruction of Chivumbwi Forest between Chikofa and Zihwa areas where a number of people cut down trees for traditional artifacts to sell. These craftsmen do not have harvesting permits and harvest trees in an unsustainable manner. Very big trees are cut for crafting and no replacement is done” (Environmental Officer 3, 2016).

The findings of this study suggest that forests are being destroyed by people involved in craft making. In addition, protected plant species are also under a threat of extinction as they are constantly cut down for making artifacts. The way trees are harvested is unsustainable as there is no plan to replace the forests that have been destroyed. The craftsmen mostly target big trees that take years to grow. The findings of the study also suggest that most of the craftsmen cut down the trees without permits to do so.

### **Barriers to effective regulation**

#### ***Violence***

Findings of this study show that the Environmental Management Agency (EMA) and the Rural District Council (RDC) are responsible for regulating the use of environmental resources in

Chivi district. However, the findings suggest that farm brick moulders who cause land degradation and deforestation have become a threat to the environmental monitors. This study found that environmental officers are at the risk of being attacked by violent brick moulders when conducting their environmental protection duties. The following interview excerpts shed further light.

“You cannot just approach the brick moulders alone, they will attack you, if I want to approach them, I invite the police and Headman because the boys are dangerous”  
(Environmental Officer 1, 2016)

The findings suggest that in order to approach the violent brick moulders, Environmental officers often have to be accompanied by law enforcement agencies and local traditional leaders. The brick moulders operate in groups to avert any perceived disturbances from authorities. The study found that, brick moulding in Chivi district was happening at a large scale and as a result, a lot of people were operating without permits. The results of the study suggest that the threat of danger has been a barrier in effectively issuing tickets to offenders as well as bringing to justice those who had been found to be in the wrong side of the law.

Findings of this study also suggest that regulating mineral mining activities in Chivi district is also a serious challenge. The findings show that organised violent groups rampage the area following the gold rush. The following interview excerpts shows the security threat of illegal miners to residents and businesses.

“It was reported that there was firing of a gun as illegal panners destroyed the shop to try and access the gold. The existence of gold in the drought prone district has become a threat to infrastructural development and to the lives of the people.” (Headman A, 2016)

The findings of this study suggest that dealing with illegal gold miners is even more complicated by the fact that some of them are unknown assailants from far away areas. The local traditional leadership also finds it extremely difficult to control their activities as they fear for their safety as well.

“I am afraid of going to the gold panners they are dangerous, the mine has no claim but they are using a local person Mr N, who has a claim but do not have resources to mine. They are just thieves who do not care about local community of Chivi because their employees come from Mberengwa District except Mr G only who is from Chikofa.”  
(Headman A, 2016)

The above excerpt from an interview with a local traditional leader suggests that people from other districts act in cahoots with locals to operate without the necessary authority. However, these illegal miners have no care for the Chivi district hence their continued destruction of the environment and pollution of water bodies through chemicals used in processing their minerals. The findings suggest that the operations of illegal miners are largely anchored in violent behavior.

### ***Corruption***

The findings of this study also suggest that corruption aids illegal miners to continue their operations without licenses. This makes it difficult to control their activities that not only destroy and pollute the environment but also cause conflict in the area. The following interview excerpt sheds further light.



“One of the traditional leaders was bribed by illegal panners to remain silent about the matter yet illegal gold panners disturb the environment by polluting the water. They mine on arable land, thereby disturbing farming land. The land is no longer suitable for farming. The panners mine without licences. They even mine on other people’s land, which leads to conflicts.” (Farmer X, 2017)

The findings of this study suggest that some traditional leaders who are supposed to play a critical role in regulating illegal mining activities were also involved in these same activities. An interview with an Environmental Officer also revealed that mining activities were a threat to both to the community of Chivi as well livestock. The officer noted 35 cattle had died in Charamba village in Gororo area in 2010 because gold panners had poisoned the water for livestock with cyanide. However, the involvement of some traditional leaders in illegal mining and their acceptance of bribes makes it very difficult to regulate and bring perpetrators to justice.

## **DISCUSSION**

In 1987 the Brundtland Commission produced a report that brought to the fore the need for environmental protection through sustainable livelihoods (WCED 1987). In this report the commission stipulated that ‘poverty is a major driver of global environmental problems’ (WCED 1987). The commission reported that poor people were mostly dependent on natural resources for their livelihoods owing to limited livelihood options and other means for self-development (WCED 1987). Likewise, this study suggests that limited livelihood options in Chivi district have pushed poor communities to pursue livelihood options that are detrimental to the environment. The study indicates that the accelerating environmental degradation is eroding the natural resource base of the poor rural communities in Chivi district. This situation is driven by the fact that the poor are directly dependent on these natural resources for livelihoods, and the resources are being overwhelmed by unsustainable practices. Given the foregoing situation, other scholars have expressed scepticism that sustainable use of natural resources and the protection of vital ecosystems would make it much easier to create or preserve livelihoods (Matthew and Zaidi 2002). However, the United Nations (2004) maintains that land degradation is intricately linked to poverty and that addressing this problem requires the participation of the resource users and where possible providing them with alternative livelihood options.

This study suggests that the proximity of the markets entices members of the community to mould bricks for money. The raw materials (clay, sand, wood) are found naturally in the environment. The excessive use of soil and wood causes deforestation and land degradation (Hashemi et al. 2015). Despite these negative effects, brick moulders in Chivi district contravene environmental legal frameworks in a bid to create livelihoods. Previous research has found that burned bricks are an environmental hazard that contribute to severe deforestation and land degradation given that there is excessive use of soil and wood in brick kilns (Hashemi et al. 2015). The moulders in Chivi district do not rehabilitate the land. They leave gullies to naturally recover, which in most cases, would never happen.

This study suggests that livelihood strategies such as illegal mining of minerals causes disproportionate environmental damage. Previous research found that illegal small-scale

mining in Ghana depleted environmental resources such as water, soil, the landscape, vegetation and the ecosystem among others (Mensah et al. 2015). In addition, Mensah et al. (2015) found that the major rivers in areas where mining took place had been heavily polluted, and land in areas surrounding mines had been rendered bare and susceptible to increased erosion and loss of viability for agricultural purposes. Similarly, the findings of this study suggest that pollution has occurred in local rivers and dams. In addition, illegal mining has affected farmlands and thus reducing agricultural productivity (that is the main livelihood source) in Chivi district. This has resulted in long term food insecurity in most parts of the district. In addition, the pollution of water bodies has resulted in the death of livestock which is an important source of livelihood. While mining is also a livelihood strategy, it is one that is not sustainable as by nature it is destructive to the environment and has long term environmental effects (Abdus-Saleque 2008; Jones 2010).

The livelihoods of the Chivi community are largely derived from natural resources, so degradation of the environment directly affects livelihood activities. Fuyane et al. (2013) argue that the environment stands as a refuge to social insecurities such as poverty, hunger and unemployment, which makes its protection more important. The communities in Chivi district need proceeds from minerals to satisfy their basic needs but their continual exploitation of the mineral resources destroys their livelihoods and the environment. However, research shows that illegal mining has become a major source of economic activity among the rural population in Africa (Kessey and Arko, 2013). Studies in African countries such as Ghana and Zimbabwe, have shown that artisanal and small-scale mining employs a number of people from poor communities (Kessey and Arko 2013; Dube et al. 2016). The youth in Chivi district are also involved in these activities as a form of employment in their desperate quest to survive in an economy with high levels of unemployment. The informal nature of these artisanal and small-scale mining initiatives presents challenges for environmental protection and regulation hence there is an urgent need for formalisation to curb these negatives (Dube et al. 2018).

## **CONCLUSION**

This study focused on how the humans interact with the environment in their quest to create livelihoods in Chivi district in Zimbabwe. The study concludes that poor people in the district engage in livelihood activities that are detrimental to the environment such as illegal mining of minerals and various kinds of soils. In addition, people engage in farm brick moulding which results in severe cutting down of trees to burn the bricks in their kilns. While these livelihood activities are profitable and promote development booms, they have dire consequences for the environment. They cause severe deforestation and land degradation that threaten other livelihood activities such as farming and fruit tree extract businesses. In addition, the current environmentally hazardous livelihoods are not sustainable as there are currently no efforts aimed at rehabilitating the destruction made on the environment.

This study concludes that communities in Chivi District are competing for survival on a declining resource base. The exploitation of land and forest resources is exacerbated by a myriad of factors such as poverty, unemployment and have limited livelihood opportunities in Chivi district. While communities in the district derive monetary benefits from the sale of natural resources, the commercialisation of land and forest resources fuels overharvesting and unsustainability. The benefits are short-term, but the environmental damages threaten food security in the long term. Most of the main beneficiaries (buyers of firewood, bricks, gold, and

traditional artefacts) of the natural resources in Chivi district are not residents of Chivi district. Therefore, they are not affected by the long-term effects of environmental destruction in the district. This study recommends some form of bottom-up formalisation in the extraction of natural resources to enable effective environmental regulation, rehabilitation and protection. This will ensure that the future livelihoods of residents of Chivi are protected as these are severely dependent on natural resources.

### **Declaration Statement**

No potential conflict of interest was reported by the authors.

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