

## **Abstract**

*This study explores the environmental degradation in Globe and Phoenix mine that has been caused by illegal mining by the mine retrenchees. It seeks to examine the cause of illegal mining in Globe and Phoenix mine with regard to the fact that it used to be the biggest and first mine to be established in Zimbabwe. The city of Kwekwe came to being because of the establishment of the mining center. The extent of the degradation is assessed in view of the strategies that are being taken by the government and stakeholders, are the measures to mitigate the problem solving the issues or they are just right answers to the wrong problem. The researcher used the qualitative approach in the process of data collection. This involved observational fieldwork, archival research, interviews and questionnaires. Development and the environment are interlinked, hence negative impacts on the environment consequently affects development. Illegal mining activities are contributing to land degradation of which this affects the environment permanently posing a danger to the present and future generation. Therefore the small gains of illegal mining activities do not outweigh the long term effects of these activities on the environment. The government and stakeholders in mining and environmental management must formulate policies that enable illegal miners to formalize their activities, for these policies to yield positive results the community and illegal miners must participate in the policy making process instead of making them passive recipients.*



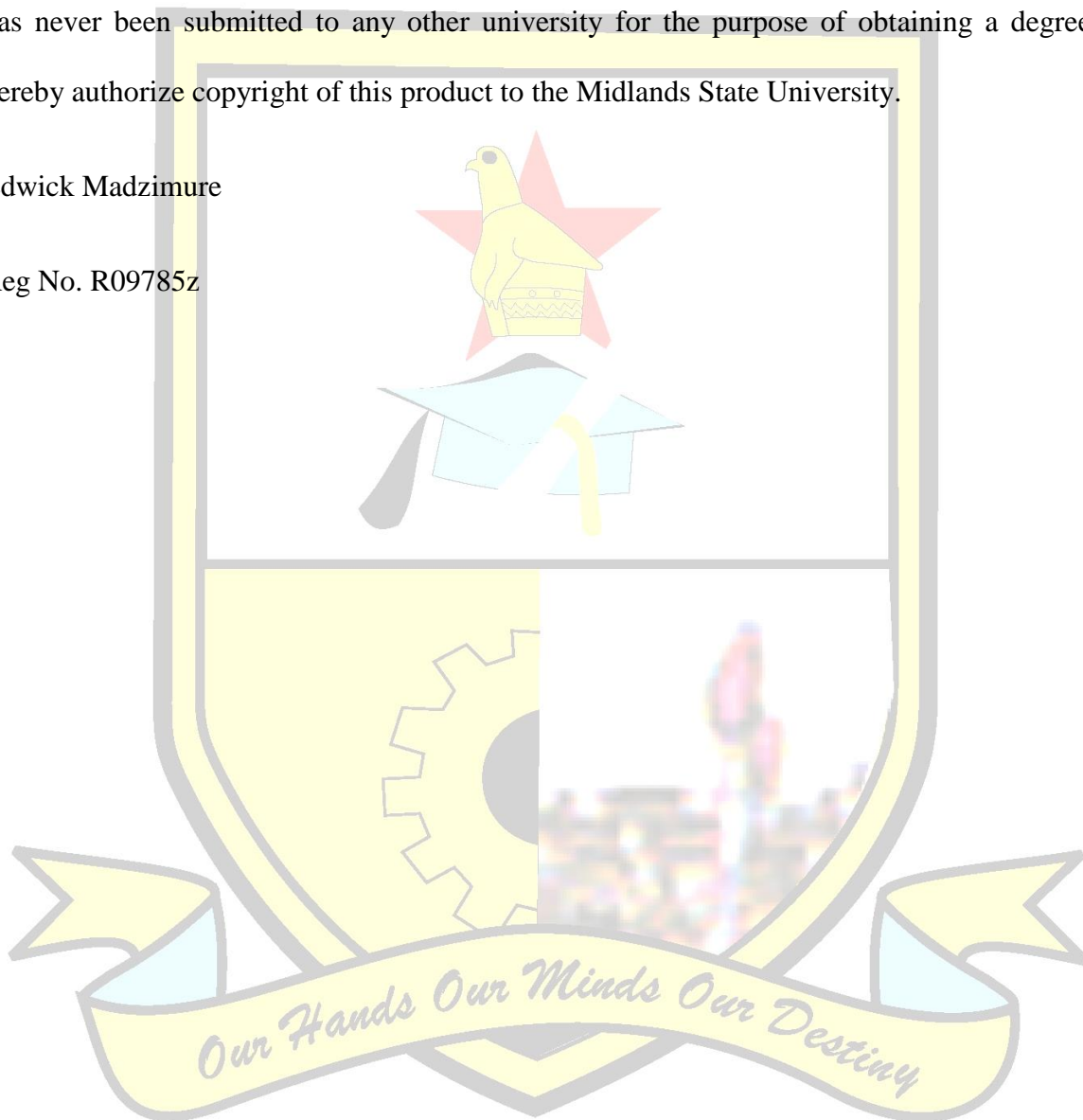
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## Declaration

I declare that this study is my original work that I must submit as a requirement in partial fulfilment of the Master of Arts Development Studies degree at the Midlands State University. I declare that this work is submitted for the first time at this university and that it has never been submitted to any other university for the purpose of obtaining a degree. I hereby authorize copyright of this product to the Midlands State University.

Edwick Madzimure

Reg No. R09785z



## Dedication

I dedicate this work to my daughter Princess Kayla, son Tariq Akudzwe hoping this study will be their inspiration to attain the highest qualification of education when they grow up, my uncle Misheck Mapika, my husband Stanege Mupanga who is in the mining industry and my father Jameson Madzimure who worked for the Globe and Phoenix mine for more than twenty years, this compelled me to carry out this research.



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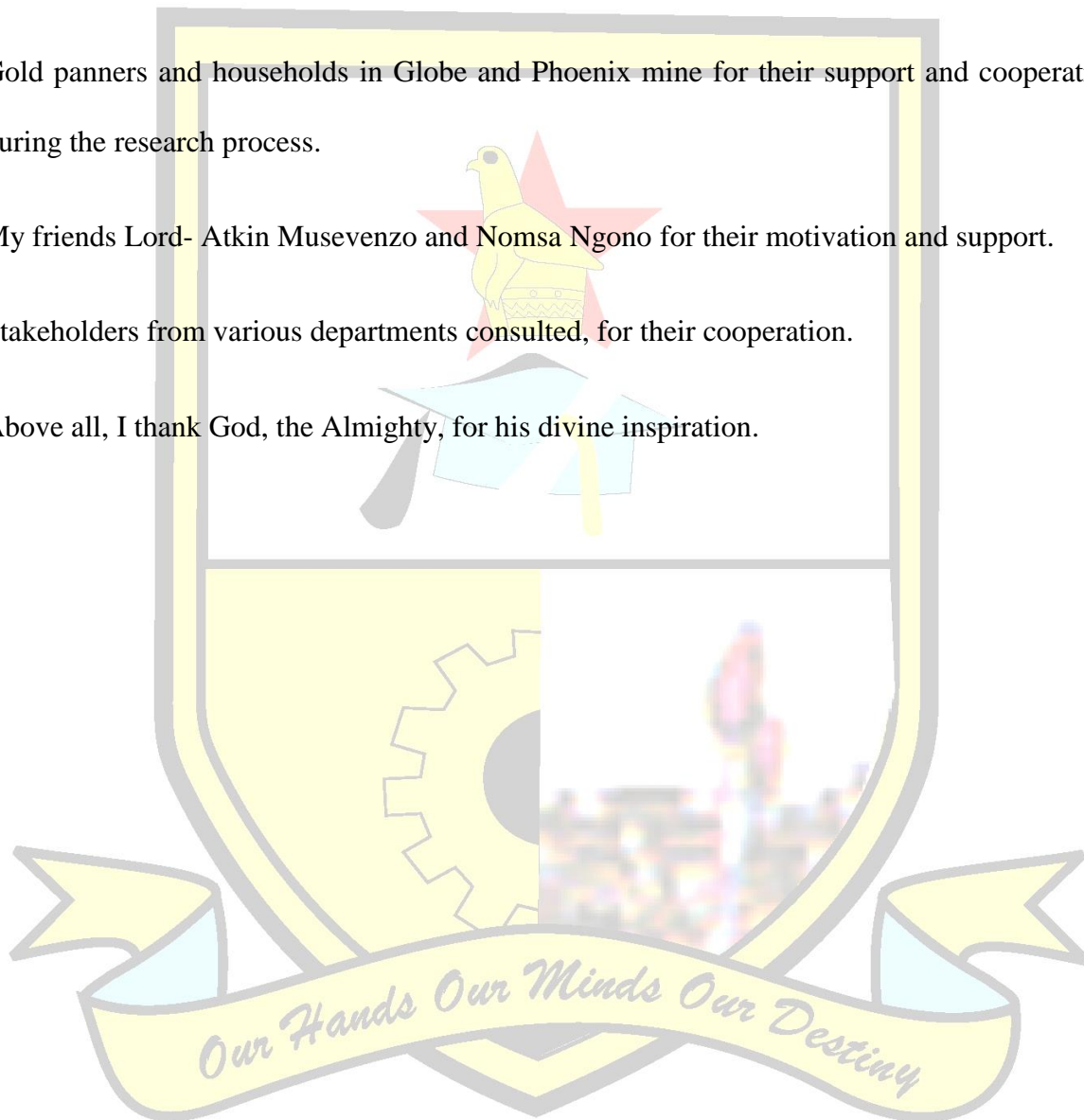
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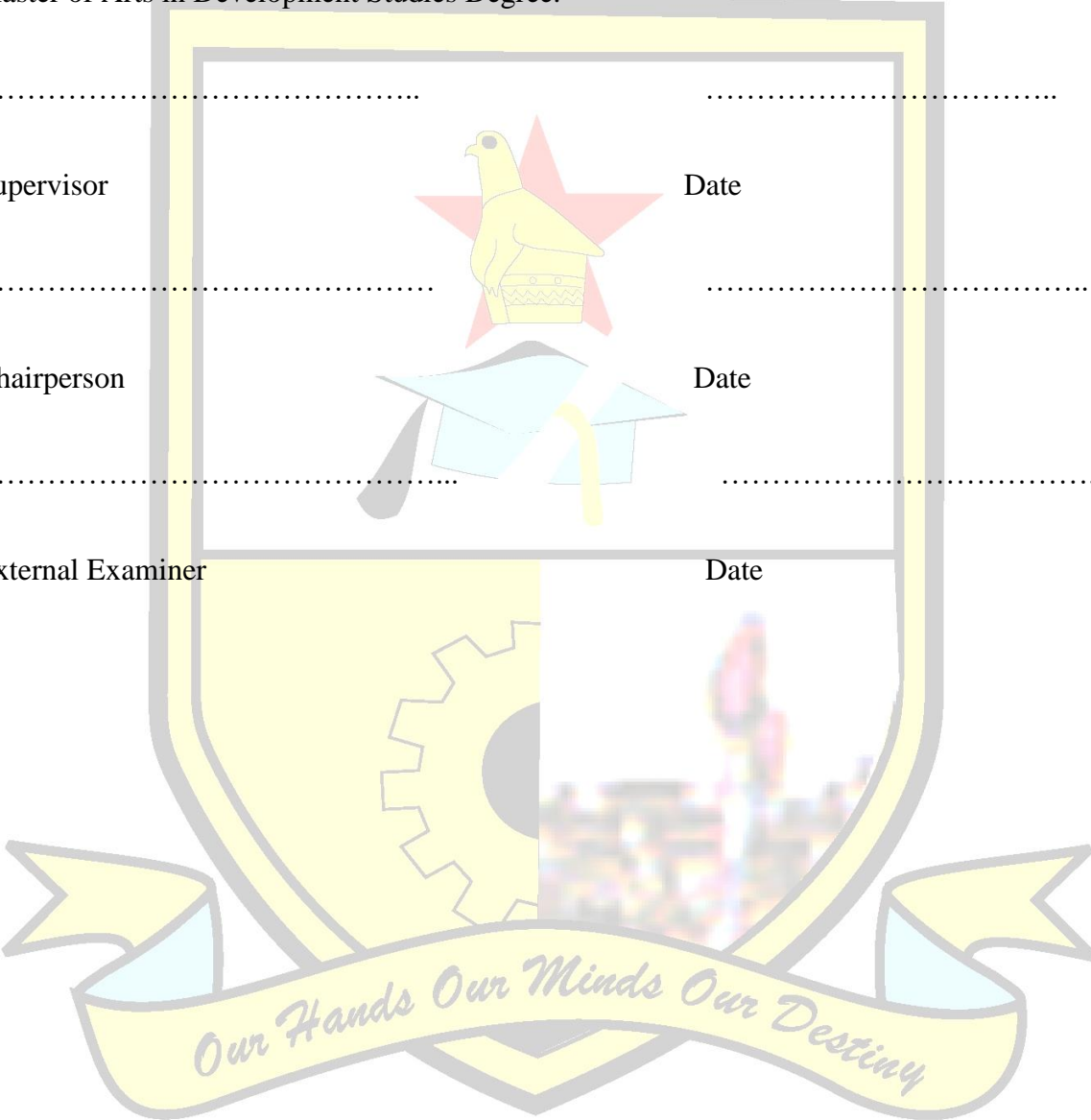
Above all, I thank God, the Almighty, for his divine inspiration.



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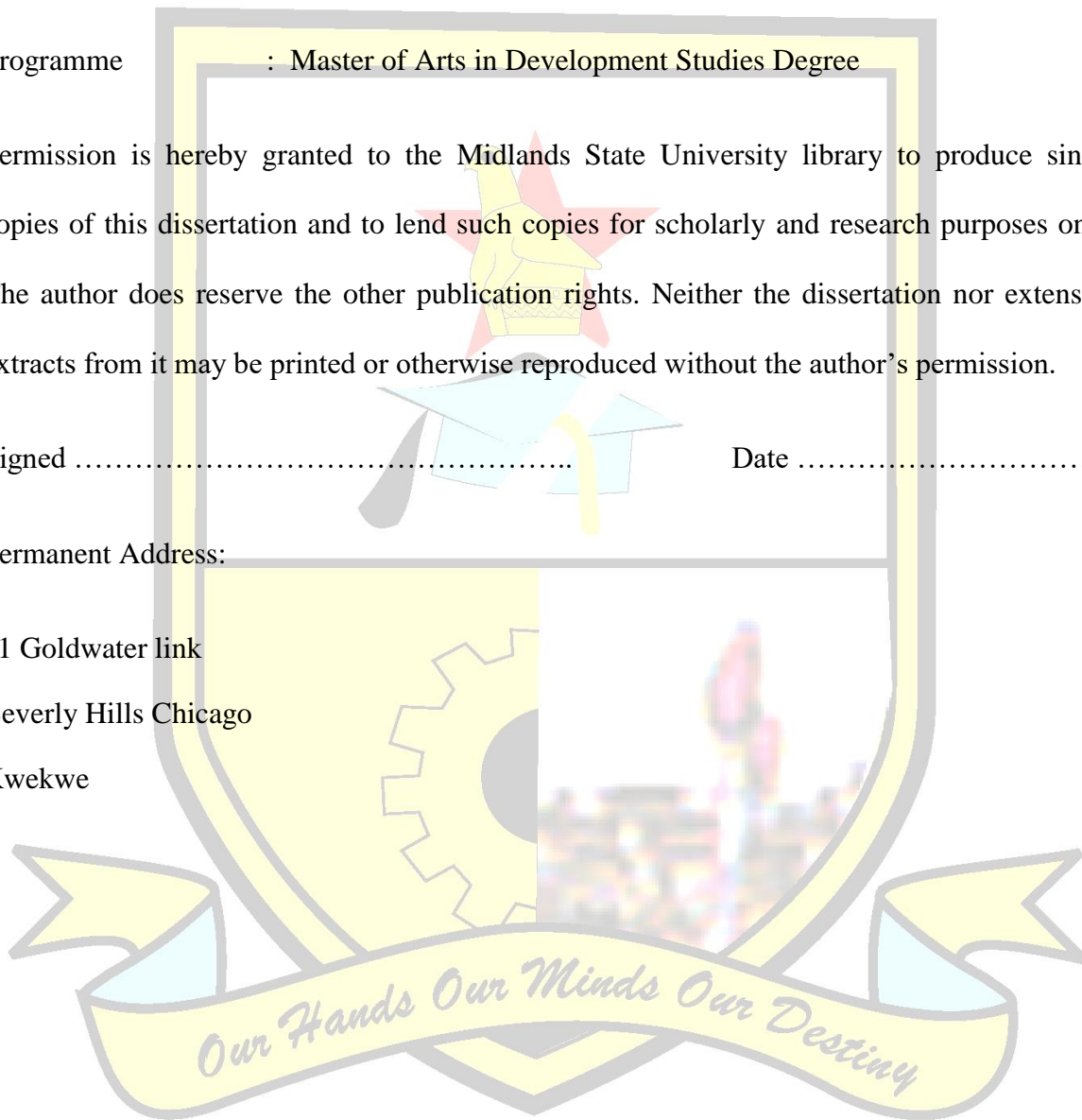
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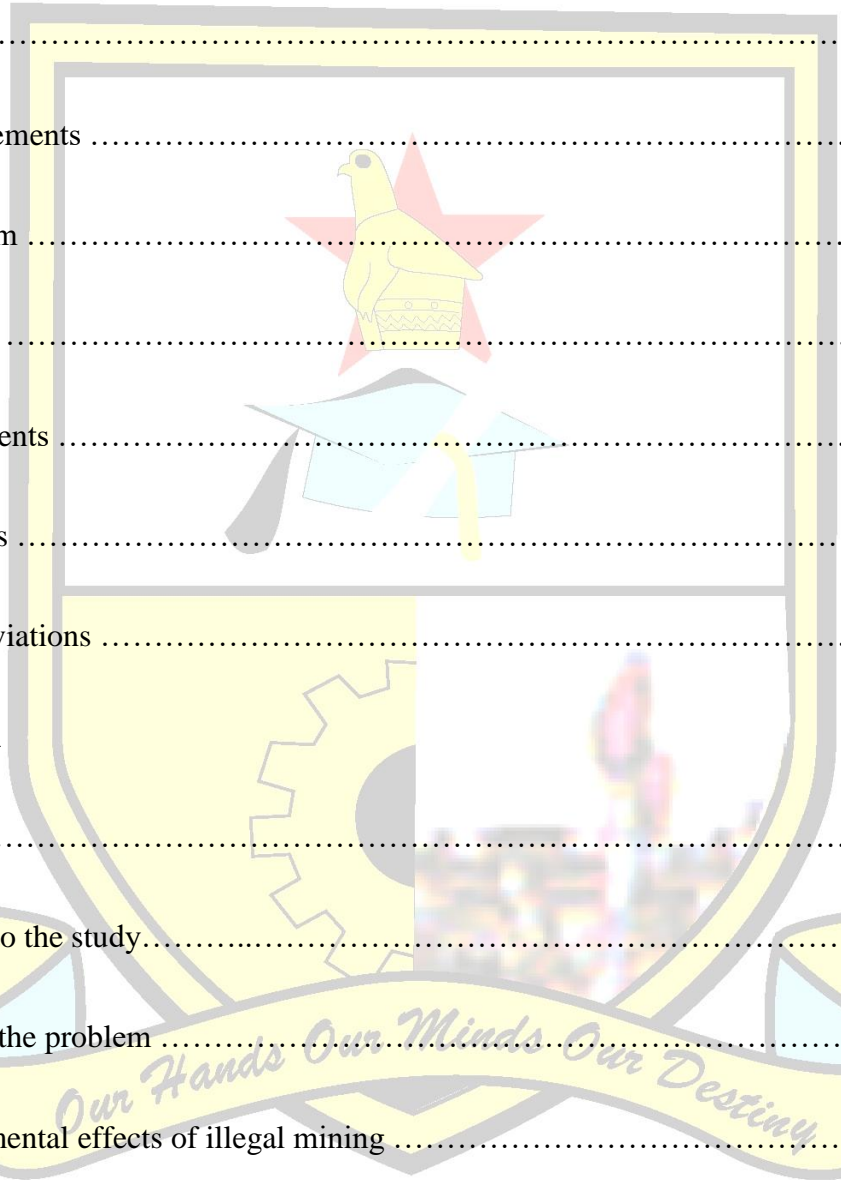
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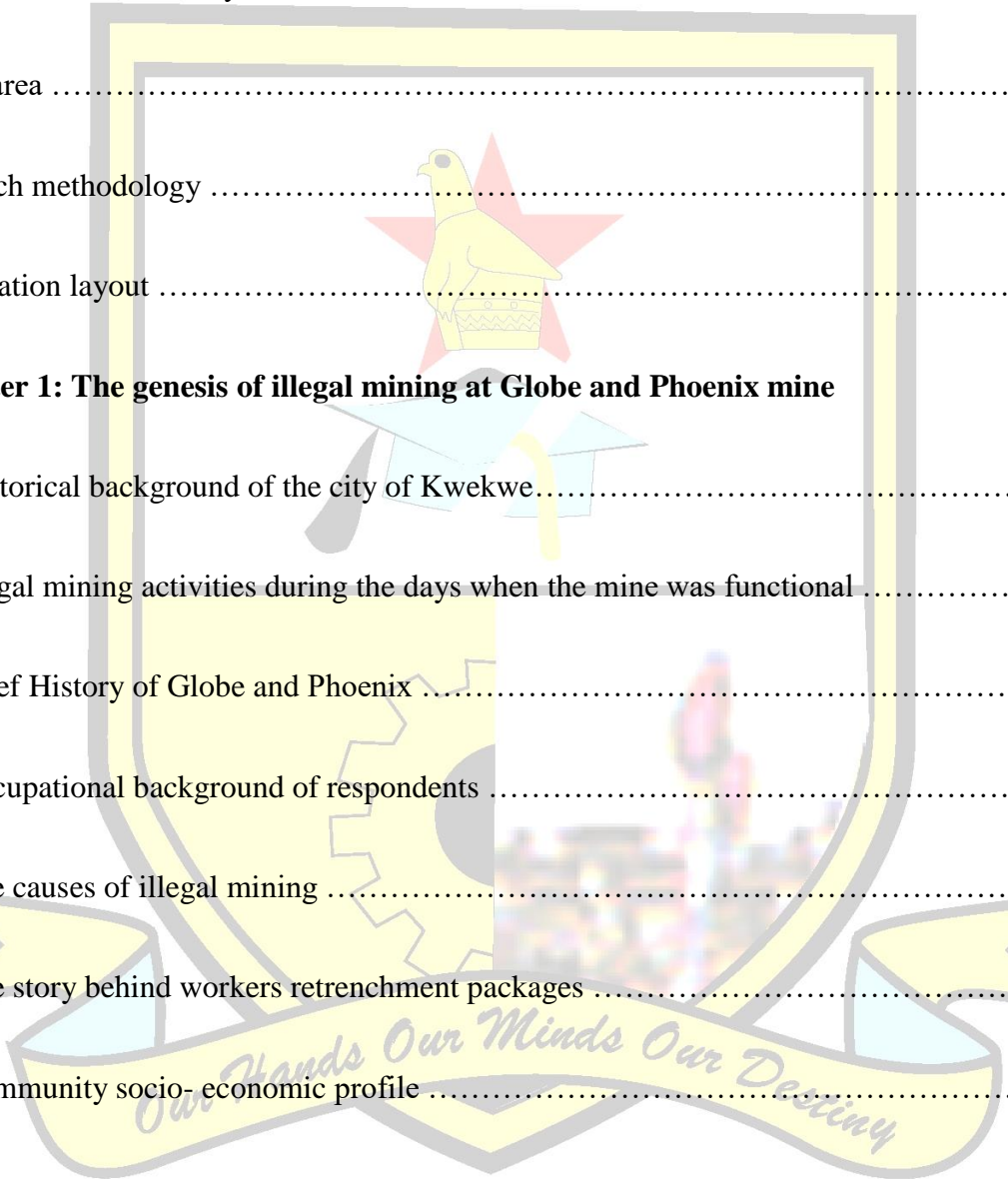


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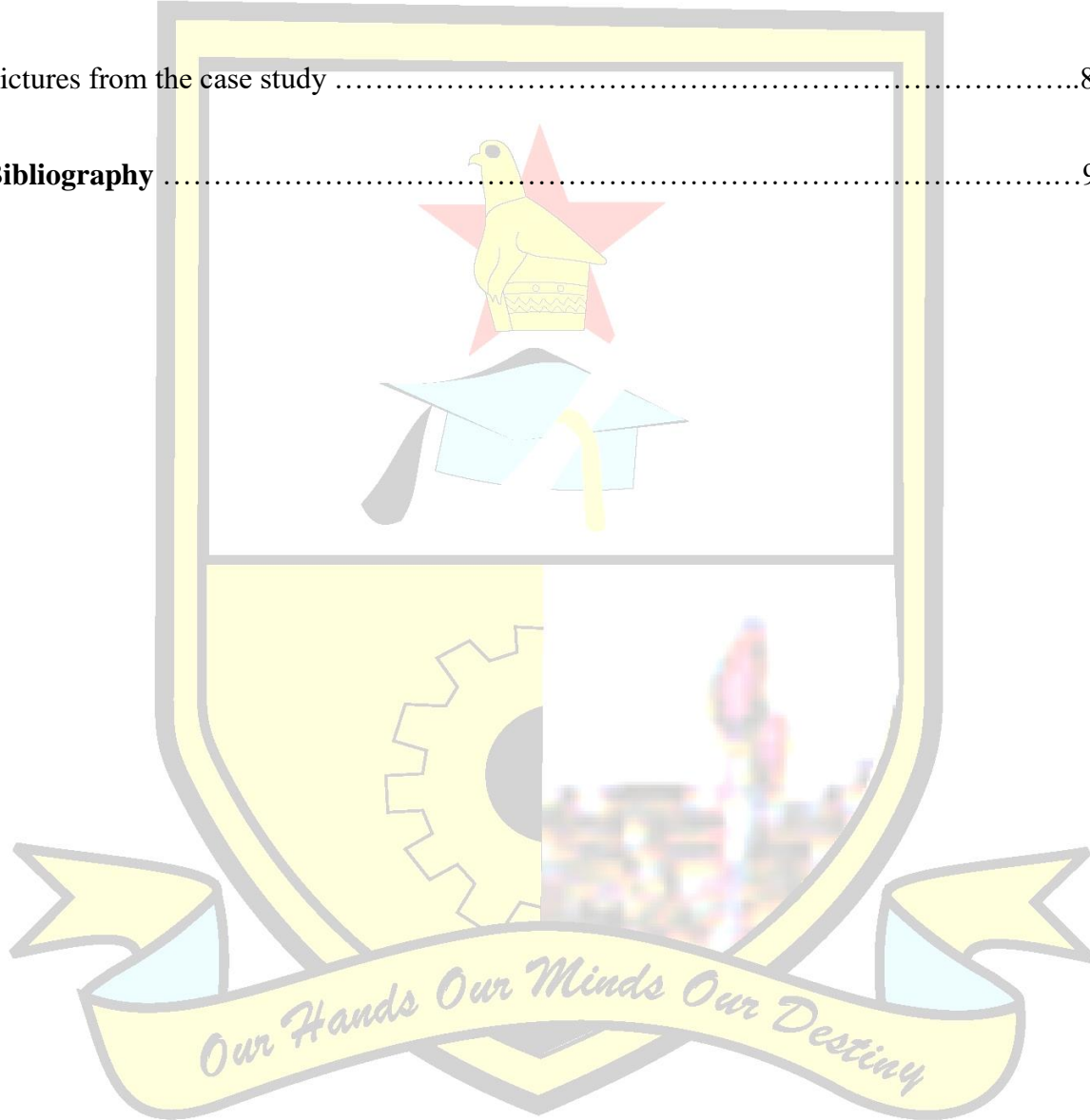
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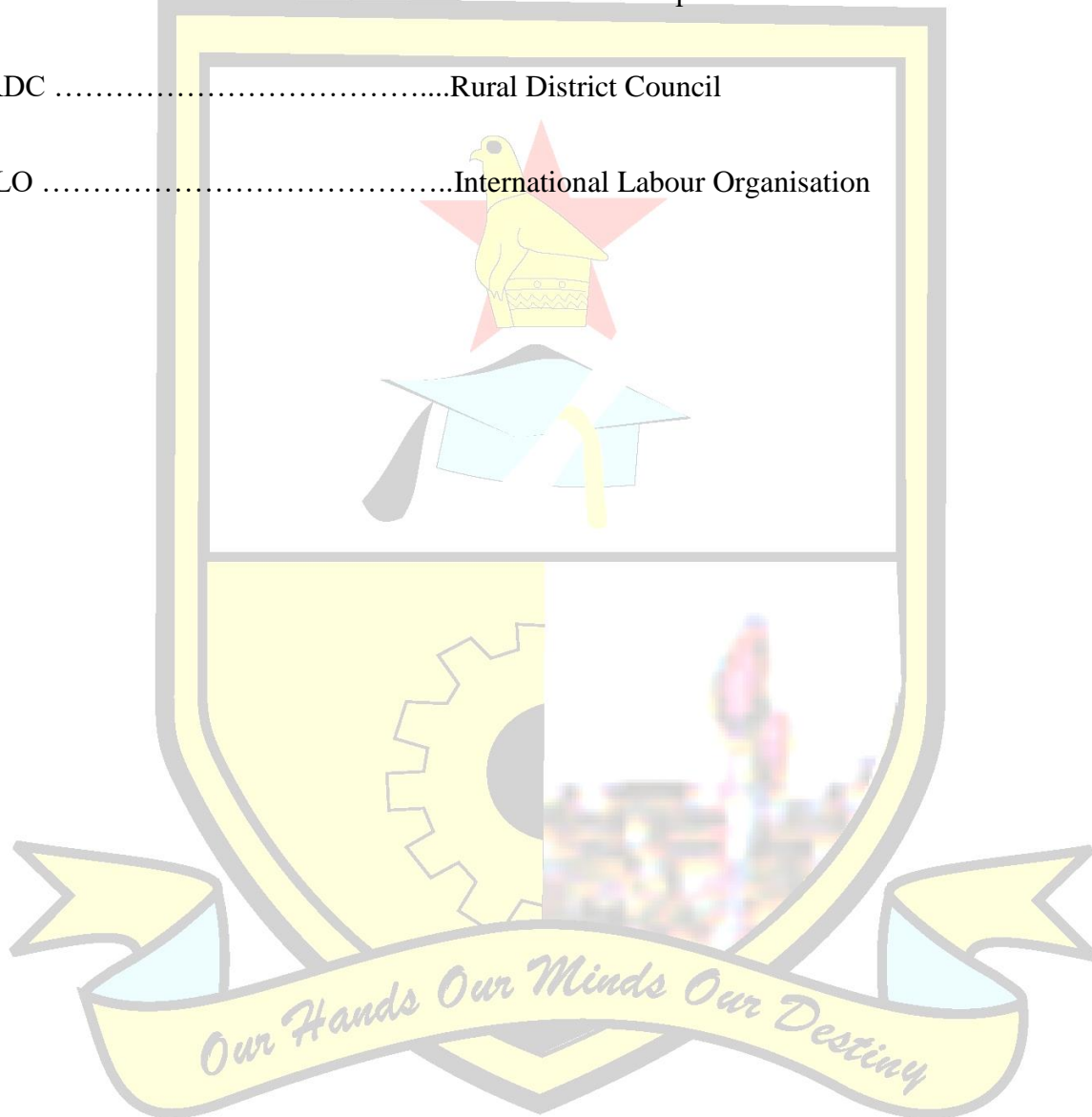
KCGM .....Kwekwe Consolidated Gold Mine

EMA .....Environmental Management Agency

EIA .....Environmental Impact Assess

RDC .....Rural District Council

ILO .....International Labour Organisation



# Introduction

## Introduction

Illegal mining and environmental sustainability have become topical issues in the 21<sup>st</sup> century. Gold panning has been growing on an international scale, with estimates indicating that 10 to 15 million workers are engaged in the sector globally and over 100 million people depend on it. An estimate of 13-20 million men, women and children from over 50 developing countries are directly engaged in gold panning activities (Darby and Lempa 2006). The International Labour Organisation (ILO) acknowledges gold panning is the source of livelihood for the majority of families in developing countries due to the economic woes that are being faced in most developing states. Gold panning is the most open opportunity for the people, but in as much as the socio- economic sphere is improved the illegal mining activities are causing detrimental effects on the sustainability of the bio- physical environment due to the fact that the operations are not done with caution.

Illegal mining is being viewed as a poverty driven activity hence it is faced with a plethora of problems which are environmental, social economic and cultural in nature. These include environmental degradation, criminality, land rights conflict, smuggling, cultural conflicts and social decay among others. The nexus between sources of livelihoods and environmental sustainability has provoked much discussion among development practitioners, the media and the government in Zimbabwe, Africa and the rest of the world. Research has proved that illegal mining has the potential to release harmful substances into the soil, air, and water, as such this study explore the effects of illegal mining on the environment and how these effects affect development. Illegal mining activities are threatening water availability for animals and human beings are no longer enjoying their right to live in a safe environment. A.G Awan postulated that the concept of environmental sustainability is a topical issue in every nation. It must be noted that currently there are efforts towards world collaboration so as to mitigate environmental degradation.

The Millennium Development Goal number seven alludes to the protection of the environment, thus one may argue that the environment and development are interlinked. Thus it is imperative to look beyond short term gains in illegal mining and focus on the long term impacts these activities have on the environment. Most states in the world ratified the mission 2016 which proposes that governments must put in place measures that ensure that mining

activities are done in such a way that the environment is not permanently damaged. Therefore countries must formulate policies and strategies that align with the Strategic Minerals Association (SMA).

### **Background To The Study**

Mining in Zimbabwe has been the hope of the state which is currently succumbing to the evils of economic crisis and the general populace is suffering from poverty and unemployment. Kwekwe district is renowned for its involvement in illegal mining. Be that as it may, it is necessary to note that illegal mining is closely attached to the natural environment and in most cases it is done in a short period of time but can leave permanent damage to the environment. It must be pointed out that illegal mining has been the worst enemy of the environment for a long time in Zimbabwe and worldwide (Geology Survey 2000). In China, Schuler pointed out that current estimates state that around 20,000 tons of gold are illegally mined and exported from "off-grid" mines in China every year. Due to the informal operations the miners do not observe environmental friendly mining methods (Schuler et al, 2011). The environmental degradation caused by illegal mining are compromising prospects for future economic and social development. The government of Peru passed the legislation to legalize illegal mining in 2002 with the aim to formalize and promote artisanal gold mining activity because it was a source of livelihood for the majority of the unemployed and this was done so as to pave way for the government to get revenue from the mining operations.

Hilson and Maponga (2003:9) noted that the implementation of the formalization process was being affected by the government's lack of financial capital for carrying out the task effectively. The World Rainforest Movement propounded that in Ghana illegal mining is a major cause of deforestation and land degradation and it has a number of negative environmental impacts (World Rainforest Movement, 2004: 43). Surface mining is risking the biodiversity of the country's tropical rainforest through the first stage of the mining activities which is the clearing of land thus the sustainability of the forests is compromised (World Rainforest Movement, 2004: 44). This process is also contributing to the drying up of rivers and streams, resulting in the extinction of aquatic life and the people's access to clean water is also affected. Illegal mining involves a number of stages which have specific environmental impacts (Gualnam, 2008: 2). The activity has led to deforestation of the environment and clearing of land affecting hundreds of endemic species, consequent erosion

and reduction of water table, contamination of the air, water and the land by chemicals such as cyanides, mercury, concentrated acids and alkaline compounds these chemicals are used in the processing of the precious mineral of which their effect on the environment is a threat to environmental sustainability (Abdus-Saleque, 2008).

Therefore, it is common to point out that the impacts of mining are related to mining itself but in the case of illegal mining the effects are detrimental due to the lack of geological knowledge and expertise on the part of the illegal miners. Their operations frequently produce hazardous substances and causes destruction to the bio physical environment. Due to mining activities in Obuasi, the health of most of the people that resides in the community is very poor, with a high prevalence of upper respiratory tract infection of which medical experts attributed to the mining activities and its associated pollution (Awudi, 2002: 9). (Kwateng, 2012: 5) pointed out that in Ghana illegal mining is locally referred to as *galamsing*, the government and the political leaders in Akwatia are aware of the activity and are not doing anything about the situation for fear of losing votes from the electorate. The government and politicians have refused to put in place measures to control these illegal mining activities in the communities for fear of losing the seat in the upcoming general elections.

Illegal mining activities are causing environmental problems in the southern region. In South Africa the shedding of jobs due to economic woes has caused an increase on the prevalence of illegal mining activities in the closed mines. Illegal miners gain access to disused shafts and collect high grade ore, Thornton I (1996:54) asserted that these are usually retrenched miners who have the required skilled labour in mining that they acquired through formal mining in the mines thus they resort to illegal mining so as to earn a living while at same time utilizing their skills. They use primitive hand tools because of the lack of financial capital they cannot purchase the modern tools that are required. Thus unemployment and poverty are also driving forces behind rampant illegal mining in South Africa.

In 1991, the Parliament of Zimbabwe gazetted Statutory Instrument number 275, which was a strategy to legalize gold panning and incorporate it in national development policies such that it can be formalized and through this formalisation the government will earn revenue. This statutory instrument stipulated that Rural District Councils (RDCs) must apply for grants for particular streams from the Secretary in the Ministry of Mines and Mining Development or a Mining Commissioner who would consult with the Department of Natural Resources



before it can be approved. When the grant has been acquired, the RDC would divide a public stream into 50 meter-sections for local persons or cooperatives that have been granted alluvial gold mining permits by the Mining Commissioner. The regulations also outlined and specified stipulated areas where panning was legally permitted and this prohibited gold panners from conducting their mining activities using methods that affected environmental sustainability.

The regulation denoted that no mining activities were to be done within 3 metres of the riverbank and they should not be deeper than 1.5metres. However this Statutory Instrument was repealed making gold panning an illegal activity of which it constitutes 90% of artisanal mining activities. S.Phiri (2011;3) postulated that in Matebeleland environmentalists have the challenge of regulating illegal mining so as to reduce the environmental effects of the operations. The situation is being caused by the rate of unemployment in the country, due to the economic instability companies in the provinces are closing thus the escalating rate of unemployment is a force behind the increase of illegal mining in the province. In Umzingwane district the illegal mining activities are causing land degradation, deforestation and water pollution. The miners are underequipped and use hazardous chemicals in the processing of gold such as mercury for amalgamation. The operations are causing negative effects to the environment and the extent of the land degradation has contributed to siltation of rivers, the destruction of vegetation as well as contamination of water bodies.

Bulawayo Metropolitan province and other rural areas that receive their water supply from the Umzingwane catchment have been affected in the process. The environmental effects of illegal mining outweigh the socio economic gains by the miners because this is affecting development and future generations will also be affected. In Gwanda there is also evidence of soil erosion and deforestation along the riverbanks due to illegal mining activities. Gold panning being viewed as a poverty driven activity henceforth it is faced with a plethora of challenges which are environmental, social and economic. These include environmental degradation, being labelled as criminals not victims of poverty, lack of mining rights, conflicts on land use, lack of access to financial resources and social decay. (Kongoma.O, 2013: 73) pointed out that 70% of the dams were silted and in most of the rivers, it was deemed not economically viable to construct new dams along the rivers where gold mining took place. Illegal mining operations contributed to the drying up of rivers and open pits are left in the process.

In the Midlands province illegal mining is a major cause for concern. The operations are taking part in most parts of the province but the extent of environmental degradation is intense in Kwekwe and Shurugwi district. News Day (April 29,2014) reported that in Shurugwi, an entire two-roomed house disappeared into the ground after a mine tunnel collapsed and in Globe and Phoenix mine a crater opened in Mr Banda's garden just less than three metres from his doorstep while he was watering his vegetables and swallowed a nearby fruit tree, calling into question the illegal mining activities taking place in the country. The incident ignited talk that the City of Kwekwe, which seats on top of a network of gold mining tunnels, could be in danger of collapsing and residents have called on an immediate plan of action to move the city off the tunnels.

Therefore, this study is going to be carried out in Kwekwe district since illegal mining is the main economic activity in the area and it has far reaching consequences on the environment. In most cases mining is being done without taking precautionary measures of conserving the environment. Leakage of respiratory poisons into the rivers and underground drainages is creating potential disasters. The mining of gold is weakening the earth's crust and the bio - physical outlook of the environment has been seriously deformed. Focus in the mining sector must not be confined in the economic benefits, but special attention must be given to the sustainability of the environment, which is part of the integrated global efforts for environmentally friendly production processes (Ajusa, 2003). Ermitte (2004) pointed out that water from mines that is concentrated with tailings depositories, slimes dams end up draining into streams. The Ministry of Mines (1990) noted that effluent must not be discharged into the environment. Mining involves the production of large quantities of waste, which account for more than 99% of ore extracted as waste (Adler & Rustler, 2007).

Disposal of such large quantities of waste poses tremendous effects to the environment. In Tiger Reef mine a major environmental problem relating to mining is the uncontrolled discharge of contaminated water commonly known as effluent disposal into Kwekwe river, this phenomenon is responsible for costly environmental and socio-economic impacts. Effluent disposal is characterized by high levels of toxic chemicals that are used during the processing of gold, these include sodium of cyanide and mercury. Adler and Rustler (2007) pointed out that the presence of toxic chemicals in effluent water is not only associated with ground and surface water contamination, but is also responsible for the degradation of aquatic environments, animal species, as well as death and infection of human beings. Assessments

by the Environmental Protection Agency in 1987 concluded that “problems relating to illegal mining may be lead to stratospheric ozone depletion.

More so studies have proved that the release of mine effluent into the environment can result in irreversible destruction of ecosystems. In many cases the polluted sites may be permanently damaged due to the fact that the extent of the degradation will be so persistent that rehabilitation measures may be difficult to apply. Kwekwe district is exposed to these outcomes because illegal mining is taking place in all the mines that were closed down namely, Jojo, Tiger Reef, BD mine, Riverlea mine and Globe and Phoenix mine. The research is going to be carried out in Globe and Phoenix mine because it was the first mine to be established and it is very close to the city center. Therefore it must be an area of interest since the effects not only expose the local residents in the community but all the residents of Kwekwe district are negatively affected.

Illegal mining is the main source of livelihood for the majority of the residents of Kwekwe district but the activity has negative impacts on the environment. The Earth Summit of 1992 which was held in Rio concluded that there is need to embark on sustainable development since the economy and environment are interlinked. Abdul Ghafoor Awan (2010) pointed out that any change in the socio- economic fields always leads to an impact on the earth’s environment and the impact can either be positive or negative, in many cases the negative impacts are irreversible. The paper states that all environmental problems are as a result of the excessive use of natural resources. This study is going to be focused on the first mine to be established in Zimbabwe by the European settlers around the early 1890s, the Globe and Phoenix mine. The effects of illegal mining to the environment will be explored and an assessment of the effectiveness of the measures that are being put in place by the government and stakeholders will be done.

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## **Statement of the problem**

Illegal mining in Globe and Phoenix mine is exposing the residents to danger because of the extent of the environmental degradation.

Zimbabwe is currently succumbing to the woes of unemployment as such people are embarking on various formal and informal projects but most of these projects are impacting negatively on the bio- physical outlook of the environment. Illegal miners are being given the platform to mine without police interference by local politicians because it is the source of their livelihood but their activities are contributing immensely to environmental degradation. In most cases mining is being done without taking precautionary measures of conserving the environment. Thus the researcher seeks to explore the limitations of the current strategies that were put in place towards mitigating the environmental effects that are being caused by illegal miners. It is therefore the focus of this study to establish the environmental damages associated with illegal mining in Globe and Phoenix mine which is in Kwekwe district.

## **The environmental effects of illegal mining**

The illegal gold miners are embarking on mining methods that are resulting in land degradation, deforestation and destroying the earth's crust to such an extent that the Globe and Phoenix mine is facing the risk of collapsing. It must be noted that this is largely due to their lack of geological expertise. The illegal gold miners dig very deep tunnels and shafts that are several in one area consequently the shafts are threatening the lives of the local people since the diggings are being conducted indiscriminately, some are being dug in roads and the school environment. Illegal gold miners light up veld fires so as to clear land for their mining activities, these fires are destroying the forests because they are not monitored. There is also rampant cutting down of trees, which are being used for making timbers that they will use as supporting pillars inside their shafts and tunnels.

Due to the scale of the operations and lack of financial capital, the illegal miners do not have the capacity to acquire modern mining machinery that is environmentally friendly. This is resulting in the exploitation of minerals without taking the necessary precautions and ignorant operations in the process of pursuing for gold veins. Mercury, acid and cyanide are very dangerous substances that are used in the processing of gold that are affecting the environment especially the soil that was once used for agricultural purposes by the local

people. These unregulated mining activities have the potential to release harmful substances into the bio physical environment, in the process risking the lives of the humans and animals in the area. A number of international conferences are being held such that governments can enforce regulations that ensure that there is minimal damage to the environment. Thus environmental protection is the key issue yet the activities of illegal miners are not monitored, of which this is risking the sustainability of the environment.

Illegal miners use various mining methods and it must be noted these methods do not ensure environmental sustainability. Open pit mining method entails the extraction of ore on the surface due to the fact that the minerals are not found in large quantities. Large areas of land will be extracted so as to acquire the mineral in large quantities since more ore must be processed. Paul and Campbell (2002) pointed out that all the steps of open pit mining are hazardous to the environment. The blasting of hard rocks using hydraulic pumps removes the topsoil that is crucial for the ecosystem since it is concentrated with seed banks hence this negatively impacts the recovery of vegetation (Miranda et al., 1998). This usually causes desertification and as a result soil erosion occurs due to the disintegration of the biomes. Large scale landscapes are opened and illegal miners do not have the time to rehabilitate the areas that has been affected because they are always on the run and when they get access to the gold ore they leave in search of other gold reservoirs.

Underground mining, is also another method used by illegal miners in the extraction of gold, has the potential for tunnel collapses and land subsidence (Betournay, 2011). Large quantities of waste rocks are dumped on the surface, vegetation is also destroyed in the process of timbering the tunnels. Ochoa G (2008) postulated that underground mining also release toxic compounds to the underground water, this will result in the contamination of water in the region surrounding the mine. The use mercury for the amalgamation process is also another source of contamination, illegal miners do not observe the necessary disposal measures hence this improper disposal can lead to the contamination of the underground water (Miranda et al., 1998).

Illegal mining contributes to environmental degradation on surrounding surface and ground water if protective measures are not taken. (Thornton, I, 1996:58) pointed out that the result of disposal of chemicals from mining activities can be unnaturally high concentrations of some chemicals such as mercury and cyanide over a significant area of surface or subsurface that will threaten the human and animal life in the area. The runoff of soil or rock debris

although non-toxic- also devastates the surrounding vegetation since it contributes to soil erosion. There is massive contamination of the area surrounding the mines due to the various chemicals used in the mining process as well as the potentially damaging compounds and metals removed from the ground with the ore. Large amounts of water produced from mine drainage and other mining processes increases the potential for these chemicals to contaminate ground and surface water. In well-regulated mines, hydrologists and geologists take careful measurements of water and soil to exclude any forms of water contamination that could be caused by the mine's operations but illegal miners do not have this expertise hence their operations are posing a danger to the locals since it is contributing to environmental degradation.

### **Nexus between development, the environment and illegal gold mining**

Thomas (2004: 1, 2) asserted that the definition of development is controversial and complex, it has been regarded as poverty reduction and achieving the millennium development goals. While, Amartya Sen postulated that development is enlarging people's choices through freedoms, politically people are given the chance to participate in politics in a democratic environment, economically people must have access to employment and credit facilities and social opportunities where people have adequate education, safety nets for employment, health facilities and protection. However it must be noted that development can not only be confined in the aspects of improvement in the well being of people rather development must also entail the economic and social system. It is common to argue that illegal mining is being practiced across the globe due to the lack of the above freedoms. Unemployment is the major driving force behind illegal mining.

Ackley Gardner (2000:6) postulated that in terms of development, economic growth is only a subset of development where as Amartya Sen postulates that development entails an improvement in all the aspects of human needs. It must stated that developing countries are facing financial challenges and this is affecting the environment since the people that are on the receiving end of the economic instability are resorting to illegal mining so as to earn a living yet these activities are degrading the environment. Development is interlinked with the natural ecosystem. Rostow's growth model, is one of the most widely cited development theories denotes the intersection of geography, economics, and politics in development (Rostow,1961:15) thus development and the environment must not be treated as independent variables rather they complement each other hence it must be pointed out that illegal mining

activities are causing detrimental effects to the environment, this will consequently affect development in a negative way because most aspects of development takes from the environment.

Barrett S (2000:433) postulated that economic development can be defined as the quantitative and qualitative changes in an existing economy. Henceforth economic development must entail the development of human capital, increasing the literacy ratio, improve infrastructure, improvement of health and safety and other areas that aim at increasing the general welfare of the citizens thus there must be modernization and industrialization in order to achieve economic development (Stern D.I, 1996:485). Economic development leads to improvements in many sectors of a nation. There are a variety of indicators that economist use to measure the level of economic development in a country. The indicators are, declining poverty rates, increasing literacy rates, declining infant mortality and increasing life expectancy.

Economic development has to be supported by the whole nation from economists, politicians, and also civilians. Thus it can be concluded that, economic development leads to the creation of more opportunities in the sectors of education, health sector, research, human development and environmental sustainability ( Grossman G,1995:355). Economic development implies an increase in the per capita income of every citizen thus development must ensure the satisfaction of human basic needs. Beckerman (1992: 494) emphasized the fact that if the environment is over exploited the end result is that human beings will not be able to attain their basic needs and future development will be compromised due to environmental degradation.

According to Charity Irungu (2008:16), sustainable development can be defined as a development which meets the needs of the present generation without compromising the ability of nature. Thus the concept of sustainable development must entail, cost effective development which does not harm the natural environment. Henceforth sustainable development does entail stopping economic growth rather its growth while paying special attention to the natural environment such that the present and future generations will not be at a disadvantage since humans and their activities are closely linked to the natural ecosystem, as such the ecological issues and economic growth must go hand in glove. Economic development involves the production of goods and services so as to meet the human basic needs therefore sustainable development must guarantee that human basic needs are met

because when the natural environment is damaged human livelihoods would be negatively affected. Charity Irungu (2008:20) postulated that ecological development means protection and conservation of our natural resources.

This discussion proves that development is not an independent aspect but it is a property of environmental, economic and social system. Therefore, it must be noted that development is linked to the environment since it takes from the environment. Mining is pivotal to the gross national product and employment creation, owing to this contribution the Southern African Development Community launched the Protocol on mining in 1997. Therefore illegal mining is detrimental to development because the state does not get revenue from the mining operations because they are not formal and the gold is sold and exported through the black market while at the same time permanently degrading the environment.

### **Research Objectives**

- To assess the extent of environmental degradation that has been caused by illegal gold mining
- To investigate if stakeholders in environmental management are playing pivotal roles in ensuring environmental sustainability and assess the effectiveness of the strategies
- To identify the constraints faced by miners in observing environmentally friendly production

### **Research Questions**

- To what extent has illegal mining contributed to environmental degradation?
- What measures are stakeholders taking and how feasible are the strategies in ensuring the sustainability of the environment? to
- Why is it complex for illegal miners to employ methods that ensure the sustainability of the environment?



## Conceptual Framework

The definition for illegal gold mining is not largely disputed, this is because of the lack of documentation legalizing the mining operations of the individuals hence the terminology illegal. Thus the fact that they are not formal is the central issue. They are mainly characterized by their small scale activities, lack of capital, poor access to markets, low standards of safety and lack of geological expertise that leads to operations that impact negatively on the environment. Therefore this paper will use the phrase illegal mining because the definition is not disputed. Illegal gold mining is a topical issue because of the effects that it has on the environment. Illegal gold mining was on the peak in 2000 as a result of the collapse of the formal economy due to the financial crisis in Zimbabwe which saw the closure of industries, that left the majority of the citizens out of employment. As formal mining receipts declined, the small-scale operations boomed, with much of the product being traded illegally and smuggled out of the country. It must be noted that illegal mining is causing detrimental effects to the bio- physical environment. Environmental sustainability involves taking actions that are meant for protecting the natural world.

Environmental change is being caused by human activity while at the same time economic development is also dependent upon the natural ecosystem thus these two factors are inter dependent. Hettique (1997:34) pointed out that the environment can be viewed as the totality of nature and its components, these are the biological and physical surroundings of human beings that are found in the lithosphere and atmosphere these include water, soil, forestry, minerals and living organisms. There is an interrelation between them due to the fact that all living organism rely on the natural environment through giving and taking from it. Goudie, (1999) propounded this interrelationship by the anthropocentrism and ecocentrism theory. Anthropocentrism denotes that human beings benefit from nature henceforth it is imperative for them to conserve it for the sake of their survival. Ecocentrism states that nature is for the use of human beings since all their survival skills are directly linked to it hence they need the natural environment for them to live. It must be noted that the key concept in these two theories is that human beings must take and give to the environment so that it can renew itself for the sake of their survival.

Illegal mining has been defined as the absence of land rights, mining license, exploration or mineral transportation permit thus there is no documentation that legalizes the mining activities however it must be noted that most illegal mining activities are more characterized by their small scale operations and most illegal mining activities takes place in abandoned mining sites. The term illegal is denotes the fact that the operations are not legalized. The Merriam Webster Dictionary defines the word legalize as to give legal validity or sanction to, it also defines formalise as to give formal status or approval to thus these definitions prove that illegal mining is not approved and neither is it formalised since it is associated with the informal sector hence this draws to the conclusion that whatever activity the illegal miners are embarking on illegal mining do not have documentation. The activities are done without taking any precautionary measures since no assessment is done hence failure to adhere to environmental laws.

In Zimbabwe illegal gold miners are known as *makorokoza*, in South Africa they are known as *zamazama*. In South Africa the Mineral and Petroleum Resources Development Act of 2002 states that registered companies only can prospect for mining sites and process minerals and the government is the legal owner underground resources regardless of land rights on the land surface illegal miners work under the justification that all natural resources are the common heritage of all the South African citizens irrespective of other provisions of the act. The environmental Kuznets curve denotes that there is a close relationship between environmental quality and economic development, this is supported by the fact that modern economic growth leads to environmental degradation until average income reaches a certain point over the course of development (Shafit Nemat, 1994: 751). It must be noted that though that this hypothesis is subject to debate, there is evidence that environmental health indicators, such as water, land and air pollution, show the inverted U-shaped curve showing the relationship between economic development and the environment. Critics argue that developed countries are still struggling to prioritize environmental pollutants such as carbon emissions due to financial constrains (Yandle B and Bhattarai M, 2000:12).

It is also necessary to note that the environment is the source of livelihood for the majority of people in developing countries and this is resulting in environmental degradation. Yandle et al (2000) argue that the environmental Kuznets curve is not applicable to specific pollutants because human activities affect the environment differently. Mining contributes much to the Gross Domestic Product (GDP) (Zimbabwe School of Mines module, 1997) but it has been

infested by illegal gold miners. In 2008 it amounted to 676 million representing about 51% of the total export shipments and 3.8% Gross Domestic Product.

Gin (2002) propounds that in 1996 the mineral industry in Zimbabwe was the world's major supplier of asbestos and lithium minerals and these minerals contributed to Zimbabwe being a leading country in the industry, contributing 27% of total exports, although such minerals as nickel chrome, coal and platinum are valuable, gold remains the mainstay of the mining sector contributing about 40% of the overall mineral output and this makes it a source of livelihood for the majority of people (Dreschler, 2001). The United Nations Human Rights Council Resolution on Human Rights and the Environment (2012) postulates that land degradation can be defined as the loss in the quality and the productive capacity of the land, the paper also alludes to the fact that land degradation threatens the economic and social needs of human beings, since human activities are interlinked to the natural ecosystem.

The theory of this study is derived from management of development principles. Management of development entails planning and implementing development programmes. Helmsing (1986) asserted that planning is the first stage among all the functions of management. Thus planning cannot be separated with policy making process because policies are put in place to manage development. Policy is defined as the product of political influence, determining and setting limits to what the state does (Hill 1993:47). Anderson defines it as a decision that the state or an organization take to solve a problem and adopts a specific strategy for its planning and implementation thus in this case it is policy planning in management of development. In Zimbabwe particularly Kwekwe district there is a problem of the effects of the activities of illegal gold miners on the environment. Thus policy making is best conveyed by describing it as a process, rather than a single and once for all act. Policy making has been defined as the process by which governments or organization translate their vision into programs and actions to deliver outcomes (Hamilton, 1999:8).

The policymakers are assumed to be capable people who have perfectly reliable information upon which they can base their goals, their actions are perceived as rational choices. Since colonial rule Zimbabwe has used the top-down approach in policy formulation and implementation. The conservation of natural resources through sustainable development is not immune from this approach. The colonial era statutes and institutions such as the 1941

Natural Resources Act, Land Husbandry Act in 1951 as largely implemented by the colonial District Commissioners (S. Mukanya, 2011:117) had no provision for participation by indigenous people. It is against this background that when Zimbabwe attained independence did away with these laws and introduced new laws for conservation of the natural ecosystem such as the Environmental Management Act, chapter 20: 27. Kleemeier (2000: 929) postulated that policy formulations that involve the participation of the community tend to achieve good results that benefit the people than top bottom policy formulations such as rationalism and blue- print approach. The approaches that put people first recognize communities as partners in development instead of regarding them as passive recipients as such one may argue that for policies or initiatives to be sustainable, the community must be put first and their views must be respected. In this instance the community was supposed to be directly involved in environmental management policy formulation such that they will treat their environment with caution in their panning activities so as to align with Ostrom's theory of Co-production and Synergy for development.

Henceforth the theory of this study is therefore drawn from Botterill and Fisher's Community Participation Model. The model denotes that community participation is the best way towards creating a positive attitude towards a policy. In the case the natural resources and environmental management agents are supposed to take note of the illegal gold mining activities and the community, so that they can formulate ways on how best they assist them so as to ensure environmental sustainability. Botterill and Fisher ( 2002: 3) asserted that the community is the best agent in solving economic, social and environmental problems because they are directly in touch with the causes of environmental degradation but they tend to be hostile if the measures are form top to them without their input. This model postulate that the bottom up approach can be used in economic development, education, health issues, biodiversity and natural resource management.

### **Significance of the study**

The researcher focused on this study because the environment is crucial to development hence any negative impacts on the environment can affect development in a similar way thus it is the co relatedness of these variables that motivated the study on how illegal mining is affecting the environment. The research also wanted to have an insight and enlightenment of illegal mining activities, therefore the study on the impact of illegal mining on the environment provides a fundamental basis for policy making for the stakeholders involved in environmental management based on the findings of the research. It must be noted that land

is a fixed economic asset which must be safeguarded for the present and future generations. As such this study provides crucial baseline information on how illegal mining is impacting the environment, the findings will play a pivotal role on the environmental agencies in Kwekwe district on how they can ensure human activities are not negatively affecting the environment.

This research will be the baseline survey for development organizations, the government and all the departments involved. The study will enrich academic research because it will provide basic information on environment and the sources of livelihood for the people in the area and the push factors. The purpose of the study is to examine the factors that have contributed to the rise of illegal mining in Globe and Phoenix mine and why the operations are rampant in this particular area. The extent of the environmental degradation that has been caused by illegal mining activities will be assessed in relation to the strategies that are being put in place by the government and stakeholders in environmental management and an analysis of the effectiveness of these measures will be done. The study will also identify the constraints faced by miners in observing environmentally friendly production.

### **Limitations of the study**

The researcher encountered difficulties that cannot be turned a blind eye to because they contributed to limitations in achieving the aims and objectives of the research. There were intense financial problems, the researcher encountered problems on the transport fare to and from the illegal mining sites, acquiring research necessities such as cameras and stationery. More so attaining information from questionnaires was time consuming since some respondents took weeks without completing, therefore this affected the time the research was supposed to be complete. Most of the government employees were reluctant to divulge information on the failures or weaknesses of their departments in curbing the problem of illegal miners as they felt they would be exposing the government. They are bound by the secrecy Act that is signed by all government employees, some feared victimization since some of the problems were being caused by political bigwigs.

## **Delimitations of the study**

Kwekwe district is endowed with centers where illegal mining is the order of the day but this study is going to be focused on Globe and Phoenix mine because it is the most affected area. The study will only focus on the bio- physical aspect of the environment and illegal miners are those small scale miners without the required documentation that is required for one to carry out mining activities.

## **Study area**

Kwekwe district is in Midlands province, the study is going to be focused on Globe and Phoenix mine which is one of the oldest mines in Zimbabwe. The mine was found by the imperialist Cecil John Rhodes. There are a number of areas that are infested with illegal mining but the researcher focused on this mine because of the level of the degradation that has since occurred to this place after the closure of the mine and its proximity to the city center. Globe and Phoenix mine is only five hundred meters from the city center yet it has become an eyesore due to the careless mining activities that are taking place in the area. Most people in this area have embarked on gold panning as a means to sustain their livelihoods making the area more vulnerable to environmental degradation. As such the choice of the area was influenced by the history and accessibility of the area.

## **Research Methodology**

Research methodology refers to the design and research methods applied in the collection and processing of data.

## **Research Design**

### **Qualitative Approach**

Saunders defined research design as a planned deliberate arrangement of conditions for analysis and collection of data in a manner that aims to combine relevance to the research (Mark Saunders, 2003:37). A design is a plan of enhancing validity of the research it help researchers to make their studies a valid piece of work. Research design is the program that guides the investigators in the process of collecting, analyzing the interpretation of observations. Frazer and Lawley (2000:29) propounded that a research design is the specification of methods and procedures for acquiring the information needed, thus it is in reality the conceptual structure within which the research is carried out by showing how all

the major parts of the research major parts of the research project work together to address the central research question. Hence the research design was there to guide the researcher and lead the researcher in the study as it was a form of ongoing feedback and check list process which enabled the researcher to monitor if the research is in the right direction and make amendments on it when there was need. It must be noted that there are different types of research designs namely experimental, descriptive, correlation historical, casual comparative to just mention but a few.

In this case the researcher used the descriptive design since it gave the researcher a chance to employ different data collection techniques. Thus the researcher was in a position to scrutinize and compile a comprehensive record of what transpires in and around the areas where illegal mining is being done, it helped the researcher to get accurate description of the community under study, the institutions and events in a manner that proves minimum bias. Pauline Young asserted that the word survey means to see over. Seeing in this context is not only limited to what is seen with the eye but also encompass attitudes, opinions and the conclusions drawn from research from the effects of illegal mining on the environment (Peter Woods, 2006:15), this was due to the qualitative nature of the research.

The researcher employed the survey approach such that the study can give a descriptive approach on how the activities of the illegal gold mining are impacting the bio-physical environment. As such the researcher was able to reach a large variety of people within a short period of time. The main advantage of descriptive survey was that instead of involving a whole population a sample was used and the findings from the sample were generalized to the whole population. Martin Marshall (1996:522) asserted that descriptive survey method deals with a situation that demands the technique of observation on principal means of collecting data. Thus the descriptive survey method involves looking with accuracy at the phenomena under study as well as describing thus the researcher visited the sites under study and observed the situation on the ground and this gave a clear insight on the activities.

Additionally the researcher used the descriptive survey because it provided information on the attitudes, opinions, points of view and feelings of the research population. The survey enabled the researcher to describe the nature of existing conditions, which was rampant unemployment in the Globe and Phoenix mine community and this enabled the researcher to identify the problem of illegal mining against the existing conditions of poverty due to unemployment compared hence the researcher was in a position to determine the relationship

between illegal mining and the driving force behind. The greatest advantage of this approach was its flexibility, the researcher was able to switch from observations to interviews, the respondents were households from the compound, stakeholders and illegal miners this enabled the researcher to gather more information. The researcher also employed the use of sampling for data collection. This entailed the process of selecting units from which data was to be retracted for this study the population of interest to illegal mining and the environment was used such that by studying the sample the researcher fairly generalized the results to the whole population. The study targeted a sample of the illegal gold miners in Globe and Phoenix community Kwekwe district, government arms that deal with mining, the EMA, ministry of natural resources and a sample of people around to solicit information on the effects of illegal gold mining on the environment.

### **Importance**

- Field observations gave the researcher several angles on the impacts of illegal mining, the researcher managed to grasp an understanding of the mining operations through observations of the environment
- The researcher gained a lot of information through interviews, opinions of miners and stakeholders was attained, observing the operations gave the researcher an understanding of how the illegal mining activities are impacting the environment.
- The design provided various angles for the researcher to collect data

### **Interviews**

The researcher used personal and focus group interviews. Roche (1999:26) defines an interview as a conversation between two or more people which is used as a means of gaining access to information. This method of collecting data was carried out in a structured way. The researcher followed a rigid procedure and sought answers to a set of pre conceived questions. T. Williams (1991:86) asserted that interviews are particularly useful for getting the story behind a participant's experiences, hence the researcher was able to pursue in depth information on illegal mining and the environment. It must be highlighted that interviews enabled the researcher to collect large amounts of information in a short period of time. Phillip Kotler (1999:27) identified two forms of face to face interviews namely individual and group interviewing.



Individual interviewing gave every respondent the opportunity to say out his or her line of thought without having been influenced by group psychology. The researcher chose this method because it made it easy for participants to clarify difficult questions such that the respondent would understand and give a response. The researcher also observed that in group interviews sensitive aspects of illegal mining were not brought out, some respondents only gave hints of the issues but refused to shed more light on the aspect therefore individual interviews filled this gap because respondents would feel safe in one on one interviews to discuss the sensitive information about their mining operations. More so the researcher was able to guide the interview while at the same recording observations, behavior, reactions and the true sentiments of the respondents on the subject, the comments were recorded through notes taking thus it was convenient.

The research was carried out through open-ended and closed questionnaire. These were done such that more information would be produced. Burns and Bush (1998) pointed out that for an investigation to be efficient the researcher needs to be thorough in the enquiries. Thus the research used questionnaires that were drafted in a tactful manner, simple and straight forward questions were first followed by complex questions especially those that demanded the respondent's view on the variance of the research. The researcher also considered ethical matters because these are crucial when carrying out a research. In this instant there was need to give special attention to confidentiality and informed consent of the respondents. Hence the researcher introduced herself, where she came from and notified the respondents that the research was only to be used for academic purposes only.

### **Questionnaires**

The researcher used questionnaires to gather information the respondents would answer structured questions. This was also an effective way of collecting data since it used to collect large volumes of information at a low cost per respondent. The respondents gave more honest answers to personal questions on questionnaires thus this method filled in the void that was created by focus groups and personal interviews, furthermore this method did not give room for the interviewer's bias since the answers were written down. It proved to be convenient to respondents from stakeholders, most of them were always busy or out when the researcher visited their offices therefore they were able to answer when it was convenient to them.

## **Telephone Interviews**

The researcher used telephone interviews in the collection data. It must be highlighted that this method played a significant role since it produced results in a very short space of time. Hence the researcher chose this method because there was need for information to be collected from town planners, draftsmen, environmental agents and development practitioners who are always out of the offices working, thus it should be noted that these people can be easily contacted through the phone since the researcher acquired the numbers from the people she would find in the offices. Glaser B.G (1968: 40) asserted that telephone interviews allow greater sample control. The above assertion is true since the researcher contacted respondents over the phone this was an effective method of getting into contact with those respondents that were usually busy and unavailable. It must be noted that it was the quickest way of collecting data over a short period of time. The respond rate was also higher than mail.

## **Secondary sources of data**

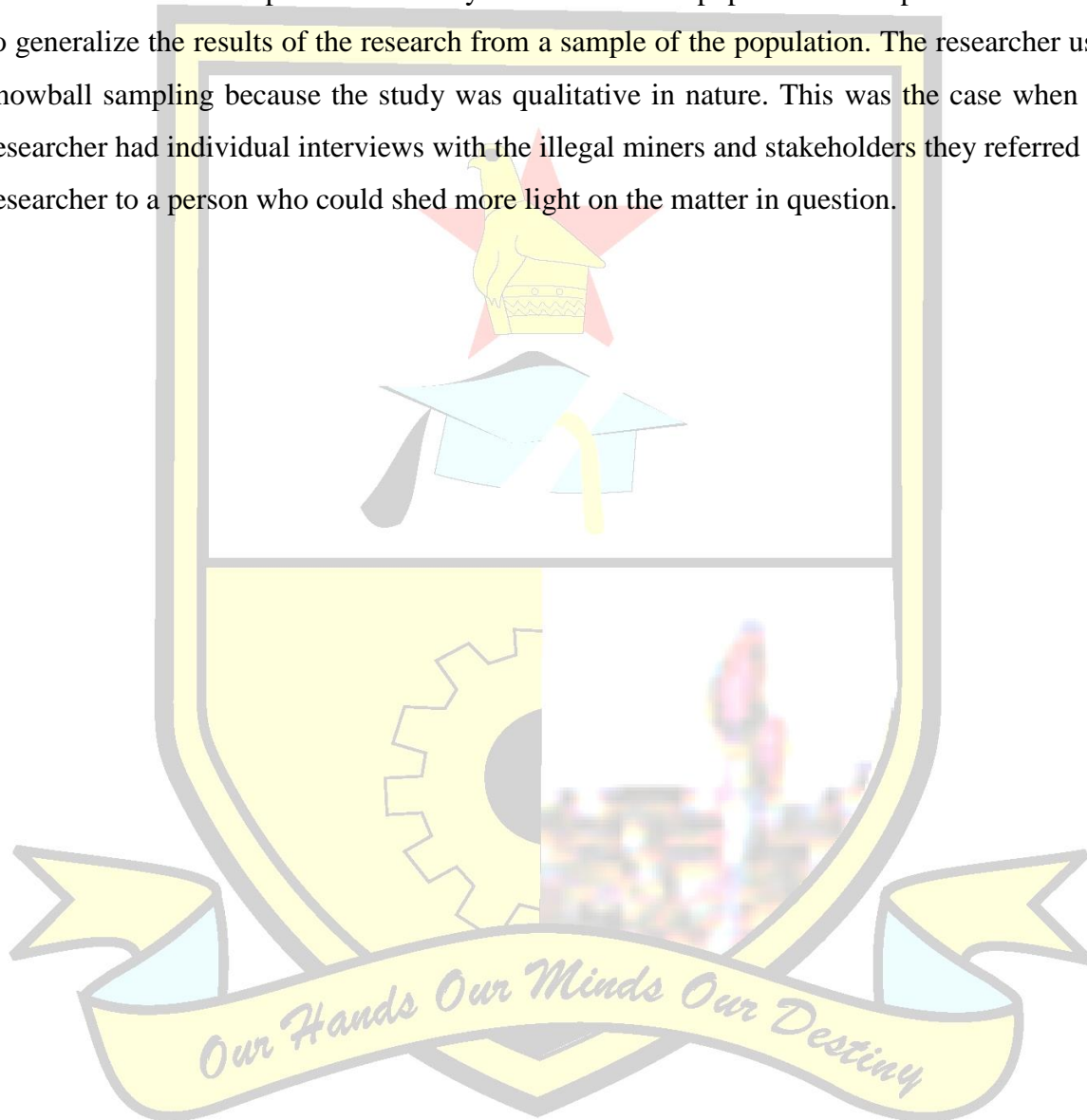
Saunders (2003;54) asserted that written documents can be important sources of data on their own. The researcher used secondary sources of information to get information on the key concepts of the study. This data was collected from literature in sources like the internet, published and unpublished sources, newspapers and magazines. These documents were used to triangulate the data collected through interviews and questionnaires

## **Research population**

Cohem and Manion (1998: 32) define population as the theoretically specified aggregation of study elements. Thus it can be argued that population is a group of study objects about which the research wants to make inferences or from which a research desires to collect data. Thus there are two types of population the target population and the accessible population. The researcher collected information from stakeholders in environmental management, these included Environmental Management Agency officers, officers from the natural resources department, government department that are involved in mining and environmental management, the police, illegal miners and households from Globe and Phoenix mine.

## Sampling

Daniel Wegner (2003;56) pointed out that a sample is a group in a research study on which information is obtained or a population selected for observation and analysis . It is a representative part of a population taken to show what the rest are like. It must be highlighted that the importance of sampling is that it is economic and it saves time since when data is collected from the sample which is only a fraction of the population it helped the researcher to generalize the results of the research from a sample of the population. The researcher used snowball sampling because the study was qualitative in nature. This was the case when the researcher had individual interviews with the illegal miners and stakeholders they referred the researcher to a person who could shed more light on the matter in question.



## Structure of the dissertation

The introduction explores on the issue of illegal mining from a global perspective and narrows down to the case the study, the research objectives, research design and methodology that was used by the researcher and the advantages and disadvantages of every method that was used. The conceptual framework is discussed basing on the relationship between illegal mining and the environment and the co relation of these variables to development, the significance of the study and justification of the study. Thus the chapter focuses on the introduction of the study and an overhaul of the methods that were used by the researcher to get information.

Chapter 1 gives a brief history of mining in Kwekwe district and Globe and Phoenix mine. The genesis of illegal mining and the reasons why the mine retrenchees are embarking on illegal mining. The socio- economic profile, the origins and years of domicile of various residents of the community is given. A comparative analysis of the environment before illegal mining took centre stage in the community and the present outlook of the environment with the introduction of illegal gold mining in the community.

Chapter 2 comprises of the discussions brought forward by authorities on the effects of illegal mining on the environment, the characteristics of illegal mining, their operations and the challenges that are faced by illegal miners in their operations that contribute to environmental degradation. Chapter 3 discusses on the involvement of women and children in the processing of gold. The research findings on the effects of the illegal mining will be brought to the surface with the analysis of the extent of which the environment has been degraded and the effects it is having on the community i.e. residential areas, school and roads.

Chapter 4 explores on the measures that are being taken by stakeholders in mitigating the effects of illegal mining on the environment. The roles and policies of the Environmental Management Agency, the ministry of mines, the police and the government will be assessed. The chapter also focus on the challenges that are being faced by illegal miners and the reasons why they are not formalizing their operations. Chapter 5 is centred on wrapping up the rest of the study, this chapter gives the conclusion of the findings and recommendations for future initiatives such that the offices that focus on environmental management and mining ensure the success of policies to mitigate the problem of environmental degradation.

# Chapter 1

## The genesis of illegal mining in Globe and Phoenix mine

### 1.0 Historical background of the city Kwekwe

Kwekwe district is in Midlands Province, in the centre of the country, roughly equidistant from Harare to the northeast and Bulawayo to the southwest. It is a centre for steel, gold and fertilizer production in the country but mining is the main economic activity. Peter Buchholz (2007) asserted that the city was established in 1895 due to the availability of gold deposits in the area, it originated as a centre for gold mining. Four gold deposits within the Kwekwe district have been studied. The Primrose and Globe and Phoenix gold deposits display typical features of gold belts that stretch to Jojo and the Indarama gold deposits. Thus the city has been on the map due to its mining activities and there are a number of mining centres in the district namely Jojo mine, Indarama mine, Tiger Reef mine and Globe and Phoenix mine.

These mines were operational and successful in the early 90s but after 2000 due to the economic meltdown most of the mines closed and as a result they faced closure. Post year 2000 the city's economy has been characterised by the growth of small-scale artisanal gold mining. Some are registered with the ministry of mines, but the majority remains informal and illegal. Most of these small scale gold miners are not registered and they are locally known as *makorokoza*, are a common feature in the district. Kwekwe district has rich mineral deposits such as gold, nickel and iron this has contributed to fast growth and development of the district. Though mining is the major economic activity there are other activities such as agriculture of cash crops and livestock production. The district populace survives on formal and informal employment. Formal employment is in the form of primary, secondary and tertiary industries.

Informal employment is based on informal trading in flea markets where the people are involved in selling imports. These are mainly clothes, blankets and electrical goods mostly radios and television. The respondents pointed out that they stock these items because they are on demand by illegal miners. Vending is also another source of livelihood in the Globe and Phoenix mine compound. The vendors sell food to the miners and some even go beyond the illegal mining sites into town to sell at bus terminus and in the shops. The field observation proved that these vendors are always on the run, because the city council police denotes that vending in the city centre is illegal rather they must go to the designated places where they are supposed to pay money to the city council. It must be noted that before the introduction of illegal mining at Globe and Phoenix mine the flea markets were there but they were very few and they mainly focused on selling second hand clothes locally known as *mabhero* hence the introduction of illegal mining brought about diversification in the field.

### **1.1 Illegal gold mining activities during the days when the mine was still operating**

The research findings proved that illegal mining was done during the days the mine was still in full scale operation. The researcher conducted an interview with Mr Manda who indicated that he was employed at the mine since 1974. He said,

During the days when the mine was still functional, the geologists indicated that the Globe and Phoenix mine pit was no longer safe for operations hence the mine opened new shafts, the Dalling pit and Chaka pit. The main pit deemed as out of bounce and security personnel were placed at the mine to ensure that no one entered the mine but miners would bribe the security officers to gain entrance into the mine. In 2002 there was an accident underground and one of the miners Saadam Ali lost one of his legs.

Thus this proves that illegal mining was been done during the days when the mine was still operating but it is necessary to note that the activities were done secretly and the effects were minimum due to the presents of security and mine policy against illegal mining. If a person was caught in the act the matter was taken to the police and strict measures were taken, miners would lose their jobs and evacuated from the mine compound. Hence no one was prepared to lose employment and accommodation thus a few outsiders were coming while bribing security officers but if caught the officers also risk losing their jobs, accommodation

and could be imprisoned. The researcher noticed that these measure reduced the rate of illegal mining because the implications of being caught were dreadful.

Showers Muwowa in his paper noted that the gold rush phenomenon in Kwekwe should not be seen just as a form of local source of livelihood of the poor, but as a site of political control and accumulation by elites who are part of a patronage economy. In Mawowa's study area in Kwekwe, former farm and mine workers rather than resettlement farmers were the new miners. Most illegal gold miners collect tiny quantities, but are reliant on mills owned by registered small-scale mines for processing. The exploitation of disused shafts is common where mining takes place underground. Mining is the main economic activity in the district of which illegal gold mining is rife because of the economic instability in the country has led to the closure of a number of industries and left the population with no other source of livelihood but mining. Therefore it must be reiterated that mining takes from the environment as such the environmental sustainability is based on the way the operations are done.

## **1.2 A brief background of Globe and Phoenix Mine**

The documentation that the researcher found at the National Mining Museum on the history of the Globe and Phoenix mine points out that Zimbabweans in the pre colonial area period discovered the gold rich area when the group from the pioneer column they shown them the shafts that they were working on and they were given blankets as appreciation from there on the Europeans started to work on the area. Archival sources found at the national mining museum also denotes that the mine was found by Globe and his friend Phoenix hence the name Globe and Phoenix mine , in 1895. The mine around which the town developed was the biggest gold mine in the country. In the mining museum on the mine premises there is a paper house that was built to house the mine manager Mr Pipe, from the pictures inside the house the researcher noticed how the paper house was a state of the art building which was in the midst of huts made from poles and dagga, made of wood and reinforced cardboard structure painted in green and white on stilts to combat the heat and protection from termites. Cecil John Rhodes, the colonial empire builder who lived in the paper house when he paid a visit to the mine during its boom days. Kwekwe was originally a gold mining camp and is today characterised by the large mines in its vicinity producing gold.

When the researcher made a tour of the mine there was evidence that as early as 1845 there were operations because there is a building that was officially opened in 1845 and the dating is on the building which is among the offices at Globe and Phoenix mine. Cecil John Rhodes paid a visit to the mine in 1898 and stayed at the mine for two days, thus this proves that the mine was established during the time when the country was being colonized. Roger Summers asserts that the Rudd Concession gave the Europeans the right to explore for minerals.

The discovery of rich gold shafts led to the establishment of the city of QueQue which was found in 1895. The mine is the oldest gold mine in Zimbabwe, it is the host of the National Mining Museum. The mine was operational since the colonial era and during those days racial discrimination was rife. The residential areas are divided into four different sections; the residential area where the white men used to stay with their families locally known as *kumayadhi*, a train of single rooms with public toilets and showers called *mudhadhadha* because of its train outlook, a camp of four roomed houses with one public toilet locally known as *kumakonzo* because the area was infested with rats then finally the marriage quarters, which were given this name because the houses were accommodation for the married couples who produced a marriage certificate as proof.

The mine was affected by the economic meltdown that affected a number of mines in Zimbabwe in 2004 when the Australian investors left. However one anonymous respondent pointed out that the mine was closed when the whites were being driven out of the country, the investors stated that the economic crisis was making it costly for their operations but the Australians left abruptly of which they had already started projects that were to be done in ten years, so they must have feared for their lives since their fellow whites were being driven out of the farms violently. Though the above factors are plausible the researcher was informed by the ministry of mines Kwekwe district that the mine was officially closed by the government in 2007 over environmental concerns.

### **1.3 Occupational background of respondents**

The source of livelihood for the respondents and the general survival skills of the community were considered by the researcher so as to have an understanding of the main source of livelihood of the community under study. The majority of women in the community rely on vending in town and at the mining sites where illegal mining is conducted, some used to carry out farming activities in the surrounding areas but with the introduction of illegal mining they



can no longer practice crop cultivation due to environmental degradation by illegal miners, thus they are now engaging in petty commercial business. Thus if one is not involved in vending, illegal mining is the only option. It is also worth mentioning that most of the male respondents from the age of sixteen who were interviewed in the compound are engaged in mining activities

#### **1.4 The causes of illegal mining**

Robert Thorntorn (2013) postulated that in South Africa illegal miners are known as *zama-zama* or artisanal miners his paper indicated that most of them are involved in these operations because there is high unemployment rate and industries are shading jobs every year. Kaakpena (2004) is also in agreement with the view that illegal mining is caused by poverty and lack of employment, he asserted that in Ghana illegal miners are known as *galamsey*, his study proved that most of the miners were involved in this type of occupation because there is no alternative occupation and they are in poverty hence illegal mining is the only opportunity.

Drechsler (2001) asserted that his study proved that all miners are resorting to illegal mining due to the harsh economic conditions that were as a result of retrenchment without receiving their packages and some because they were failing to secure employment since most industries were either closing down or scaling down on employment, Heemskerk (2000) is also in agreement with Drechsler's view on the reason why illegal mining is on the peak, it is the only readily available source of livelihood. Majority of the population are in this sector because they have no alternative way to provide for their families (Heemskerk, 2002). Veiga and Hinton (2002) agree that, ultimately it is a quest for survival driving most artisanal miners who work to provide for their families. Drechsler (2001) in his research on ASM in Zimbabwe, notes that nearly all the miners indicated harsh economic conditions resulting from retrenchment of workers and high unemployment levels as the main reason for going into artisanal small scale mining. Therefore the scholars above are in agreement that illegal mining is caused by poverty and lack of employment.

Illegal gold mining was always there in Kwekwe district but the operations peaked in 2008 with the collapse of the formal economy. Since formal mining was on the decline to the country's economic crisis. Zimbabwe National Chamber of Commerce (ZNCC) asserted that to this day about fifteen companies in Kwekwe have shut down most of which have pending

cases at the Labour court with the workers due to issues over unpaid wages. Bell Medical Centre which is a private hospital was shut down and the Deputy Sheriff attached its property in accordance with the High Court ruling in Harare that the property must be auctioned to repay the salaries of workers who were owed \$55,000 dating back to 2012, the Midlands engineering group, CC Electrical and Blythedale Mining also have pending court cases brought forward by the workers for their unpaid wages. Giant companies like Zimasco and Zisco are almost shutting down operations and Zisco workers have not been paid their wages for the past seven years and Zimasco retrenched workers during the late 2014. Given this background it can be noted that there is a high rate of unemployment in the city and those who are employed are receiving very low wages.

Therefore illegal gold mining is the major source of livelihood for the majority of the population in the city. Mr Thomas Phiri pointed out that companies are closing down and people have no other way of feeding their families apart from panning for gold. Most studies have proved that illegal mining operations are poverty-driven. Shoko (2001) is of the view that illegal mining can be seen as a panacea for survival in these harsh living conditions therefore the operations cannot be ignored. People in Kwekwe district have resorted to illegal mining as the only way of earning a living since there are no alternatives.

### **1.5 The story behind the miner's retrenchment packages**

The researcher managed to trace the ownership on the Globe and Phoenix mine from Tabex which operated for only two years in 1989 and handed over the mine to Falcon Gold which operated from 1991 to 1995 when it handed over the mine to Kwekwe Consolidated Gold Mine which ran the mine for five years, Mr Madzimure who was then working as the mine surveyor since 1989 said that when KCGM came they opened a number of new shafts because the main shaft was no longer safe for operations, they opened the Globe and Phoenix pit, Dalling pit and the Chaka pit, these were the new working sites and they operated there until the directors from Australia left abruptly in 2000 without addressing the workers on the issue of their retrenchment packages. The researcher observed that respondents were keen to give information after the period when KCGM left. The respondents that divulged information on that wanted to be anonymous because the issue is topical and controversial, as it is people are getting in and out of court.

Mr Chipangura a former worker and resident of Globe and Phoenix mine said,

Homestake mine which is under the directorship of an Austrian known as Lee Johns came as soon as KCGM directors left and told the workers that he was taking over he was in charge of operations until 2005 when he gave a tribute to Carslone Enterprises which was under the Reserve Bank of Zimbabwe, the company left in 2010 without telling us the workers what was going on and we were not given retrenchment packages. In 2011 another company under the name Midkwe that was ran by Mr Mutomba from Harare continued operations at the Chaka pit for a year, we did not sign any contract forms with this company but all the workers who worked for Carslone enterprises worked for this company because we were advised that it was a tribute but in 2013 the company just disappeared without giving us our retrenchment packages leaving us stranded.

Due to this endless puzzle of handover, takeover the workers were left not knowing exactly who to turn to for their retrenchment packages but the only traceable source is Lee Johns who has been in and out of the high court to prove how he became the owner of the mine and the agreement that was made between him and KCGM on the retrenchment package of the workers. When the companies were handing over operations and making tribute agreements every new company came with new policies and as a result a number of workers were losing their jobs, the workers last got salaries in 2005 so in 2006 some workers decided to strike and all of those who took part in the strike were fired as a result all these people lost their sources of livelihood hence they turned to illegal mining since they had skills in mining.

## **1.6 Community socio- economic profile and years of domicile of respondents**

The researcher asked respondents the period that they have stayed in the Globe and Phoenix mine. This was done to clarify on the familiarity and the knowledge that they have on the community and environmental aspect of the community under research before the illegal mining activities started, as a result this gave the researcher a fair comparative account of the variables under research. The researcher noted that most of the respondents below the age of forty were born and bred in Globe and Phoenix mine as a result their parents and relatives are in the community. Therefore the researcher was in a position to get information from knowledgeable and reliable sources. The researcher also had interviews with migrant settlers who have stayed in the community since the illegal mining activities took center stage in the community.

The dominant languages in the community is Shona which constitutes 55% of the population, Ndebele 35%, most people of the Ndebele descent came from Silobela, Zhombe and Lower Gweru due to the gold rush in Globe and Phoenix mine and Chewa is 20% but most of the original Chewa descendants are now diluted due to mixed marriages but originally the people came from Malawi to work in the Globe and Phoenix mine. Mr Kachingwe who is sixty-five years old pointed out that he came from Malawi in 1975 when he was twenty five years in search of work, he worked for Laundro at Munyati mine in Rusape where he was transferred to Tiger Reef in 1985 and he was transferred again to Globe and Phoenix in 1990 so he has been there upto date. Mr Phiri seventy- two years old noted that he came straight from Malawi with his friends and got a job at Globe and Phoenix mine and he has been there since then and he married a Shona woman, mixed marriages between these three ethnic groups is a common phenomenon.

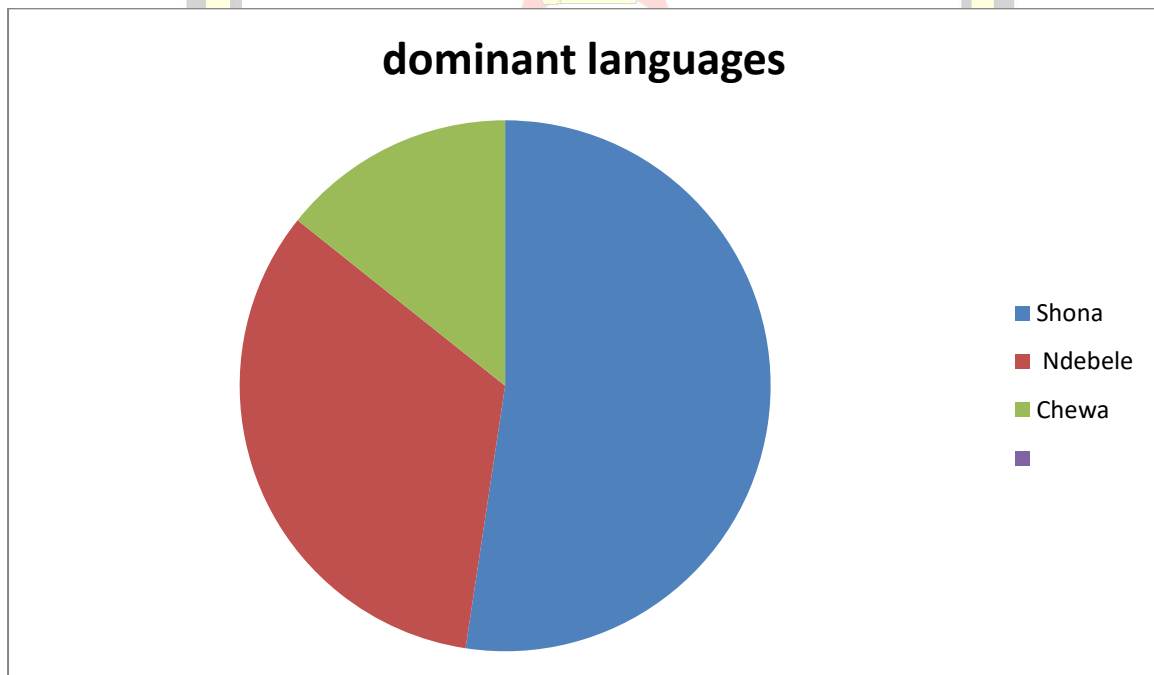


Fig 1.1 : Dominant languages in Globe and Phoenix mine

Source: research fieldwork

The research proved that gold panning is the main economic activity in the area, with individuals buying gold at their home from the gold panners. There are a number of gold dealers who are in the business of buying gold and selling mercury and explosives to the illegal miners. The researcher interviewed them but they indicated that they their names must not be divulged for fear of being tracked by law enforcers since they are always on the run.

They pointed out that a set of explosives is \$3, gold is bought for \$38 per gram and the mercury is sold at eighteen dollars per teaspoon. These are the main activities of the day. The illegal miners also smoke marijuana of which it is sold by community members. A miner who also spoke on condition that his identity will not be disclosed noted that they cannot perform their operations without smoking because it gave them courage and it is a source of energy, they buy it from the local traders who sell it for a dollar.

The researcher also observed that prostitution is rampant in the community. Mrs Banda who pointed out that she has been a resident in Globe and Phoenix mine for the past twenty years said that prostitution was always there because there was a high proportion of unmarried men in the mine, the introduction of illegal mining worsened the problem of prostitution because the gold rush led to young girls from the nearby rural areas flocking into the area because of the wide spread rumor of how the illegal miners are making money from gold.

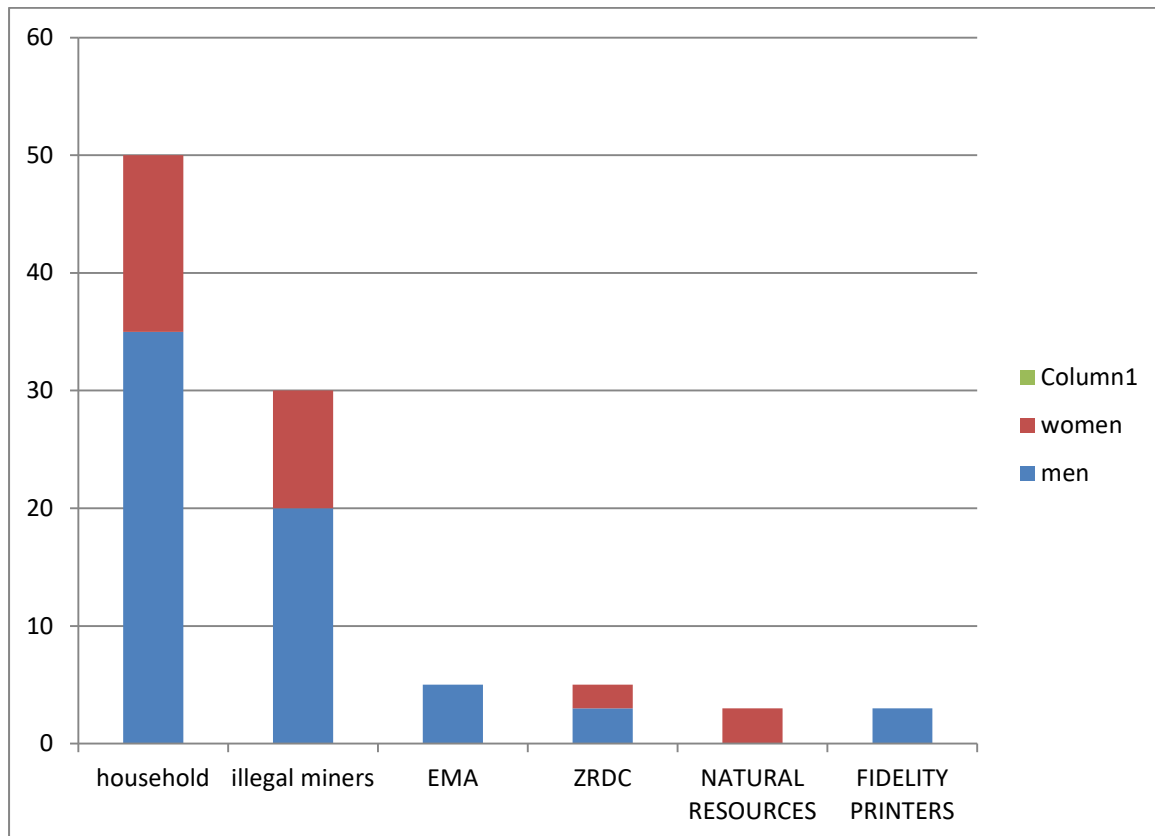
### **1.7 Diet**

The study proved that sadza is the main meal in the compound, it is eaten twice a day. There are no shops in Globe and Phoenix mine. The shops that were there closed when the mine stopped operating because miners used to get groceries on credit and pay when they get their salaries. As a result of lack of shops, the economic situation in the area vending is sprouting, they sell vegetables, small packets of kapenta and chicken cuts. Mrs Chipunza, who is renowned for her vending in the compound, said that most of her prices are less than a dollar and specialize more on selling relish because of the demand by miners and residents the items give lucrative profits. There is no operational clinic in the area, the clinic also closed when the mine ceased to be operational because the mine used to buy the drugs and clinic equipment, the mine was also responsible for the salaries of the nurses thus the residents do not have a nearby clinic, they are now using the Zibagwe rural clinic.

### **1.8 Demographic characteristics of respondents**

A researcher must have information concerning respondents who will give information in line with the study. This will provide information on the people who were participating in the research. The researcher focused on language so as to get the background of their origins and how they ended up in this community. The total number of respondents was hundred, consisting of fifty households, illegal miners were thirty of which ten were women, children were there but research ethics states that children are not reliable sources of information as

such no information was obtained from children. The researcher also visited organizations that are involved with mining, EMA five responds were interviewed, at the Ministry of Mines mining engineers, surveyors and geologists were administered questionnaires, rural district council, natural resources department and fidelity printers and refiners. Below is a table depicting the number of respondents in terms of gender and office.



*Fig 1.2 : Number of respondents by gender and department*

*Source: Researcher, fieldwork*

The trend on the graph is not biased in terms of gender because in households women constituted a greater percentage, on the sites where mining activities are done men constituted a greater percentage because Peter Mlauzi a miner pointed out that women are not supposed to be on the site because there is a myth that their presence there can make the gold belt to disappear.

## 1.9 The environment in retrospect

The information on this section was derived from interviews made with household respondents and respondents that proved that they have been in the community for a long period. This was done so as to get an understanding of the current state of the environment with reference from the environmental status ten years ago so as to have a comparative assessment of the level of the changes that have occurred due to the illegal mining operations. The respondents indicated that the forest that has been affected used to be thick, with only stripe roads that were used as shorter routes for getting into the city center. There were no gullies and land degradation in the surrounding areas.

Mrs Phiri who stated that she has been a resident of the mine for the past twenty-six years, indicated that she used to carry out agricultural activities in the area that has since been affected. The produce from agriculture would supplement her husband's low wages that he was receiving from the mine. She said she would grow sweet potatoes, round nuts, ground nuts and maize that would be her supply for mealie meal for the whole year. During this interview the researcher learnt that because of the farming activities that used to take place in the area there was a grinding meal and so an interview was done with Mr Chitimbe who worked in the grinding meal for thirty years until 2008 when it closed due to the fact that mining activities have disturbed the agricultural activities in the area. Mr Chitimbe indicated that he used to spend the whole day milling the maize from members of the community, very few people bought mealie meal from the shops because they used to produce their own but with coming of these makorokoza the areas that were used for farming are no longer safe even for walking past them.

During the days when KCGM was running operations at Globe and Phoenix mine the social facilities were there and the people from the compound had free access to health facilities. Mr Zulu who was the mine's resident manager pointed out that, they would employ state registered nurses who were paid by the mine and these nurses would facilitate the ordering of medicines and all the medical requisition from the Kwekwe general hospital. All the people from the compound and miners could get medical attention from the clinic. The researcher also lived the experience because the researcher's father was a miner, a patient was supposed to give the mine number of the miner whom they were beneficiaries. The residents of the compound also enjoyed a clean environment. The researcher observed that there are four public toilets in the marriage quarters compound, one toilet in Makonzo compound and three

toilets in Mudhadha compound. Mr Machona who was the head of the cleaning operations noted that, they were obliged to clean toilets three times a day, the first shift would clean at five o'clock in the morning to ensure the showers would be ready for those who leave for work at seven, at two o'clock in the afternoon and at eight o'clock in the evening they were shifts to clean the toilets. As such the public toilets were always clean.

The compound also had tapes for the residents. For instance, Mr Mbewe the mine plumber indicated that the Globe and Phoenix marriage quarters eight tapes, three tapes in Makonzo and three tapes in Mudhadha compound thus people had access to clean and safe water, the access points were also not congested. Electricity was available in all the areas of residents and there were electricians were always on stand so as to attend to electrical faults. Every weekend the residents would enjoy soccer matches at the Globe and Phoenix soccer pitch, in the evening they would be entertained by nyau dancers at the Globe and Phoenix beer hall. There was a shop that was called GG which was situated next to the mine clinic. Miners could purchase groceries on account then pay when they get their salaries. Most miners pointed out that they used to get their salaries on the 25<sup>th</sup> of the mine and got bonuses every year and the miners would attend a Christmas party where they will be given rations to bring to their families at home.

### **1.10 Current state of the environment in Globe and Phoenix**

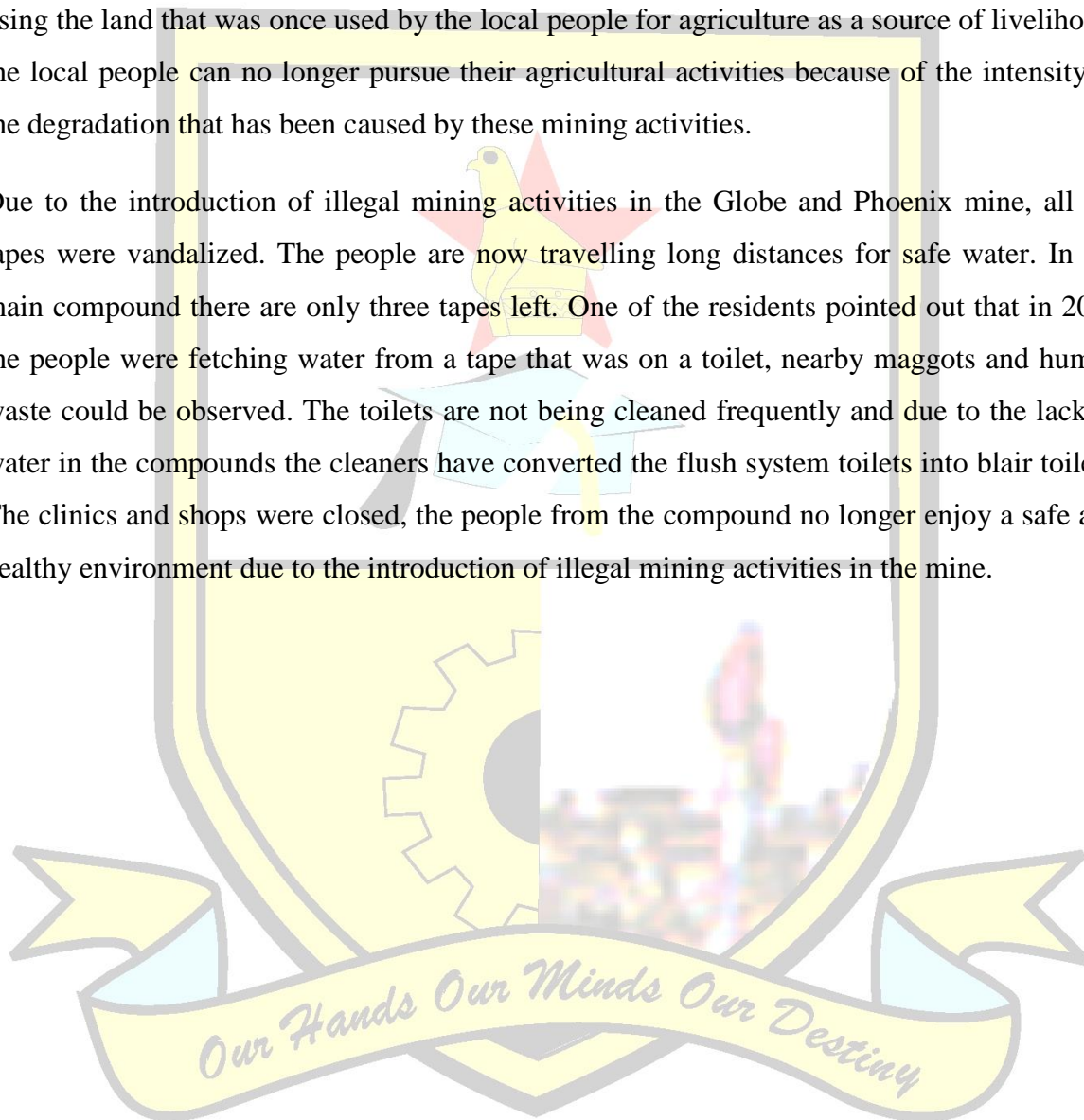
An assessment of the state of the environment in Globe and Phoenix community particularly on forestry and the landscape was done and the basic information was obtained from respondents who have been residing in the community for a long period. The information was gathered through focus group interviews and they indicated that there has been a massive negative change on the environment since the introduction of illegal mining in the community. The land is now best described as mountainous and dangerous due to the fact that when the tunnels are being dug the soil and rocks from underground are abandoned on the surface.

Graham (1996) stated that one reason why surface or open-pit gold mining is not the best or should be condemned by residents of an area is the destruction of large acreage of land for various purposes associated with mining. It is estimated that mining activities requires land and large tract of the land is cleared with the removal of topsoil and vegetation. This left the land at the mercy of the weather. Kasanga (1997) pointed out that, the result of the land



destruction, is that the beautiful natural scenery is destroyed. The extensive land clearance associated with these mining activities has also resulted in the destruction of vegetation, biodiversity and contamination of underground water, it also destroys the natural habitat of wild life. There is also conflict over land use since the emergence of these illegal mining activities, the coming of surface mining in an area does not only abuse the human rights of the indigenous people but also brings different problems about land use. The miners now using the land that was once used by the local people for agriculture as a source of livelihood, the local people can no longer pursue their agricultural activities because of the intensity of the degradation that has been caused by these mining activities.

Due to the introduction of illegal mining activities in the Globe and Phoenix mine, all the tapes were vandalized. The people are now travelling long distances for safe water. In the main compound there are only three tapes left. One of the residents pointed out that in 2008 the people were fetching water from a tape that was on a toilet, nearby maggots and human waste could be observed. The toilets are not being cleaned frequently and due to the lack of water in the compounds the cleaners have converted the flush system toilets into blair toilets. The clinics and shops were closed, the people from the compound no longer enjoy a safe and healthy environment due to the introduction of illegal mining activities in the mine.



## Chapter 2

# The characteristics of mining operations of illegal miners

### 2.0 Methods of mining

Furniss, C (2005) noted that illegal miners use simple tools because their mining methods are derived from ancient methods of mining, their operations are small scale and they also do not have the capital to buy modern tools. Robert Thorntorn is also in agreement with this notion, his paper indicated that illegal miners use very simple tools that can fit in well in a backpack and the mining has resemblance of ancient methods of mining. They extract ores using spades and iron bars, his paper indicted that illegal miners cannot use modern equipment because most of the times they will be trespassing in legalized or closed mines as a result they are always at loggerheads with the police hence they cannot make use of heavy machinery since they are always on the run. However though there are different ideologies on the reasons why illegal miners use simple tools there is a general consensus among scholars on the fact that illegal miners do not use modern tools.

This research proved that illegal miners in Globe and Phoenix use simple tools to extract ore, they use chisels and hummers. The study proved that illegal miners are not financially capable of purchasing modern machinery because most of them are resorting to illegal mining due to the fact that they are seeking for opportunities to take care of their families. As such the researcher observed that they cannot afford to buy these tools and their operations are also small scale. Munei Shoko an illegal miner pointed out the police is always harassing them so they cannot make use of large machines because they can be impounded by the police when they ran away and desert their machines.

Illegal miners also use *explosives* to blast the hard rock of which these explosives are used without taking the necessary precautionary measures, the mines are not safe for blasting explosives and as a result a number of illegal miners have died during this process. Viega (2005) asserted that the extraction involves the use of dynamites for blasting, due to the presence of hard rocks. Simba Dube told the researcher in a one on one interview that illegal miners die frequently underground because blasting loosen hard rocks and in the process the

timbers which they use for supporting the weight of the crust can give in leading to some sections of the tunnel collapsing and trapping miners and the fact that their activities are illegal they tend to attend to the disaster on their own, he further pointed out that it is believed that if a person die they will be closer to a gold belt that is pregnant with ore. They buy explosives from unlicensed individuals who buy explosives on the black market the research proved that the explosives are bought by licensed companies who then sell the explosives to the dealers at a higher price. The researcher was invited to go underground but could not join them because of the dangerous nature of the mines.

Robert Thorntorn (2013) pointed out that the miners operate in groups of five to fifteen people from different backgrounds, some Zimbabwe, Mozambique and South Africans. The paper noted that they form these groups because since they operate on small scale they need to cooperate and allocate duties among themselves such that they can produce more. The researcher noted that most of the miners form what they call *mining syndicates* where they will mine in groups of ten to fifteen people. The miners go underground using ladders made from pieces of wood. They do not wear any protective clothing but torn clothes and touches will be attached to their foreheads such that when they get underground they will light it, their heads are not protected by hardheads. Below is a picture of an illegal miner just about to go underground.

Compressors are used for providing oxygen underground and in most cases these compressors are hired from the small scale miners who have the required modern mining equipment. The miners are supposed to pay the charges for hiring in form of gold, which is one gram of gold per hour. Pumps are used for draining water underground, thus the compressors and pumps are the only technical machines used by illegal miners in the extraction of ore from underground. They will use what they call the convoy not in lateral sense but it is a way they carry their ore from underground to the surface. They put the ore in sacks which they made in such a way that it can be carried on their backs and they carry the ore to the surface in a single file, this is done continually until the rest of the ore reach the surface.

## 2.1 Disorganized mining methods and environmental degradation

The researcher observed that the illegal miners are not mining according to the expectations of the Environmental Management Agency. Mining is being carried out without taking precautionary measures on the bio- physical environment. The illegal mining site is roughly 100 meters from the houses. There are more than 30 shafts being mined with the average depth of 15- 25 meters and the shaft are not protected. They pose a danger to wildlife and human beings especially school pupils because the shafts are less than 10 meters from the school blocks of Globe and Phoenix primary school. The shafts are not fenced or protected such that they cannot be accessed by children, the area has become a death trap because one cannot use the roads that are in this area when it is dark. The people who live in the Mudhadhadha area are supposed to put their toddlers under strong supervision because failure to do so will lead to the children being trapped in the shafts.

The illegal miners use the local trees for the timbering of their mining shafts. No proper precautions are taken as a result these mining techniques are significantly harming the environment. The landscapes testify to this reality. Thousands of square miles mountainous terrain has been caused by illegal miners, they abandon waste of soil and rocks from underground causing landslides, erosion and sedimentation. These remaining unstable waste crumble into the roads this pose problems to the people in the community. Erosion is also a major problem being created by illegal miners because of their careless operations since they are removing the plant cover and the remaining soil is left unstable and bare. As a result there are no more trees in the area since there are being exploited. One of the miners said they normally use the Msasa tree for timbering the underground shafts so as to support the weight of the crust to prevent it from caving in. The researcher observed that there is no rehabilitation of the area after it has been mined. Their operations are just a touch and go.

On 12 January 2012 Mr Alfonso Banda's garden and a three meter guava tree were swallowed by as suspected mine shaft estimated to be over thirty meters deep (News Day, April 29; 2014). Mr Banda asserted that, the crater opened in his garden just less than three metres from his doorstep after he had finished digging and watering his vegetable garden, the ground suddenly opened and swallowed the guava tree, the vegetables and the hedge. The residents of the Globe and Phoenix area are struck with fear after this incident because there was also an incident of the ground opening and swallowing the road, in February 2012 a few

kilometers away from the compound, a miner on his way to work died when the ground gave in and trapped him.

There are a number of tunnels under the compound which are being operated by illegal miners who are mining without taking the necessary precautionary measures for the well being of the environment and the inhabitants. The former Globe and Phoenix Mine draftsman and surveyor Lewis Makiyi said that the illegal miners are invading the disused mining tunnels yet in digging the mining tunnels they will be weakening the pillars that were left in strategic areas to ensure that the ground will not collapse. He noted that the pillars are in the ore zone therefore, some of the pillars are rich with gold ore so the illegal miners target these pillars yet they are endangering the lives of the residents.

Illegal mining has caused long-term damages to the environment. It is eliminating the existing vegetation and it is altering the soil profile and the natural soil layer. These mining activities are disturbing the layers of the soil since the soil is diluted due to the mixing up of the top soils with sub soils. The researcher also observed that the productivity capacity of the land adjacent to the mining sites was affected, trees and vegetation are no longer growing. This is due to the fact that toxic materials are blown to the top soils and this can affect the growth of the surrounding trees and vegetation. Hence as a result urban farming activities of the local populace is negatively affected.

Huge open pits that are left behind after open cast mining are the most visible form of environmental degradation. Members of the community pointed out that the illegal miners are leaving open pits that are posing a great danger to both human beings and animals. The wildlife in the area was affected by these mining activities. The residents indicated that before the introduction of illegal mining activities they used to see wild animals like hares, bush bucks and warthogs but presently they are scarce. Some were destroyed and others displaced from the mining sites. This is because their natural habitats were impaired hence they could not adjust to the artificial changes brought by land disturbances caused by the mining activities. Their primary breeding grounds were affected, some are even disturbed by the noise from blasting therefore they displaced to quiet places.

Heap leaching is also another environmental problem created by illegal mining. This is due to the fact the miners are failing to dispose the waste from their activities in the expected way. These is resulting in the release of toxic heap leaching fluids into the environment and this

can affect the health of the human beings and negatively impact the surrounding ecosystem. Cyanide is used by the miners to extract gold from oxidized ores and as a result leach ponds are causing the death of wildlife. Kwekwe district Environmental management agency DEO Mr Tinei Nyajena pointed out that illegal miners lack of geological information is a contributory factor to their careless methods of operations, to the extent that some can come up with claims that they dreamt there was gold at a particular place, and they would go in search of that gold and some also believe that where there is gold people must die before it is mined. He further asserted that apart from these superstitious beliefs among illegal miners there were also other problems such as failure to comply with legislation, use of unskilled labour and failure to adhere to environmental laws

## **2.2 Challenges being faced by illegal miners**

The research proved that the Globe and Phoenix mine retrenchees are embarking on illegal mining because they are vulnerable. The local people and immigrants are driven by the economic situation because of this they cannot absorb the shocks and hazards that they encounter in their mining activities since they do not have a stable source of income. Local people are vulnerable because they do not have access to resources that are required to cope with the hazards. Because of the lack of resources the illegal mining of gold is not a boom and bust activity rather it is associated with the vulnerabilities of poverty.

Illegal mining is often regarded as disorganized hence face stigmatization from the society and key stakeholders but the researcher observed that illegal miners are very organized based in the way they organize themselves. Development practitioners have long expected informal sectors to be gradually absorbed into formal sectors so as to ensure economic growth. The study proved that has not been the case with illegal gold miners. The government often continue to introduce inefficient policies or even portray a predatory attitude in the regulation and management of the sector, and in many cases the formal sector's capital intensity excludes many who still turn to the informal sector for employment and income. Legal systems often perpetuate informality due to the complex nature of the legal frameworks and thereby preventing these illegal miners from being formalized. Thus the negative labeling of illegal miners affect their operations.

The laws and legislative regulations governing small scale mining are unrealistic and procedurally complex for the miners to comprehend. Many miners are poorly educated, and are therefore not likely to understand regulations unless someone interprets them. As a result, some of the miners engage in unacceptable work practices not out of choice but because they are not able to tell what is good or bad practice. In addition, the licensing procedures are too bureaucratic and encumbered with conditions that are more prohibitive and obstructive than productive. Illegal miners also indicated that they are failing to formalize their operations because the money charged for acquiring mining rights is out of their reach. The community in Globe and Phoenix is made up of people who cannot have access to such amounts of money.

The miners cannot acquire loans from the banks because they do not have collateral, this is due to the fact that they are housed in mine houses hence they do not have title deeds since the houses are still company property though the mine is no longer functional, therefore the major challenge for miners is lack of access to credit facilities (Mutemeri and Petersen, 2002). Illegal mining is by nature poverty-driven, gold panning does not generate enough capital for reinvestment and therefore it needs financial support from lending institutions. However, there is reluctance by reputable investors to engage in the sector because of its volatile. For this reason, it fails to attract meaningful credit arrangements because of its degree of high-risk. Besides, lending institutions require borrowers to provide collateral, but most miners do not have collateral.

The greatest challenge that gold panners face regarding formalisation is lack of security of tenure (Hilson and Potter, 2003). Miners lack access to suitable land and mineral rights as most mineralised land has been awarded to Multi National Companies in concessions for example in Zimbabwe Anglo America, Rio Tinto, DeBeers. Most of the land which they mine is not surveyed hence they cannot be given title deeds. This inaccessibility to important factors of production hinders them from investing into their operations, and thus they are unable to improve their technology and ultimately their productivity and output. Illegal miners wishing to register for licenses are subjected to too many bureaucratic and difficult procedures. Miners have to visit many offices moving from one office to another before they can finally get the permit and after long periods of waiting, a situation that makes the process even more tedious.

The whole process is time consuming and costly on the part of miners who have to spend too much time visiting registration offices and waiting for licenses. In addition, the costs attached to securing a mining plot and permit are prohibitively high for miners who do not have enough money, in this instance the miners are retrenches who were not given their retrenchment packages. A study carried out in Uganda by the United Nations in 2012 on the challenges faced in formalising gold panning proved that procedures of licensing an applicant is more of a red tape. The process has official and unofficial costs at each step that substantially increase barriers to legislation. Fees for the licenses officially cost 650 000 Ugandan shillings plus 200 000 shillings per year for mineral rent and when prospecting the license is \$75,00, stamp fees at district office range from \$25-\$100, services fees for assistance in licensing preparation ranges from \$75-\$420. In total the cost range from \$515-\$1045 excluding day to day expenses which is far beyond the reach of the gold panners.

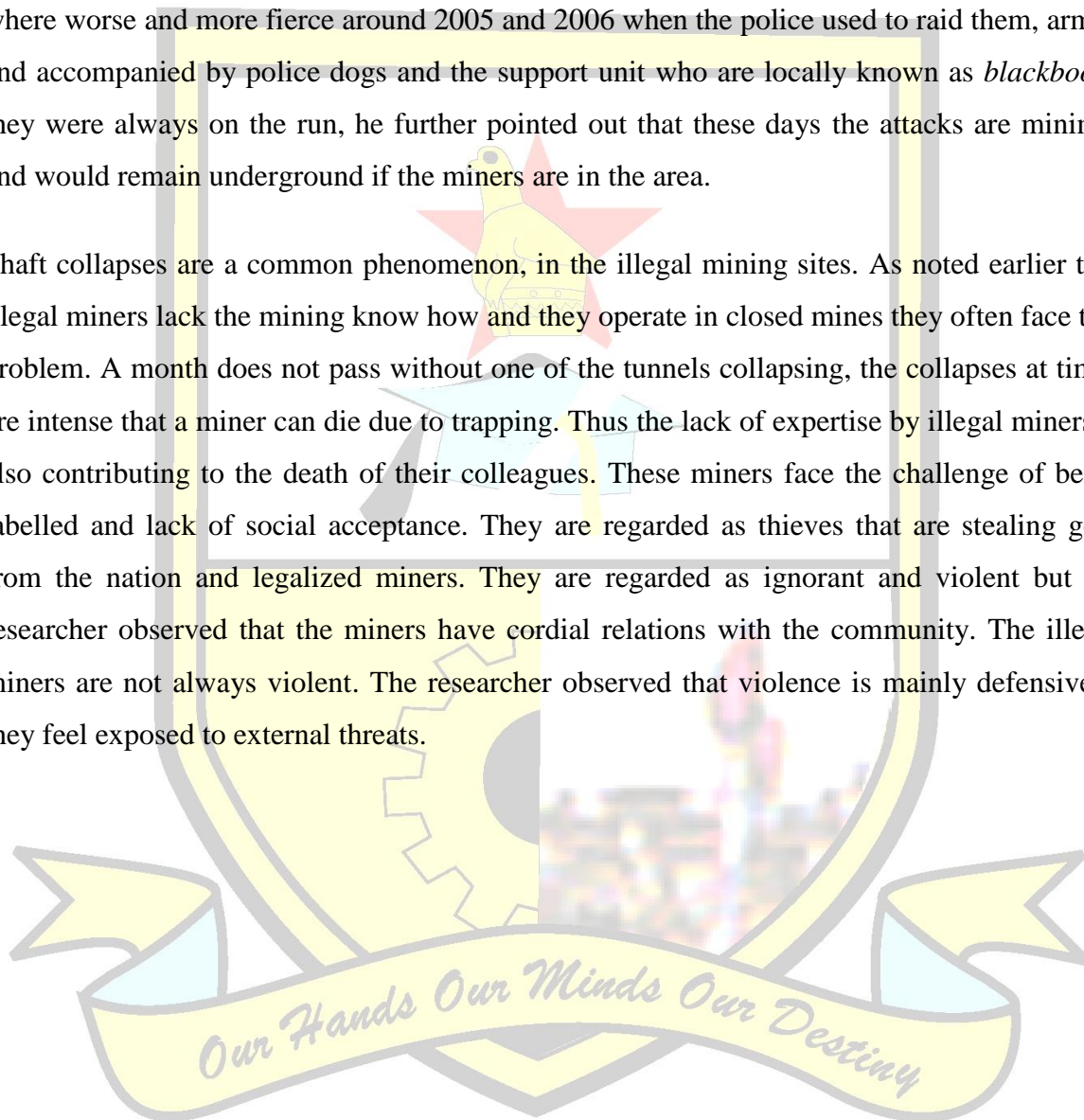
These mining rights can only be accessed by local business people and politicians who will use illegal miners for operating. The researcher learnt that at the Globe and Phoenix mine sites there are individuals with mining rights but are not residents of the community. For instance J. Mapurazi acquired a claim amidst holes by illegal miners and at these claim illegal miners form groups known as syndicates where they get into the holes in turns and after milling they share fifty percent of their profit with J. Mapurazi. Hence there is need for the Mines and minerals act to be amended since some people are benefiting from the disadvantages of illegal miners. The current laws are biased towards those who already have money. Kwekwe Central Member of Parliament Cde Masango Matambanadzo, noted that some top Zanu PF members are at the centre of illegal mining activities and they are using their political muscles to evade the mining regulations from the Ministry of mines.

Lack of recognition is a major challenge being faced by the illegal miners. Tamuka Magonyo pointed out that the fact that they are labeled as illegal miners paint them as criminals makes their operations difficult. As a result they do not get any incentives from the government hence they carry out their mining activities in a manner that does not cater for the sustainability of the environment. This is evidenced by the careless disposal of harmful waste by the miners. Lack of geological knowledge is a major challenge for the illegal miners, they do not have the geological expertise for the mining operations. The researcher observed that most of the miners gained the mining knowhow from skilled miners who used to work in the mine.



These miners are skilled but they do not have the required geological expertise. Due to this lack of geological knowledge their operations are based on gambler mentality and as a result their outputs cannot be forecasted. This poses a negative impact of their financial inflows to an extent that they cannot legalize their operations because of this they do not have any form of documentation so they face gruesome attacks from the police. Pedzisa Zhou, a miner who has been involved in illegal mining for the past ten years noted that the attacks by the police were worse and more fierce around 2005 and 2006 when the police used to raid them, armed and accompanied by police dogs and the support unit who are locally known as *blackboots*, they were always on the run, he further pointed out that these days the attacks are minimal and would remain underground if the miners are in the area.

Shaft collapses are a common phenomenon, in the illegal mining sites. As noted earlier that illegal miners lack the mining know how and they operate in closed mines they often face this problem. A month does not pass without one of the tunnels collapsing, the collapses at times are intense that a miner can die due to trapping. Thus the lack of expertise by illegal miners is also contributing to the death of their colleagues. These miners face the challenge of being labelled and lack of social acceptance. They are regarded as thieves that are stealing gold from the nation and legalized miners. They are regarded as ignorant and violent but the researcher observed that the miners have cordial relations with the community. The illegal miners are not always violent. The researcher observed that violence is mainly defensive if they feel exposed to external threats.



## Chapter 3

### Effects of illegal mining activities to the environment

#### 3.0 Environmental degradation due to lack of machinery

Kaakpena (2004) noted that illegal miners are not in a position to purchase modern equipment for their mining activities hence they engage in dangerous mining methods which endanger their lives and at the same time creating environmental pollution. To this Furniss (2005) postulated that gold panners move from place to place due to the fact that they do not own any gold sites as a result they harm the environment without rehabilitating the environment. While these arguments tend to hold water Robert Thorntorn (2013) argues that illegal miners do not produce large amounts of waste because of their small operations. Awudi (2002) is also in agreement, he denotes that environmental degradation is caused by large scale miners not small scale miners because of the level of their operations.

Ricardo and Hersilia (2004) and Furniss (2002) argue that illegal mining activities affect the environment negatively and this also affect the well being of people in the surrounding areas where the activities are being carried out. Though a number of arguments are of the view that illegal mining does not contribute to environmental degradation because of the fact that they use simple tools and the level of operation is low, it must be noted that some scholars are also in agreement that illegal mining is affecting the environment due to the lack of expertise and financial capacity to contact the proper methods of mining that do not harm the environment.

George Kwateng pointed out that illegal mining activities in Akwatia, Ghana has led to the loss of the community's agricultural land, the community is aware of the detrimental effects of the existing situation but there must be a great awakening in terms of education and public involvement, so as to be able to create massive awareness in the community in order to reduce future impact to the environment and on the well-being of the people. He noted that though, the practice has turn out to be a main source of revenue for the general public in Akwatia, particularly the youth, the situation put danger and hazard to the sustainability of the environment. Edward Sibanda (2010) is also in agreement with this analysis when he started that mining activities in Tiger Reef are causing negative impacts to the environment that are putting the people of this community at risk. The Globe and Phoenix mine is facing a

potential disaster because some portions of the ground are caving in since illegal miners are mining the old shafts destroying the natural pillars that were left by geologists during the days the mine was operational.

### 3.1 Noise pollution

Most people in Globe and Phoenix mine no longer consider noise as a form of pollution and have come to accept noise making as part of their everyday living irrespective of where it is coming from. However, knowing the dangers associated with noise and the nuisance it can create for people, respondents were asked if illegal mining activities increased noise levels. All the respondents said the major source of noise is blasting. The noise from the blasts is the most complained about by the residents from the compound and the noise is usually heard during nights when they are sleeping. The respondents lament how the blast noise from the mining sites disturbs their sleep and even causes their houses to crack. One respondent in describing the noise from the blasting sites said:

The blasting noise, is not easy especially at night when we are asleep. As we are sleeping, we often hear boooooom!!! Sounds. And our houses are usually felt shaking. You can go round and see for yourself, most of the houses in this compound have cracks because of the blasting. It is very dangerous and we live in fear

Blasting is being done indiscriminately without taking precautionary measures this is leading to the explosion of support pillars that were left in the tunnels. The research revealed that illegal miners access the old shaft through digging holes outside the mining premises until they reach the old tunnels underground. This has led to the destruction of infrastructure underground and on the surface. This is causing serious ground instability. Mining leaves openings both on the surface and underground and as a result, fractures can develop leading to collapse of the ground. The impact is catastrophic in Globe and Phoenix mine because the fractures are occurring on the surface of which there are structures and as a result these structures are being impacted negatively.

### **3.2 Caving in of the ground**

In Globe and Phoenix mine there have been two incidents of the ground caving in creating craters that swallowed trees and the other incident a miner died after he was swallowed into the ground when the road just caved in. Needless to say the impacts are disastrous with this evidence of trapping and subsequently loss of human life. The impact is high during the operation stage especially when blasting is done during wet periods. Numerous studies have been undertaken during the last 15 years to highlight the principal environmental problems emanating from illegal gold mining and panning in Zimbabwe but then the problems were minor but the environmental impacts that are being faced these days are a threat to human life. These effects on the environment are physical mainly, vegetation destruction, dumping of extracted waste on the surface from underground and permanent degradation of the landscape and chemical pollution from mercury and cyanide.

The nature and extent of these adverse effects depends on the location of dumping sites, mineral extraction operations, the mining and processing methods used, and the mechanization used. Illegal gold mining include large amounts of sand as waste and numerous unprotected shafts. The destruction of vegetation is another common occurrence on illegal mining sites as miners pursue rich gold belts without surveyors or geologists to draw the work plans this process is done haphazardly. The increase in population density in Globe and Phoenix due to the gold rush has led to accelerated timber harvesting for pillar purposes underground and for fuel. The primary gold recovery method used by the miners involves crushing of ore followed by amalgamation with mercury. Mercury used by these miners because of its ability to simplify the process of gold recovery, low investment and its high recovery rates.

### **3.3 Alteration of the soil profile**

Long-term damage to soil resources from illegal mining, this is because mining eliminates existing vegetation and alters the soil profile. These activities disturb and destroy the beneficial micro-organisms in the topsoil that also helps in the natural rehabilitation of the environment. This led to the degradation of the productive capacity of the adjacent land. There has been immense erosion in these areas because the vegetation that lowers the level of soil erosion was cleared and the top soil was removed. Therefore soil rate of erosion is increased by mining operations especially during the early stages of land clearing and when

land is cleared and soil is disturbed. Trenches and roads loosen the soil and this leads to erosion.

Soil erosion has significant impact as it contaminates water bodies and modification of the soil profile as the topsoil is eroded. These alterations of the natural soil topography in Globe and Phoenix has made it impossible for the locals to perform agriculture and even future generations will not be able to practice any land use on the terrain because of the extent of the degradation. Illegal mining activities by nature are extractive that is, they involve the removal of the soil from underground to the surface (Pablo,2006). The result of illegal mining in Globe and Phoenix mine is that the natural arrangement of the soil layers (profile) was altered. The soil extracted from underground is not suitable for plant growth hence the vegetation in Globe and Phoenix is not recovering, in fact the situation will lead to desertification.

### **3.4 Collaboration of women and children in the amalgamation process**

In Ghana women and children are also involved in sorting and the final processing of the ore after it has been brought to the surface and they also help for the transportation of food, mining materials and other logistic support to the miners ( J. Opoku- Ware, 2010). Manuel (2011) asserted that in Mozambique women and children participate in the primary activities of gold mining and gold amalgamation process, they do not go underground because of taboos and traditions do not allow women to be near the gold veins. Tatenda Moyo a miner at Globe and Phoenix pointed out that they do not want women around the mining sites because it is believed that if they come near the pits during their menstruation period or after indulging in sexual activities the gold veins will disappear hence women are not allowed to be around the mining sites.

Ore is first crushed by hand on open rock surface by women. The researcher observed that in Globe and Phoenix the ore is brought to the surface by men such that women will do the crushing and amalgamation process locally known as *kugiga*. Women actively collaborate with the men and carry out the duties that compliment the operations of men. The women mix mercury with crushed ore and water in small dishes, which are then shaken so as to allow both mercury and gold to settle to the bottom. After stirring the material, the wet ore at the top is washed off slowly into a second dish. This is repeated until all the fine material is separated from the mercury. Stirring is done by hand and thus there is direct contact with

mercury. During this process mercury is lost to the ground. The gold and mercury mixture is wrapped into a piece of cloth, which is then twisted by hand to separate the amalgam and liquid mercury.

The amalgam is then heated on an open flame to separate the gold from mercury and evaporates into the atmosphere. Thus the local people inhale this chemical of which it causes respiratory infections in the long run. Thus the handling, processing and disposal of mercury affect the environment and the health of the humans negatively. The poverty cycle is a constraining factor since miners are embarking on these gold recovery methods because they do not have the resources to commit to processing methods that ensure environmental sustainability. Miners will give women the residue which is left after the amalgamation process as appreciation for their complimentary roles. Women will repeat the amalgamation process to collect the remaining gold. Most children that were found on the sites were aged between six and eighteen, they transport the ore from the mining sites to the shades where women will be waiting for the gold ore since they are not allowed to be around the mining sites

The gold ore are put in small quantities into mortars that are made from strong steel and there they will be crushed using pestles into fine granules, the granules are put in a pan dish with water and mercury the mercury will amalgamate gold particles in the panning process. Thereafter, the wet granules are spread in the sun to dry so as to retain the gold that would have been lost in the first processing, this was usually done by children as young as ten years old, in most cases their mothers will be doing the crushing. When the granules are dry they are taken to the grinding stone for grinding and the amalgamation process is redone. Robert Thorntorn (2013) asserted that in South Africa women are used for crushing the ore and children fetch water that is to be used during the processing of gold, his study also proves that the system used for the processing of gold by illegal miners is uniform, he noted that they take the enriched slurries are mixed with mercury until balls of amalgam are obtained then it will be burnt by an oxy- gas torch burning off mercury leaving behind pure gold. The mercury which is used during the amalgamation process is lost to the environment, making it not suitable for agriculture.

### 3.5 Alluvial gold panning in the mining sites

The researcher also observed that women are mostly involved in the use of James table, they call this process *kuguruza*. They prospect for gold in the vicinity of the areas where the tunnels worked by men are. They use wheelbarrows and sacks to transport the soil that is to be worked on the James table. This type of mining is most done along rivers since it is the alluvial mining, the undocumented miners in Globe and Phoenix vandalize sewage pipes and build their makeshift James table besides the pool of water that accumulates after vandalizing the pipes. Njabulo Ndebele who is a miner noted that for them to get water they root out sewer and water supply pipes to the compound from the main pipes. The researcher observed that the James tables are in hideous places since they are disadvantaging the community, they vandalize the community resources. Old cloths are laid on the James table with plastic papers underneath such that the gold will not be lost, when the soil has been washed the cloths are taken and washed in a pan dish, thereafter mercury is put into the residue for the amalgamation process. The miners sweep in the roads to attain the soil for alluvial gold and this is resulting in intense soil erosion.

### 3.6 Ore processing at mill centres

The researcher observed that not all the ores are processed using the James table or using the grinding system using motors, some illegal miners sneak their way through to milling centers. Steven Jerie (2010) asserted that in the Tiger Reef area of Zimbabwe and especially in the Kadoma-Chakari Region, ore extraction is highly manual involving digging of tunnels of up to 50 meters deep with basic tools, like picks, shovels, hammers and chisels. Ore is sent to nearby independently operated stump or ball mills for crushing where ore is generally passed over a copper plate where mercury is spread directly in an attempt to increase gold recovery. EMA and the Ministry of Mines stipulated that milling centers must only entertain ores from miners with mining permits, failure to do that will result in the owner of the mill being given a penalty. Mr Marufu who is a mill manager at Ivanhoe mine which is the nearest mine that is usually visited by the illegal miners with their ores for milling, said that they would normally come during the night and bribe the security guards such that ore is allowed into the mine.

Hinton (2006) pointed out that mercury is used in mining during the gold extraction process from weathered ores, the researcher observed that illegal miners in this community make use

of mercury, which is then lost to the environment. Dales (1995) pointed out that during the amalgamation process a lot of mercury is emitted to the environment through mine tailings. This is supported by the fact that the mills use copper plates for the amalgamation process. Mr Kanyi, the assistant mill attendant at Ivan hoe mine where most illegal miners sneak their ores for milling pointed out that they use copper plates because it reacts well with mercury and gold and the process gold is not lost. Mercury is spread on the plates as the gold will be passing it will amalgamates with mercury.

### **3.7 Unprotected shafts and tunnels**

Illegal mining in Globe and Phoenix as mentioned earlier has affected the environment, the entire forest near the primary school is now infested with deep, unprotected dangerous tunnels. The miners key concern is striving to survive hence they turn a blind eye to the effects of their activities to the environment. Globe and Phoenix is a mining community, it was once a giant mining company but the mine was closed seven years ago when the directors of KCGM left the country for Australia. The community is a neighbor of B.D which again is a closed mine but illegal miners are still getting into these mines directly through the main entrance or the dig tunnels from outside until they reach the main tunnels underground of the disused mines. which is surrounded by illegal mining communities namely Venice mine, Mumba mine, Nhaipa mine just to mention but a few, these mines are along the Harare road just a few meters from the Harare- Bulawayo highway and they stretch upwards until Sherwood where there are also disused mines of Indarama and illegal mining is the main source of livelihood.

Hence the researcher observed that Globe and Phoenix is located in an area where illegal mining is the main economic activity, meaning the activity is not sinister to the residence. Due to the collapse of the company those formally employed in the company have also joined the illegal mining activities. There are no other means of livelihood, according to some residents when the company closed down they used to rely on agriculture but with the coming of illegal mining all the farms were affected because they are now regarded as mining sites and even if one plants maize seeds the panners will continue their operations while uprooting the maize seeds hence the residents had no choice but to join the illegal mining activities so as to fend for their families since there are no other mines of survival.



Open cast mining is practiced by most illegal miners because it is cheap, it must be noted that it usually leads to the abandonment of open cast workings which end up in the formation of vertical high walls or dangerous undercutting with the resultant high failure rate of the hanging wall (Sunga 1998). Illegal mining is the most pronounced economic activity for those who live in closed mines yet it is also causing large scale environmental degradation which is impacting on the ecological setup, it has been viewed by environmentalists and development practitioners world over as an environmental disaster in the making (Sunga 1998). The environmental impacts are being fuelled by amongst other factors by the harsh economic` conditions as illegal miners are failing to observe the necessary environmental friendly mining techniques (Sunga 1998). The researcher observed that this was also true in regard to the type of mining operations that are being carried out in Globe and Phoenix

It must be noted that illegal mining and the environment are inextricably linked. Land, atmosphere, and air provide the humans with resources such as timber, minerals and a variety of resources, the environment also provide important services such as the purification of air and water, soil generation, maintenance of soil fertility and pollination of crops (Dobb Edwin, 1996:37) hence if the environment is negatively affected these natural services will not be offered. Global environmental problems and the ability to meet human needs are linked through a set of physical, chemical, and biological processes, when human activities affect one component of the earth system the wellbeing of the natural ecosystem will also be affected. For instance, a change in the earth's climate would likely reduce bio-diversity, change the distribution and productivity of forests, and increase the rate of loss of stratospheric ozone thus endangering the lives that are depended on the environment. The conversion of forests to other types of land cover can increase greenhouse gas emissions into the atmosphere and thus contribute to change climate, reduce bio-diversity, and affect water resources therefore it must be noted that these illegal mining activities in Globe and Phoenix mine if not carefully observed and monitored may be detrimental to the natural ecosystem.

Pablo postulated that mining activities by nature are extractive that is, involve the removal of the soil and rocks from underground on to the surface hence if not done cautiously the natural arrangement of the soil profile is altered therefore it must be noted that this can cause significant modification of the soil structure and as a result impact the ecosystem negatively (Pablo. 2006:46). Though Robert Thorntorn (2002:73) argued that illegal miners do not produce much waste, Matthews noted that by nature, mining involves the production of large quantities of waste, in some cases contributing significantly to a nation's total waste output.

For instance, a large proportion of the materials flows inputs and outputs in the United States can be attributed to fossil fuels, coal, and metal mining (Matthews, 2000:107). Gold and silver are among the most wasteful metals, with more than 99 percent of ore extracted ending up as waste thus contributing to environmental degradation (Da Rosa, 1997:56).

### **3.8 Disruption of other sources of livelihood**

Poverty and economic development are the pivotal force that has led to the exploitation of the natural environment. The need for a source of livelihood in most parts of the country and the globe has resulted in unregulated exploitation of the environment. For instance people are resorting to deforestation in search of firewood due to the cost of electricity, in rural areas there is lack of education on how they can use appropriate technology to ensure sustainability of the environment. Illegal mining is a source of livelihood for the poverty stricken Globe and Phoenix community yet it is contributing to vast degradation of the environment. There has been environmental change happening through time. Environmental degradation is now a cause of concern because the area is facing the risk of desertification. These problems have led to numerous disasters, poverty cycled is being created because these negative impacts are retarding growth.

Most of the respondents noted that the forest surrounding the Globe and Phoenix main compound has been extremely degraded to the extent that residents can no longer continue with their agricultural activities. Mr Jusa pointed out that during rainy season these gullies will be filled with the water and children from the compound will be sneaking from their homes to swim in these gullies of which it is dangerous and it also posing as a health hazard. The children will be at risk of getting infected with water borne diseases and drowning. To get information on the environmental impacts of illegal mining activities the researcher interviewed the respondents if they have experienced environmental changes due to the mining operations. If they experienced environmental changes they were supposed to state which parts of the environment were affected?

The researcher took questionnaires to fifty households in the Globe and Phoenix compound, 80% of the respondents indicated that they have experienced the environmental degradation that has been caused by illegal mining and all of them noted that the landscape has been grossly affected. The researcher noted that that the twenty percent who indicated that there were not aware of any environmental changes were not indigenous residents of this

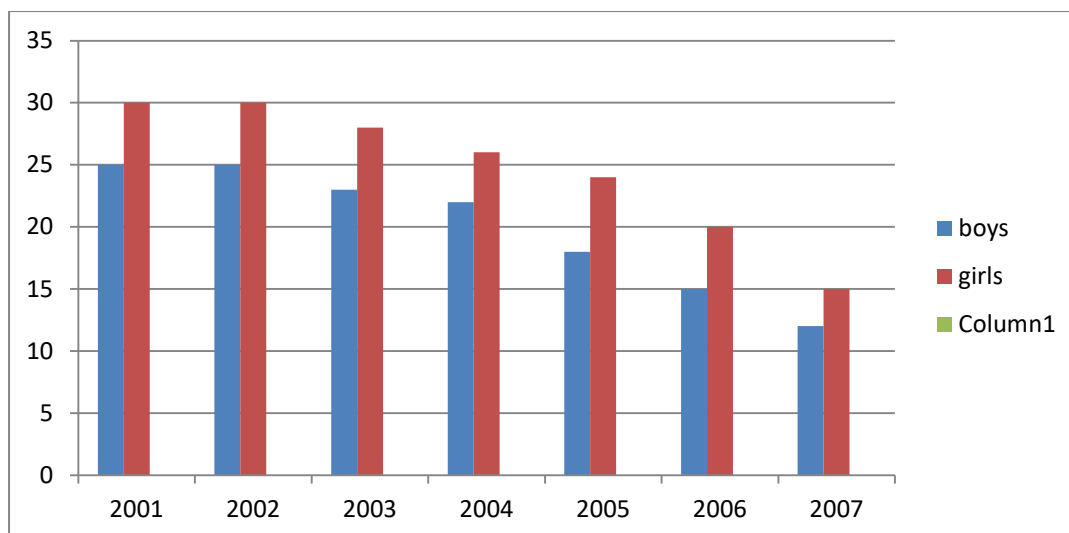
community they came into the community when illegal mining operations had already taken centre stage. The researcher asked those who indicated that there has been an environmental change if this change has affected them and they said yes since they used to carry out urban farming on the pieces of land that had been affected and they could take care of their families, since they grew maize, sweet potatoes, groundnuts, round nuts and beans that they would eat until the next farming season. The area is now infested with dangerous trenches that are not covered, trees have also been cut randomly without any forms of rehabilitation taking place.

### **3.9 Globe and Phoenix Primary School under threat**

Globe and Phoenix primary school and Globe and Phoenix Secondary School are the schools that are attended by the children in the community. The researcher had interviews with the teachers at these schools. Mrs Kurakaraka who has been teaching at Globe and Phoenix since the early 90s indicated that most pupils who come from this mining community are usually dirty, their fees are not paid in time and in the infant grades show evidence of malnutrition and they come to school late. Mr Finch, the headmaster at the primary school pointed out that dropping out is the problem that the school experience when the children get to the upper grades. Boys drop out of school to join their parents and peers in the mining activities. The teacher also noted that the rate of their absentism from school is alarming. Brian Mukandi an illegal miner indicated that he dropped out of school in 2001 when he was in grade six to join the gold panning industry. Girls are introduced to sexual relations at a very tender age and when in grade seven most girls drop out of school to get into early marriages. These problems are caused by illegal mining activities in the community. Below are the statistics of a class from the enrolment until the class reached grade seven.



*Our Hands Our Minds Our Destiny*



*Fig 3.1: School drop outs due to illegal mining*

*Source; Research Fieldwork*

Globe and Phoenix Primary School is now a danger zone for both the pupils and staff they are exposed to dangers such as obscured pits around the school perimeter and vandalism of school property by illegal miners. The headmaster Mr Finchi highlighted that they are all living in fear due to the extreme environmental damage that is being induced by illegal miners, whom they are failing to control. The school head also indicated that some awareness programmes were done every Wednesday in order to alert pupils of the dangers which they are exposed to due to illegal mining activities in the school. Environmental Management Agency highlighted that these miners were ordered to regularize their operations, a directive which came from EMA Board Members early 2013 when the situation was going out of hand.

However they submitted an EIA report which failed to meet the requirements during review processes and were required to redo the document addressing issues which were not addressed in the initial document. Since then nothing was done and regularization of the mining operations were still pending. In an interview, Assistant Commissioner Makunda declared Globe and Phoenix a black spot given the frequency at which disasters were occurring in the mining area. The existence and safety of the school is under threat due to the mining activities by the illegal miners. The researcher observed cracks on the walls of buildings and windows which the headmaster attributed to the blasting activities from the mining activities.

The school fence has been destroyed by illegal mining. They have also started digging within the school parameters. One classroom has been dug and as it is the building was sealed off but the miners continue to dig in the classroom during the night and that is why they vandalized the fence so as to gain access to the yard. There are fears that the school is no longer safe and stable for continued use since it shelters toddlers and immature children during the day.

Environmental impact of illegal mining has been a bone of contention for the people in Globe and Phoenix, the community has recorded a lot of negative environmental impacts. After taking the questionnaires round, the majority of the respondents in the area indicated that they are being affected directly by the illegal mining activities by miners. The Environmental Management Act stipulates that there must be rehabilitation of the environment but illegal miners are affecting the environment while at the same time vandalizing the surrounding infrastructure. The Act stipulates that those who cause environmental degradation or pollution without rehabilitating it is liable to a fine or punishment. The Public Health Act (Chapter 15.09 of 1996) of Zimbabwe denotes that waste producers must take responsibility for their activities but due to the fact that illegal miners are not bound by any laws by virtue of them being illegal since they do not have the necessary documentation for their activities.

### **3.10 Socio- environmental effects**

Illegal mining is a vital economic propellant and source of livelihood for the local people on the contrary, it has been a source of social discontent, civil unrest and other high social cost (Gualnam, 2008: 2). This is because mining activities appropriates land belonging to the local communities, impacts health negatively, alter social relationships, destruct the forms of community subsistence and the working conditions at the illegal mining sites are hazardous and unhealthy. Illegal gold mining in Globe and Phoenix started off as a free for all activity where miners, vendors and gold buyers coexisted. The result was an influx of miners from different parts of the district and provinces. Thus the area ended up not only with the Globe and Phoenix retrenches but the immigrant miners and this led to a boom in the population size. The main environmental concern became the lack of sanitary services in an environment that was increasing becoming densely populated. The absence of sanitary services and waste disposal infrastructure coupled with massive production of air pollution through dust particles, have caused unrecorded environmental deterioration that impacted on human health. The cholera outbreak of 2008 marked the peak of this degeneration. The area does

not have infrastructure and resources to cater for the housing needs, water supply and sanitary requirements for the miners. There are no toilets at the illegal mining sites hence the miners resort to bush toilets or use the compound toilets that do not have a functional flushing system and is infested with maggots.

Alluvial gold panning requires large quantities of water, the miners resorted to vandalizing sewage pipes and water pipes these facilities are under the maintenance of the mine so due to lack of financial resources of the local committee that was chosen to monitor the smooth running of these facilities they could no longer continue fixing the pipes every time that the miners vandalized. Therefore, presently there is no functional sewage system the toilet cleaners converted the toilets that were originally flushing system type to blair toilets of which under this system they empty the stools using buckets into the septic that were used during the period when the was water supply in the area.

### **3.11 Prostitution**

Prostitution is usually described as, an old age profession because it has been employing people in most countries although its widespread could be very devastating and could have long term social and health impacts in many societies. Observations by the researcher especially at night provided very revealing insights of the rate of prostitution in the area. Most of the respondents interviewed indicated an upward and significant increase in prostitution and other forms of sexual relationships that have developed in the compound since the introduction of illegal mining activities. The prevalence rate of the spread of sexually transmitted diseases is high. One respondent said,

Haa! That one, huh! It is very common that even young girls and married women are involved in the practice. Now all our girls are been deceived into it because of money. It is the money they want because we are poor and they have to cater for their needs, some of them are child headed families because both parents have died. At least, they do that for a living.

Observing at night, the researcher noticed young girls standing around the beer hall where most miners will be socializing, some will be loitering around the shacks that are at the mining sites. Young girls of age ranging from twelve years could be spotted.

In a focus group discussion, it was particularly revealing that prostitution due to availability of money from illegal miners is a problem when one member of the group retorted:

These miners are collecting our girls and wives and they are sleeping with them indiscriminately because they have the money and we are poor. For instance, when I give a dollar to my wife, the miner will give her twenty dollars. Because of that, our wives nowadays do not respect us because they think we are poor and we cannot afford them their needs. Most of our wives are divorcing us and marrying the miners and the young girls are getting pregnant.

This comment affirmed responses from majority of the respondents that the introduction of illegal mining activities have increased divorce rate in the compound and pre marital pregnancies. The miners have the money to provide for all the needs of the women they have an affair with which some of the husbands lack.

### **3.12 Inflation of prices on goods and services**

The majority of the respondents lamented how the start of illegal mining operations in the Globe and Phoenix mine have resulted in escalated prices of goods, services as well as food commodities which hitherto were cheap. It is realized that the mere perception of the people about a gold mining firm to them indicates that miners have money and are ready to spend hence as a result are willing to pay any amount for a commodity they need. As a result, providers of basic services, petty traders and prices of general goods are so high with the view that miners would be ready to pay for them when they need them. Community residents who usually complain about the high prices are usually told to leave if they cannot afford them since miners would come to buy. Some retrenches are renting out rooms to miners and because of the demand of shelter the rentals are now very high to such an extent that those who are not involved in mining cannot afford the rooms.

### **3.13 Petty businesses as a source of livelihood**

The field work revealed a number of trading activities in the area. Some of the compound residents have resorted to petty business ventures that could provide them with a source of livelihood. By observation, the researcher noticed that most of the businesses were mainly table top business like selling soft drinks, bread spread with margarine or peanut butter,

boiled eggs, drinking water and other commodities. Vending has been diversified with some vendors selling cooked meals like sadza.





## Chapter 4

### Strategies by stakeholders to mitigate illegal mining

#### 4.0 Kwekwe city council

In Zimbabwe city councils are mandated to prevent air, land and water pollution, they are supposed to ensure that people are living in a clean and safe environment. The researcher observed the extent of the degradation and the socio- environmental conditions in Globe and Phoenix mine and questioned whether the city council was carrying out its obligations in the mine as an authority to which the mine falls under also taking into cognizance the proximity of the mine to the city center. The researcher conducted an interview with the deputy director of the health and environment department Mr Bandama about the state of the toilets and the sources of water that were vandalized by illegal miners and as a result the people are exposed to unhealthy environments due to the fact that sewage pipes are no longer functional hence there is no water supply for flushing and sewage system hence the toilets were producing a very strong stench and maggots could be observed from the toilet entries.

To this effect the respondent noted that Globe and Phoenix mine was privately owned hence they cannot fix the vandalized pipes, it was the mandate of the local mine authorities, after the official closure of the mine Mr Zulu the former mine manager took the responsibility hence most of the questions were directed to him. In an interview Mr Zulu asserted that the unhealthy environments were prevailing because most of the residents rely on illegal miners hence their sources of income are not stable, they cannot contribute to raise the amount of money that is required by the city council to rebuild the vandalized sewage pipes. However Mr Bakama pointed out that the Kwekwe city council went to the area when there was a typhoid outbreak and wrote a report directed to Mr Zulu because he is mandated to ensure a clean and health environment in the mine on areas that they were supposed to improve. The researcher observed that there was a positive change in the water supply system because before the visit all the residents were fetching drinking water at a tape that was on the toilet of which it was only one access point for the rest of the compound. It must be noted that there is need for the health department to carry out more assessment visits to the compound because the environment is exposing the residents and miners to diseases.

## **4.1 The roles of Environmental Management Agency**

Environmental Management Agency is mandated by the Environmental Management Policy and Environmental Management Act (Chapter 20:27) to coordinate environmental management issues. This department must ensure that all human activities do not affect the sustainability of the environment. This is achieved through educating the community so that they carry out environmentally friendly activities and if there is need rehabilitate it. The organization is also responsible for regularizing the activities by people ensuring that their activities are not causing detrimental effects to the natural environment. Policies are formulated and this board was given the mandate to monitor and evaluate if they are being observed.

The organization was created because there was need for a board that is supposed to do the monitoring on human activities on the environment. This is because environmental issues are a major concern in the globe due to natural disasters being caused by the changes in climate due to the effect of human activities on the environment. This is a global issue because developed and developing countries are all affected by this problem. The major responsibility of this organization is to carry out environmental protection and rehabilitation programmes. In Globe and Phoenix mine there is intense land degradation but the researcher noted that there is no evidence of rehabilitation projects in the sites. Environmental Management Agency is issuing fines and penalties to those who are negatively affecting the environment,

## **4.2 Environmental laws and regulations**

There are ministries and boards that were set for the regulation of environmental sustainability, these are Ministries of; Mines, Local Government, Natural Resources and Environmental Management Agency, Rural District Councils and District Administrators. The Environmental management agency has the mandate to supervise and oversee environmental issues with the use of statutory laws and regulations. Statutory Instrument 6 of 2007 regulates the environmental issues and the mining aspects and operational expectations are clearly stated.

The effluent and solid waste disposal regulations, Subsection 3 item 24 on mining and mining waste denotes that;

- a) those who are given mining rights by the ministry of mines and attain operating licenses from EMA must do so in a way that does not adversely affect the environment
- b) on cession of operation rehabilitation of the environment must be done within twelve months
- c) a financial guarantee for security and surety that the operators will comply with the regulations must be paid to EMA

Violation of the above regulations will attract a fine , imprisonment or closure of the operation sites by the agency .The Environmental Management Act, National Environmental Policy and the Environmental Impact Assessment regulations, are also stipulated in the Statutory Instrument 7 of 2007 so as to regulate. There are also civil society organizations that are playing a pivotal role educating the society about environmental issues these are ,Zimbabwe Environmental Law Association (ZELA), Environment Africa, SAFIRE and CAMPFIRE.

<b>Coordinates</b>		
<b>X</b>	<b>Y</b>	<b>ALT(m)</b>
18.92214	029.80304	1226
18.92267	029.80364	1228
18.92249	029.80377	1226
18.92990	029.80010	1236

Fig 4.1 Globe and Phoenix mine pits perimeter

### **4.3 Monitoring and evaluation by EMA**

EMA does the monitoring and evaluation to ensure that human activities are being done in compliance of the regulations and policies. This is done through measurement of the environmental parameters and the extent of how the waste is being discharged. In the mining sector the organization use the Statutory instrument 6 of 2007. Using this they evaluate if the activities by communities are not detrimental to the environment. The statutory grades pollutions into level, from level 3- 14, the penalty fine for level is 3 is twenty dollars while level fourteen is five thousand dollars of which level fourteen can also attract an imprisonment for a period of not more than twelve months. The EMA regulations stipulate that there must be rehabilitation of degraded lands and these are brought forward by audits.

Environmental Management Agency endorsed Local Environmental Action Plan so as to help in the implementation of programmes and projects for rehabilitation this was formulated in 1987 as an environmental conversation strategy and in section 95 of the Environmental Management Act (chapter 20:27). The organization use this platform to assist the communities to employ environmentally friendly activities but the researcher observed that in Globe and Phoenix mine is not benefiting from this since the research proved the community did not have knowledge on the subject hence nothing is being done towards LEAP the community does not have environment action plan.

### **4.4 Challenges faced by EMA officers in the implementation**

The Kwekwe district DEO Mr Tinei Nyajena indicated that Environmental Management Agency is failing to fully carry out task to enforce environmental protection regulations on illegal miners because the set up is complicated by the fact that it is not the Agency that grants mining licences but the Ministry of Mines hence interrogating illegal miners on their lack of documentation becomes a challenge. Hence it must be noted that EMA is being tasked to police multiple activities. This pose a critical problem since EMA cannot interrogate them for their operations because it is not directly linked with the issuing of operating licences especially when the mining activities are degrading the environment no one will be accountable since the illegal miners do not have documentations.

The researcher observed that illegal miners dessert their mining sites when they have been tipped off that Environmental Management Agency are in the vicinity. Transport is another challenge being faced by officers and they rely on the community or the organization that has

a task that needs to be carried out. Therefore these challenges are contributing to the failure by environmental management agency to carry out their duties.

EMA officers ensure that areas of environmental concern identified during the EIA processes are carried through to and are appropriately considered and incorporated into the detailed designs and tender stages of the projects. The EMA DEO Mr Tinei Najena reiterated that this goal cannot be met when illegal miners are involved because they do not seek environmental impacts assessment before they start their activities. It was also noted that the basis that illegal mining is not legalized or formalized there are no clearly drawn margins on how these miners must operate. This is also creating problems for EMA officers to contact awareness programmes with them because their relation is that of cat and mice. Henceforth the fact that these mining activities cannot be monitored or regularized is an indication for disasters. At Globe and Phoenix illegal mining sites the rate of land degradation is alarming and EMA officers are failing to perform their duties in line with the EIA because no one is held responsible.

The Environmental Management Agency must provide a database against which any short or long term environmental impacts of projects can be determined. The researcher noted that the officers can only manage to make a database of the number of holes that have been dug and the perimeters of these holes but no information could be produced on the environmental impacts of the activities because there are no work plans. In an focus group interview the gold panners indicated that their operations cannot be planned because they work in the holes that are producing ores that are rich in gold and when the gold belt has ended they move on to others holes, so they pointed out that planning their mining activities is not possible since their operations are determined with daily results. Therefore this pose as a problem for EMA officers in terms of forecasting the long term impacts of illegal miners since the mining is done in a haphazard manner.

EMA officers must provide early indications should any of the environmental impact mitigation measures fail to achieve results. Due to the fact that illegal miners and the environmental management agency cannot work together on the grounds of them being labeled as criminals who are breaking numerous laws no mitigation measures can be carried out successfully in these areas. Petros Moyo, testified that he had been fending for his family through gold panning in Globe and Phoenix mine for the past ten years indicated that they do not trust the EMA officers because every time they visit the mining sites where illegal mining

is being conducted they come with police force and those miners who are unfortunate to be found on the scene are arrested therefore they will never entertain the officers. Joseph Kaninji also noted that companies are closing down so gold panning is the only means of survival yet EMA officers are for the idea that we stop, our colleagues die underground everyday searching for gold, but the next morning we go back because we have no choice.

Tatenda who is an EMA officer in Kwekwe district indicated that they are failing to produce results in environmental mitigation measures because they cannot conduct meetings with illegal panners educating them on how they can operate in such a way that can ensure environmental sustainability. The researcher observed that EMA is failing to implement strategies due to lack of funds, hence there is need to redress the issue of how the money collected from fines is used. The Kwekwe district accountant for EMA indicated that currently the money is regarded as state funds and is deposited to the government coffers. The researcher recommends that EMA must be given the mandate to do the budgeting taking note of the areas that needs attention, especially the rehabilitation of the damaged environments, such the community can benefit from the fines paid by the illegal miners. In Globe and Phoenix mine illegal miners have caused intense environmental degradation yet no rehabilitation projects are being done, so that the people of this community can enjoy the right to live in a safe and clean environment.

#### **4.5 Government initiatives**

The government had initiatives to formalize illegal mining in 1991 when it gazetted the Statutory Instrument 275 on mining regulations in alluvial gold, so as to regularise gold panning. The government gave the platform to gold panners to apply for mining permits through the Rural District Councils and the Ministry of mines and the miners must do their operations in an environmentally friendly sustainable forms. The Gold Mining and Minerals Development Trust was established in 2001 such that miners will sell their gold to this trust. This was done so as give illegal miners a platform to sell their gold. The Trust stopped operations in 2004 due to lack of funding from the government. Though the trust crumbled due to lack of funding it must be noted that the government realized that a lot of revenue is lost by the state in the informality of illegal miners, since royalty and taxes cannot be obtained from illegal miners since they do not have any documentation hence they cannot be given penalties.

For this reason again they cannot remit their gold to the Fidelity printers and refineries because upon the presentation of gold documentation that the mine is legitimate must be brought forward, as a result they sell their gold on the black market where the prices are also catchy. For the formalisation of gold panning to succeed governments must take the leading role and provide an enabling environment. However, very often governments lack the political will to legalise artisanal mining, especially where land rights are not recognised. Hentschel et al.,(2003) argue that, the lack of political will to create an adequate framework for legalising gold panning may be explained by personal interests related to corruption and in this instance the researcher noted that some politicians are benefiting from the illegal mining activities.

Many countries lack census data on artisanal and small-scale miners (Hilson and Maponga, 2004). It must be noted that Zimbabwe is not immune from this challenge. It is not certain on the exact numbers of people involved in the sector as there have been no field censuses. For this reason, Hilson and Maponga (2004) add that even the statistics on ASM used in most literature is based on crude estimates. The non-availability of comprehensive demographic information makes it difficult to formulate policies that reflect the needs of the sector, and as such support programmes put in place to help miners appear to be ineffective.

The artisanal miner's chairperson Wellington Takavarasha noted that the government the government is in the process of formalising illegal gold mining, the government has already allocated \$100 million towards capitalizing small-scale operations. This initiative was brought about by these ministries: Finance, Mines and Mining Developments, Environment, Water and Climate, Environmental Management Agency, Zimbabwe Parks and Wildlife Management Authority, Fidelity Printers and Refiners, Minerals Marketing Corporation of Zimbabwe and Zimbabwe Mining Development Corporation. The government is implementing these strategies so as to minimise the environmental degradation by illegal miners and the fact that they are not contributing to the states revenue. In the 2014 National Budget statement, Finance minister Patrick Chinamasa noted that the mining sector is projected to grow by 11,4%, Chinamasa said the capital intensive nature of mining activities pose challenges to the operations of many small-scale miners (newsday 13 May 2013.)

Absence of geographical information on location and distribution of minerals is another major challenge governments are faced with (Hilson, 2005). In Zimbabwe the government institutions lack the capacity and resources to undertake geological surveys and produce

geological maps for issuance to prospecting artisanal and small-scale miners. This pose as a challenge since the government cannot offer meaningful support to miners so as to curb illegal mining activities. Hilson and Maponga (2004:25) noted that geological data is a necessary prerequisite for determining and demarcating locations appropriate for mining activities, the research proved that in Globe and Phoenix mine the geological surveys have been done in the sites that illegal mining is taking place.

#### **4.6 Mining Laws and strategies by the Ministry of Mines to mitigate illegal mining**

- Mines and minerals Act Chapter 21:05
- Explosives act chapter 10:08
- Mining Regulations SI 109 of 1990 (Management and Safety)
- Mining Regulations SI 182 of 1995 (Health and Sanitation)
- Gold trade act chapter 21:03
- Mines and minerals regulations SI 239 of 2002 (custom milling plants)
- Mines and minerals regulations SI 82 of 2008 (minerals unit)
- Mines and minerals notice SI 91 of 1990 (declaration of minerals)

The mine and minerals act chapter 21:05 is the regulatory law that govern all the mining activities in Zimbabwe. This law propounds that all mineral rights are vested in the President. It also stipulates that any person who has reached the age of eighteen and a Zimbabwean may acquire prospecting licenses after payment of the designated fee. Section 26 denotes that for a person to prospect reserved ground must apply to the mining affairs board first. The Mining Affairs Board is a body which was established through Part II of the Mines and Minerals Act. It was created such that it will execute the function and duties that are stipulated in the mines and minerals act hence it oversee the effective administration of the Act. The Permanent Secretary of the Ministry of Mines and Mining Development chairs the board. Members of this board are derived on the basis of their expertise from the sectors of mining, legal affairs and environmental management agency.

Upon application the applicant shall pay a deposit per hectare. The board verify the application and assess if the applicant is suitable and capable financially to undertake the operations then recommendations will be made to the minister of mines to approve the



application. When the order is given it must be used by the applicant and the rights cannot be transferred or used by any other person and the applicant must mine the mineral applied for only.

Below are the steps to be followed;

- a) Acquisition of a prospectors license
- b) Pegging and registration of the mine
- c) Notification of the concerned local authorities and their approval ie Rural District council, Department of Natural resources, Environmental management agency
- d) Draft a work plan for approval by the Ministry of mines
- e) Environmental Impact Assessment to be done

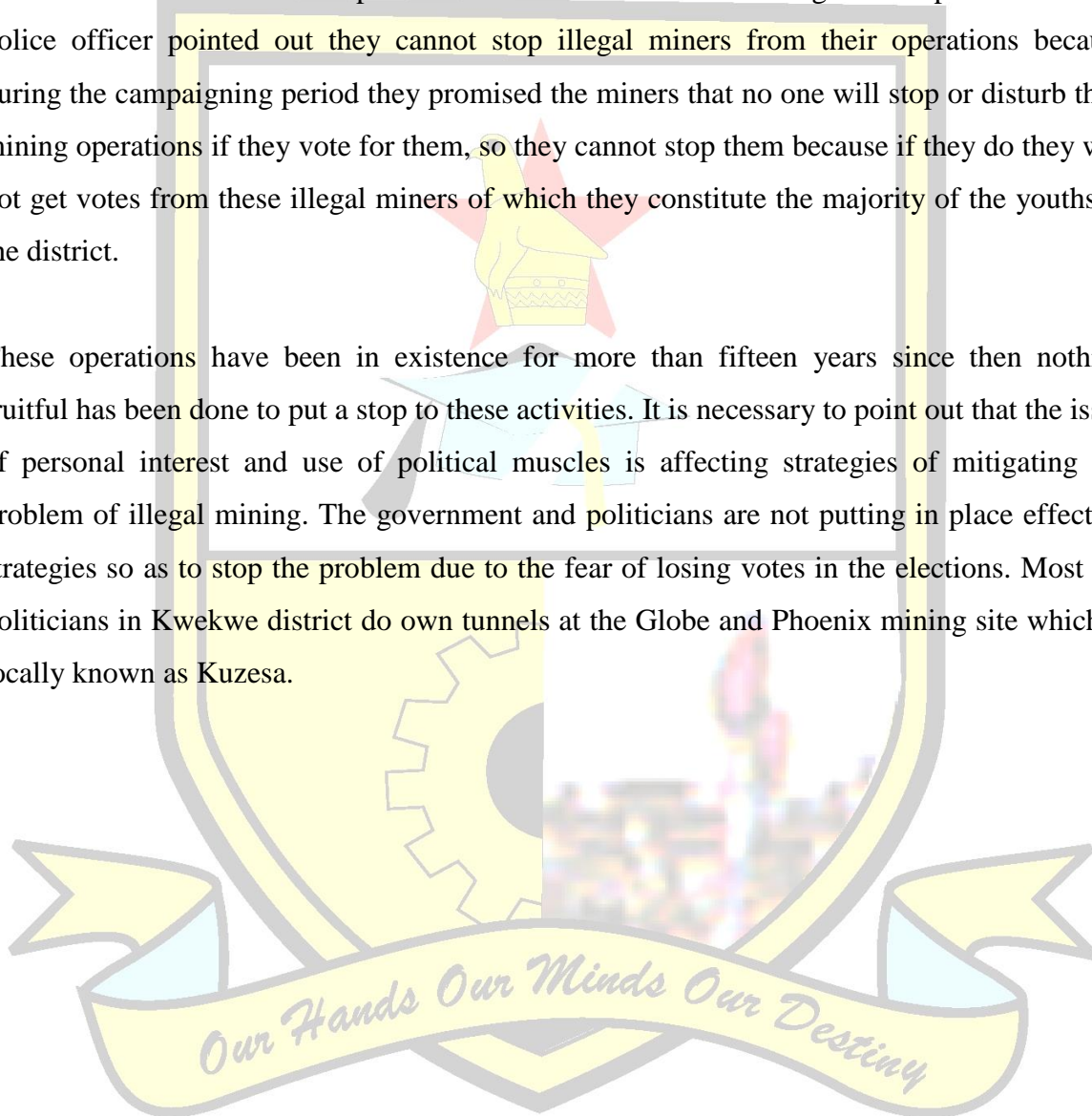
There are a number of regulations that were created to compliment the mines and minerals Act. The health and sanitation regulations of 1977 postulate that the mining environment must have health and sanitation facilities and the mining management and safety regulations of 1990 regulates the safety of the area under operation. Be that as it may it must be noted that illegal miners do not have any of these documentation hence their mining activities are done without taking any precautionary measures thus posing a danger to them and the community. In Globe and Phoenix a number of miners are mining without these permits even those that a not labelled as illegal miners who are said to be small scale miners because of their affiliation with some politicians, no environmental assessment was done by EMA their shafts are equally as dangerous as those by illegal miners.

Even if the mining operations will be stopped but environmental damage is irreversible because the people of Globe and Phoenix community are now exposed to the dangerous landscape. It is necessary to note that these illegal mining operations proves the loopholes of the mines and minerals act because some firms are carrying out mining activities without observing the necessary requirements of which this is disastrous to the environment. The legislation formulation must also pay special attention to the challenges that are depriving illegal miners from formalizing their operations, they must not be equated to small scale miners because they operate as groups not as individuals due to the fact that they are not financially capable, thus they should be a law that allow these individuals to operate giving them parameters of their operations.

## 4.7 Police intervention

The police is aware of the environmental degradation that is being caused by illegal miners and the shady dealings that are involved with their operations. Forty percent of the respondents most of whom indicated that their names must not be exposed indicated that hands of the police are tied since politicians are involved in the operations of illegal miners who have close ties with the politicians and some will be working for the politicians. One police officer pointed out they cannot stop illegal miners from their operations because during the campaigning period they promised the miners that no one will stop or disturb their mining operations if they vote for them, so they cannot stop them because if they do they will not get votes from these illegal miners of which they constitute the majority of the youths in the district.

These operations have been in existence for more than fifteen years since then nothing fruitful has been done to put a stop to these activities. It is necessary to point out that the issue of personal interest and use of political muscles is affecting strategies of mitigating the problem of illegal mining. The government and politicians are not putting in place effective strategies so as to stop the problem due to the fear of losing votes in the elections. Most the politicians in Kwekwe district do own tunnels at the Globe and Phoenix mining site which is locally known as Kuzesa.



## Chapter 5

### A look into the future

Regardless of the challenges faced in formalising illegal gold mining, there are still possible ways in which it could be steered into transformation from being a mostly subsistence providing informal sector into a viable sustainable formal sector capable of contributing positively to sustainable development and growth.

#### 5.0 Decentralisation and revision of mining policies

It must be noted that the policing needs to be addressed because currently in Zimbabwe the rules and regulations towards gold panning are vague. They must be policies that are put in place so as to ensure rehabilitation of the environment after mining operations. This can be achieved only after illegal miners have been formalised. Hence there is need to cut the red tape that is in the formalization process of small scale miners. Decentralisation of the registration process is necessary because illegal miners are trying to earn a living their activities must not be criminalized rather they must be given the platform to do their operations instead of having hostile relations with the police and environmental management agencies. Therefore there is a need for a collaborative effort amongst key ministries and stakeholders in environmental management and mining to come up with a policy that will ensure environmental sustainability with the operations of illegal mining activities taking center stage. Blackman (2003: 21) underscores the need to involve all stakeholders for any project to be sustainable. Such a policy needs to realise panners as the victims not as criminals. The policy must be formulated in such a way that it will attract gold panners to formalise their operations.

#### 5.1 Empowerment of local authorities

The study also proved that the major weakness in the government's regulatory system relates to monitoring of the mining activities due to lack of resources. Therefore there is need for the government to empower the local authorities so as to enable them to monitor panning activities and prosecute violators of regulations where there is need. The local authorities need financial and human resources for the monitoring process. EMA Kwekwe district officers pointed out they can not go to the field regularly because the district only have one

vehicle hence accessing the mining sites is a challenge. Hence to overcome these constraints, the local authorities must keep the levies collected from mining offenders such that they can use it to implement environmental management policies as well as monitoring and evaluation. The local authorities have a lot to gain from collecting levies since these form a reserve fund which they can tap on for other uses. They can also manage human resource constraints by training personnel who would visit panning sites regularly. The effectiveness of a locally based monitoring system can only be achieved through the empowerment of the local environmental management departments.

## **5.2 Access of miners to financial resources**

The government must also give incentives to illegal miners such that they can formalize their operations because they are not in a position to pay so as to meet the requirements of all the involved departments. The fees that are charged by the Ministry of mines and Environment Management Agency are too much for the miners who are always operating from hand to mouth. Environmental Management Agent must cooperate with the miners through giving them the necessary platform to get assistance from the government such that they can be given all the required items for operating in a way that does not affect the environment. This include giving the miners training on the requirements of Environment Management Agent on how they can operate in a way that does not affect the environment, they must also be given new and efficient mining technology such that they can produce more.

There must be cordial relations between illegal miners and the government so as to ensure growth and environmentally friendly production, they must also be granted mining titles. The fact that they are regarded as illegal expose them to discrimination and social stigma due to the criminal connotations in the terminology of their operations. Hence there must be treated the same as all the individuals that are trying to earn a living. They must be incentivized, illegal miners are refraining from formalizing their operations because they believe there are no economic benefits, rather the government will be only focused from getting revenue from them. If they are aware that they tend to benefit from formal operations, they will do so and at the end of the day they will use formal markets and formal banking system.

The study proved that poverty as a major cause of illegal mining and environmental degradation is due to lack of resources hence there is a link between poverty and natural resource degradation. Poverty is a constraining factor on the ability of illegal miners to embark on mining methods that ensure environmental sustainability. The miners are poor so they have limited access to capital hence degradation continues as long as there is open access to resources. Thus, there is need to break the poverty–resource degradation linkage. In Globe and Phoenix poverty is emanating from unemployment and because of lack of financial resources, miners have shorter planning horizons as a result they do not regard environmental issues as important, as theirs is a subsistence existence.

### **5.3 Access to mining technologies**

Therefore the government must also assist illegal miners with mining services and technologies such they can carry out their operations in a more formal way that carters for the well being of the environment. They must also be given a chance to do their operations with experts in the mining field like geologists and surveyors so that they will be taught on how they can operate in a way that they can get profit instead of the gambling type of mining which they are doing. It must be noted that mining does affected the natural ecosystem especially when carried out by people who lack the knowhow on how to take from the environment without affecting it negatively. Common indicators of land degradation that are as a resultant of illegal mining are open deep shafts and mountains of sands commonly referred to as heap leaches in the mining field. It is necessary to note that the people’s right to live in a healthy and sustainable environment such that they can live a healthy life is breached by environmental degradation caused by illegal miners.

### **5.4 Value addition**

Value addition can play two pivotal roles, that of employment creation and contribution into the state revenue. The state has been reduced to the level of producers of raw materials that fetch very low prices on the international market. The state must embark on value addition means of production, by doing so firms will be opened and most of the people that are involved in illegal mining operations due to poverty and lack of a source of livelihood can get formal employment. This mineral production will also reduce the rate at which gold is being sold on the black market. The government must also put in places taxation rates that are not

too high such that everyone will be able to comply especially illegal miners since they do not have capital bases that are stable.

### **5.5 Projectization of rehabilitation programmes**

Illegal miners show immense lack skills in their operations as such the government is embarking on capacity building programmes. The research proved that most illegal miners that were interviewed have not benefited from the research so far. The formalization of these illegal mining activities must be the initial step on the partnership of the government and community in curbing the environmental problems being caused by illegal miners. The major reason why illegal gold mining is rife in Globe and Phoenix mine is unemployment and poverty. Therefore the researcher recommends that there should be introduction of projects that would be more centered on environmental rehabilitation. The government may give the local people contracts of closing the holes that are almost everywhere.

The government and all the involved departments must create a conducive markets for the illegal miners such that there will cooperate with the government initiatives, this will also give them a chance to contribute to the gross domestic production while at the same time fending for their community and this will also ensure environmentally friendly operations. There is need to projectise rehabilitation projects i.e. nurseries for reforestation, solid waste management this can create income for the community since there are no other alternatives for the Globe and Phoenix residents of whom some are resorting to illegal mining which is causing environmental degradation due to the fact that they do not have income generating projects. The community must be involved in rehabilitation projects, so as to create the sense of ownership and belonging in the communities for sustainability.

This will ensure the sustainability of the project and the community will use the environment in a way that does not harm it because they will be involved in the process of rehabilitating it as such they will start protecting their surroundings because it will create a sense of sustainable utility. More so, the community must fully participate in environmental management-formulation and implementation of policies. Most of the policies that are formulated by Environmental Management Agency do not involve the community the policies are mainly top- down and as a result the community tend to be hostile to the policies. Respondents indicated that the officers come with their policies to them without considering

what their needs as a community are, thus community participation can ensure sustainability of environmental management policies. Therefore there must be partnership between government, environmental management agency, miners and the community.

### **5.6 Training and capacity building**

The environmental degradation being caused by illegal miners is being caused by their lack of knowledge and formal training. All respondents from local authorities, officials for environmental management and mining organizations received training on environmental management and mining. Most of the miners (98%) expressed ignorance of the existence of the statutory rules and regulations on environmental management but they are aware that their activities are illegal. They were not aware of the disaster management policies. Those who were aware of the policies had participated in workshops, organized by Environmental Management Agency before the government banned gold mining operations in February 2008. Across the globe training of illegal miners is being implemented in various ways. For instance in Porgera, Papua New Guinea community-based public education campaigns are used to create an awareness and understanding of mining and the dangers of illegal mining. Offenders are made aware that they may be apprehended, prosecuted and possibly heavily fined (Barrick Gold Cooperation, 2012).

Paul Chitimbe who is a syndicate leader said that he had never participated in the training and did not need to since this it is time consuming and the process will expose him to the authorities who would want to know of his operations of which they are illegal. He also indicated that he had heard that if he joined or registered with mines they would assess his production and he will be forced sell his gold through the fidelity printers, which pay very low prices than the market. He also pointed that he had acquired vast experience through mining. The study established that some of the gold miners had more than sixteen years of gold panning experience. The majority of the miners interviewed had a negative attitude towards training programmes hence the there is need for the government to establish good working relations with the miners before embarking on training programmes, the miners must also be reassured on the benefits of formalizing their operations.

## 5.7 Conclusion

The introduction stated that mining in Kwekwe has been central economic activity for more than hundred years. The town was established due to the availability of gold by the early settlers, Globe and Phoenix was a renowned mine in the country and in the Southern region. Foreign investors were in the area since the colonial era and this led to job creation although exploitation was experienced after independence issues such as racial discrimination were addressed and the local people were benefiting because of the employment creation. The investors built a primary and secondary school for the workers hence one may argue that that was development because Amartya Sen denotes that access to education is one of the properties of development and also employment opportunity, people flocked in from all over the country and immigration especially from Malawi were part of those who were recruited in the mine. Hence when the foreigners were there the people benefited and the country also gained revenue from royalties and taxes. When the investors left a lot of people were left jobless, the situation was exacerbated with the closure of major companies such as Zisco, Lang shire Steel and a number of industries in Kwekwe.

This led to the rise of illegal mining because those who were once employed in the mine began to use the knowledge that they have acquired during the years they were working in the mine. Illegal mining became the major source of livelihood in Globe and Phoenix. However, though illegal mining has proven to be the source of income for a lot of families it has its corresponding challenges which have caused negative environmental effects. The illegal miners are operating using methods that do not ensure environmental sustainability due to lack of modern equipment and hazardous mining methods. The people in the community are living in poverty, they operate from hand to mouth and most households cannot afford three meals a day. They use simple tools but hire modern mining equipment from established local small scale miners whom they will pay in form of gold after they finish the processing, the researcher observed that the illegal miners are left with very little or no gold after paying for expenses those with modern equipment and financial capital take advantage of them and demand fifty percent from their profit of which they will have to share the remainder among themselves since they work in groups.



Most of the miners are not using environmentally friendly mining methods because of lack of geological expertise, they just carry out their mining activities without taking the necessary precautions. More so, the criminalization of the operations by regarding them illegal miners also contribute to this careless operations since they do their operations in a hurry since they are always on the run because their relations with the police and environmental management agency are hostile they cannot be addressed on issues that are in line with the mining activities and how they can use ensure environmental sustainability.

The activities by illegal miners have also put Globe and Phoenix primary school at threat of collapsing due to the extent of the environmental degradation, the landscape in the school yard had been adversely affected. School children especially those in grade one and grade zero are no longer safe, they cannot move around the school yard without being monitored because of the trenches and pits that were dug and left without being rehabilitated or protected. The miners are more concerned with earning a living while turning a blind eye to the environmental effects that are being created by their operations. Most people noted that the operations by illegal miners has affected their livelihoods, before the introduction of illegal mining activities in the vicinity of the compound, most local people used to practice farming as a source of livelihood. Therefore illegal mining also created conflict over land use since the coming of surface mining. The miners now using the land that was once used by the local people for agriculture as a source of livelihood, the local people can no longer pursue their agricultural activities because of the intensity of the degradation that has been caused by these mining activities.

EMA has a number of statutory instruments that were established so as to ensure the operations that are being employed ensure environmental sustainability. The research proved that this organization is failing to implement its policies due to the fact that illegal miners are not bound by any regulation since they do not have any documentation, if the authorities are coming they desert their mining sites so the officers do not have a way of following them up . More so, the respondents from the compound indicated that the authorities are aware of these activities and the effects but because some politicians are also involved they are making it complicated for the law enforcers to implement the strategies of mitigating illegal mining. Politicians are not putting in strong measures on stopping illegal mining due to the fear that they will lose in the next election since they use authorization of illegal mining as a political gimmick to get votes thus if they stop the operations they will lose votes.

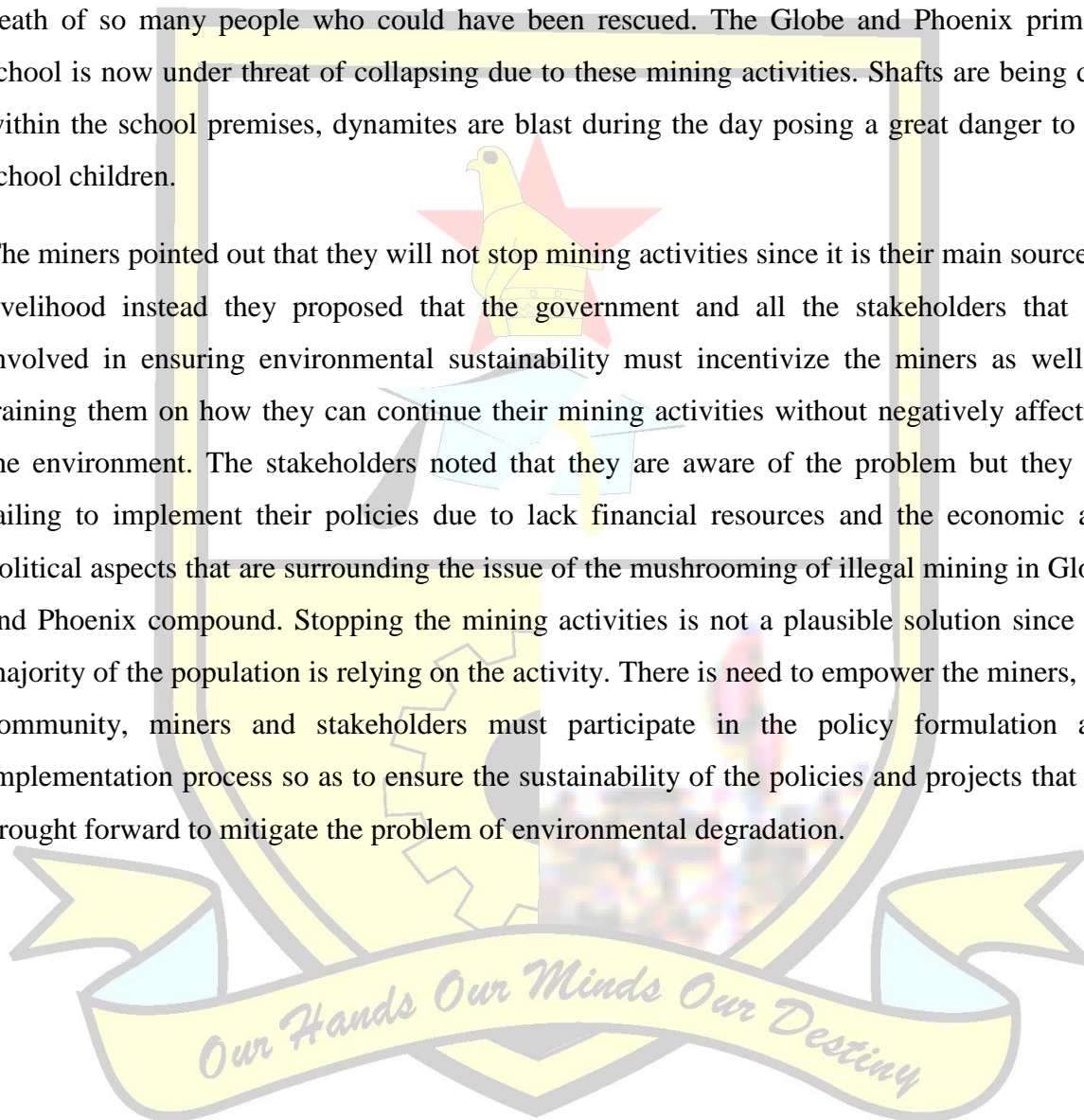
The study established the ecological disasters that have come as a result of the activities of illegal miners. The researcher used quantitative and qualitative approach to gather information, observations were done in the areas where the illegal mining activities are taking place. The respondents' views and opinions on the variables were derived from the households, stakeholders and the miners these was achieved through the use of interviews, focus group and individual interviews. Participants in this research were the illegal miners, the researcher used random selection, households from the Globe and Phoenix mine community, stakeholders from Zibagwe Rural District Council, Natural Resources Department, Kwekwe Central police, National mining museum, the former employees of Globe and Phoenix mine and the department of mines. The researcher interviewed the heads of department. Pictures, graphs and tables were used to represent information that was gathered during the research. The questionnaires were open ended so that the interviews may be in a good position to explain their answers. The research proved that most people in this area are relying on artisanal mining. The mine was the first mine to be established in Zimbabwe by the early colonialist, the population is comprised of different languages and some of the people came from Malawi.

This study proved that the closure of the mine left them stranded hence mining was the only source of livelihood and they used the skills that they have attained during their years of working in the mines. Most of the industries in Kwekwe closed down as a result of the economic meltdown that has swept across the country. These mining activities are being carried out without taking precautionary measures to ensure environmental sustainability. The Globe and Phoenix mine is now at risk of collapsing, in January 2014 a garden and a tree was swallowed into the ground when a crater just opened, in February the same year a miner was swallowed into the ground and died when the road just opened up. Mining engineers pointed out that the miners are mining in the old shaft that was closed years but there were pillars that were left to support the core from giving in these pillars have the ore that is rich in gold.

The research on environmental effects of illegal mining in Globe and Phoenix mine proved that illegal mining activities are posing danger to the local residents and the outsiders because of unprotected shafts and tunnels that are almost everywhere, the heaps of waste from underground, deforestation and dumps of mud concentrated with cyanide. There are no signs of rehabilitation taking place in the affected area. The miners postulated that they are aware

of the environmental damages that they are causing on the bio- physical environment but they cannot stop since it is their only source of livelihood. The mine closed without giving them their retrenchment packages, so they were left with no other means of survival. Most of their colleagues are dying as a result of being trapped underground due to the unsafe working environment and because they are not formal when one of them is trapped they do not call for help from the police for rescue because they fear they can be arrested and this has led to the death of so many people who could have been rescued. The Globe and Phoenix primary school is now under threat of collapsing due to these mining activities. Shafts are being dug within the school premises, dynamites are blast during the day posing a great danger to the school children.

The miners pointed out that they will not stop mining activities since it is their main source of livelihood instead they proposed that the government and all the stakeholders that are involved in ensuring environmental sustainability must incentivize the miners as well as training them on how they can continue their mining activities without negatively affecting the environment. The stakeholders noted that they are aware of the problem but they are failing to implement their policies due to lack financial resources and the economic and political aspects that are surrounding the issue of the mushrooming of illegal mining in Globe and Phoenix compound. Stopping the mining activities is not a plausible solution since the majority of the population is relying on the activity. There is need to empower the miners, the community, miners and stakeholders must participate in the policy formulation and implementation process so as to ensure the sustainability of the policies and projects that are brought forward to mitigate the problem of environmental degradation.





**Midlands State University**  
Established 2000

*Our Hands, Our Minds, Our Destiny*

## **Appendix**

### **Open- Ended Questionnaire**

**Midlands State University**

**Department Of Development Studies**

#### **INTRODUCTION**

This questionnaire is designed so as to get information on the topic “the impact of illegal mining on the environment in Globe and Phoenix mine” the research is done as part of post graduate dissertation work.

Topic and case study: the impact of illegal mining on the environment, Globe and Phoenix mine, Kwekwe

This study is purely for academic purposes, as such its confidentiality is assured.

Please tick and explain where necessary

Student: Edwick Madzimure

*Our Hands Our Minds Our Destiny*



Yes ..... No .....

If yes why?

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





Are you aware of the government regulations towards mining without the required documentation?

.....  
.....

Does your mining activities affect the environment?

.....  
.....

Have you participated in any form of training for mining?

.....  
.....

Do you get any form of assistance from the government?

.....  
.....

Do you use mercury, cyanide and acid in your operations?

Yes ..... No.....

If yes are you aware of the dangers?

.....  
.....

What challenges do you encounter in your operations?

.....  
.....

How can the government assist you?

.....  
.....

What is stopping you from formalizing your operations?

.....  
.....

If you are given an alternative job or project will you stop this form of mining?

.....  
.....

In your own words what can you suggest to reduce the environmental impact of mining and the well-being of the people in Globe and Phoenix mine?

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



# QUESTIONNAIRE FOR STAKEHOLDERS

## PERSONAL DATA

Name of respondent.....

Gender            Male        .....                                  Female        .....

Age .....

Nationality .....

Occupation/profession.....

Roles .....

Experience .....

Organization.....

Address.....

Email.....

## MAIN DATA

What are your organization's regulations towards illegal mining?

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

Does your organization facilitate training on environmental sustainability to illegal miners?

Yes ..... No.....

Explain your answer .....

.....  
.....

How can the problem of environmental degradation due to illegal mining in Globe and Phoenix mine be mitigated?

.....  
.....

What has your organization done towards ensuring environmental sustainability in Globe and Phoenix mine?

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

Are the miners involved in the policy formulation process?

Yes .....

No .....

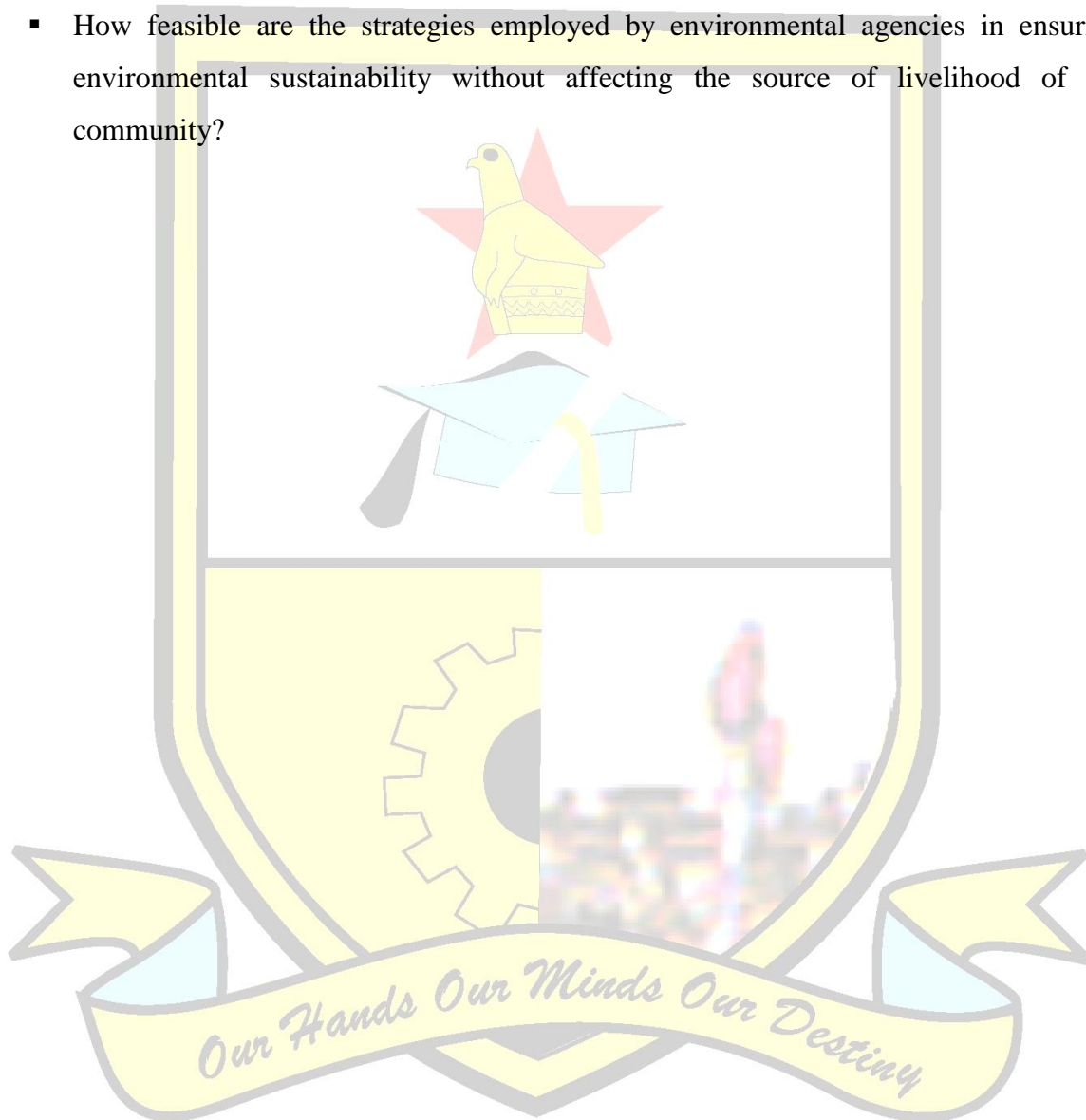
In your own words what can you suggest to reduce the environmental impact of mining and the well-being of the people in Globe and Phoenix mine?

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



## Focus group interview questions

- What caused the rise of illegal mining?
- To what extent has illegal mining contributed to environmental degradation?
- What measures are the challenges of illegal mining?
- Why is it difficult for illegal miners to employ environmentally friendly production
- What are the effects of illegal mining to the environment?
- How feasible are the strategies employed by environmental agencies in ensuring environmental sustainability without affecting the source of livelihood of the community?



# Pictures of the case study: Globe and Phoenix mine

Source: Research Fieldwork



*Globe and Phoenix mine offices*



*People from the compound observing the illegal gold panning site*



*Gullies being caused by erosion due to soil profile alteration as a result of illegal mining*



*Unprotected shafts 10 meters away from the houses*



*Landscape exposed to erosion*



*Entrance point of illegal miners into underground mine tunnel*



*Police officers assessing the extent of the degradation at the illegal gold mining sites*



*Illegal miners under the age of eighteen years caught while mining*



*An illegal miner on his way to the shafts*



*Dumps of slimes concentrated with cyanide*





*land degradation at illegal mining sites*



*EMA officers assess the illegal mining activities that are taking place in a classroom*

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