AN INVESTIGATION INTO THE CHALLENGES AFFECTING THE POTENTIAL OF SMALL-SCALE GOLD MINERS TO CONTRIBUTE MORE IN THE EXTRACTION OF MINERALS: THE CASE OF SMALL-SCALE MINING IN KADOMA, ZIMBABWE.

BY

INNOCENT MADZIVA

R981603A

A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR MASTERS IN BUSINESS ADMINISTRATION

JULY 2012

GRADUATE SCHOOL OF MANAGEMENT

UNIVERSITY OF ZIMBABWE

SUPERVISOR: MR I. KWESU
DECLARATION

I, …………….., do hereby declare that this dissertation is the result of my own investigation and research, except to the extent indicated in the Acknowledgements, References and by comments included in the body of the report, and that it has not been submitted in part or in full for any other degree to any other university.

____________       Date_________
Student signature

____________       Name:_____________       Date:_________
Supervisor’ Signature
DEDICATION

This dissertation is dedicated to my wife Shamiso and my two daughters, Kunashe and Alms. I also dedicate this project to my mothers and father, Chengeto Sandra, Josephine and Richard Shuvai Madhabha.
ACKNOWLEDGEMENT

I would like to acknowledge the support that my wife Shamiso gave me during the course of my MBA studies. She endured lonely weekends and this was neither easy nor enjoyable.

I am grateful to Mr I. Kwesu, my supervisor, for his insightful comments. He is indeed a good mentor. I want to thank my fellow MBA friends, who in their small ways assisted me during the course of this MBA. Without their assistance, I would not have reached this stage.

I also want to thank all the respondents to my questionnaires and interviews. These include small-scale miners, small-scale miners representatives, Ministry of Finance officials, Ministry of Mines and mining Development officials, Chamber of Mines and Institute of Mining Research-University of Zimbabwe officials. I hope they will be able to access this dissertation.
ABSTRACT

This research focused on the challenges facing small-scale miners in the extraction of minerals in Zimbabwe. The research focused on the mining area of Kadoma. The principal objectives of the research was to unravel the challenges that small scale miners face in their mining business as well as identify the role that small-scale mining has played in improving the wellbeing of people. The major motivation of undertaking the research was to proffer solutions to challenges facing small-scale miners. The survey method was used to gather data for the research. Two questionnaires were used, one to small-scale miners and the other to small-scale miners' representatives. A sample of 90 respondents was drawn for small-scale miners. The research findings show that small-scale mining has great potential to contribute to economic development. Small-scale miners in Zimbabwe, however, face a myriad of challenges. These include gold marketing challenges, lack of mechanised equipment and finance, perceived lack of recognition and consultation, high fees and charges, absence of a clear mining policy that promotes small scale mining and centralisation of mining services. The research conclusion are that, although small-scale miners face many challenges, they have the potential to contribute more to the economic growth of the country, based on the sector's growth in the last three years. Small miners forecast to increase their production by more than fourfold by the year 2020. The research summed up by recommending government to provide equipment and financial support at concessionary rates, charge optimal mining fees, establish an authority that is responsible for the marketing of minerals produced by small scale miners, intensify awareness education on the long-term effects of using mercury in processing gold, develop a mining policy that promotes small scale mining, decentralise mining services to mining areas, as well as involving small scale miners organisations in policy formulation.
TABLE OF CONTENTS

DECLARATION .................................................................................................................. 2
DEDICATION .................................................................................................................... 3
ACKNOWLEDGEMENT ................................................................................................... 4
ABSTRACT ...................................................................................................................... 5
ACRONYMS .................................................................................................................... 13

CHAPTER ONE .............................................................................................................. 15
1.1 INTRODUCTION .................................................................................................... 15
1.2 BACKGROUND TO THE STUDY ........................................................................... 15
  1.2.1 Overview of the Mining Sector in Zimbabwe ................................................ 15
  1.2.2 PESTEL analysis of the Small Scale Mining Sector in Zimbabwe ............... 25
  1.2.3 Michael Porter’s 5 forces and the gold industry in Zimbabwe ...................... 27
1.3 PROBLEM STATEMENT ...................................................................................... 29
1.4 RESEARCH OBJECTIVES .................................................................................... 29
1.5 RESEARCH QUESTIONS ...................................................................................... 30
1.6 RESEARCH PROPOSITION ................................................................................... 31
1.7 SIGNIFICANCE OF THE STUDY ....................................................................... 31
1.8 SCOPE/DELIMITATION OF THE STUDY .......................................................... 32
1.9 ETHICAL ISSUES .................................................................................................. 32
1.10 LIMITATIONS OF THE STUDY .......................................................................... 33
1.11 ASSUMPTIONS ..................................................................................................... 33
1.12 STRUCTURE OF THE DISSERTATION ............................................................... 33
1.13 CHAPTER SUMMARY .......................................................................................... 34

CHAPTER TWO ............................................................................................................. 34
2.0 LITERATURE REVIEW .......................................................................................... 34
2.1 INTRODUCTION .................................................................................................... 34
2.2 MAIN DISCUSSION-LITERATURE REVIEW ....................................................... 35
  2.2.1 Small-scale mining definition ........................................................................ 35
  2.2.2. Small-Scale Mining and Millennium Development Goals ......................... 39
  2.2.3. History of Small-Scale Mining in Zimbabwe .............................................. 39
  2.2.5 Mining and Poverty Reduction: Key Linkages ............................................ 44
  2.2.6 Best Practices in Small-Scale Mining ........................................................... 46
2.2.7 Success factors in Small-Scale Mining

2.2.8 Structure of the Small-Scale Mining Sector in Zimbabwe

2.2.9 Overview of the Legislation Governing the Mining Sector

2.2.10 Government policy on small-scale mining

Zimbabwe Mining Policy after dollarization STERP I & STERP II [Macro-Economic Policy and Budget Framework (2010-2012)]

2.2.11 Environmental issues in Small-Scale Mining

2.2.12 Challenges facing Small-Scale Miners in general

2.2.13 Gender issues in small-scale mining

CASE STUDY IN SMALL-SCALE MINING

2.2.14 Small-scale Gold Mining in Tapanahone and Brokondo Region, Suriname South America

2.3. CHAPTER SUMMARY

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 INTRODUCTION

3.2 RESEARCH DESIGN

3.2.1 Justification of the Research Design

3.3 RESEARCH PHILOSOPHY

3.3.1 Justification of the Research Philosophy

3.4 RESEARCH STRATEGY

3.4.1 Justification of the Research Strategy

3.5 POPULATION AND SAMPLING TECHNIQUES

3.5.1 Sampling

3.6 DATA COLLECTION METHODS

3.6.1 Sampling methods

3.6.2 Primary and secondary data

Questionnaires

Questionnaire design

Pre-test of the questionnaire

3.6.4 Data analysis and presentation

3.7 RESEARCH PROCEDURE

3.8 RESEARCH LIMITATIONS

3.9 CHAPTER SUMMARY
CHAPTER FOUR .................................................................................................................................96
4.0 RESULTS AND DISCUSSION ................................................................. .................................................................96
4.1 INTRODUCTION .................................................................................. .................................................................96
4.2 FINDINGS .............................................................................................. .................................................................96
4.2.1 RESPONSE RATE ........................................................................... .................................................................96
4.2.2 AGE DISTRIBUTION ........................................................................ 97
4.2.3 LEVEL OF EDUCATION ..................................................................... 98
4.2.4 CLAIM OWNERSHIP ....................................................................... 99
4.2.5 MIGRATION ..................................................................................... 99
4.2.6 MIGRATION AND CLAIM OWNERSHIP ........................................ 100
4.2.7 OCCUPATIONS/SOURCES OF INCOME .......................................... 101
4.2.8 GOLD MARKETING ......................................................................... 101
4.2.9 INCOME FROM GOLD-2008-2020 (Projected) .................................. 102
4.2.10 TOTAL NUMBER OF PEOPLE EMPLOYMENT IN THE MINES .......... 102
4.2.11 INTERNATIONAL PRICES/OUNCE VERSUS AVERAGE PRICES PAID TO MINERS .................... 103
4.2.12 PROCESSING .................................................................................. 103
4.2.13 MINING VOLUMES ....................................................................... 104
4.2.14 USE OF MERCURY ....................................................................... 105
4.2.15 CHALLENGES FACING SMALL-SCALE MINERS ................................ 105
4.2.16 GOLD TRADING CHALLENGES .................................................. 106
4.2.17 EQUIPMENT .................................................................................. 106
4.3.18 MAXIMUM DEPTH MINED .......................................................... 107
4.2.19 REPRESENTATION ........................................................................ 108
Figure 4.1 shows representation by organisation ................................................................. 108
Figure 4.1: Representation .................................................................................. 108
4.2.20 OTHER CHALLENGES FACING SMALL SCALE MINING ................ 108
4.2.21 AFFILIATION .................................................................................. 109
4.2.22 ROLE OF WOMEN ........................................................................ 109
4.2.23 CONSULTATION OF SSM BY GOVERNMENT .................................. 110
4.3 DISCUSSION OF RESULTS .................................................................. 111
Demographic issues .................................................................................. 111
Education .................................................................................. 111
LIST OF TABLES

Table 1.1: Ministry of Mines and Mining Development: Policy Rank 3 ........................................24
Table 2.1: Different criteria used in the definition of small-scale mining ..................................36
Table 2.2: Different cost-benefit aspects of Artisanal Small Scale Mining ..................................42
Table 2.3: Linkages between Small-Scale Mining and Poverty .................................................45
Table 2.4: Selected Best Practices in Small-scale Mining ..........................................................46
Table 2.5: Success factors in Small-Scale Mining .....................................................................49
Table 2.6: Key Information Needed to Design Policy for Small-Scale Mining .........................66
Table 2.7: Promotion of Mineral Exploration through creation of an exploration entity ..........69
Table 2.8: MILF interest rates ..................................................................................................70
Table 2.9: Mining fees .............................................................................................................76
Table 3.1: Differences between quantitative and qualitative research designs .......................85
Table 4.1: Gender Results .........................................................................................................96
LIST OF FIGURES

Figure 1.1: Mining contributions to GDP ...............................................................18
Figure 1.2: Contribution to GDP by sector ............................................................19
Figure 1.3: Mining contribution to national exports ................................................19
Figure 1.4: Sectorial contribution to exports .........................................................20
Figure 1.5: Employment creation (excluding alluvial diamonds) ..............................20
Figure 1.6: Gold delivery trend in 2011 .................................................................22
Figure 1.7: Gold Deliveries, January – February 2011 Versus 2012 ........................23
Figure 1.8: Mining production from January 2011 to April 2012 ..............................23
Figure 1.9: Comparison between gold deliveries in the first quarters of 2011 and 2012 24
Figure 2.1: Mining cycle in a large-scale gold mining ............................................56
Figure 2.2: Summary of Small-Scale Miner Authorisation Procedures .....................57
Figure 2.3: Amalgamation process in small-scale mining .......................................59
Figure 2.4: Carbon-in-pulp process in small-scale mining ......................................60
Figure 2.5: The Retort Method .............................................................................61
Figure 2.6: Factors influencing the willingness of small-scale miners to operate legally ......62
Figure 2.7: Typical problems of small-scale mining ...............................................73
Figure 3.1: The research cycle .............................................................................84
Figure 3.2: Five-step procedure for drawing a sample .............................................88
Figure 3.3: Questionnaire design process ..............................................................94
Figure 4.1: Gender results ..................................................................................97
Figure 4.2: Age distribution (Years) ....................................................................98
Figure 4.3: Levels of education ..........................................................................99
Figure 4.4: Claim ownership ..............................................................................99
Figure 4.5: Migration .........................................................................................100
Figure 4.6: Migration and Claim ownership .........................................................100
Figure 4.7 Sources of Income ...........................................................................101
Figure 4.8: Gold Marketing ................................................................................101
Figure 4.9 Average income 2008-2020Proj .........................................................102
Figure 4.10: Total number of people employment in the Mines ................................102
Figure 4.11: International prices/ounce versus average prices paid to miners ..........103
Figure 4.12: Processing premises .......................................................................104
Figure 4.13: Mining volumes .............................................................................104
Figure 4.14: gold processing methods ................................................................105
Figure 4.15: Challenges facing Small-Scale Miners .............................................106
Figure 4.16: Gold trading challenges .................................................................106
Figure 4.17: Equipment of small-scale miners .....................................................107
Figure 4.18: Maximum Mining Depth .................................................................107
Figure 4.19: Representation ...............................................................................108
Figure 4.20: Negative Aspect of Small Scale Mining ..........................................109
Figure 4.21: Affiliation .....................................................................................109
Figure 4.22: Work usually done by women .......................................................110
Figure 4.23 Consultation by Government ............................................................110
Figure 4.21: Prospecting Licences ................................................................. 116
Figure 4.22: Inspections Fees per 5h/a ......................................................... 116
<table>
<thead>
<tr>
<th>ACRONYMS</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>STERP</td>
<td>Zimbabwe Short Term Emergency Recovery Programme</td>
</tr>
<tr>
<td>MTP</td>
<td>Medium Term Plan</td>
</tr>
<tr>
<td>MMMD</td>
<td>Ministry of Mines and Mining Development</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>CSO</td>
<td>Central Statistics Office</td>
</tr>
<tr>
<td>ILO</td>
<td>International Labour Organisation</td>
</tr>
<tr>
<td>BOP</td>
<td>Balance of Payment</td>
</tr>
<tr>
<td>RDCs</td>
<td>Rural District Councils</td>
</tr>
<tr>
<td>RBZ</td>
<td>Reserve Bank of Zimbabwe</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>MMCZ</td>
<td>Minerals Marketing Corporation of Zimbabwe</td>
</tr>
<tr>
<td>ZMF</td>
<td>Zimbabwe Miners Federation</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>BSAC</td>
<td>British South Africa Company</td>
</tr>
<tr>
<td>NGOs</td>
<td>Non-Governmental Organisations</td>
</tr>
<tr>
<td>ITDG</td>
<td>Intermediate Technology Development Group</td>
</tr>
<tr>
<td>AfDB</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>SADC</td>
<td>Southern Africa Development Community</td>
</tr>
<tr>
<td>MAB</td>
<td>Mines Affairs Board</td>
</tr>
<tr>
<td>EPOs</td>
<td>Exclusive Prospecting Order</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>EELs</td>
<td>Exclusive Exploration Licences</td>
</tr>
<tr>
<td>MILF</td>
<td>Mining Industry Loan Fund</td>
</tr>
<tr>
<td>ZCTU</td>
<td>Zimbabwe Congress of Trade Union</td>
</tr>
<tr>
<td>AMWZ</td>
<td>Associated Mine Workers of Zimbabwe</td>
</tr>
<tr>
<td>EMCOZ</td>
<td>Employers' Confederation of Zimbabwe</td>
</tr>
<tr>
<td>ZIMRA</td>
<td>Zimbabwe Revenue Authority</td>
</tr>
<tr>
<td>VAT</td>
<td>Value Added Tax</td>
</tr>
</tbody>
</table>
CHAPTER ONE

1.1 INTRODUCTION

According to the Zimbabwe Short Term Emergency Recovery Programme (STERP) of 2009, the growth of most African economies has been inhibited by “high levels of poverty, poor wealth accumulation policies, low intensive capital investment, shortage of start-up capital, weak demand, capital flight and speculative behaviour of economic agents.” (STERP, 2009, pp. 7).

Many of the challenges of African countries are because of deficiencies in organizational frameworks of development. The majority of them do not have alternative development models, such as the promotion of small businesses like small-scale mining that can transform economies with some form of equity. (STERP, 2009).

In this chapter, the researcher illuminates the introduction of the study, background of the study, research problem, research objectives, research questions, proposition of the study, justification of the study, the scope of the research, ethical issues of the research and the structure of the dissertation.

1.2 BACKGROUND TO THE STUDY

1.2.1 Overview of the Mining Sector in Zimbabwe

According to International Monetary Fund (IMF) Tax Policy Mission to Zimbabwe of June 2009, mining contributed 4.2% to GDP in 2000. However, the sector was later severely affected by hyperinflation, restrictions on foreign exchange trading and collapse in investor confidence, hence the sector contributed only 2% to GDP in 2008/9 (IMF, 2009).
IMF (2009) further noted that by 2008, output of most base and precious metals had fallen to between one half and one third of the levels prevailing in the mid-1990s. However, since the introduction of the multi-currency system and relaxed surrender requirements, especially for gold in 2009, most mines have been re-opened. According to the Chamber of Mines, the mining sector contributed about US$311 million in terms revenues to Government in 2011. This represents about 12% of the US$2.6 billion revenue collected by Government for the year. If alluvial diamonds are incorporated, the contribution increases to around 18% (Chamber of Mines, 2011, pp8).

The 2012 National Budget presented in November 2011 also underscored that mining would remain a fundamental driving force behind overall economic growth. The growth in the mining sector is forecasted to be 15.9% in 2012 (2012 National Budget, 2011).

**Importance of the Mining sector in Zimbabwe**

According to Viewing (1984), the mining sector in Zimbabwe is one of the most diverse in the SADC region with over 40 different minerals under production. IMF (2009) also noted that the country is endowed with a broad range of mineral deposits including gold, diamonds, nickel, chromium, coal, asbestos, black granite and platinum group of metals.

The mining sector is an important part of the Zimbabwean mineral production system and it has played a pivotal role in the economic development of the country since pre-colonial times (Masiya et al 2008). The mining sector has been the fastest growing sectors since 2009, with growth up from 33.3 % in 2009 to an estimated 47% in 2010. The major gains in mining have been due to firming international commodity prices, as productivity in the mining sector remains weighed down by erratic power supply (2011 National Budget Statement, pp.32)
Geology

In terms of geology, generally, Zimbabwe has similar geological terrain that has yielded spectacular deposits in Tanzania, West Africa, Canada and Australia. The country is prospective for gold, platinum, nickel, diamonds, tungsten, and other minerals. The most common minerals suitable for small-scale mining are gold and chrome. The majority of reefs are sitting barely on the surface particularly for gold and chrome. Zimbabwe has recorded occurrence of over 40 different minerals and metal types and about 70% of landmass is under mineral wealth (Mazula, 2010).

According to Mazula (2010), soil analysis results range from 5% to over 60% for gold, with purity grade 88%-100% averaging 90-95% for reefs and over 95-100 % for alluvial. In 1999, with an annual production of 27 tonnes, Zimbabwe was rated the third largest producer in Africa. Potential for growth exists on current operations as well as in greenfield areas (Mazula 2010).

The introduction of the multicurrency system in February 2009 saw an increase in the exploration of ore, investment and improved technologies. This led to increased capacity utilization and improved grades. Currently, the following grades are realized compared to global production:-

- Gold 3-5g/ton compared to 7-15g/ton worldwide
- Nickel 0.6% compared to +1% worldwide
- Chrome 8-15cm seams compared to podiform in South Africa
- Platinum 3.5g/ton compared to +4g/ton in South Africa (Mazula 2010)

Role and contribution of Mining Sector in Zimbabwe

Zimbabwe's mining sector plays a critical role in the socio-economic development of the country. The sector’s contribution to the economy appear in several forms, inclusive of direct contribution to Gross Domestic Product (GDP), employment creation, foreign exchange generation, gross national investment, social
infrastructure development and direct revenues to Government revenue (Chamber of Mines, 2011).

According to the Chamber of Mines (2011), the mining sector contributed the following in 2011:-

- 13% of nominal GDP,
- 50% of the nation’s total exports,
- 12% of fiscal revenue
- 45,000 employment jobs,
- More than 50% of foreign direct investment, and corporate social investment in agriculture, health, education, housing, and infrastructure (Chamber of Mines, 2011 pp. 8).

The following diagram shows the contribution of mining to the Zimbabwe economy as from 1995 to 2011, including projections to 2015:

**Figure 1.1: Mining contributions to GDP**

![Graph showing mining contributions to GDP from 1995 to 2015]


From the diagram above, it is clear that the mining sector benefited from favourable international commodity prices as well as dollarization in 2009 (AfDB, 2012).
The diagram below shows the contribution to GDP by sector.

**Figure 1.2: Contribution to GDP by sector**

![Diagram showing GDP contribution by sector from 1995 to 2011.]

Source: Chamber of Mines, 2011 pp8

From the figure above, it is clear that mining is now contributing more than it used to contribute a decade ago.

Figure 1.3 below shows the contribution of mining to national exports from independence to 2011 and the forecast for 2012. From the diagram, the contribution of mining to total national exports has been increasing over the years and was more than half of the national exports in 2009.

**Figure 1.3: Mining contribution to national exports**

![Diagram showing mining exports and total national exports from 1980 to 2012.]

Source: Chamber of Mines, 2011, pp.8
From the pie charts below, the mining sector’s contribution to national exports has increased from 20% to 43% from the period 1993-2003 and 2004-2011 respectively.

**Figure 1.4: Sectorial contribution to exports.**

Source: Chamber of Mines 2011 pp.9

Although employment creation in the mining sector decreased significantly from 2000-2008, since dollarisation, the contribution of the mining sector to national employment has been increasing. This is illustrated on Figure 1.5 below:-

**Figure 1.5: Employment creation (excluding alluvial diamonds)**

Source: Chamber of Mines, 2011 pp.9
Small-scale mining sector in Zimbabwe

According to the Zimbabwean Government Medium Term Plan (MTP) of 2011-2015, one of the key focus areas of the Government of Zimbabwe’s interventions during the plan period is to empower small-scale miners so that they become self-sustained. During this period, Government intends to develop sustainable small-scale mining projects and provide financial and technical support to small-scale miners. These measures will ensure that small-scale mining contributes significantly to the wellbeing of the Zimbabwean people, as well as to economic growth and development (MTP, 2011).

In Zimbabwe, the small-scale mining sector has great potential for employing even more people. The sector has grown remarkably since 1980 and is an increasingly becoming a significant part of the mining sector. The sector exhibited its strongest showing in the 1990’s and since dollarization in February 2009, it is continually playing an important role in economic growth and development (Mtetwa and Shava, 2003).

O. Maponga (1995), International Labour Organisation (1999), Shanu, Wolff et al (1993) and Svoitwa and Mtetwa (1997) estimated that there are about 20,000 -350,000 small-scale miners in Zimbabwe. The small-scale mining sector in Zimbabwe is dominated by gold mining. The increase in small-scale gold mining activities can be attributed to their profitable income generating potential, which provides a ready means of survival to local communities, more so with the country’s erratic rain patterns, which makes reliance on agriculture uncertain (Mtetwa and Shava, 2003).

Contribution of the Small-scale Mining sector in Zimbabwe after dollarization in 2009.

The small-scale mining sector in Zimbabwe has the potential to play an important role in economic development. However, small-scale miners face many challenges, which need to be addressed by policy planners if this is to be realised.
The line diagram below shows the comparison of contributions by small-scale and primary producers (large-scale miners) in 2011. The percentage contribution by small-scale-miners increased from about 5% to 32% during the period January-December 2011. From these statistics, the role of small-scale players in the gold sector is, thus, becoming more pronounced in the mining industry (AfDB, January 2012, pp4).

**Figure 1.6: Gold delivery trend in 2011**

![Gold delivery trend in 2011 graph]

Source: AfDB Zimbabwe Monthly Economic Review, January 2012, pp4

From the above diagram, the production of small scale miners increases from about 120 kgs (or 6% of total production) in January to 440 kgs (or 17% of total production) in December 2012. The trend continued in 2012 as total gold deliveries for the month of February 2012 amounted to 927.98 kgs, representing a decline of 13 percent from deliveries in January 2012 of 1 058.16 kgs (AfDB, January 2012, pp4).
Figure 1.7 below shows the comparison between Gold Deliveries, January – February 2011 versus 2012

**Figure 1.7: Gold Deliveries, January – February 2011 Versus 2012**


The diagram below shows the contribution of small-scale miners and primary producers from January 2011 to April 2012.

**Figure 1.8: Mining production from January 2011 to April 2012.**


The diagram below shows the comparison between gold deliveries in the first quarters of 2011 and 2012.
Cumulative gold deliveries for the first three months in 2012 grew by 21.64%. Small-scale producers and primary producers grew by 19.2% and 22.3%, respectively, in the first quarter of 2012 from the figures attained in the first quarter of 2011. In line with the MTP, the Ministry of Mines and Mining Development has also prioritised assistance to small-scale miners by ranking promotion and empowerment of small-scale miners through capacity building and provision of loans and equipment as its third priority (AfDB, April 2012).

The table below shows the actual amounts as well as the forecast expenditure of the Ministry of Mines and Mining Development in line with the MTP.

Table 1.1: Ministry of Mines and Mining Development: Policy Rank 3

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Expenditure (USD)</td>
<td>-</td>
<td>425 000</td>
<td>1 000 000</td>
<td>4 229 000</td>
<td>4 404 000</td>
<td>4 600 000</td>
</tr>
</tbody>
</table>


This small-scale mining sector has been labelled “illegal” and has been, in most cases, operating informally. The categorisation of small miners into illegal mining
comes from the fact that the miners generally have had a low degree of ownership of mining property, use a rudimentary knowledge of the exploitable reserves, have limited technology and very little or no access to finance. The sector has also been characterized as highly unstable, in relation to income, especially for seasonal miners. A number of mines operate with short-term contracts and the smallest operations tend to be subsistence activities. (Dreschler 2001).

Despite Zimbabwe being perceived to be a high cost producer, the rising gold prices from 2009 to 2012 made it more viable for most small-scale miners to resume and/or increase production as the revenue per unit continues to increase ahead of the unit cost of production. These global developments thus paint a bright future in small-scale mining of precious metals, such as gold (AfDB, May 2012).

1.2.2 PESTEL analysis of the Small Scale Mining Sector in Zimbabwe

Political Factors

The Government has promulgated policy and regulations such as the Indigenisation & Empowerment Act and the Mining (Alluvial Gold) Public Stream Regulations in support of the participation of small-scale miners in extractive industry. The Mining (Alluvial Gold) Public Stream Regulations seek to control small-scale gold panning. The Regulations empower Rural District Councils (RDCs) to issue small-scale miners with permits as well as monitoring and controlling gold panning in designated areas. However, out of about 30 RDCs who are potentially affected by gold panning activities, only a few districts have applied and obtained the Special Grants that empower them to issue panning permits. Furthermore, most RDCs lack resources to monitor the panning activities and there is no incentive to do so (Dreschler 2001).

The Indigenisation and Empowerment Act seeks to promote the participation of indigenous people, including small-scale miners in sectors like mining, that were previously dominated by foreigners. There are also intensified calls by the Minister of
Mines and Mining development to recognise small-scale miners not as “illegal” miners but as legitimate economic agents (MMMD, 2012).

**Economic Factors**

The introduction of the multicurrency system in February 2009 and the removal of surrender requirements in 2009 saw an increase in the exploration of ore, investment and improved technologies. This led to increased capacity utilization and improved grades (Mazula, 2010).

**Social Factors**

According to the International Labour Organisation (1999), small-scale mining is viewed as a critical livelihood that employs about 13 million workers and sustaining 80 to 100 million people in the world. In Zimbabwe, most people rely on mining income; hence, it is a very important sector for the livelihood of people (ILO, 1999).

**Technological Factors**

The Zimbabwean small-scale miners usually work in syndicates. They use simple tools such as hoes and hammers to look for gold reefs. According to Dreschler (2001), very few of the miners have the financial capacity to buy huge machinery such as compressors. They earn about US$180 per week and their alternative returns from activities such as farming and fishing is low, small-scale mining pushes them to even work on unsafe underground work environments (Dreschler 2001).

**Environmental Factors**

In Zimbabwe, the environmental impacts of the small-scale mining sector have tended to be ignored as it is often assumed that because they are small these
operations have little impact. However, given the growing numbers of such operations, increasing access to mechanized mining methods, and often, haphazard management, small-scale mining does have the potential to significantly affect the environment and our scarce national water resources (Dreschler 2001).

**Legal and Regulatory Framework**

Generally, the current legislation is in favour of small-scale mining development. The Mines and Minerals Act allows individuals, regardless of whether small or big, to own a claim. This has also the potential to create opportunities for joint ventures with foreigners who have capital. Furthermore, gold regulations were relaxed in the 2009 Mid Term Fiscal Review (Mid Term Fiscal Review, 2009 pp24).

The relaxation of gold regulation in the 2009 Mid Term Fiscal Review resulted in preponderance of gold activities which, to a large extent, is a major supply of US dollars in the country. A presumptive tax of 5% of value is levied to unregistered entities and those who do not have VAT certification. This created opportunities in custom milling of gold. Claim holders have access to gold buying licences at US$ 2 500 per year. Export licences that are handled by the Ministry of Finance have however been limited (Mid Term Fiscal Review, 2009).

Notwithstanding the above, the mining sector in Zimbabwe is regulated by over 18 pieces of legislation. At least seven different Government ministries administer these 18 pieces of legislation. The result of this is that issues relating to mining have been dealt with in several fragmented and sometimes conflicting pieces of legislation (Dreschler 2001).

**1.2.3 Michael Porter’s 5 forces and the gold industry in Zimbabwe**

**Rivalry among Competing Sellers in the Industry**
According to the Chamber of Mines, the mining sector in Zimbabwe consists of a formal large subscriber with more than 1,300 operating mines. There are also more than 20,000 registered mining claims of which only about 10% are in active production. According to S votwa and Mtetwa (1997), there were about 300,000 small-scale miners. Rivalry is mainly witnessed in acquisition of claims and to some extent in selling gold (Svotwa and Mtetwa 1997).

Competitive Pressures from Substitute Products

Substitute products limit the potential returns of an industry by placing a ceiling on the prices that firms in that industry can profitably charge. The gold industry in Zimbabwe however does not have close substitutes although it competes internationally with other precious stones like platinum and diamonds (Porter, 1985).

Potential Entry of New Competitors

Entry barriers in the small-scale mining industry include economies of scale, claim rights, technology and specialised know, learning and experience curve effects. Procedures in acquiring claims are bureaucratic. Furthermore, the gold sector is heavily restricted (Porter, 1985).

The Power of Suppliers

Suppliers can exert bargaining power by threatening to raise prices or reduce the quality of purchased goods and services (Porter, 1985). However, in Zimbabwe, most small-scale miners use rudimentary equipment hence suppliers have no much power. It is only is cases where suppliers sponsor miners through providing mercury and equipment that the power of suppliers is pronounced.

The Power of Buyers

Buyers threaten an industry by forcing down prices, bargaining for higher quality or more services, and playing competitors against each other. These actions erode industry profitability (Porter, 1985). The Buyer in this industry is in a strong
bargaining position mainly because of the Precious Metals Act which gives monopoly power to the Reserve Bank of Zimbabwe (Fidelity Printers) and only a few other players to be the sole buyer of all gold in Zimbabwe.

1.3 PROBLEM STATEMENT

The mining sector in Zimbabwe has recorded phenomenal growth over the past years. The sector contributed 2% to GDP in 2008/2009 and its contribution to the economy increased significantly to levels of close to 11% of GDP. The sector also contributed over 50% of total export earnings, 45 000 formal jobs, with informal small-scale mining also contributing substantial numbers (2012 Mid-term Fiscal Review, pp.37)

Government and mining institutions place much emphasis on large-scale mining companies, whose contribution to economic growth and development are known, mainly because their operations are regulated for taxation purposes. The marketing of minerals by large scale mining institutions is usually done through institutions such as the Minerals Marketing Corporation of Zimbabwe (MMCZ) while payments and acquittals of exports is done through Reserve Bank of Zimbabwe and Commercial Banks. Most of their transactions are formal, hence their challenges are known and quickly addressed by policy makers.

Despite the increase in production and the number of participants in the small-scale mining sector over the past three years, the challenges facing small-scale miners have tended to be ignored. It is against this background that the researcher undertook an investigation into the challenges affecting the potential of small-scale miners to contribute more to economic growth and development of the country.

1.4 RESEARCH OBJECTIVES
The objectives of the study are to:-

i) Identify the role that small-scale mining play in extractive industries with special reference to Kadoma mining town of Mashonaland West Province.

ii) Investigate the challenges facing small-scale miners in the extraction of minerals with special reference to Kadoma mining town of Mashonaland West Province.

iii) Identify the potential of small-scale mining in contributing more to the extraction of minerals with special reference to Kadoma mining town of Mashonaland West Province.

iv) Give possible practical recommendations to the challenges that small-scale miners face in their mining business, if they exist.

1.5 RESEARCH QUESTIONS

The research study sought to address the following questions:

i. What is the role that small-scale mining play in extractive industries with special reference to Kadoma mining town of Mashonaland West Province?

ii. What are challenges facing small-scale miners in the extraction of minerals with special reference to Kadoma mining town of Mashonaland West Province?
iii. What are the potential areas of improvement so that small-scale mining contributes more to the extraction of minerals with special reference to Kadoma mining town of Mashonaland West Province?

iv. Are there lasting solutions to the challenges that small-scale miners face in their mining business?

1.6 RESEARCH PROPOSITION

The small-scale miner has potential to contribute significantly to the economy in the extraction of minerals.

1.7 SIGNIFICANCE OF THE STUDY

The imperatives of studying small-scale mining are important in that it would provide the latest and substantial evidence on activities and challenges of small-scale mining and how this sub-sector impacts on poverty alleviation. From a policy perspective, the findings of this study would contribute to shaping policy on small-scale mining in Zimbabwe.

The significance of the study is to

- Identify the role that small-scale mining play in extractive industries.

- Establish the challenges facing small-scale miners in the extraction of minerals

- Give information to relevant authorities such as Ministry of Mines and Mining Development, Ministry of Finance, small-scale miners associations, Chamber of Mines and other organisation as a policy guidance document.
• Identify potential areas for growth in the small-scale mining business, if any.

• Propose suitable solutions to challenges that small-scale miners face in their mining business.

1.8 SCOPE/DELIMITATION OF THE STUDY

Kadoma is a city in Zimbabwe in the Mashonaland West province, 140 km south-west of Harare on the main road to Bulawayo. It has an area of 57,441 km² and a population of approximately 1.2 million (Central Statistics Office, 2002 census data). Chinhoyi is the capital of the province. Mashonaland West is divided into 6 districts, which are Chegutu, Hurungwe, Kadoma, Kariba, Makonde and Zvimba.

The city is at the centre of a mining area, which provides gold, copper and nickel. Kadoma is at an elevation of 1,162 m (3,812 ft). Its population is 81,000 according to 2007 Central Statistics Office estimates (Mtetwa and Shava 2003).

This study will cover Kadoma area. The study will cover the post-dollarized period of 2009 to 2011. Questionnaires and key informant interviews with Ministry of Mines and Mining Development, Ministry of Finance, Chamber of Mines, Zimbabwe Miners Federation (ZMF) and mining research institutions will be used to collect the data. In order to capture as much information as possible in the collection of data, survey instruments used both closed and open-ended responses. The focus area of this study was Kadoma mining area.

1.9 ETHICAL ISSUES

According to the Precious Stones Trade Act (Chapter 21:06) section 3, gold is classified as a precious stone. The same Act pronounces a very heavy penalty for any person who contravenes the mentioned section. Given the sensitive nature of gold, all the information provided by respondents was treated with strict confidence.
1.10 LIMITATIONS OF THE STUDY

In doing my research, I faced the following obstacles:-

- Due to the failure by respondents to answer honestly, results might not reflect the true picture.

- The study took a longer time and respondents were unavailable or unwilling to participate in further interviews.

- Some of the small-scale mining companies are not registered hence it was difficult to get some of the information.

1.11 ASSUMPTIONS

1. This study assumed that gender does not affect the respondents’ views.

2. This study also assumed that all respondents answered questions honestly.

1.12 STRUCTURE OF THE DISSERTATION

This research is divided into five chapters. Chapter 1 covers the introduction, statement of the problem, research questions, significance of the study, definition of terms, and limitations of the study. Chapter 2 reviews related literature and research to the problem. Chapter 3 covers the methodology and procedures used to gather data for the study. The results of analyses and findings to emerge from the study are
contained in Chapter 4. Chapter 5 covers a summary of the study and findings, conclusions drawn from the findings, a discussion, and recommendations for further study.

1.13 CHAPTER SUMMARY

Chapter 1 dealt with the introduction of the study, background of the study, research problem, research objectives, research questions, proposition of the study, justification of the study, the scope of the research, ethical issues of the research and the structure of the dissertation.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 INTRODUCTION
This Chapter discusses the literature that forms the base for the research. The Chapter is divided into sections that include definition of small-scale mining, small-scale mining in Southern Africa, the history of small scale mining in Zimbabwe, cost-benefit aspects of artisanal small scale mining, linkages between small-scale mining and poverty and best practices in small-scale-scale mining. The Chapter also reviews literature on challenges facing small-scale miners, gender issues in small-scale mining, structure of the small-scale mining sector in Zimbabwe, overview of the legislation governing the mining sector in Zimbabwe, Government policy on small-scale mining, environmental issues in small scale mining and a case study in small scale mining.

2.2 MAIN DISCUSSION-LITERATURE REVIEW

2.2.1 Small-scale mining definition

Although small-scale mining is often defined in terms output, capital investment, number of people employed or managerial structure, there is no generally agreed definition of the term small-scale mining. Most of stakeholders have defined small-scale mining to suit their specific requirements (Dreschler, 2001).

Dreschler (2001) defines small-scale mining as mining operations of individuals organized in groups of four to eight or co-operatives of ten or more individuals. Mining operations are usually carried out throughout the year using simple traditional techniques and tools of low mechanization levels. Dreschler (2001) definition of small-scale mining is different from the United Nations’ definition, which defines small-scale mining in terms of average annual production. Small-scale mining is any single unit mining operation having an annual production of unprocessed materials of 50 000 tonnes, or less (United Nations, 1972)

The International Labour Organisation (ILO) however differs from Dreschler and United Nations in defining small-scale mining. ILO contends that the definition of
small-scale mining is diverse as each country has its own definition. The table below shows the dimensions in which small-scale mining is viewed in different countries (ILO, 1999).

Table 2.1: Different criteria used in the definition of small-scale mining

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Côte d’Ivoire</td>
<td>Level of mechanization</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Annual production and level of mechanization</td>
</tr>
<tr>
<td>Ghana</td>
<td>Capital investment and number of participants</td>
</tr>
<tr>
<td>Guinea</td>
<td>Type of minerals exploited</td>
</tr>
<tr>
<td>Senegal</td>
<td>Depth of working and crude production levels</td>
</tr>
<tr>
<td>South Africa</td>
<td>Capital investment</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Capital investment, labour and technology</td>
</tr>
<tr>
<td>United Nations</td>
<td>Annual production capacity</td>
</tr>
<tr>
<td>Zambia</td>
<td>Size of concession area</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>Size of concession area and capital investment</td>
</tr>
</tbody>
</table>

Source: Compendium on Best Practices in Small-Scale Mining in Africa (n.d), pp4

Maponga (2003) argues that the definition of small-scale mining is not diverse and brings a dimension of formal/informal, production, labour, capitalisation and level of mechanisation in defining small-scale mining.

The Zimbabwe Miners Federation (ZMF) concur with Maponga (2003) on the aspect of defining small scale mining in terms of labour not formally trained in mining but argue that Dreschler (2001) and ILO (1999) definitions of small-scale mining are not sufficient as they lack the characterization of labour force involved in small scale mining. ZMF also argue that the issues of production levels and mechanisation are
irrelevant in defining small-scale mining because, in some countries, small-scale miners produce more, overally, than large-scale miners (ZMF, 2012).

Dreschler (2001), United Nations (1972) and Maponga (2003) all agree that small scale-mining is defined in terms of annual production. They however differ in other aspects. Dreschler (2001) maintains small-scale miners use simple traditional techniques and this results in low production. The United Nations (1972) argue that small-scale miners usually produce unprocessed materials while Maponga (2003) argues that low production is because of capitalisation.

Krappmann (2006) further categorises small-scale mining into three classes, in accordance to size. The three classes are micro-scale miners, mechanized small-scale miners and the most advanced category. Pulles, Howard & de Lange, (2006) concurs with Krappmann (2006) and ZMF (2012) that there are smaller as well as larger operations in small scale miners and defines smaller operations as those that often involve an informal or temporary worker who operates with rudimentary, low cost techniques. Larger operations involve a higher level of mechanisation, for example, front-end loaders, draglines, some permanent staff that are supervised and employment of casual labour.

Noetstaller (1995) classified artisanal and illegal mining using the following factors:

- Lack of or very reduced degree of mechanization,
- Great amount of physically demanding work,
- Low level of occupational safety and health care,
- Deficient qualification of the personnel on all levels of operation,
- Inefficiency in the exploitation and processing of the mineral production (low recovery of values),
- Exploitation of marginal and/or very small deposits, which are not economically exploitable by mechanized mining,
- Low level of productivity
- Low level of salaries and income,
- Periodical operation by local peasants or according to the market price development,
- Lack of social security,
- Insufficient consideration of environmental issues and hence significant impact on the environment,
- Chronically lack of working and investment capital and mostly working without legal mining titles (Noetstaller, 1995).

The above stated factors can be summed up as the disadvantages of small-scale mining. Noetstaller thus defines small-scale mining in a negative way, hence it should be discouraged.

For the purposes of this study, small-scale mining will be defined as all both formal and informal mining operators, mechanized and semi-mechanized miners of varying sizes in terms of production, labour and capitalization as well as artisanal, whether registered or not. The researcher thus incorporated most of the principles put forward by Maponga (2003), Dreschler (2001), United Nations (1972), Krappmann (2006) and ZMF (2012).

**Small-scale Mining in Southern Africa**

According to Dreschler (2001), about 1.5 million people in the Southern African region alone are directly employed by the sector and several millions more benefit directly or indirectly from the activities. The mining involve more than 30 different minerals and gold is the dominant mineral. Mining activities in the SADC region is usually the alternative to agriculture. More than 50 per cent of those employed in it are women and children and overally, small-scale mining sectors in most SADC countries contribute up to 5 per cent of GDP (Dreschler 2001).
2.2.2. Small-Scale Mining and Millennium Development Goals

The UN conference on Mining in Yaoundé, Cameroon in November 2002 urged Governments to develop policies that contribute to sustainability, reduce poverty and improve livelihood in artisanal and small-scale mining communities by the year 2015, in line with the Millennium Development Goals (MDGs). The conference pointed out that education and awareness programmes in small-scale mining succeed if their design and implementation reflect the daily life realities, perceptions, and knowledge. According to the report, the "one size fits all" approach to small-scale mining policy does not yield any results; hence each country should craft its own policies that best suits its small-scale mining sector (UN, 2002).

2.2.3. History of Small-Scale Mining in Zimbabwe

Masiya et al (2008) argue that mining, in particular gold mining, has played a significant role in the economic development of Zimbabwe in the pre-colonial times, the colonial and post-colonial times.

Characteristic of Small-Scale Mining in the Pre-Colonial Period

According to Dreschler (2001), small-scale mining in Zimbabwe dates back to the 13th century, when the Portuguese traded gold with the Monomotapa people. Phimister (1975) argues that gold mining and trading was the basis for the rise of states such as Great Zimbabwe and Mutapa State. During this period, gold was used to pay tribute. According to Phimister, (1976) small-scale mining sector provided a source of income for about 35,000 Africans during the pre-colonial period.

Other scholars such as Viewing (1984) argue that most of the small-scale mining operations started early in the 20th century, when the British South Africa Company (BSAC) established more than 4,000 mines. The established mines developed into permanent communities with basic infrastructure such as water, communication, health, education and local Government (Viewing, 1984). The same sentiments are
also echoed by Maponga and Ngorima (2003), where small-scale mining in Zimbabwe can be traced back even before colonization in the 1890s.

Viewing further argues that 80% of the development of infrastructure, cities and towns in Zimbabwe is linked to mining and agricultural activities. During the pre-colonial period, there were more than 4000 mines. Pre-colonial miners were mostly focused on agricultural and pastoral activities with mining being a supplementary activity done outside the agricultural season.

**Characteristic of Small-Scale Mining in the Colonial Period**

The colonial Government played a critical role in supporting the small-scale miners. The Government was instrumental in the setting up of infrastructure, facilities and departments at regional and district levels to support small-scale mining activities. The country’s Geological Survey was established in 1910 and its regional offices were established to guide underground small-scale mines and to examine and give advice on their prospecting activities. 1928 saw the establishment of the Department of Metallurgy whose main purpose was to provide free laboratory and assay facilities to the small-scale mining sector (Masiya et al 2008).

In 1945 the Government introduced the ex-Servicemen Scheme whose aim was to first train returned soldiers in mining at the Zimbabwe School of Mines and this was followed by giving them soft loans to start up their own mining operations or to re-open mines closed during the war. This scheme was considered as a success as it trained 221 men and 279 mines were re-opened which, by 1952, had produced gold worth $51 million (Viewing, 1984).

However, this support from the colonial Government for the sector benefitted mostly the white miners only as no black indigenous people legally owned or operated a mine. Blacks were mostly restricted to illegal panning activities along the major rivers (Viewing, 1984).
Characteristic of Small-Scale Mining in the Post-Colonial Period

According to Hentschel et al (2002), small-scale mining of gold played a very important role in poverty alleviation and rural development in the post-colonial Zimbabwe. The attainment of independence in 1980 was the foundation of the formal small-scale black miner. These miners focused mainly on gold and other precious metals (Dreschler, 2001).

In an effort to promote the development of the small-scale mining sector, the Government of Zimbabwean facilitated the registration of mining claims by charging a nominal registration fee and introducing and implementing a number of support programmes. The result of these Government policies were positive because the number of registered claims increased from an estimate of 1,000 in 1983 to 10,000 by 1990 (Dreschler, 2001) and to more than 20,000 by the year 2000 (Maponga, 2003).

According to Chimsasa (1996), the sector contributed 5% to gold production in Zimbabwe in 1996 and the number of people that were involved in alluvial gold panning alone in Zimbabwe was around 300,000. The number of people directly dependent on small-scale mining surged to over two million in 2002 (Dreschler, 2002, p.132). A greater percentage was related to gold panning.

Non-Governmental Organisations (NGOs) and the private sector also played an important role in assisting small-scale miners in the post independent Zimbabwe. Examples include Intermediate Technology Development Group (ITDG), EU Micro Projects and occupational health and safety through the Chamber of Mines. Most of the interventions however, have been directed towards the formal small-scale mining with none going towards the poverty driven panners (Dreschler 2001).

2.2.4 Role of Small-Scale Mining in Economic Growth and Development
According to Hentschel T. et al (2003), small scale mining has both costs and benefits. The costs include effects on the environment, social costs like bad working environment and macro-economic costs such as conflicts due to land and water usage. The benefits include discovery of important deposits in remote areas and job creation.

The rest of the costs and benefits of small scale mining in general are shown on the table below:

Table 2.2: Different cost-benefit aspects of Artisanal Small Scale Mining

<table>
<thead>
<tr>
<th>COSTS</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geological – Mining costs</td>
<td>Geological – Mining benefits</td>
</tr>
<tr>
<td>Exploitation of a non-renewable resource</td>
<td>possibility of exploiting smaller deposits</td>
</tr>
<tr>
<td>Losses:</td>
<td>ASM achieves successful prospecting without high cost</td>
</tr>
<tr>
<td>◦ irrational working of high grade material</td>
<td>Working of abandoned pillars, tailings, etc.</td>
</tr>
<tr>
<td>◦ incomplete exploitation</td>
<td>Small-scale miners discover important deposits in remote areas</td>
</tr>
<tr>
<td>◦ processing methods</td>
<td></td>
</tr>
<tr>
<td>◦ transport</td>
<td></td>
</tr>
</tbody>
</table>

Effects on the environment

<table>
<thead>
<tr>
<th>Environmental risks, emissions and damage to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>◦ earth</td>
</tr>
<tr>
<td>◦ soil</td>
</tr>
<tr>
<td>◦ water (underground and surface)</td>
</tr>
<tr>
<td>◦ air</td>
</tr>
<tr>
<td>◦ flora and fauna</td>
</tr>
<tr>
<td>◦ energy sources</td>
</tr>
<tr>
<td>◦ ecosystems</td>
</tr>
</tbody>
</table>

Social costs

| precarious working conditions |
| negative health consequences (sickness, accidents) |
| infra-human living conditions |
| complicated dependency relations |
| child labour |
| unbalanced development between men and women |
| violation of resident and indigenous community rights |

Social benefits

| labour qualification |
| source of income (in money) |
| job creation |
changes in the system of ethical values and its consequences
insufficient social security

Macro-economic costs

- conflicts
  - due to land and water usage
  - with governing bodies (judicial conflicts)
  - with large-scale mining
  - with the indigenous population
  - with landscape protection objectives (national parks, protected areas)
- Smuggling illegality (products profit)
- no tax generation
- costs of controlling the sector
- continuous costs resulting from social causes
- uncontrolled development due to lack of planned exploitation

Macro-economic benefits

- mobilization of natural resources
- tax collection
- active effect for the balance of payments
- buffer for the labour market in cases of programmes for structural adaptation
- provides personnel reserves for large-scale mining
- contribution to regional economic development by
  - cash circulation (social product)
  - investment
  - demand for products and services
  - mobility
  - structural consequences (alternative to agriculture)
- avoids rural exodus
- infrastructure development (road building, schools, energy supply) by small-scale mining and neighbouring population
- comparative financial advantages (products with a high labour coefficient in countries with high labour availability)
- relatively stable product supply even with market fluctuations
- contributes to product diversity and exports
- substitutes imports

Source: Hentschel T. et al, 2003, pp64

According to Remy (2002), small-scale mining provides a livelihood for approximately 13 million workers and their families worldwide, particularly in countries such as Bolivia, Brazil, Burkina Faso, China, Colombia, the Democratic Republic of the Congo, Ghana, Ecuador, India, Indonesia, Madagascar, Tanzania and Thailand.

According to the ILO (1999), the combined economic and social impact is significant in many developing economies. Within sub-Saharan Africa, small-scale miners
produce gold and gemstones worth about $1 billion. Globally, nearly 15-20% of the value of non-fuel minerals comes from small-scale miner operations. These activities provide considerable employment, especially in rural areas and contribute substantially to poverty alleviation. In developing countries, the number of those whose livelihoods in one way or another depend on small-scale miner activities is between 80-100 million people (ILO, 1999).

According to Pedro and Suliman (2003), the significant economic benefits to be realized from small-scale mining activities have recently been recognized by several African countries. Indeed, the potential of the sector to contribute significantly to socio-economic development is great. Such contributions include the decisive role it can play in:-

- Poverty alleviation, especially in rural areas;
- Reducing rural-urban migration especially for the unemployed youth;
- Maintaining the vital link between people and the land;
- Creating alternative economic activities;
- Contributing to national incomes; and
- Contributing to state revenues (Pedro and Suliman, 2003).

2.2.5 Mining and Poverty Reduction: Key Linkages

This section explores the linkages between mining operations and the four dimensions of poverty, which are economic opportunity, capability, security, and empowerment. Although small scale mining has the potential to create employment, intensive competition for natural resources can actually lead to even fewer opportunities than would be available if it was absent. Small-scale mining can lead to child labour, widespread of diseases and indigenous groups risk of remaining without access to decision making regarding their land (Weber-Fahr M. et al, 2002).
The linkages between mining operations and the four dimensions of poverty are summarized on the table below:

<table>
<thead>
<tr>
<th>Poverty Dimensions</th>
<th>Potential key positive effects</th>
<th>Potential key negative effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic opportunity</td>
<td>Employment generation</td>
<td>Some of the poor might find themselves with significantly fewer opportunities for income generation and subsistence than previously as they compete for the use of natural resources (land and water) and infrastructure (transport) with incoming groups of small-scale miners.</td>
</tr>
<tr>
<td></td>
<td>Potentially higher incomes than from alternative activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be a source of cash income on a seasonal basis, often very important for women</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Private sector development and related employment: downstream and lateral business activity— suppliers and refiners— microenterprises</td>
<td></td>
</tr>
<tr>
<td>Capability</td>
<td>Lack of health care and education facilities for small-scale miners in the context of an unregulated environment</td>
<td>Significant use of child labour with negative effects on health and education.</td>
</tr>
<tr>
<td>Security</td>
<td>Work-related health risks as well as widespread increase in infectious diseases (for example, HIV/AIDS), alcoholism, and consequent gender issues.</td>
<td>Environmental and resulting health risks for miners, their families, and surrounding communities, particularly from water pollution and use.</td>
</tr>
<tr>
<td></td>
<td>Environmental and resulting health risks for miners, their families, and surrounding communities, particularly from water pollution and use.</td>
<td>Risk of losing property and income where mining rights are not regulated or protected.</td>
</tr>
<tr>
<td></td>
<td>Risk of losing property and income where mining rights are not regulated or protected.</td>
<td>Invasion of lands of indigenous or tribal people by miners.</td>
</tr>
<tr>
<td>Empowerment</td>
<td>Often little access for miners and their families to any public decision making process because of absence of local government structures.</td>
<td>Risk of severe cultural conflicts between miners and local or indigenous population.</td>
</tr>
<tr>
<td></td>
<td>Risk of severe cultural conflicts between miners and local or indigenous population.</td>
<td>If diamonds: risk of illegitimate diamond trading to finance regional conflicts.</td>
</tr>
<tr>
<td></td>
<td>Often little access for miners and their families to any public decision making process because of absence of local government structures.</td>
<td>Indigenous groups at risk of remaining without access to decision making.</td>
</tr>
</tbody>
</table>
regarding their land and property rights


2.2.6 Best Practices in Small-Scale Mining

In any country, the miscellany of what is considered best practice involved the identification of individual parameters and issues that have a bearing on the development of the small-scale sector. However, what may constitute a best practice in a given environment or location may not necessarily be replicable in another, depending on local conditions, institutional culture and capacity (Hentschel T. et al, 2003).

The parameters for best practices are mining policy, mining legislation, technology, environmental management, minerals marketing, institutional capacity, access to credit and finance, technical assistance programmes, women issues, child labour and other factors such as research and development. The following table shows best practices in small-scale mining capacity (Hentschel T. et al, 2003).

Table 2.4: Selected Best Practices in Small-scale Mining

<table>
<thead>
<tr>
<th>MAIN AREA</th>
<th>SPECIFIC ISSUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining policy</td>
<td>• Policy recognition of small-scale mining and its categories</td>
</tr>
<tr>
<td></td>
<td>• Identification of government functions and roles</td>
</tr>
<tr>
<td></td>
<td>• Policy objectives</td>
</tr>
<tr>
<td></td>
<td>• Recognition of small-scale mining constraints</td>
</tr>
<tr>
<td></td>
<td>• Policy directions and strategies</td>
</tr>
<tr>
<td>Mining legislation</td>
<td>• Country definition of small-scale mining</td>
</tr>
<tr>
<td></td>
<td>• Specific legislation for small-scale mining</td>
</tr>
<tr>
<td></td>
<td>• Types of mineral rights</td>
</tr>
<tr>
<td></td>
<td>• Size of concessions</td>
</tr>
<tr>
<td></td>
<td>• Duration of tenure and renewability</td>
</tr>
<tr>
<td></td>
<td>• Entitlement to transfer and mortgage of mineral rights</td>
</tr>
<tr>
<td>Category</td>
<td>Issues</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Technology</td>
<td>• Limitation of small-scale mineral rights to nationals</td>
</tr>
<tr>
<td></td>
<td>• Upgrading of mineral rights</td>
</tr>
<tr>
<td></td>
<td>• Designation of areas specific for small-scale mining</td>
</tr>
<tr>
<td></td>
<td>• Decentralization of mineral rights allocation and administration</td>
</tr>
<tr>
<td></td>
<td>• Informal/undocumented licensing</td>
</tr>
<tr>
<td></td>
<td>• Availability of channels for access to technology</td>
</tr>
<tr>
<td></td>
<td>• Programmes for promotion of cleaner and more efficient technology</td>
</tr>
<tr>
<td></td>
<td>• Technical training and awareness programmes</td>
</tr>
<tr>
<td></td>
<td>• Promotion of value-adding techniques</td>
</tr>
<tr>
<td></td>
<td>• Specific small-scale mining technologies</td>
</tr>
<tr>
<td>Environmental management, minerals marketing</td>
<td>• Specific environmental legislation and regulations</td>
</tr>
<tr>
<td></td>
<td>• Procedures for environmental impact assessment</td>
</tr>
<tr>
<td></td>
<td>• Procedures and financing for site rehabilitation</td>
</tr>
<tr>
<td></td>
<td>• Legislation on health and safety</td>
</tr>
<tr>
<td></td>
<td>• Monitoring, reporting and data collection</td>
</tr>
<tr>
<td>Minerals marketing</td>
<td>• Regulation of minerals marketing</td>
</tr>
<tr>
<td></td>
<td>• Licensing of private mineral dealers</td>
</tr>
<tr>
<td></td>
<td>• Other forms of open local mineral markets</td>
</tr>
<tr>
<td></td>
<td>• Local mineral pricing systems</td>
</tr>
<tr>
<td></td>
<td>• Strategies/incentives to discourage illegal trading</td>
</tr>
<tr>
<td></td>
<td>• Mineral export procedures for producers and dealers</td>
</tr>
<tr>
<td></td>
<td>• Incentives to encourage value adding practices</td>
</tr>
<tr>
<td></td>
<td>• Value-adding industries</td>
</tr>
<tr>
<td>Institutional capacity</td>
<td>• Institutional network</td>
</tr>
<tr>
<td></td>
<td>• Adequate human and financial resources</td>
</tr>
<tr>
<td></td>
<td>• Specialized small-scale mining units</td>
</tr>
<tr>
<td></td>
<td>• Small-scale miners’ organizations</td>
</tr>
<tr>
<td>Access to credit and finance</td>
<td>• Loan-based financing schemes</td>
</tr>
</tbody>
</table>
Potential Positive Impacts of Small-Scale Mining on the Poor

According to Weber (2002), mining can contribute to poverty reduction in a variety of ways; most linkages work directly by generating income and creating opportunities for growth for lateral or downstream businesses. The following are some of the positive impacts of small-scale mining:–

- Foreign exchange income.
- Income generation.
- Local economic development.
- Improved land-use planning.
- Source of energy (Weber 2002).

Source: Hentschel T. et al, 2003, pp11
Potential Negative Impacts on the Poor

Despite the above mentioned benefits, small-scale mining also poses the following problems:-
- Governance, corruption, and macroeconomic instability.
- Environment problems.
- Health and human development threats
- Socio-cultural issues.
- Negative impacts on other non-mining sectors (Weber, 2002)

2.2.7 Success Factors in Small-Scale Mining

Success factors in mining are based on the best practices already discussed. The following table shows success factors in small-scale mining (Hentschel T. et al, 2003).

Table 2.5: Success factors in Small-Scale Mining

<table>
<thead>
<tr>
<th>MAIN AREA</th>
<th>SUCCESS FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining policy</td>
<td>• Baseline studies to identify user needs and profile the sector; • Simple and transparent licensing system for small-scale mining; • Applications for licenses are handled by district and regional offices; • Licensing system for minerals trading that is handled at the regional level; • Simple environmental management regulations specific to small-scale miners;</td>
</tr>
<tr>
<td>Mining legislation</td>
<td>• Clear rules to access and use mineral rights and land; • Application of mineral rights within district and regional offices located within mining areas; • Issuance of mineral rights based on first-come-first served approach; • Small-scale mining licenses do not need the Minister’s approval; • The all process takes between two weeks to four weeks; • Maintain the same mineral rights categories as those issued for the large-scale operators to make administration less cumbersome; • Maintaining a single system minimizes the pressure on human</td>
</tr>
<tr>
<td>Technology</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>and financial resources;</td>
<td></td>
</tr>
<tr>
<td>A single system enables miners to acquire experience on mine project development;</td>
<td></td>
</tr>
<tr>
<td>Large concession sizes and long tenure periods allow easy access to finance and attract investors;</td>
<td></td>
</tr>
<tr>
<td>A system allowing transfer and mortgage of mineral rights allows miners to raise financing through outright sale, transfer of shares (in Joint ventures) or selling part of the mineral rights;</td>
<td></td>
</tr>
<tr>
<td>Designation of specific areas for small-scale mining allows easy management and enforcement of regulations;</td>
<td></td>
</tr>
<tr>
<td>Decentralization of mineral rights allocation and administration allow the local government to participate in administration;</td>
<td></td>
</tr>
<tr>
<td>Allocate adequate funding for centres of innovation and adaptation of(appropriate) technology;</td>
<td></td>
</tr>
<tr>
<td>Replicate tested models of equipment-hiring, pay-back or hire-to-pay schemes from other countries;</td>
<td></td>
</tr>
<tr>
<td>Programmes for promotion of efficient technology which enable miners to identify and operate them with the aim of improving productivity and hence earnings;</td>
<td></td>
</tr>
<tr>
<td>Technical training programmes:</td>
<td></td>
</tr>
<tr>
<td>Provide training to trainers to access more miners;</td>
<td></td>
</tr>
<tr>
<td>Raise awareness on the negative health and environmental issues;</td>
<td></td>
</tr>
<tr>
<td>Establish baseline data regarding mercury levels in miners, water, fish and sediments in the mining areas;</td>
<td></td>
</tr>
<tr>
<td>Develop mining methods that can be easily adopted to mine other minerals;</td>
<td></td>
</tr>
<tr>
<td>Application of equipment that:</td>
<td></td>
</tr>
<tr>
<td>Is simple in design and can be produced locally;</td>
<td></td>
</tr>
<tr>
<td>Use accessories, e.g., grinding media that are readily available;</td>
<td></td>
</tr>
<tr>
<td>Is mobile and easy to install and operate;</td>
<td></td>
</tr>
<tr>
<td>Is powered by small diesel engines (diesel is available in most mining areas);</td>
<td></td>
</tr>
<tr>
<td>Is cheap and can be afforded by individual miners;</td>
<td></td>
</tr>
<tr>
<td>Is efficient and have minimum environmental impacts;</td>
<td></td>
</tr>
<tr>
<td>Has low power consumption;</td>
<td></td>
</tr>
<tr>
<td>Utilize selective mining techniques that allow focusing on particular types and grade of ore;</td>
<td></td>
</tr>
<tr>
<td>Apply methods that combine both manual and mechanized processing techniques;</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
</tr>
<tr>
<td>Health and safety legislation establishes control over distribution</td>
<td></td>
</tr>
<tr>
<td>Management, health and safety</td>
<td>and trading of dangerous chemicals:</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>• Legislation allows users to be known and hence can be easily monitored for compliance and assistance;</td>
<td>• Legislation that leads to increased use of safe methods and reduction of health and environmental negative impacts.</td>
</tr>
<tr>
<td>• It allows data on the amount of chemicals entering the country, amount used and other relevant information to be accessed;</td>
<td>• Establishment of locally enforced safety security systems which allow miners to watch each other’s mining practices to ensure that the set safety standards are adhered to;</td>
</tr>
<tr>
<td>• Legislation that leads to increased use of safe methods and reduction of health and environmental negative impacts.</td>
<td>• Establishment of regulations that contribute to improved working relations between miners, authorities and their organizations;</td>
</tr>
<tr>
<td>• Establishment of regulations that contribute to improved working relations between miners, authorities and their organizations;</td>
<td>• Regulations specific to small-scale mining operations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minerals marketing</th>
<th>Simplified licensing of minerals marketing by processing applications at district and regional offices;</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Monitoring is localized and more efficient;</td>
<td>• Data collection is simplified as officers have to cover smaller areas within their jurisdictions;</td>
</tr>
<tr>
<td>• Data collection is simplified as officers have to cover smaller areas within their jurisdictions;</td>
<td>• Establishment of a “one-stop-shop” where mineral traders can easily access information and process their exports;</td>
</tr>
<tr>
<td>• Establishment of a “one-stop-shop” where mineral traders can easily access information and process their exports;</td>
<td>• Establishment of a specialized body in minerals marketing that is capable of offering more specialized services to mineral traders;</td>
</tr>
<tr>
<td>• Establishment of a specialized body in minerals marketing that is capable of offering more specialized services to mineral traders;</td>
<td>• Mineral rights holders do not require another license to market or export their minerals;</td>
</tr>
<tr>
<td>• Mineral rights holders do not require another license to market or export their minerals;</td>
<td>• Establishment of gemstone auctions that:</td>
</tr>
<tr>
<td>• Establishment of gemstone auctions that:</td>
<td>• Provide producers direct contact with international dealers;</td>
</tr>
<tr>
<td>• Allow miners to gain experience of gemstones grading and evaluation through contact with experienced dealers;</td>
<td>• Enable miners get access to information on international gemstone markets and pricing systems;</td>
</tr>
<tr>
<td>• Enable miners get access to information on international gemstone markets and pricing systems;</td>
<td>• Accord Government a direct chance to collect revenue.</td>
</tr>
<tr>
<td>• Accord Government a direct chance to collect revenue.</td>
<td>• Develop strategies to curb illegal mineral trading so that:</td>
</tr>
<tr>
<td>• Develop strategies to curb illegal mineral trading so that:</td>
<td>• Miners get good prices and hence have no incentives for trading illegally;</td>
</tr>
<tr>
<td>• Miners get good prices and hence have no incentives for trading illegally;</td>
<td>• Establish gemstone cutting centres in order to:</td>
</tr>
<tr>
<td>• Establish gemstone cutting centres in order to:</td>
<td>• Create jobs by training gemstone cutters and rock carvers;</td>
</tr>
<tr>
<td>• Create jobs by training gemstone cutters and rock carvers;</td>
<td>• Improve quality of the cut gemstones for export and thus earn more revenue;</td>
</tr>
<tr>
<td>• Improve quality of the cut gemstones for export and thus earn more revenue;</td>
<td>• Promote local consumption of gemstone products through improved quality;</td>
</tr>
</tbody>
</table>
| Institutional capacity | • Providing continuous training to small-scale miners in gemmology and processing of industrial minerals;  
| | • Establishment of offices that are close to major mining areas and that:  
| | • Are well-funded;  
| | • Can recruit adequate well-trained personnel;  
| | • Can collect revenue effectively and retain part of it for SSM  
| | o activities;  
| | • Can provide extension services, monitor the activities of small-scale  
| | o miners;  
| | • Well-distributed and known by the end-users;  
| | • Create small-scale miners’ organisations that:  
| | • Are the mouthpiece of small-scale miners in the country especially  
| | o in handling negotiations with the Government, NGO and the donor  
| | o community;  
| | • Can mobilize assistance to small-scale miners;  
| Access to credit and finance | • Draft a small-scale mining lending policy;  
| | • Establishing loans targeted to specific needs of small-scale mining projects;  
| | • The government is the grantor so that small-scale miners do not have to have a collateral when applying for loans;  
| | • Amount of loan based on actual requirements following an assessment by mining experts from the government;  
| | • Establishing equity-based financing to promote joint-ventures;  
| | • Establishing hire/purchase schemes that enable small-scale miners to access and acquire equipment through payment of small affordable instalments;  
| Technical assistance programmes | • Establish assistance programmes:  
| | • That allow miners to get assistance from specialized institutions;  
| | • That start from project conceptualisation to full implementation;  
| | • Where miners can get services paid at a nominal fee;  
| | • Where miners can access assistance quickly because the district/  
| | o regional mines offices are located close to mining areas;  
| | • Establish specialized training institutions:  
| | • That offer full-certificate level training to technicians who can then go and work directly with small-scale miners, without any further training;  
| | • That provide specialized training to small-scale miners either
| Women in mining | Through formal training or on-the-job training;  
|                | That offer students practical training by facilitating attachment to small-scale mining operations with a view to impart on the students a better understanding of SSM needs and problems;  
|                | Enacting mining policies that: bring to the forefront issues limiting women participation in mining and help to raise awareness of the miners and the public;  
|                | Establishment of women miners’ organizations that:  
|                | Provide a single voice for women miners;  
|                | Are able to encourage and mobilize women to take-up mining as an economic activity;  
|                | Are active in organizing members in trusts so as to promote group mining projects and are mobilizing assistance.  
| Child labour   | Enacting mining policies that:  
|                | Enable miners and the public in general to become more aware of the dangers of employing children under dangerous mining environment; and  
|                | Can attract support to eradicate child labour, e.g., the Tanzania/IPEC Programme supported by the International Labour Organization  
| Other parameters | Promote research and development programmes that:  
|                | Encourage production of safe and efficient technologies;  
|                | Develop technology that can be used with the same or improved efficiency in environments without electricity, which are common in small-scale mining areas;  
|                | Provide training to miners on the safe use of technologies developed;  
|                | Focus on the integration of mining projects with rural development programmes;  
|                | Promote relationships between small- and large-scale miners that:  
|                | Allow small-scale miners access to reserves that originally belonged to large mining companies, but that cannot be efficiently exploited by them;  
|                | Assure miners a market for their products by selling to the larger companies;  
|                | Encourage large-scale miners to provide bridge financing for new ventures promoted by small-scale miners; and  

2.2.8 Structure of the Small-Scale Mining Sector in Zimbabwe

According to Dreschler (2001), many people in Zimbabwe have resorted to small-scale mining mainly due to economic conditions such as retrenchment, high unemployment levels and poor agricultural yields due to erratic rainfall patterns. For small-scale gold miners, in particular, small-scale mining is viewed as a solution for survival in harsh economic environments. According to Sivotwa et al 2000, about 80% of gold miners interviewed in Insiza District responded that they derive all their income from mining. They however claimed that their spouses supplement their income by engaging in farming activities (Sivotwa et al 2000).

According to Mungoni, (2008) Zimbabwe small-scale mining, in most cases, is characterized by very short implementation periods. This has placed the sector in the post-colonial era in a strategic position to take full advantage of short-term booms in the mining industry (Maponga, 1991). Most small-scale mining is labour-intensive (Gocht et al, 1988, p.243) while also providing employment to many people.

There are also downstream benefits and positive synergies associated with small-scale mining which are created in the rural economy. These include expansion of the clientele base for rural business centres, creation of both capital and market for other income generating activities in the rural areas, et cetera (Mungoni, 2008; Gocht et al, 1988).

It is also its natural linkage with economic and social development external to the communities through marketing, that the small-scale mining sector is regarded as a vehicle for poverty alleviation in the post-colonial Zimbabwe (Gocht et al, 1988).
The number of Small-Scale Miners in Zimbabwe

According to Shanu, Wolff et al (1993), there are 100,000 artisanal panners in Zimbabwe. Svitwa and Mtetwa (1997), estimate the figure to be 190,000 while the International Labour Organisation (1999) sectorial Activities Programme, there are between 50,000 and 350,000 informal miners in Zimbabwe. Svitwa et al (1999) used the panner density model and estimated that there are 200,000 to 250,000 panners in Zimbabwe.

O. Maponga (1995) estimated the number of people employed in the small-scale mining sector at 35,000. Svitwa and Mtetwa (1997) put the number at 20,000 while Svitwa (1999) estimated the number of small-scale miners to be in the range of between 40,000 and 60,000. Small-scale mining in Zimbabwe is composed of the formal small-scale subsector in which more than 20,000 claims are registered in accordance with the provisions of the Mines and Minerals Act, and the informal small-scale and artisanal operators, numbering in excess of 350,000, who are primarily unregistered panners and diggers (Masiya et al 2008).

At least 80% of them operate in the gold mineral. This is because gold has a ready market, both in the formal and in the informal market. Furthermore, gold mining operations of small-scale miners require very little amounts of capital of about US$10,000. Small-scale mining activities in Zimbabwe do not always take place throughout the year, no matter how successful they are in terms of sustaining economic production levels. This is because Zimbabwe is an agricultural economy and most people always find time and space for agricultural activities (Dreschler 2001).

Most mining activities in Zimbabwe are seasonal. This is because most of the operations are underfunded. According Dreschler (2001) most of the operations of small-scale miners are at best shallow open pits which are 20-30m in depth. In most instances, they are flooded with rain during the rainy season and this hinders mining.
if pumping of the water cannot be done. Moreover, roads, which are quite essential in transporting the ore to the mills, will be eroded and this hinders production (Dreschler 2001).

**Large Scale Mining Versus Small-Scale mining cycles**

According to Dreschler (2001), a typical mining cycle in a large scale gold mining involves the following stages:

**Figure 2.1: Mining cycle in a large-scale gold mining**

- Production, processing and marketing
- Pre-feasibility and feasibility studies
- Mine planning and mine designing
On average, it can take up to 5 years for a mining company to start production, especially in instances where the operations involve underground operations (Dreschler 2001).

In other countries such as South Africa, the authorization map (Pulles Howard & de Lange, 2006) is shown on the diagram below:

**Figure 2.2: Summary of Small-Scale Miner Authorisation Procedures**
In Zimbabwe, it has been observed that small-scale miners do not always follow the above stated stages and it is common for all the above stated stages, that is, from registration with the Mining Commissioner to production, to take place in one month (Dreschler 2001).

**Mining Equipment, Mining Methods and Processing Methods**

Most small-scale miners in Zimbabwe use very simple equipment such as using a bucket tied to a chain and dragged upwards. As the mine gets deeper, the operation will become more and more difficult to manage and most small-scale miners...
abandon the site at depths exceeding 50m, after which a new shaft is then started from the surface. This will result in a series of uncovered trenches, pits and gullies which are a danger to both humans and animals (Dreschler 2001).

**Processing methods**

Small-scale miners usually hand sort minerals that are brought to surface. Sorting is then done to improve grade and then transported to the nearest mill. They usually employ the pestle and mortar method, where the concentrate is fed into an amalgam barrel where it is mixed with mercury. The gold-mercury amalgam is then free-retorted to recover the gold as an end product. The diagram below shows the amalgamation process in small-scale mining (Dreschler 2001):

![Amalgamation process in small-scale mining](source)

**Figure 2.3: Amalgamation process in small-scale mining**

Source: Danilo C. and Jasminda P., 2002, pp. 16

The amalgam separated from the slurry is then collected and placed in a fine cloth. This is then squeezed to remove the excess mercury (Danilo C. and Jasminda P., 2002).

**Carbon-In-Pulp (CIP) method**
The CIP process starts with the crushing of the ore. After crushing, the ore is placed in a rod mill or ball mill and added with lime and water then grinded until it turns into fine ore (Danilo C. and Jasminda P., 2002).

**Figure 2.4: Carbon-in-pulp process in small-scale mining**

![Diagram of the CIP process]

Source: Danilo C. and Jasminda P., 2002, pp. 18

**The retort Method**

The concentrate is suckled into an amalgam barrel where it is mixed with mercury. The gold-mercury amalgam is then free-retorted to recover the “yellow staff” which is the product (Dreschler 2001).
The following diagram illustrates the retort method (Danilo C. and Jasminda P., 2002):

Figure 2.5: The Retort Method

2.2.9 Overview of the Legislation Governing the Mining Sector

Where governments do not have the means to control the compliance of the laws or do not want to recognize small-scale miners’ activities, many operations remain informal. This may be due to a number of reasons such as lack of knowledge about
legal requirements and limited access to mining titles as well as bureaucratic procedures (Hentschel T. et al, 2003).

The table below shows the factors that influence small-scale miners to comply with legislative provisions:

<table>
<thead>
<tr>
<th>Legal and administrative factors:</th>
<th>Moral factors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existence of coherent legal bases (mining code, legislation, etc. in force)</td>
<td>Expression and interest of public, the communities and other actors in favour of legal operations</td>
</tr>
<tr>
<td>Existence of human, financial and material resources to enforce the laws (including decentralized structures)</td>
<td>Consciousness of clients about origin and manner of production of mineral commodities</td>
</tr>
<tr>
<td>Existence of the political will to execute the laws (including control and sanctions on infractions)</td>
<td>A large-scale mining operation to serve as a positive example</td>
</tr>
<tr>
<td>Transparent and efficient mining administration (management of mining titles, etc.)</td>
<td>Public opinion against informality, corruption, etc.</td>
</tr>
</tbody>
</table>
According to Dreschler (2001), the Mines and Minerals Act is the principle legislation in the mining sector and overrides all other Acts affecting the mining sector. However, the Act does not provide for specific issues on the environment, hence results in indiscriminate dumping of waste materials by both small and large-scale miners. According to Section 6 of the Mines and Minerals Act, the Act is administered by an 11 member Mines Affairs Board (MAB). According to Section 7 of the Act, the Mines Affairs Board consists of the Permanent Secretary, the Chief
Government Mining Engineer, the Director of Metallurgy and the Director of Geological Survey. The Chamber of Mines of Zimbabwe provides four representatives to the Board, of whom two shall be small-workers, from, one from Commercial Farmers’ Union of Zimbabwe and one from Institute of Chartered Accountants of Zimbabwe (Dreschler (2001),

The composition of the MAB does not represent the interests of the small-scale miners in any way because it is mainly dominated by senior civil servants and the Chamber of Mines representatives. It is also surprising that Commercial Farmers Union, a farmers’ representative organisation that has little or no interests in mining, is also represented in the Board (Dreschler 2001).

**The Mining (Health and Sanitation) Regulations**

These are regulations that promote the use of adequate health and sanitation facilities on mines. In Zimbabwe, these regulations rarely apply to small-scale miners because most of them do not have any health and sanitary facilities (Dreschler 2001).

**The Mining (Management and Safety) Regulations**

The Mining (Management and Safety) Regulations govern and control health and safety issues of mines in line with International Labour Organisation conventions, including convention number 45, which prohibits women from working underground. However, these regulations cannot be applied to small-scale miners in Zimbabwe, since compliance to these regulations require certain levels of technical competence on the part of mine management and financial resources, of which most small-scale miners do not have (Dreschler 2001).
The Mining (Alluvial Gold) Public Stream Regulations

According to Dreschler (2001), Mining (Alluvial Gold) Public Stream Regulations seek to control small-scale gold panning. The Regulations empower Rural District Councils (RDCs) to issue small-scale miners with permits as well as monitoring and controlling gold panning in designated areas. However, out of 30 RDCs who are potentially affected by gold panning activities, only a few districts have applied and obtained the Special Grants that empower them to issue panning permits. Furthermore, most RDCs lack resources to monitor the panning activities and there is also no incentive to do so (Dreschler 2001).

Exclusive Prospecting Orders (EPOs) Regulation

About 80% of Zimbabwe is covered by EPOs. Small-scale miners have no room to carry out prospecting activities. On the other hand, EPO holders claim that small-scale miners hold thousands of claims, hindering large-scale mining. There is thus need to revisit the Minerals and Mines Act with a special focus on small-scale and artisanal mining (Dreschler 2001).

Co-operatives Act

Dreschler (2001) noted that small-scale mining co-operatives generally perform poorly mainly because mining co-operatives are governed by two pieces of legislation, which are conflicting, The Co-operatives Act directs that the selection of the co-operative leader is done in a democratic way, without any consideration of technical and managerial skills. On the other hand, the Mining Regulations direct that the mine manager is elected on the basis on technical and managerial skills. These two pieces of legislation are thus in conflict, in terms of corporate governance (Dreschler 2001).
According to the Chamber of Mines, other Legislation affecting the mining sector include:-

- Water Act
- Natural Resources Act
- Parks and Wildlife Act
- Forestry Act
- Hazardous Substances & Articles Act
- Atmospheric Pollution Prevention Act
- Water (Effluent and Waste Water Standards) Regulation
- Explosive Act
- Communal Land Forest Produce Act
- Public Health Act (Chamber of Mines, 2011)

2.2.10 Government Policy on Small-Scale Mining

In any country, the success of the small-scale mining sector depends on the environment in which the small-scale miners operate (Weber-Fahr M. et al, 2002). Table 2.6 shows the key information needed to design policy for small-scale mining.

Table 2.6: Key Information Needed to Design Policy for Small-Scale Mining

<table>
<thead>
<tr>
<th>Key aspects</th>
<th>Questions to be asked</th>
</tr>
</thead>
</table>
| Economic opportunity | • Are there alternative income sources?  
• What is the small-scale miners’ position in the production chain? What share of the value added can they claim for themselves? If the share is disproportionately low, why?  
• Are ownership rights protected? What is the relationship between indigenous people’s property and small-scale mining? What is the relationship between small-scale mining and large mines?  
• What is the impact of small-scale mining on the local economy? Has downstream or lateral economic activity developed? If not, why?  
• Is the legal and regulatory environment adequate, implemented, and respected? Are mining rights and obligations clear, quantifiable, and secure? What about land rights? Is compliance to |

Page 66 of 164
| Capability | Are basic health services and education available? Is education or information on health issues available?  
| | Does child labor exist, and to what extent? Do gender issues prevent small-scale miners from benefiting appropriately from their activities? |
| Security | What types of minerals are mined? What techniques are used (more versus less hazardous)?  
| | How many miners are involved? What is the relation to other local populations and communities? What is the origin of the miners? Are there any cultural or other tensions?  
| | What types of illnesses affect small-scale miners disproportionately, and in what severity? What are the causes of any systematic patterns?  
| | Are environmental laws and regulations adequate, implemented, and respected? Is compliance monitored? |
| Empowerment | Do informal governance structures exist locally? Are there any well-defined communities? Are there special interest groups; for example, women’s groups, regional groups?  
| | What is the potential for supporting community-driven development? Who would be the relevant groups; for example, women, indigenous groups?  
| | Does consultation take place when designing a government intervention? Are all stakeholders included? |


Zimbabwe Mining Policy after dollarization STERP I & STERP II [Macro-Economic Policy and Budget Framework (2010-2012)]

Short Term Economic Recovery Programme (STERP 1) of 2009

STERP provided mechanisation support for small-scale mining with potential to generate substantial mineral exports as well as capitalising the Mining Industry Loan Fund and technical services. It is also noted in STERP that the mining sector, which used to be a major foreign currency earner in Zimbabwe, performed below its potential for the period up to 2009. According to STERP, the major challenges facing the mining industry are lack of exploration and absence of clear policy on
exploration, hence minerals are being rampantly abused. STERP recommended the setting up of an independent exploration institution that specialise in the consolidation of a comprehensive database on the quality and quantity of the country’s mineral resources. STERP was also crafted on the basis of imposing penalties for exportation of raw materials where value addition options will be readily available (STERP, 2009).

STERP directed marketing of minerals other than Gold to be done under the supervision of Ministry of Mines and Mining Development, together with the Mineral Marketing Corporation of Zimbabwe. According to STERP, “special attention will be given to the small to medium gold producers.” STERP was also aimed at reviewing the framework for mining rights especially the mining title system, with a view of discouraging holding of claims which are not being worked at on “use it or lose it” basis (STERP, 2009).

**Macro-Economic Policy and Budget Framework (2010-2012) December 2010 (STERP II)**

According to STERP II, mining sector grew by 1.7% in 2009 compared to -22.1% in 2008. This growth is attributed to liberalisation measures. Gold producers benefited from high world bullion prices. Gold deliveries improved from 182.9 kg in April 2009 to 603 kilograms by October 2009 (STERP II, 2010).

According to STERP II, mining in Zimbabwe contributed only 2% to GDP in 2009 while it contributed 9% in 1999. The decline in the operations had reduced mining activity from about 100 registered mines to only 3 operational mines in 2008. Mining grew by 40 % in 2010. STERP also underscored the need for Government to levy international commodity prices, flexibility in the Marketing of minerals, protecting the environment and the abolishment of retentions on commodity earnings (STERP II, 2010).
STERP 11 was crafted with a view of removing speculative tendencies in Exclusive Prospecting Orders (EPOs) and also discourage hoarding. It was also aimed at replacing EPOs by Exclusive Exploration Licences (EELs), that is, removing the procedure for acquisition of an EPO from the Act and introduce EEL into regulations. The “use it or lose it principal was reinforced in STERP 11. Government has also hinted that it will issue EELs and Special Grants and also avail ground for exploration by potential serious investors. Government plans to reclaim all undeveloped mining claims held by some mining companies for speculative purposes (STERP II, 2010).

**Exploration**

STERP 11 notes that exploration is a very risky business, requiring large investment expenditure outlay and this has resulted in little exploration activity in Zimbabwe since the 1980s. Global experience estimate that the average mining exploration success rate is under 12%, with regards to resource return on investment, hence most of the mineral resources have remained as inferred resources (STERP 11).

Pursuant to STERP II, the Ministry of Mines and Mining Development has prioritised mineral exploration and the planned expenditure is shown on the table below:-

**Table 2.7: Promotion of Mineral Exploration through creation of an exploration entity**

<table>
<thead>
<tr>
<th>Year</th>
<th>2010 (Actual)</th>
<th>2011 (Actual)</th>
<th>2012 (Budget)</th>
<th>2013 Forecast</th>
<th>2014 Forecast</th>
<th>2015 Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Expenditure (USD)</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 000 000</td>
<td>1 300 000</td>
<td>1 500 000</td>
</tr>
</tbody>
</table>

Source: MMMD, 2012
Mining Industry Loan Fund (MILF)

The Government, through the Ministry of Mines and Mining Development has also set up the Mining Industry Loan Fund (MILF). The Ministry of Mining and Mine Development administers the interest rates that are charged on its mining inventory that is leased to miners as well as interest rates on marketing loans, plant loans and loans for establishment of water supplies that are issued to small-scale miners through the MILF (MMMD, 2012).

Under STERP, the Government undertook to provide support to small-scale miners through the re-capitalisation of the Mining Industry Loans Fund (MILF) (STERP, 2009). Prior to the dollarized period, interest rates on plant hire and loans offered to small-scale miners were prohibitive and ranged from 90% to 112% per annum. According to the Ministry of Mines and Mining Development fees schedules, in 2009, the Government reduced borrowing as follows:-

Table 2.8: MILF interest rates

<table>
<thead>
<tr>
<th>Type of Loan</th>
<th>Pre-October 2009 Annual rates (%)</th>
<th>Normal Risk &amp; Establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Risk &amp; Establishment</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>Speculative Development</td>
<td>100</td>
<td>11</td>
</tr>
<tr>
<td>Highly Speculative Development</td>
<td>112</td>
<td>12</td>
</tr>
<tr>
<td>Plant Hire</td>
<td>90</td>
<td>12</td>
</tr>
</tbody>
</table>

2.2.11 Environmental issues in Small-Scale Mining

Mining of minerals is an environmentally unfriendly activity and has thus attracted global attention from the standpoint of its environmental impact. Generally, mining affects all the components of the environment and the impacts are permanent/temporary, beneficial/harmful, repairable/irreparable and reversible/irreversible. However, impacts produced by artisanal and illegal mining activities are felt most by the ecology, land and atmosphere. These environmental impacts are perhaps of greatest concern to many observers of the mining sector (Maponga, 1995).

According to Maponga, Musingwini and Sibanda (1999), small-scale miners are only interested in free gold. They also shift from one place to another once the value of the ores are exhausted or once the extraction becomes impossible without any rehabilitation of mined out areas. This leads to siltation and contamination of rivers, especially when mercury is used. Mercury poisons plants and animals. According to Dreschler (2001), about 9 tonnes of mercury are imported every year in Zimbabwe. Small-scale miners use about 6 tonnes mercury and most miners are exposed to direct inhalation of the chemical. In most cases, the processing of the gold ore using mercury is watched by all miners because everyone will be eager to see how much gold they would have made.

In a sample of miners examined for mercury poisoning in a study in Insiza District by ITDG, 1998, it was discovered that 60% of the population had general body weakness, 55% had symptoms of nausea, 50% had lost teeth, 40% had a history of respiratory distress, 40% had salivation and tremors, 40% had a high mercury level in hair and 30% had high mercury levels in blood. These results are not surprising considering the carelessness in which small-scale miners in Zimbabwe handle mercury in the processing of gold (Dreschler 2001).
The most important environmental problems include mercury pollution, cyanide pollution, direct dumping of tailings and effluents into rivers, improperly constructed tailings dams, acid rock drainage, river damage in alluvial areas and river siltation. (Da Rosa and Lyon, 1997; Mason, 1997; MMSD, 2002).

One of the challenges that confront governments is the difficulty in monitoring and enforcing environmental violations due to lack of resources and the widely scattered and inaccessible nature of the terrains. Because of the remoteness of the mining locations, and the wide dispersion of the miners, they are very difficult to control. Ellmies et al (2005) outline the adverse environmental impacts of various small-scale mines to be open holes, audits and mining pits, trenches, steep walls of the pits and waste rock disposal in the mining areas. Mining settlements also cause environmental degradation in the form of destruction of the vegetation due to collection of firewood, missing toilets and unorganized disposal of waste (Ellmies et al 2005).

2.2.12 Challenges facing Small-Scale Miners in general

Masiya et al (2008) argues that over the years, the contribution of small-scale mining to regional development has been limited due to a number of challenges in the sector. Most of these challenges are related to their small-scale nature and lack of pertinent legal framework as well as lack of Government support.

Figure 2.9 below shows some of the problems facing small-scale miners in the extraction of minerals. These include geology, technology, law, human resources, marketing, finance and organisation.
Figure 2.7: Typical problems of small-scale mining

<table>
<thead>
<tr>
<th>GEOLOGY</th>
<th>TECHNOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>lack of appropriate ore bodies</td>
<td>use of labour-intensive technology</td>
</tr>
<tr>
<td>lack of information about these ore bodies</td>
<td>high losses of values and time</td>
</tr>
<tr>
<td></td>
<td>lacking transparency of the hardware market</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LAW</th>
<th>TECHNOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>discouraging investment climate</td>
<td>use of labour-intensive technology</td>
</tr>
<tr>
<td>illegality of ASM</td>
<td>high losses of values and time</td>
</tr>
<tr>
<td>lack of social security</td>
<td>lacking transparency of the hardware market</td>
</tr>
<tr>
<td>lack of political and legal stability</td>
<td></td>
</tr>
<tr>
<td>difficulties of legalizing mines</td>
<td></td>
</tr>
<tr>
<td>contradictions between different/official acts</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HUMAN RESOURCES</th>
<th>TECHNOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>unskilled labour force</td>
<td>use of labour-intensive technology</td>
</tr>
<tr>
<td>lack of written contracts</td>
<td>high losses of values and time</td>
</tr>
<tr>
<td>social dependencies</td>
<td>lacking transparency of the hardware market</td>
</tr>
<tr>
<td>lack of cultural understanding</td>
<td></td>
</tr>
<tr>
<td>bad social image of mining</td>
<td></td>
</tr>
<tr>
<td>subsistence economy</td>
<td></td>
</tr>
<tr>
<td>lack of knowledge about</td>
<td></td>
</tr>
<tr>
<td>economic principles</td>
<td></td>
</tr>
<tr>
<td>credit and finance aspects</td>
<td></td>
</tr>
<tr>
<td>gambler mentality</td>
<td></td>
</tr>
<tr>
<td>access to foreign experts limited</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARKETING</th>
<th>TECHNOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>access to the market only via intermediaries</td>
<td>use of labour-intensive technology</td>
</tr>
<tr>
<td>market barriers</td>
<td>high losses of values and time</td>
</tr>
<tr>
<td>market regulations</td>
<td>lacking transparency of the hardware market</td>
</tr>
</tbody>
</table>

Page 73 of 164
Limited Access to finance

According to ILO (1999), obtaining finance is the number one issue affecting small scale-miners although environment, safety and technical assistance were also at the top of the list of issues.

Inadequate Institutional Framework

In Zimbabwe, Ministry of Mines and Mining Development is the parent ministry dealing with mineral exploration, mineral processing, and marketing. On the other hand, there is a representative body of the mining industry, which is the Chamber of Mines. In principle, the Chamber of Mines accepts any registered miner, regardless of it being large or small. However, it draws much of its major funding from large mining companies like Zimplats, Mimosa and others. As a result, priority in representation of interests is given to the large companies (Dreschler 2001).

There is also the ZMF, which represents the views and aspirations of small-scale miners. The organisation has about 25000 registered small-scale miners. 50 000 are
involved in artisanal and small-scale mining in Zimbabwe. 153 000 are women and children. About 70% are into Gold mining and 30% are into chromite, tantalite and other semi-and precious minerals (ZMF, 2012).

According to Car, Laurence and Svotha (1998), the small-scale miners membership of 5000 cannot represent over 300 000 artisanal miners. There is also an evidence of dissatisfaction since splinter organisations such as Women in Mining Miners Association, Explorers and Developers association and Gold Producers Association have been formed. An arm of the Zimbabwe Congress of Trade Union (ZCTU) called Associated Mine Workers of Zimbabwe represents the interests of mining employees. Employers’ Confederation of Zimbabwe (EMCOZ) also represents all employers in Zimbabwe. Although small-scale miners are employers in their own right, EMCOZ does not recognize them, hence most of their issues, especially minimum wage negotiations, are not considered either by Government or by arbitrators. This arrangement places small-scale mining workers in a precarious position in terms of minimum wages bargaining (Dreschler 2001).

**Restrictive Marketing Conditions**

The Gold Trade Act [Chapter 21:03] is very restrictive. According to the Act, no person is allowed to deal in or possess gold without a licence or permit. Registered miners are mandated to sell gold to the Reserve Bank of Zimbabwe through Fidelity Printers. On the other hand, Fidelity Printers has its own restrictions, which are spelt out in its Gold Bullion Acceptance document (Fidelity Printers, 2012).

According to the Gold Bullion Acceptance, depositors (miners) are required to provide current mine location registration certificate, authority to dispose of gold bullion at the Refinery, Disposal of Proceeds Instructions, and current Mine Inspection certificate/Buying Permits and no processing will be done until the required documentation is presented. Minimum assay total for gold and silver shall
be five hundred (500) parts per thousand (1000). Prior authority of the Refinery is required before deposits of gold bullion of less than five hundred (500) parts to a thousand (1000) can be made (Fidelity Printers, 2012).

The above-mentioned requirements tend to discourage small-scale miners from selling through the formal channels because they produce smaller quantities and the majority of them usually operate illegally and have no registration certificates. Furthermore, there is a time lag between deposition of the bullion and payment by Fidelity Printers. Fidelity Printers also charges extra charges such as refining charges, melting and assaying charges. Presumptive Tax and Withholding Tax are deducted from proceeds of Small-scale Producers and Primary Producers who do not have ITF 263 (Tax clearance Certificates), respectively, while royalties are deducted from Producers at prevailing rates (Fidelity Printers, 2012).

**High Mining Fees and Unsustainable Taxes**

As in most developing countries, Zimbabwe small-scale miners are heavily taxed. Mining fees were raised by up to 5,000 per cent, in January 2012. According to the Ministry of Mines and Mining Development Statutory Instrument 11 (2012), registration of diamond claims was increased from US$1 million to US$5 million with a new ground rental fee of US$3,000 per hectare per year. Application fee for prospective coal investors has been increased from US$5,000 to US$100,000, while the registration or renewal fee is set at US$500,000. This is so despite the fact that most small-scale mines are low-tech and employ poorly trained uneducated people (MMMD, 2012).

Table 2.9 shows some of the fees that are generally applicable to mining firms in Zimbabwe:

<table>
<thead>
<tr>
<th>Application and Registration Fees and Surface Rentals for Mining Licences for diamonds, coal, PGMs and chrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.9: Mining fees</td>
</tr>
</tbody>
</table>

Page 76 of 164
<table>
<thead>
<tr>
<th>MINERAL</th>
<th>SUBJECT</th>
<th>FEE (per application)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diamonds</td>
<td>Application Fee (once-off and non-refundable)</td>
<td>$1 million</td>
</tr>
<tr>
<td></td>
<td>Registration (once-off and non-Refundable)</td>
<td>$5 million</td>
</tr>
<tr>
<td></td>
<td>Ground Rental (annual payment)</td>
<td>$3 000 per hectare per year.</td>
</tr>
<tr>
<td>Coal, CBM gas, mineral oils, natural gas and nuclear energy source material</td>
<td>Application Fee (once-off and non-refundable)</td>
<td>$100 000</td>
</tr>
<tr>
<td></td>
<td>Registration/Renewal Fee (once-off and non-Refundable)</td>
<td>$500 000</td>
</tr>
<tr>
<td></td>
<td>Ground Rental (annual payment)</td>
<td>$100 per hectare per year.</td>
</tr>
<tr>
<td>Platinum</td>
<td>Application Fee (once-off and non-refundable)</td>
<td>$500 000</td>
</tr>
<tr>
<td></td>
<td>Registration Fee (once-off and non-Refundable)</td>
<td>$2.5 million</td>
</tr>
<tr>
<td></td>
<td>Ground Rental (annual payment)</td>
<td>$1 000 per hectare.</td>
</tr>
<tr>
<td>Chrome</td>
<td>Application Fee (once-off and non-refundable)</td>
<td>$500</td>
</tr>
<tr>
<td></td>
<td>Registration Fee (once-off and non-Refundable)</td>
<td>$2 000</td>
</tr>
<tr>
<td></td>
<td>Ground Rental (annual payment)</td>
<td>$500 per Ordinary Block (max 25Ha)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$3 000 per Special Block (max 150Ha)</td>
</tr>
</tbody>
</table>

Source: Ministry of Mines and Mining Development: May 2012

**Export Permit Fees (permit valid for three months except for diamonds)**

<table>
<thead>
<tr>
<th>Product</th>
<th>Fees (US$) (per permit per 3 months)</th>
</tr>
</thead>
</table>

Page 77 of 164
## Product

<table>
<thead>
<tr>
<th>Product</th>
<th>Fees (US$) (per permit per 3 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platinum Group Concentrates</td>
<td>$20 000</td>
</tr>
<tr>
<td>White Matte</td>
<td>$15 000</td>
</tr>
<tr>
<td>Copper Concentrates</td>
<td>$15 000</td>
</tr>
<tr>
<td>Ferrochrome</td>
<td>$3 000</td>
</tr>
<tr>
<td>Ferrochrome Small Consignment</td>
<td>$1 000</td>
</tr>
<tr>
<td>Nickel</td>
<td>$5 000</td>
</tr>
<tr>
<td>Other Base Metals</td>
<td>$2 000</td>
</tr>
<tr>
<td>Processed Industrial Minerals</td>
<td>$1 000</td>
</tr>
<tr>
<td>Unprocessed Industrial Minerals</td>
<td>$10 000</td>
</tr>
<tr>
<td>Corundum</td>
<td>$1 000</td>
</tr>
<tr>
<td>Black Granite (Unprocessed)</td>
<td>$10 000</td>
</tr>
<tr>
<td>Black Granite Small Consignment (Semi Processed)</td>
<td>$500</td>
</tr>
<tr>
<td>Steel Products</td>
<td>$3 000</td>
</tr>
<tr>
<td>Steel Products (Small Consignments)</td>
<td>$500</td>
</tr>
<tr>
<td>Cut and polished Diamonds (per shipment)</td>
<td>$5 000</td>
</tr>
<tr>
<td>Uncut Diamonds (per shipment)</td>
<td>$10 000</td>
</tr>
<tr>
<td>Rough emeralds</td>
<td>$5 000</td>
</tr>
<tr>
<td>Cut Emeralds</td>
<td>$2 000</td>
</tr>
<tr>
<td>Other Raw Semi-Precious Stones</td>
<td>$1 000</td>
</tr>
<tr>
<td>Foundry Residues/ Industrial scrap</td>
<td>$1 000</td>
</tr>
<tr>
<td>Samples For Test Work &gt;/= 100kg</td>
<td>$1 000</td>
</tr>
<tr>
<td>Samples above 100kg</td>
<td>$5 000</td>
</tr>
</tbody>
</table>

## Other Licenses

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>FEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>License to deal in precious stones (cutting and grading)</td>
<td>$100 000</td>
</tr>
<tr>
<td>Gold Buying License</td>
<td>$5 000</td>
</tr>
<tr>
<td>Gold Jewellery Permit</td>
<td>$2 000</td>
</tr>
<tr>
<td>Custom Milling License</td>
<td>$8 000</td>
</tr>
<tr>
<td>Elution Plant</td>
<td>$5 000 for Toll smelters</td>
</tr>
<tr>
<td>Certificate of registration as an Approved Prospector</td>
<td>$5 000 per year</td>
</tr>
<tr>
<td>Ordinary Prospecting License</td>
<td>$500 per mining district</td>
</tr>
<tr>
<td>Special Prospecting License</td>
<td>$1 000 per mining district</td>
</tr>
<tr>
<td>Recommendation for Gazetting/ Project Status</td>
<td>$1 000 for the whole country</td>
</tr>
<tr>
<td>Recommendation for Duty Certificate application</td>
<td>$1 000 (project status)</td>
</tr>
<tr>
<td>Recommendation for VAT Deferment</td>
<td>$500 (gazetting)</td>
</tr>
<tr>
<td>Recommendation for Work Permit</td>
<td>$500 (per application)</td>
</tr>
<tr>
<td>Recommendation for Work Permit</td>
<td>$500 (per application)</td>
</tr>
</tbody>
</table>
**SUBJECT**

<table>
<thead>
<tr>
<th></th>
<th>FEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Movement Permit</td>
<td>$1 000</td>
</tr>
</tbody>
</table>

Source: (MMMD, May 2012 fees & charges schedule pp20-34)

**Equipment and Machinery**

According to Dreschler (2001), one of the reasons why small-scale miners are classified as “small” is because of the kind of equipment and machinery they use. In many African countries, small-scale miners use traditional techniques and low level equipment in excavation or digging, whereas in South America, miners use rudimentary tools, manual devices or simple portable machines. These tools are often not sufficient to carry out their activities, hence, they often do not perform to their maximum capabilities. This lack of equipment is worsened by the fact that miners do not have starting capital in order to acquire the tools they require (Dreschler 2001).

Miners have no access to credit from formal financial institutions for them to finance their operational requirements. According to Ellmies, Hahn and Mufenda (2005) small-scale mining is characterised by the following:-

- Lack of adequate mining equipment
- Difficult and unsafe excavation conditions
- The need for capital during periods with no tourmaline
- Absence of a buyers scheme organised by government
- Poor quality drinking water
- Lack of toilets (Ellmies, Hahn and Mufenda, 2005)

**Health and Safety**

In Zimbabwe, small-scale mining is characterised by very poor health and safety conditions. This is mainly due to lack of resources, lack of education as well as
ignorance on the part of small-scale miners. Accidents usually occur when sidewalls and hanging walls collapse mainly due to undercutting. This is worsened by lack of finance to buy reinforcements Dreschler (2001).

2.2.13 Gender issues in small-scale mining

According to Dreschler (2001), Zimbabwe is an example of a country with a high representation of women in small-scale mining. Dreschler (2001) further explains that within this sector, women are involved in the more informal work of small-scale mining such as panning. However, despite the increased representation of women in small-scale mining and apart from the challenges faced by all small-scale miners, women still face some challenges unique to them as women. These are listed by the Dreschler (2001) as:

- Lack of technical management skills
- Lack of access to credit facilities
- Bias and stigmatization
- Lack of exposure to appropriate technology
- Lack of exposure to market

Of the 300 000 artisanal/informal miners in Zimbabwe, 150 000 or 50% of them are believed to be women and children. Of the 30 000 formal small-scale miners in Zimbabwe, only 3000 or 10% are women. Of the 3 000 women mine owners, 70% of them feature as joint mine owners. The remaining 30% is engaged in the processing of gold in the informal sector. Women are involved in the gravity concentration using mostly wooden pans. According to Svo	wa et al 2000, a study carried out in Insiza district of Matebeleland South Province in Zimbabwe revealed that more women work as part time employees than full time ones (Svo	wa et al 2000).

Women are involved in direct mineral production activities and in mining settlement-related activities. Although taboos and socio-cultural factors, financial and economic
capacit and technological and organizational aspects often curtail their entry into direct production, their numbers have been increasing in many countries. The growth of women’s participation is often a necessity rather than choice, due to lack of alternatives. The increase in retrenchments from public employment as a result of structural adjustment programmes, low commodity prices, prolonged droughts, among other factors, can be linked to this growth (Masiya et al 2008).

According to a survey by ILO, about 3.5-4.0 million women out of 11.5-13 million small-scale miners worldwide are directly involved in these activities (ILO, 1999). It has been estimated by the Economic Commission for Africa (ECA) that 45-50% of the 3-3.7 million people engaged in small-scale mining in Africa are women. Despite these impressive numbers, most women are still part-time workers, relegated to secondary activities such as manual grinding of ore and panning. This is more pronounced where some degree of technology is used, such as in hard-rock mining (Traore, 1997).

CASE STUDY IN SMALL-SCALE MINING

2.2.14 Small-Scale Gold Mining in Tapanahone and Brokondo Region, Suriname South America

A study on perceptions of small-scale gold mining impacts in Tapanahone and Brokondo Region, Suriname South America by Heemslerk M. and Oliviera M. (2003) found out that small-scale gold mining is seen as a “necessary evil” mainly because it is the only livelihood of forest people where employment is non-existent. It also brings development through stores, finances, transport and health. The study also concluded that miners and villagers recognised the negative effects of mining. They, however, had different fears. Miners feared occupational accidents and diseases while villagers feared water pollution.

Most of the work in mines is physical, hence young men are the once that are usually involved. They will be away from home and this attracts sex work resulting in the spread of STDs and HIV/AIDS among miners.
Small-scale mining income is seasonal in instances where mining activity is affected by rain. The variable income makes it difficult for miners to smoothen their consumption and this creates uncertainty. According to Chambers and Conway, there is need to develop economic activity in ways that minimise negative effects and contributes more to sustainable development.

The study also concluded that what is known to date about local perceptions of the role of small-scale mining and its impacts on livelihood of people is incomplete, localised and a circumstantial/anecdotal. Results on the perception of small-scale mining were that related impacts are shaped by subsistence concern, religious beliefs, myths, folk knowledge and outside information.

**Negative impacts**

The study pointed to the fact that generally most people in this area agree that money generated in mining does not compensate the associated negative impacts. The study found out that small-scale mining can result in the following negative impacts:-

- Water pollution
- Malaria
- Occupational accidents
- Violence
- Mercury poisoning

It was also observed that retorts are a closed system that captures, condenses and recycles the mercury vapour during the burning of the mercury-gold amalgam. This is done to avoid emissions into the atmosphere and retain the mercury for reuse. However small-scale miners are unwilling to spend extra money on retorts. Some even complain that the retort process is slow and noisy.

### 2.3. CHAPrer SUMMARY
Chapter 2 deals with the different views on the definition of small scale mining, the history of small scale mining in Zimbabwe, cost-benefit aspects of artisanal small scale mining, linkages between small-scale mining and poverty, best practices in small-scale mining, challenges facing small-scale miners, gender issues in small-scale mining as well as a case study in mining, structure of the small scale mining sector in Zimbabwe, overview of the legislation governing the mining sector in Zimbabwe, government policy on small-scale mining and environmental issues in small scale mining.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

According to Hancork (2002), research methodology is a process by which a research is carried out using scientific ideologies. Leedy (1985) says that a research methodology is a framework within which the facts are placed so that their meaning may be seen more clearly. Kidder (1981) notes that a methodology has a bearing on the quality and reliability of the conclusions, hence a research is as good or bad as its methodology.

3.1 INTRODUCTION

This chapter outlines and discusses the research design employed in the execution of the research. The section describes the target population, sampling procedure, and sample size of the research, the data collection instrument used and the issues pertaining to its validity and reliability, the procedure followed to gather the data and the statistical techniques used to analyse the data.
The methodology of the research is the one that enables a researcher to explain and analyse methods. Furthermore, it reinforces the types of questions that can be addressed and the nature of the evidence that is generated (Clark et al. 1984).

Once a topic is selected, there is need to craft focus questions and then design the parameters of the study. The next stage involves data collection followed by analysis and interpretation of the data. The last stage involves informing others basing on the results (Neuman, 2003).

The following diagram is a typical research cycle.

**Figure 3.1 : The research cycle**

1. Select Topic

   2. Focus Question

   3. Design Study

   4. Collect Data

   5. Analyse Data

   6. Interpret Data

   7. Inform Others

Source: Neuman (2003, p13)

**3.2 RESEARCH DESIGN**
Churchill (1979) defines research design as a framework that provides for an overall guidance for the collection and analysis of data of a research. A research design is thus a critical link between the theory and argument that informed the research and the empirical data collected (Nachmias and Nachmias 2008).

The choice of research design mirrors decisions about the priority being given to a range of dimensions of the research process. Along with clear research plan it provides, constraints and ethical issues that a study will inevitably encounter must also be considered (Saunders et al. 2007).

According to Leedy (1997), there are the two forms of research paradigms, which are qualitative and quantitative. Qualitative research attempts to understand meanings that people give to their deeds or to social phenomena. Quantitative research is generally an iterative process whereby evidence is evaluated, theories and hypothesis are refined and tested. Statistics is the most widely used branch of mathematics in quantitative research (Leedy 1997).

The table below shows the differences between quantitative and qualitative research designs.

Table 3.1: Differences between quantitative and qualitative research designs

<table>
<thead>
<tr>
<th>QUANTITATIVE</th>
<th>QUALITATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Subjective</td>
</tr>
<tr>
<td>“Hard” Science</td>
<td>“Soft” science</td>
</tr>
<tr>
<td>Literature review must be done early in study</td>
<td>Literature review may be done as study progress or afterwards</td>
</tr>
<tr>
<td>Test theory</td>
<td>Develops theory</td>
</tr>
<tr>
<td>One reality: focus is concise and narrow</td>
<td>Multiple realities: focus is complex</td>
</tr>
<tr>
<td>Facts are value free and unbiased.</td>
<td>Facts are value-laden and biased</td>
</tr>
<tr>
<td>Reduction, control and precision</td>
<td>Discovery, description, understanding, shared and interpretation</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>Measurable</td>
<td>Interpretive</td>
</tr>
<tr>
<td>Mechanistic: parts equal the whole</td>
<td>Organismic: whole is greater than parts</td>
</tr>
<tr>
<td>Report statistical analysis</td>
<td>Report rich, narrative, individual, interpretation.</td>
</tr>
<tr>
<td>Basic element of analysis is numbers</td>
<td>Basic element of analysis is words/ideas</td>
</tr>
<tr>
<td>Researcher is separate</td>
<td>Researcher is part of process</td>
</tr>
<tr>
<td>Subjects</td>
<td>Participants</td>
</tr>
<tr>
<td>Context free</td>
<td>Context dependent</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>Research questions</td>
</tr>
<tr>
<td>Reasoning is logistic and deductive</td>
<td>Reasoning s dialectic and inductive</td>
</tr>
<tr>
<td>Establishes relationships, causation</td>
<td>Describes meaning, discovery</td>
</tr>
<tr>
<td>Uses in instruments</td>
<td>Does not use in instruments</td>
</tr>
<tr>
<td>Strives for generalisation</td>
<td>Uses communications and observation</td>
</tr>
<tr>
<td>Generalisation leading to prediction, explanation and understanding</td>
<td>Strives for uniqueness</td>
</tr>
<tr>
<td>Patterns and theories developed for understanding</td>
<td></td>
</tr>
<tr>
<td>Highly controlled setting: Experimental setting (Outcome oriented)</td>
<td>Flexible approach: natural setting (process oriented)</td>
</tr>
<tr>
<td>Sample size n is require (should be representative)</td>
<td>Sample size is not a concern; seeks informal rich sample</td>
</tr>
<tr>
<td>‘Counts the beans’</td>
<td>Provides information as to ‘which beans are worth counting’</td>
</tr>
</tbody>
</table>

Source: Business Research Methods Lecture notes, 2010

### 3.2.1 Justification of the Research Design

Kidder (1981) argues that qualitative research is ideal where there is an evaluation of institutions and policies. Furthermore, Spencer et al (2003:17) says that qualitative research is suitable in the evaluation of poorly understood policy development or to inform the kind of intervention that is needed.
In light of the above, and given the nature of the research problem as outlined in Chapter 1, the researcher chose the qualitative approach in evaluating the challenges facing small scale miners in the extraction of minerals in Zimbabwe.

3.3 RESEARCH PHILOSOPHY

Research philosophy is a belief about the way data should be collected and analysed. If different philosophical perspectives are used to interpret, this will cause interpretation problems. There are two primary alternatives of research philosophy, that is the positivist and phenomenological philosophy. Positivism adopts a clear quantitative approach to investigating phenomena, as opposed to post-positivist approaches, which aim to describe and explore in-depth phenomena from a qualitative perspective.

Abbott (1998) argues that for a theoretical model to explain anything there must be an appropriate relationship between the statements made, the methods used to make such statements and the philosophical perspective deployed to inform the methods. There are issues pertaining to ontology, epistemology and methodology. Ontology is concerned with the nature of reality and its central question is whether social entities can, or should, be considered social constructions built-up from the perception and action of social actors. Epistemology, on the other hand, concerns what constitute acceptable knowledge in an area of study. The key epistemological question is “can the approach to the study of the social world, be the same as the approach to studying the natural sciences?” The positivist suggests that human behaviours can be explained and predicted in terms of cause and effect (Saunders et al. 2007).

3.3.1 Justification of the Research Philosophy
In this study, the researcher adopted both the positivist and phenomenological philosophy. This research is based on the belief that there exists a real physical world beyond our knowledge and comprehension. Moreover, there also exists a social world that is being constructed, shaped and influenced by our life experiences, knowledge and desire. Thus, this study positions itself on ‘critical realism’ perspective, hence taking the position that one can only understand reality to a limited extent; no one can obtain the entire picture of a studied phenomenon. Therefore, reality can be studied to a certain extent and generalisations can be made with a degree of probability.

3.4 RESEARCH STRATEGY

According to Saunders (1997), a research strategy is a plan of action on how to answer the research questions in the study. There are five major research strategies which can be employed in a research. These are experiment, survey, case study, action research and grounded theory. The researcher chose the survey strategy in evaluating role of small-scale mining in extractive industries in Zimbabwe.

The intention is to make an inference into the role of small-scale mining in economic growth and development. The study followed a five-step procedure for drawing a sample based on Churchill and Iacobucci (2002) and Wilson’s (2006) suggestions.

The following diagram shows the procedure adopted in the study.

Figure 3.2: Five-step procedure for drawing a sample

1. Define the target population
2. Identify the sampling frame
3.4.1 Justification of the Research Strategy

The survey method was used and involved small-scale miners as well as small-scale miners’ organisations. The questionnaire survey was the main data collection instrument of this study because the questionnaire survey enables researchers to examine and explain relationships between constructs, in particular cause-and-effect relationships (Saunders et al. 2007). Follow up interviews were also carried out to clarify unclear data.

3.5 POPULATION AND SAMPLING TECHNIQUES

Population is the target group upon which the researcher is interested to make inferences. This study will focus on small-scale mining companies in Kadoma. Additionally, stakeholders in the mining sector such as Ministry of Mines and Mining Development, Small-scale Miners Associations, Kadoma Town Council, Zimbabwe Revenue Authority (ZIMRA), Reserve Bank of Zimbabwe and Minerals Marketing Authority were considered to get views on small-scale mining in Kadoma.

3.5.1 Sampling
A sample is defined by Saunders (2003) as a subgroup or part of a larger population. A representative sample is also defined as a sample that represents exactly the population from which it is drawn. A sample of 90 respondents was drawn randomly from a population estimated to be 1000 small-scale miners in Kadoma. Miners are based at locations across the whole region of Kadoma. The researcher also selected 2 miners’ representative organisation and sent questionnaires to get information on policy issues.

3.6 DATA COLLECTION METHODS

According to Dudwick et al (2006) the quality and reliability of conclusions and recommendations of any research depends to a large stand on the quality of data collected.

3.6.1 Sampling methods

Probability and Non-probability Sampling

Probability sampling is where every element in a population has a known non-zero probability of selection. A simple random sample is the best-known probability sample, in which each member of the population has an equal probability of being selected (Dudwick et al 2006).

On the other hand, in a non-probability sampling the probability of any particular member of the population being chosen is unknown. The selection of sampling units is quite arbitrary, as a researcher will rely greatly on personal judgement.

Convenience Sampling
Convenience sampling is also called haphazard or accidental sampling. It refers to the procedure of obtaining units or people who are most conveniently available. Researchers generally use convenience samples to obtain a large number of completed questionnaires quickly and economically. The user of research that is based on a convenience sample should remember that projecting the results beyond the specific sample is inappropriate. Convenience samples are best utilised for exploratory research when additional research will subsequently be conducted with a probability sample (Saunders, 2003).

Judgemental Sampling

Judgemental sampling is a non-probability sampling technique in which an experienced researcher selects the sample based upon some appropriate characteristic of the sample members. The researcher selects a sample to serve a specific purpose, even if this makes a sample less than fully representative (Saunders, 2003).

Stratified Sampling

Stratified sampling is a probability sampling procedure in which subsamples are drawn from samples within different strata that are more or less equal on some characteristics. A sub sample is drawn utilizing a simple random sample within each stratum. The reason for taking a stratified sample is to have a more efficient sample than could be taken based on simple random sampling. Random sampling error is reduced because the groups are internally homogeneous but comparatively different. More technically, a smaller standard error may be the result of this stratified sample because the groups are adequately represented when strata are combined. Another reason for stratified sample is that the sample will accurately
reflect the population based on criterion or criteria used for stratification. This is a concern because occasionally a simple random sample may give a disproportionate number of one group or another and the representativeness of the sample could be improved (Saunders, 2003).

**Systematic Random Sampling**

A sampling procedure in which an initial starting point is selected by a random process and then every $k^{th}$ number on the list is selected. Although this procedure is not actually a random selection procedure, it yields random results if the arrangement of the items in the list is random in character. The problem of periodicity occurs if a list has a systematic pattern, i.e. if the list is not random in character.

**Simple Random Sampling**

Saunders (2003) defines simple random sampling as a sampling procedure that assures each element in the population an equal chance of being selected. The sampling process is simple because it requires only one stage of sample selection.

**Justification for Selecting a Sample Design**

In coming up with the appropriate sampling design, the researcher evaluated the above mentioned sampling designs using the following:-

a) Degree of accuracy;
b) Resources-Cost associated with different sampling techniques vary tremendously;
c) Time;
d) Advance knowledge of the population;
e) National versus Local project-Geographic proximity of population elements will; and,
f) Need for Statistical Analysis
Based on the above reasons, the researcher used non-probability sampling to come up with the sample (Saunders, 2003).

3.6.2 Primary and Secondary Data

Questionnaires

Most researchers agree that questionnaires are an inexpensive way to gather data from a potentially large number of respondents. A well-designed questionnaire that is used effectively can be used to gather information on both the overall performance of the test system as well as information on specific components of the system (Wallis, 2002).

It is important to remember that a questionnaire should be viewed as a multi-stage process beginning with definition of the aspects to be examined and ending with interpretation of the results. Every step needs to be designed carefully because the final results are only as good as the weakest link in the questionnaire process. Questionnaires are generally cheaper to administer compared to other data collection methods such as observation, telephone interviews, and direct interviews (Wallis, 2002).

Questionnaire Design

Questionnaires may have different number of sections and headings. However, it is now common in most instruments of this nature to contain three major sections,
namely, administrative section which accommodates the cover letter, instructions to respondents and questionnaire number. The other section is the demographic section which houses the basic information describing the respondent (Wallis, 2002).

The last section is the body of the questionnaire, which is the crux of the matter, contains the research questions. In carrying out this research, these outlined sections will be adopted in the crafting of the questionnaire. In this regard, a structured questionnaire was drafted to capture responses during the survey of small-scale mining operators and their workers. The analysis takes two forms, namely literature review and data from the field survey (Wallis, 2002).

**Figure 3.3: Questionnaire Design Process**

<table>
<thead>
<tr>
<th>Step 1: Define the target population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2: Select a sampling frame</td>
</tr>
<tr>
<td>Step 3: Determine if a probability or nonprobability sampling method will be chosen</td>
</tr>
<tr>
<td>Step 4: Plan procedure for selecting sampling units</td>
</tr>
<tr>
<td>Step 5: Determine sample size</td>
</tr>
<tr>
<td>Step 6: Select actual sampling units</td>
</tr>
</tbody>
</table>

Source: Churchill & Iacobucci (2002, p.302)

**Pre-test of the questionnaire**
A questionnaire must go through several stages (Churchill & Iacobucci, 2002). A sample of three questionnaires was used to pre-test the questionnaires and the final questionnaire was adjusted accordingly.

### 3.6.3 Justification of Data Collection Methods Used

Validity of the questionnaire refers to the capability of the research questionnaire to measure what it is supposed to measure. The questionnaire, after the pre-test will be capable of achieving that feat. Through the process of triangulation, any finding or conclusion is likely to be much more convincing and accurate if it is based on several different sources of information, following a corroboratory mode (Saunders, 2003).

### 3.6.4 Data Analysis and Presentation

Excel and SPSS were used to analyse the data. This is because these Statistical Packages can express deeper relationships in the data.

### 3.7 RESEARCH PROCEDURE

The researcher distributed 90 questionnaires to miners in the Kadoma district in order to investigate miners’ challenges in their daily operations. The respondents were randomly selected. The researcher also distributed questionnaires to two small-scale miners’ representatives, in order to get deeper information on policy issues. Follow up interviews were also carried out with both the miners and miners’ representative bodies.

### 3.8 RESEARCH LIMITATIONS

In carrying out this research, the researcher could not access some of the areas in Kadoma mainly because they were inaccessible. Furthermore some of the
respondents failed to return back the questionnaires (28 of 90) despite spirited efforts by the researcher for them to do so.

3.9 CHAPTER SUMMARY

This chapter focuses on the research design, research philosophy, research strategy, population and sampling techniques, data collection methods, research procedure and research limitations.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter will focus on the findings of the research. The findings will be presented in the form of diagrams and tables. The results of the research are discussed at the end of the chapter.

4.2 FINDINGS

4.2.1 RESPONSE RATE

The researcher distributed 90 questionnaires and 62 Respondents managed to return the filled questionnaire. The response rate was 69%. In terms of gender, the respondents to the questionnaire were as follows:

Table 4.1: Gender Results

<table>
<thead>
<tr>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
</table>

Page 96 of 164
Figure 4.1 below shows the gender results:

**Figure 4.1: Gender Results**

4.2.2 AGE DISTRIBUTION

Figure 4.2 shows age distribution in years:
4.2.3 LEVEL OF EDUCATION

Figure 4.3 shows the levels of education
4.2.4 CLAIM OWNERSHIP

Figure 4.4 shows claim ownership by gender:

4.2.5 MIGRATION
Most of the respondents originally come from Kadoma area (50%). However, a significant percentage (47%) of the respondents were from outside Kadoma. 23% of the respondents were originally from other provinces.

Figure 4.5 shows migration:

**Figure 4.5: Migration**

![Migration Graph]

### 4.2.6 MIGRATION AND CLAIM OWNERSHIP

Figure 4.6 shows migration versus claim ownership:

**Figure 4.6: Migration and Claim ownership**

![Migration and Claim Ownership Graph]
4.2.7 OCCUPATIONS/SOURCES OF INCOME

Figure 4.7 shows the sources of income:

![Figure 4.7 Sources of Income](image)

4.2.8 GOLD MARKETING

About (44%) indicated that they sell their gold to private buyers. A significant percentage (32%) indicated that they sell their gold to Fidelity and Tetrad Bank.

![Figure 4.8: Gold Marketing](image)
4.2.9 INCOME FROM GOLD-2008-2020 (Projected)

Figure 4.9 shows average income of a miner from 2008-2020(Proj.)

4.2.10 TOTAL NUMBER OF PEOPLE EMPLOYMENT IN THE MINES

Figure 4.10 shows the total number of people employment in the Mines
4.2.11 INTERNATIONAL PRICES/OUNCE VERSUS AVERAGE PRICES PAID TO MINERS

Figure 4.11 shows the International prices/ounce versus average prices paid to miners:

*Figure 4.11: International Prices/Ounce versus Average Prices Paid to Miners*

4.2.12 PROCESSING

Most miners (40%) indicated that they process their gold at black millers while a significant proportion of them still process their gold at white millers (28%).
Figure 4.12 shows the Processing premises

**Figure 4.12: Processing Premises**

Most miners (58%) indicated that they mine more than 6 tons of raw ore per month. This volume is quite significant considering that they are small scale in terms of equipment and machinery.

### 4.2.13. MINING VOLUMES

Figure 4.13 shows mining volumes:

**Figure 4.13: Mining volumes**

Miners, on average, obtain roughly 6-20g of gold per tonne of gold.
4.2.14 USE OF MERCURY

Nearly all respondents (95%) use mercury to get their gold. Sources of mercury to miners are wide-ranged. They include suppliers such as retailers in Kadoma, the millers or the buyers/dealers. Usually the amount of mercury used varies, depending on the ore obtained. However most respondents stated that they use 50g of mercury for the extraction of about 100 grams of gold.

Figure 4.14 shows gold processing methods

**Figure 4.14: gold processing methods**

Most of the miners do not know the harmful effects of using mercury. Only 11% used some form of protection against it and most handled it with bare hands.

4.2.15 CHALLENGES FACING SMALL-SCALE MINERS

Figure 4.15 presents the challenges facing Small-Scale Miners
4.2.16 GOLD TRADING CHALLENGES

Figure 4.16 presents gold trading challenges:

4.2.17 EQUIPMENT

Figure 4.17 shows Equipment of small-scale miners:
4.3.18 MAXIMUM DEPTH MINED

About half of the miners mine up to a depth of 25m while only 2% mine up to a depth of 30m. Miners usually leave the mine not because of mineral depletion, but because of lack of machinery. Most of them leave the pits uncovered with the hope that they will find machinery someday.

Figure 4.18 shows Maximum Depth Mined
4.2.19 REPRESENTATION

Figure 4.19 shows representation by organisation:

**Figure 4.19: Representation**

4.2.20 OTHER CHALLENGES FACING SMALL SCALE MINING

Most of the respondents (46%) complained that prostitution was rife in the area, mainly because most miners have families at their rural homes outside the mining area. Furthermore, transport costs are prohibitive for them to commute to these rural homes and they tend to resort to prostitution. This also means that very little of the money earned filters into the rural homes.
4.2.21 AFFILIATION

Most miners are not affiliated to any small scale miners' organization, although a significant percentage of them indicated that they were members of the Zimbabwe Miners Federation (ZMF) and Women in Mining (which is also an affiliate of ZMF). None of the miners indicated an affiliation to the Chamber of Mines.

4.2.22 ROLE OF WOMEN

The work that is usually done by women at mines is cooking and carrying out load. A significant percentage is also involved in mercury amalgamation, mainly because they are patient and can be trusted more than men.
Figure 4.22: Work usually done by women

4.2.23 CONSULTATION OF SSM BY GOVERNMENT

Most miners indicated that the Government does not consult them when crafting policies.

Figure 4.23 Consultation by Government
4.3 DISCUSSION OF RESULTS

Demographic issues

From the results above, males generally predominantly dominate the mining in Kadoma. This is in contrast to Dreschler (2001) who asserts that Zimbabwe is an example of a country with a high representation of women in small-scale mining. However, the findings of the research also found out that men are involved more in the informal work of small-scale mining, such as digging and cooking, as echoed by Dreschler (2001) and (Traore, 1997). The majority of people in the economically active age range (21-40 years) are miners. The number of adults tapers off considerably in above 50yrs amongst miners. The manual nature of the work might be a factor and that maybe the reason why people retire from mining to do other work or possibly mortality might be high in this community.

Education

Most miners have acquired secondary and college education. A significant percentage of them have also attained university degrees. This is a reflection that literacy levels in the area are good. Most people interviewed (68%) own mining claims and most of them indicated that they were paying an inspection fee of US$400 per year.

Of the 42 respondents who own mining claims, 5 of them were women and most of them were educated up to college level. During follow up interviews, some of them indicated that the Women in Mining, an affiliate of the Zimbabwe Miners' Federation, had assisted them to attend courses at the Zimbabwe School of Mines and were given certificates for the courses attended.

Although most of the respondents who were claim owners originally come from within the Kadoma area, a significant percentage (29%) of them was renting the
claims. During follow up interviews, some of them claimed that most influential people, who even come from other provinces and had connections with the provincial mining officers, were holding on to a number of claims for speculative purposes. Nearly all miners from other provinces were owners of mining claims (93%).

4.3.1 ROLE OF SMALL SCALE MINING

Income

From the results above, income from gold has been increasing over the years 2008-2011. This has mainly been caused by surging international prices of gold as well as removal of surrender requirements by RBZ. The IMF (2009) also mentioned this sentiment. However, it is also important to note that over the period 2008-2011, the average prices at which small-scale miners sold their gold is well below international gold prices. They could have got more income if a small scale mining policy that recognise small-scale mining and its categories, that identifies Government functions and roles, that clearly spelt out policy objectives and that recognises small-scale mining constraints was in place, as put forward by Hentschel T. et al, (2003).

Employment Creation

The number of people employed in the sector has been increasing since 2009 from 167 to 789 in 2011 and is expected to grow exponentially to about 4009 in 2020. The Chamber of Mines (Chamber of Mines, 2011 Annual report, pp.9) and AfDB Zimbabwe Monthly Economic Review, January 2012, pp4, also established the same sentiments.

According to the Zimbabwe Miners Federation (ZMF, 2012), despite the low production at an individual level, the often large number of units involved means that at a national scale, total production of small scale miners can be significant,
equalling or exceeding that of large scale miners. In 2004, small-scale miners produced 60% of the total 29 tonnes produced. In 2005 small-scale miners produced just under 50% of the total 21 tonnes produced. In 2006, Government launched “Operation Chikorokoza Chapera” leading to a decrease in production.

Resultantly, in 2008, Zimbabwe’s Fidelity Printers and Refiners was delisted from the London Bullion Market Association because the country produced below the minimum 10 tonnes required. In 2010, ASM produced 2 tonnes while 2.7 tonnes were produced in 2011, small-scale miners’ operations and challenges are not well known because their operations are informal in most cases.

4.3.2 CHALLENGES FACING SMALL SCALE MINERS

Limited Access to Finance & Equipment

About 92% of the respondents agreed that access to finance and equipment was an impediment to their potential to produce more gold. This characteristic is one of the factors put forward by Noetstaller, (1995) to define small scale mining. The same sentiments were also put forward by ILO (1999), where obtaining finance was listed as number one issue affecting small scale miners. In order to fully realise the potential of small-scale miners, there is need to incorporate the best practices in small scale mining put forward by Hentschel T. et al, 2003, pp82, where issues of drafting a small-scale mining lending policy and establishing loans targeted at specific needs of small-scale miners are emphasised.

The majority of small-scale miners have basic tools (98%), which in most cases demand a lot of manual energy. Very few of them have mechanized equipment such as compressors. Extraction of the ore from the gold reefs is manual and involves digging it out with basic tools, i.e. picks, shovels, hammers and chisels. In most instances, steps are made as the people dig deeper (up to 25m) to enable the ore to be moved up by shovels to the top.
However, in a few cases vertical shafts are dug (15%), with miners being sent down using as bucket and rope from a hand operated winch. In such cases digging can go to a depth of 30m or more below ground level and usually leave holes uncovered. (Dreschler 2001) put forward the same sentiments. However, the results differ with those put forward by Dreschler (2001) on maximum depth mined. Dreschler (2001) mentions the depth of 50m as the maximum depth while the results show that small scale miners in Kadoma only mine up to a depth of only 30m, after which a new shaft is then started from the surface.

**Pricing and Marketing of gold**

Most of the respondents (38%) complained that they were being short-changed by the buyers in terms of the pricing of the gold. From the follow up interviews conducted by the researcher, some of the miners complained that their production levels do not meet the requirements of Fidelity Printers as per their Gold Bullion Acceptance conditions. They also complained that small-scale miners resort to trading using informal channels, hence could not easily meet the conditions set out by the Ministry of Finance to get a Gold Trading licence. Some miners also complained that they were just price takers, with limited or no ability to influence the price. This is in deviation of best practices in mining put forward by Compendium on Best Practices in Small-Scale Mining in Africa (n.d.), pp4 where regulation of minerals marketing, licensing of private mineral dealers and Local mineral pricing systems are emphasised.

According to the Women in Mining Organisation, most of their registered members sell their gold to Fidelity, Millers, Tetrad Bank and private buyers. Due to the oligopolistic nature of the market, suppliers tend to collude in terms of their pricing. The prices they offer are far well below the international prices of gold.
Centralisation of Mining Services in Harare

They complained that the Mining Industry Loan Fund is centralized in Harare and mainly caters for people who are connected to Chief Mining officers. This sentiment was also put forward by Dreschler (2001). Marketing of the gold is also a problem, taking into account small scale miners’ production levels. Most of the miners complained that the current institutional set ups are designed to serve the interests of large scale miners only. However, only a few miners complained about lack of representation.

Security

Miners also indicated that they have challenges of security (20%). Most of them said that armed gangs had besieged the area mainly because of the gold. Furthermore, they bemoaned the lack of adequate policing by the Zimbabwe Republic Police (ZRP).

Mining Fees

Considering their scale of operations, most respondents (73%) strongly agreed that the level of fees that are levied by the Ministry of Mines and Mining Development are too high and about 21% agreed that the fees were too high hence 94% of the respondents generally agreed that the fees were too high. Most people interviewed (68%) were claim owners and most of them indicated that they were paying an inspection fee of US$400 per year.

ZMF bemoaned that fees charges are too high and unsustainable. The fees and charges that apply to large companies such as Zimplats also apply to them. They are of the view that fees in the large-scale mining should be differentiated from the fees that are applicable to the small-scale mining sector.
The following diagrams show the fees that directly affect small scale miners and the extent of the increase:

**Figure 4.21: Prospecting Licences**

![Graph showing the fees for different types of prospection licences.](image)


**Figure 4.22: Inspections Fees per 5h/a**

![Graph showing the fees per 5 hours for inspections.](image)

4.4 CHAPTER SUMMARY

Chapter 4 laid bare the research findings discussed in the context of literature presented in chapter two. The conclusions and the recommendations are in the next chapter.
CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This last chapter of the dissertation presents conclusions and recommendations by the researcher. The conclusions and the recommendations are drawn from the research findings. The conclusions will be discussed with reference to objectives stated in chapter 1.

SUMMARY OF FINDINGS

From the findings in chapter 4, it is clear that small-scale mining is an indispensable economic activity that has been the driver of much of the economic development. Small-scale miners’ contribution in extractive industries has significantly increased since the introduction of the multicurrency system in 2009. Although there are costs to small-scale mining, its benefits outweigh the costs. Despite the benefits and potential of small-scale mining, miners face many challenges, most of which are to do with Government policy and perceptions. This sector is posed to contribute even more, if challenges facing this sector are addressed.

5.2 CONCLUSIONS

5.2.1 What is the Role that Small-Scale Mining Play in Extractive Industries?

At the onset of the research, the researcher was begin troubled by the question, “Is there any role that is played by small scale miners in extractive industries or they are just there to destroy the environment and the ecosystem? However, as presented in
Chapter 4, small scale mining has contributed significantly to the economy, especially after the introduction of the multi-currency system in 2009. The results show that incomes of miners and production have increased significantly. This fact is also supported by data from Fidelity Printers and AfDB. On this research question, small-scale miners have the potential to contribute more to the economic growth of the country based on the sector’s growth in the last three years.

5.2.2 What are Challenges Facing Small-Scale Miners in the Extraction of Minerals?

This research was conducted against a background of literature and reports that Small-scale miners face a myriad of challenges in their mining business. The researcher sought to find out the challenges facing the miners. Basing on the results in chapter 4, small-scale miners face many challenges, which undermine their potential to contribute more to the economy. The challenges include the following:-

Lack of equipment and financial support

From the findings in chapter 4, small-scale miners have potential to contribute significantly to the Zimbabwean economy. They, however, lack the financial support to purchase requisite capital equipment to increase efficiency and output. They cannot access loans from banks mainly because they do not have equipment that can be used as collateral security. During the past decade, NGOs, who used to assist small-scale mines, have withdrawn their support.

Although the Government is currently assisting small-scale miners by exempting customs duty on selected equipment through gazetting of mining locations, the procedures are bureaucratic and miners still pay VAT of 15% of the total cost of machinery/equipment, thus adding to their costs of production and affecting productivity.
Mining Fees and Consultation

From the findings in chapter 4, mining fees gazetted by the Ministry of Mines and Mining Development in January 2012 are too high. Although the fees are reasonable to large-scale miners who mine diamonds and platinum, they are too high for a small-scale miner, if we consider their scale of operation. Miners are not consulted, even on matters that directly affect them.

Marketing of Minerals Produced by Small-Scale Miners

One of the challenges facing small-scale miners is the pricing of minerals. In most cases, they are short changed by dealers because some of them cannot sell to Fidelity Printers because since they are unable to produce the required thresholds as per Gold Bullion Acceptance Standards. Moreover, the current Gold policies and legislative provisions in Zimbabwe restrict the participation of small-scale miners in the sector.

Environmental Degradation

Environmental degradation at disused mine sites remains unchecked. Moreover, most miners do not know the health and environmental dangers of improper mercury use. This might lead to the long-term effects of these dangers.

Absence of Mining Policy that Promotes Small-Scale Mining

Currently, there is no mining policy that incorporates a poverty reduction dimension in small-scale miners and strategies that recognize small-scale mining as an important economic sector. Most people view small scale mining as “illegal”, regardless of whether it is registered or not.
Centralisation of Mining Services in Harare

Small scale miners have complained that most mining offices and services are centralised in Harare and other large cities. The Ministry of Mines and Mining Development does not have dedicated offices for small scale miners.

Lack of Representation

The activities of small-scale miners’ organisations are fragmented and are based on regions. Miners’ organizations do not have a single voice that can help miners in conducting negotiations, mobilizing assistance programmes, conducting awareness campaigns amongst its members and organizing security and other mining camp-related activities.

5.2.3 What are the potential areas of improvement so that small-scale mining contributes more to the extraction of minerals?

From the results in chapter 4, the future of the mining sector in Zimbabwe lies in the small scale mining sector. Small miners forecast to increase their production more than fourfold by 2020. There is thus need for Government to put in place policies that address their challenges so that they will realise their potential.

5.2.4 Are there lasting solutions to the challenges that small-scale miners face in their mining business?

The researcher managed to review literature on solutions to the challenges facing small scale miners. The literature includes the best practises in small scale mining and this will be discussed in more detail on recommendations.
Evaluation of the research proposition

The research proposition mentioned in chapter 1 was, “The small-scale miner has potential to contribute significantly to the economy in the extraction of minerals.” The researcher’s view is that the small-scale miner surely has the potential. This is because firstly, the results clearly showed that employment, production and income of the small scale miner have been increasing over the years, despite the many challenges that they face. Secondly, other sources of literature such as AfDB and Fidelity Printers also state that the output of small scale miners has been increasing since 2009.

5.3 RECOMMENDATIONS

5.3.1 Provision of Equipment and Financial Support

In order to fully realise the potential of small scale miners, there is need for the Government to prioritise the recapitalisation of Mining Industry Loan fund (MILF) and ensure that it is easily accessed by small-scale countries across the whole country.

The Government should also identify and develop schemes that will enable miners to have access to finance, for example, through the establishment of special financing schemes, such as Government/donor-supported financing programmes, revolving loans, equity-based schemes, hire/lease/purchase schemes/buyers’ credits, group schemes and others. Government should consider giving the small-scale miners a rebate of duty valid for 5 years to enable them to capitalise.
5.3.2 Mining Fees Review

There is need for the Ministry of Mines and Mining Development to review the whole mining fees schedule, with a view of lowering those fees which are applicable to small scale mining. This should be done in consultation with the miners, so that there will be no problems in the future.

5.3.3 Marketing of Minerals produced by Small-Scale Miners

There is need for Government to licence more gold buyers in order to reduce the monopoly power of Fidelity Printers and a few other licenced dealers in the market. This will make the market more competitive and all the pricing distortions will be erased.

Furthermore, the gold licencing policy should be revised with a view of allowing small-scale miners to market their gold nationally and internationally. Fidelity Printers’ Gold Bullion Acceptance rules should also be revised, taking into consideration the average volumes produced by small scale miners.

5.3.4 Environmental Degradation

Miners should be made aware of the negative environmental impacts, the relevant environmental legislature, and prompted to take action to rehabilitate disused mine sites. This can be done through education as well legislation. The Government, through the Ministry of Health and Child Welfare, should also embark on awareness education on the long-term effects of using mercury and educate them on the new safe methods of processing gold.

The is also need for the Ministry of Mines and Mining Development to develop specific regulations for small-scale mining in order to address environmental
protection, health and safety requirements that are practical, implementable and within the technical and financial capacities of the miners. There is need for small scale miners to comply with the requirements for minimizing negative environmental impacts and upholding high health and safety standards.

5.3.5 Development of Mining Policy that Promotes Small-Scale Mining

There is need for stakeholders to develop a mining policy that incorporates a poverty reduction dimension in small-scale miners’ strategies and recognizes small-scale mining as a potential economic sector with clear identification of constraints and potential. The policy should be crafted with the input of small-scale miners’ representatives. The policy should incorporate procedures, institutions, targets and a time frame for implementation. It is common in most countries to have good policies that never get implemented.

5.3.6 Decentralisation of MILF to Mining Areas

Small scale miners have complained that most mining offices and services are centralised in Harare and other large cities. There is thus urgent need to decentralize the administration system, especially for the artisanal permits and authorizations, so as to encourage involvement of local authorities, enable effective control and ensure benefits to local economies.

5.3.7 Establish a Specialized Small-Scale Mining Unit/Department within the Ministry Responsible for Mining

There is need to establish a specialized small-scale mining department within the Ministry that will promote and provide support services specifically to the small-scale mining sector. The department should have experts in mining technology, environment, gender, and child labour, financing, minerals marketing and others.
This department will be responsible for identifying and timeously act on the challenges facing small scale miners.

5.3.8 Strengthening of Small Scale-Miners Organisations

In principle, miners’ organizations or associations provide a single voice that can help miners in conducting negotiations, mobilizing assistance programmes, conducting awareness campaigns amongst its members and organizing security and other mining camp-related activities. The formation of small scale organisations should follow a bottom up approach so that the miners will own their initiatives.

5.4. AREAS FOR FURTHER STUDY

It will be interesting to research further the challenges facing small-scale mining who are mining other minerals such as chrome and iron ore. Knowledge on the challenges facing these miners will enable the Government to design holistic and well informed small scale mining policies for the whole sector.

5.5 CHAPTER SUMMARY

Chapter 5 focused on the conclusions and the recommendations of the study. Areas that are for further study are also discussed in this Chapter.
5.6 REFERENCES

1. 2009 Mid Term Fiscal Review, Zimbabwe Ministry of Finance, July 2009

2. 2011 National Budget Statement, Ministry of Finance, November 2010


11. Chamber of Mines 2009 Mining Annual Report

12. Chamber of Mines 2010 Mining Annual Report


23. Ellmies, Hahn and Mufenda (2005), ‘Excursion to Small-scale Mining Operations in Namibia and environment with a special focus on gold panners.’


26. Exclusive Prospecting Orders (EPOs) Regulations, Ministry of Mines and Mining Development

27. Fidelity Printers Gold Bullion Acceptance Conditions, 2012


31. Hancock, B, (2002). *An introduction to Qualitative Research.*” Nottingham, Trent Focus Group.


38. Hollaway, J. (1996), Environmental Problems in Zimbabwe from Gold Panning. CRS.


40. Indigenisation and Economic Empowerment Act [Chapter 14:33] and the 2010 Indigenisation and Economic Empowerment General Regulations.


42. International Labour Organisation’s 1999 sectorial Activities Programme.


45. Investment In Zimbabwe: Junior & Small-scale Mining Projects By Rose Mazula (2009)


47. Journal on Mining, People and the Environment of Natural Resources. Forum 26 and the March 2003 special issue on Environmental Management in the Small-Scale.


57. Medium Term Plan (MTP) 2011-2015, Ministry of Economic planning and Investment Promotion, 2011.  


75. Precious Stones Trade Act (Chapter 21:06), Zimbabwe Government Printers.


78. Reserve Bank of Zimbabwe, 2012 Publications


86. Summers, R. (1969), Ancient mining in Rhodesia and adjacent areas, National Museums of Rhodesia Memoir No.3, Salisbury, The Trustees of


89. The Mining (Health and Sanitation) Regulations, Ministry of Mines and Mining Development.

90. The Mining (Management and Safety) Regulations, Ministry of Mines and Mining Development.

91. The Mining (Alluvial Gold) Public Stream Regulations, Ministry of Mines and Mining Development


94. United Nations, 1972 publications

95. The UN conference on Mining in Yaoundé, Cameroon in November 2002


Monika Weber-Fahr,


102. Zimbabwe Short Term Emergency Recovery Programme (STERP 1), March 2009.
TO WHOM IT MAY CONCERN

04 June 2012

Dear Sir /Madam

My name is Innocent Madziva. I am a final year Masters of Business Administration (MBA) student at the University of Zimbabwe’s Graduate school of Management.

It is a requirement for the MBA programme that I undertake a research study for submission to the University. To this end, I am conducting a research study entitled: In investigation on the role of small scale mining in the extraction of minerals in Zimbabwe. The major objectives of the study are to investigate the contribution of small-scale mining development as well as provide practical recommendations to the challenges that small-scale miners face in their mining business.

In order to fulfill the research objectives mentioned above, I am kindly asking for your assistance in completing a questionnaire attached. The research is purely for
academic purposes and the research participants will be treated with strict confidence.

I look forward for you completion of the questionnaire and returning of the same.

Yours faithfully,

Madziva Innocent
SECTION A: DEMOGRAPHIC AND BACKGROUND INFORMATION

1. Gender

Male □
Female □

2. Age

<table>
<thead>
<tr>
<th>18-20 yrs.</th>
<th>21-30 yrs.</th>
<th>31-40 yrs.</th>
<th>41-50 yrs.</th>
<th>51-60 yrs.</th>
<th>61 yrs.+</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. How long have you been engaged in mining activities?

<table>
<thead>
<tr>
<th>Less than 2 yrs.</th>
<th>2 – 5 yrs.</th>
<th>5 – 10 yrs.</th>
<th>More than 10 yrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. What is the highest level of education?

<table>
<thead>
<tr>
<th>ILLITERATE</th>
<th>PRIMARY</th>
<th>SECONDARY</th>
<th>COLLEGE</th>
<th>UNIVERSITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Page 138 of 164
5. Ownership

- Individual claim owner □
- Renting a claim □
- Member of a cooperative □
- Other, (specify) ...........................................................

6. Where do you originally come from?

- Kadoma area □
- Not from Kadoma but still from Mash West □
- Other provinces □
- Other country □

MINING OPERATIONAL ACTIVITIES

1. Why did you venture into the small-scale mining business?

- Retrenchment □
- Unemployment □

- Poor Agricultural yields □
- Other reasons..........................................................
2. How many years have you been mining in this area?

- Less than year
- 2 years
- 3 years
- 4 years
- 5 years
- More than 5 years

3. Are you a miner full time?

- Mining full time
- Mining part time
- Farming Full time
- Farming part time
- Other Jobs

4. Do you have a mining licence?

- Yes
- No

5. If you have a mining licence, how much do you pay in terms of claim fees per year?

US$
6. Are the fees reasonable and affordable?

   Reasonable  □
   High        □
   Unaffordable □

MINERAL PROCESSING & MARKETING OF GOLD

1. Where do you usually sell your gold?
   Licenced dealers  □
   Fidelity Printers  □
   Private Buyers    □
   Cross boarder dealers  □
   Other activities  □
   (Specify)………………………………………………………………………………

2. Explain why you sell to the institutions/persons mentioned above
   ……………………………………………………………………………………………
   ……………………………………………………………………………………………
   ……………………………………………………………………………………………
   ……………………………………………………………………………………………
   ……………………………………………………………………………………………
3. On average what is your monthly income

Less than US$50
US$50-100
US$100-200
US$200-400
US$400-600
More than US$600

4. Over the past years (2008-2012), at what price do you sell your gold and how much did you realize from the sales?

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012F</th>
<th>2015F</th>
<th>2020F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prices/Ounce</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Income from gold</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Where do you process your ore?

At home
Cooperative
Black Millers
White Millers
Other ........................................................................
6. Average ore per month?

2 tonnes  □□
3 tonnes  □□
4 tonnes  □□
5 tonnes  □□
6 tonnes  □□

7. What is your average gold (grams) per tonne of gold ore per month?

0-3  □□
4-6  □□
7-9  □□
10-12 □□
13-15 □□
16-18 □□
19-21 □□

8. How do you process your gold?

Use mercury  □□
Use retort method  □□
Other (Specify) .................................................................
9. Why do you use the method stated above?

Cheap  
Easy  
Fast  
Other reason (Specify)
………………………………………………………………..

10. If you are using mercury, who supply you with mercury for processing your ore?

Mill owners  
Retailers  
Private Gold Buyers  
Other, 
(specify)………………………………………………………………………………..

11. Do you know the dangers of using mercury?

Yes  
No  

12. Do you use protective clothing when using mercury?

Yes  
No  

13. How much mercury do you use per tonne of ore?

14. How much do you spend a month on average on the following?

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
</tr>
<tr>
<td>Rent</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td></td>
</tr>
<tr>
<td>School fees</td>
<td></td>
</tr>
<tr>
<td>Clothing</td>
<td></td>
</tr>
<tr>
<td>Transport Energy (firewood/electricity)</td>
<td></td>
</tr>
<tr>
<td>Others (specify)</td>
<td></td>
</tr>
</tbody>
</table>

15. What are the difficulties you encounter while selling your gold?

16. How can your working and living conditions be improved?

17. Would you like to be trained in order to benefit from improved methods of gold extracting technology?

Yes  

No
18. Which mining equipment do you possess? Tick where appropriate.

- Shovels
- Picks
- Wheelbarrows
- Hammers
- Chisels
- Compressors
- Beam balances
- others (specify) ...........................................

19. Maximum depth that you mine?

- 8m
- 15m
- 25m
- 30m
- 50m

20. Do you cover your holes after mining?

- Yes
- No

21. Where do you get the tools mentioned above?

- Buy from Retailers
- Buyers/Middlemen
- Other ..........................................................
22. Which mining infrastructure do you have? Tick where appropriate.
   a) Shafts
   b) Mill
   c) Cyanidation ponds/tanks

23. What is the most positive thing that gold mining brings?

                                                                                           
                                                                                           
24. If “nothing positive”; then why do people continue mining, why doesn’t everyone stop?

                                                                                           
                                                                                           
25. In the community: Have gold miners contributed to community development; have they done anything to make the place better?

                                                                                           
                                                                                           
                                                                                           
                                                                                           
                                                                                           

26. Challenges facing small scale mining business (Please tick where appropriate)

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining fees and taxes charged by Government are too high</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small scale miners have limited access to finance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are no Extension Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small scale miners are not adequately represented</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is very difficult to meet the conditions for bullion acceptance set out by Fidelity printers or to get a gold dealership licence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Scale mining is hampered by lack of equipment and machinery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
27. Apart from the above mentioned challenges, what other challenges do you face in your mining business?

……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

28. What do you think should be done to address the challenges that you stated above?

……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

29. What is the most negative consequence of small-scale gold mining; what problems has gold mining brought to this area?

……………………………………………………………………………………………
……………………………………………………………………………………………

30. What can you do to reduce/mitigate the problem? (families, community, gold miners, Government)

……………………………………………………………………………………………
……………………………………………………………………………………………

31. Are there things that have become worse since there is small-scale gold mining?

……………………………………………………………………………………………
……………………………………………………………………………………………

32. If small-scale gold mining were to cease, because for example, it would be prohibited or all gold would be gone, what would there be to do? How would people react? Where would you find money to support your family?
SUPPORT PROGRAMMES FOR SMALL SCALE MINERS EXTENTION SERVICES

1. Do you know where Ministry of Mines and Mining Development offices located?

…………………………………………………………………………………………
…………………………………………………………………………………………

2. Does Ministry of Mines and mining Development provide extension work?

Yes  ___
No   ___

3. Where else do you get small-scale mining education?

NGOs  ___
Private sector  ___
None   ___

4. How often does the Inspector of Mines visit your mine?

Every year  ___
2 years  ___
3 years  ___
Never    ___
5. Which miners' representative board are you affiliated to?

- Chamber of mines
- Federation of Small Scale Miners
- Women in Mining Association
- None
- Other………………………………………

6. What type of services do you usually access from your association?

……………………………………………………………………………………………
……………………………………………………………………………………………

HEALTH AND SAFETY

1. Can you please rate your health and safety conditions

- Very good
- Good
- Poor
- Very poor

ROLE OF WOMEN IN MINING

1. How males and how many females are employed on this mine?

- Males
- Females
2. State the work that is usually done by men

State the work that is usually done by women

- Digging
- Carrying load
- Mercury Amalgamation
- Burning Amalgam
- Other (specify)

3. In your opinion, what would be the ideal institutional mechanism for the engagement between Small Scale Miners and Government?

4. State what factors constrain effective engagement on the part of Government?

5. How often does the Government engage Small Scale Miners in mining?

- Very often
- Sometimes
- Not at all
TO WHOM IT MAY CONCERN

04 June 2012

Dear Sir /Madam

My name is Innocent Madziva. I am a final year Masters of Business Administration (MBA) student at the University of Zimbabwe’s Graduate school of Management.

It is a requirement for the MBA programme that I undertake a research study for submission to the University. To this end, I am conducting a research study entitled: In investigation into the challenges facing small-scale miners in the extraction of minerals in Zimbabwe. The major objectives of the study are to provide practical recommendations to the challenges that small-scale miners face in their mining business.
In order to fulfil the research objectives mentioned above, I am kindly asking for your assistance in completing a questionnaire attached. The research is purely for academic purposes and the research participants will be treated with strict confidence.

I look forward for you completion of the questionnaire and returning of the same.

Yours faithfully,

Madziva Innocent
BACKGROUND INFORMATION

1. Name of Small Scale Miners representative organization


2. How many members do you represent?


SUPPORT PROGRAMMES FOR SMALL SCALE MINER Extension SERVICES

3. What type of services do you usually provide to your members?


LEGAL AND REGULATORY FRAMEWORK

4. How often does the Government engage your organization in mining policy formulation?

Very often [ ]

Sometimes [ ]

Not at all [ ]

5. In your opinion, what would be the ideal institutional mechanism for the engagement between Small Scale Miners and Government?

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

6. What are the factors that constrain effective engagement with Government?

........................................................................................................................................................................................
........................................................................................................................................................................................
........................................................................................................................................................................................
........................................................................................................................................................................................
........................................................................................................................................................................................
........................................................................................................................................................................................
7. Is the constitutional and statutory basis for private mining rights and obligations clearly defined and based on transparent rules?

8. Is private sector access to mining rights granted? Are mining titles issued by Ministry of Mines and Mining Development secure?

9. Are marketing and foreign exchange freedoms competitive and stable in the small scale mining sector?

10. What, if any, are the legal or regulatory restrictions that impede investments in the small-scale mining sector?
11. Which regulatory reforms or legal initiatives could most increase the country’s attractiveness for the small scale mining sector?

12. Are there international financial institutions or other organizations that can be partners in promoting the small scale mining sector internationally?
ECONOMIC POLICY

13. What are the measures put in place by the Government to manage volatility of income streams from small-scale mining?

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

14. What are the systems put in place by the Government for ensuring that small-scale mining investment decisions are taken in a rational and transparent manner?

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

15. Is the impact of the small-scale mining sector’s growth on the overall economy adequately managed and monitored?

.................................................................
.................................................................
.................................................................
.................................................................
GOVERNANCE OF THE SMALL SCALE MINING SECTOR

16. Are the earnings, as well as income flows to the Government, appropriately documented, fully transparent, and disclosed?

……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

17. What initiatives by mining companies that would generate direct opportunities for the poor could be encouraged or supported?

……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

18. Has substantial lateral or downstream economic activity developed? If not, why?

……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

CAPABILITIES IN THE SMALL SCALE MINING SECTOR

19. What initiatives by mining companies that benefit the capabilities of the poor directly could be encouraged or supported by Government?

……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………
TRAINING AND EDUCATION

20. Do mining companies have training programs designed to transfer capabilities not only to workers but also to others in the communities?

ENVIRONMENTAL ASPECTS OF MINE CLOSURE

21. Are environmental responsibilities defined for orphaned sites and for decontamination of the land? What is the definition of closure, reclamation, and cleanup?

22. What agreements can be reached on the use of land after mine closure, particularly for land rehabilitation? What are the arrangements for post-closure monitoring, site stability, and environmental protection?
HEALTH AND HUMAN DEVELOPMENT RISKS

23. Are workplace health and safety risks properly managed by the company? Are there any significant community-related health risks (HIV/AIDS, for instance) that need greater government attention or give scope for public–private partnerships?

24. Can a closure plan be made a prerequisite to a mining concession? Can standards and arrangements for mine closure be negotiated with existing mining operations at a later stage?

25. What types of labour market interventions will be needed in the event of mine closure? Early planning can contribute to the sustainability of interventions.
EMPOWERMENT

26. How has the Indigenization and Empowerment policy of Government affected the activities of the small scale sector

27. Can the government support the flow of information from the company to the communities concerned? Is information packaged so that local communities can access it and understand the potential implications?

28. State other challenges facing small scale miners.
29. What do you think should be done to address the challenges that you stated above?