THE CONTRIBUTION OF SMALL-SCALE AND ARTISANAL MINING TO HOUSEHOLD LIVELIHOODS IN THE MIDLANDS PROVINCE OF ZIMBABWE

Patience Siwadi*

Marcus Mutanga*

Abstract

Although small-scale and artisanal mining in Zimbabwe predates to the time of colonialism, the country's economic downturn which began in the 1990s saw an unprecedented increase in this economic activity. For a long time, mining in Zimbabwe was carried out by large mining houses most of which are multinationals. In 1992 Zimbabwe's Minister of Mines legalized small-scale and artisanal mining countrywide on condition that the miners sold their yield to the Reserve Bank of Zimbabwe (RBZ). Informal mining became a major livelihood for many rural households. While the negative environmental and social impacts of small-scale and artisanal mining are now well documented, there still exists a lacuna of empirical research on the positive impacts of small-scale and artisanal mining, especially as a poverty alleviating economic activity yet there is the stereotype of associating it with high expenditure and extravagant life styles. This paper sought to find out and document the impact that small scale mining has had on the livelihoods of the miners. The study also sought to document the viability of the small scale mining in the Zimbabwean context. The study focused on gold mining, this being the most favoured mineral by small-scale miners. The period considered was from 2000 to 2012. The study adopted the survey research design. The study focused on 41 households. Snowballing sampling was done to reach at the sample size given the illegal nature of these mining activities. The questionnaire was used as the main data collection instrument. The findings showed that the majority of the miners were men. Most of the miners are young, below thirty years of age and are

* Graduate School of Business Leadership, Midlands State University, Gweru, Zimbabwe

without tertiary education. The findings also indicated that the majority of the respondents rely on this activity as their source of income. Most of the miners get incomes well above the official poverty datum line from the mining activities and they spend most of their income on capital goods. The study recommended that the government should come up with policies and programs that enables these small scale and illegal miners to form groups and get into partnerships with established companies so that the mining is done in a systematic, legal, secure and sustainable way, both to the environment and to the miners themselves.

Key terms

Artisanal mining, Small scale mining, illegal gold panning.

List of acronyms

ASM – Artisanal Small-Scale Mining.

1. Introduction

Zimbabwe's Great Dyke which stretches from West Nicholson in the south of the country to Rafingora in the north is well endowed with large amounts of mineral wealth. The rich dyke has deposits of platinum, gold, chrome, emeralds and nickel. Large and small scale miners excavate these deposits. The most popular mineral among small-scale miners is gold, followed by chrome. Historically, mining in Zimbabwe was carried out by large mining houses most of which are multinationals. In 1992 gold panning along the country's streams was legalized and actively encouraged, provided the panners obtained the necessary permits and deposited their gold with the Reserve Bank of Zimbabwe or its agents. From the year 2000, the land reform programme heralded the advent of illegal small-scale miners. Mining was largely viewed as a poverty alleviation strategy by villagers who flocked to rivers and disused mines in a gold rush that had never been witnessed before in Zimbabwe. Tschakert and Singha (2007) observed that most artisanal gold miners are miners and farmers from socially and economically marginalized communities, who turn to mining in order to escape extreme poverty, unemployment and landlessness caused by multinationals. Research indicates that most of the small scale mining takes place in developing countries. According to a survey carried out by the ILO in 1999, 13 million people were directly involved in small mines throughout the world and it is envisaged

that such activities will continue for at least as long as poverty continues to necessitate it, Hentschel, Hruschka, and Priester (2003). In Zimbabwe, as a result of a deteriorating agricultural sector and the layoff of public sector workers following implementation of a series of Economic Structural Adjustment Program and the country's poor economic performance from 2000, this activity is expected to increase, Dreschler (2001).

Previous research has been done by the ILO (1999) to determine the socio economic impact of small scale mining on the economy. However, little or no research has focused on whether artisanal mining reduces poverty. On a national scale, government reserves have been boosted and production figures are high with gold bringing in $291 million according the Zimbabwean Chamber of Mines (2010). On a micro scale, the question to be asked is whether small scale mining has improved the livelihoods and quality of life of the miners. The main objective of this study was therefore to trace the livelihoods of the selected households that have been involved in small-scale mining from 2000 to 2012 to determine whether their quality of life improved. The study therefore focused on the earnings trends of the miners, the uses to which the proceeds are put, as well as the gender dynamics. The study focused on gold mining because preliminary research indicated that this is the most favoured mineral by the small-scale miners.

2. Literature Review

2.1 Socio-economic importance of small-scale mining

The artisanal and small-scale mining (ASM) sector has experienced significant growth worldwide, predominantly in remote rural areas of the developing world. This has occurred mainly in response to widespread unemployment within African, Latin-American and Asian countries in which it takes place, Hentschel et al., (2003). There is a consensus worldwide that ASM is largely poverty-driven. According to Lombe (2002), the area in which small-scale mining has the greatest impact is sustaining rural economies in Africa, Asia and Latin America – the three poorest continents. For many Latin American, Asian and African countries endowed with mineral resources, small-scale mining supports entire rural communities and in some cases is the only economic alternative providing the only source of household income. Indeed, the prevalence and endemic nature of small-scale mining on the three continents is largely explained by the fact that it is poverty driven.

Zimbabwe experienced an upsurge in artisanal gold mining since the late 1990s, which is "informal" (unlicensed or illegal). ASM activities provide a source of livelihood to at least 500,000 people directly, and indirectly. As much as two million people depend on its existence Shoko, (2002). It is widely believed that these numbers increased substantially between 2005 and 2008, during which period the country's deepening economic crisis further limited livelihood options for its rural and urban populations alike. With the run away inflation in 2007 and the subsequent high gold price more people joined the informal gold panning trade as retrenchment caused by the structural adjustment programme began to bite, Sokwanele Report (2007). Various estimates suggest that there is probably 13 million people in close to 40 countries engaged in small-scale mining, and on the overall, between 80 and 100 million depend on its existence economically Lombe (2002). In Tanzania, the people who engaged in Artisanal Mining activities concentrating on gold and diamond mining in the Mwanza Region are less likely to be impoverished than those employed in other industries. The sector serves as an important buffer to the region's livelihood shocks according to Mwaipopo et al (2007). Banchirigah and Hilson, (2009) agree with this view as they note that at one point in Zimbabwe teachers were leaving the class room for the more lucrative ASM. It has a bearing on rural-urban migration, maintaining the link between people and the land, making a major contribution to foreign exchange earnings as noted by Yakovleva, (2007), Banchirigah and Hilson (2009) enabling the exploitation of what would, otherwise, have been uneconomic resources, thereby becoming a precursor to large-scale mining.

There are nearly 40 minerals that are mined. In some cases these can only be mined using small-scale methods (Lombe). These include the most pegmatite minerals, such as beryl, tantalum, fluorite, as well as minerals like mercury and tungsten. Small-scale mining is not restricted to industrial minerals. According to Lombe (2002) global estimates of diamonds and gold produced by small-scale mining have been put at US$ 1.5 billion and US$ 0.5 billion, respectively. In the Southern African Development Community (SADC) region, it is estimated that small-scale mining contributes about 30% to mining output and numerically accounts for 90% of all mines. In Zimbabwe it is believed that there are as many as 1400 small scale mines.

2.2 Livelihoods and Small scale Mining

Though 'opportunism' and people's desire to 'get rich quick' are commonly presented as the explanations for engaging in small scale mining, the most widely accepted reason is nationwide poverty, Hentschel et al., (2003). People become involved in ASM because there are few alternative income-earning opportunities available. (Hilson 2002) argued that because artisanal mining is largely driven by poverty, it has grown as an indispensable economic activity, complementing more traditional forms of rural subsistence earnings like farming. According to Hoadley and Limpitlaw (2004), ASM provides a form of livelihood for the miners, but there is usually no net generation of wealth. The benefits provided by this activity are outweighed by the costs. These costs may be borne directly by the miners, such as poor safety and health conditions in the working environment, or may be externalized onto the surrounding communities, such as environmental degradation in a wider area around the working areas and social disruption, such as alcoholism. In some instances, profit can only be generated by employing family members at wages below subsistence levels. This promotes the exploitation of women and children. Hoadley and Limpitlaw (2004) notes the negatives of small scale mining as being a short term coping mechanism, not economically effective and having ecologically negative effects to the community. It is also noted as contributing to the upsurge in HIV/AIDS.

3. Research Methodology

The research adopted the survey research design. The survey focused on the Shurugwi town of the Midlands Province because small scale gold mining has been increasing steadily over the past decade in this area. Questionnaires were used as data collection instruments. This provided the opportunity for clarification of questions and in-depth interviews. Questionnaires were distributed to a total of 41 households that take part in river bank and disused mines gold panning. Snowballing sampling was done given the nature of the respondents who are largely found in illegal situations and are wary of strangers. This entailed identifying one miner who led the researchers to other miners. This yielded responses from the informal miners.

4. Findings and discussion

4.1 Characteristics of Respondents

The composition of the respondents by age groups is shown in table 1 below.

Table 1: Respondent composition by Age groups

Age group	Frequency	Percentage
20-24	9	22
25-29	10	24.3
30-34	7	17.1
35-39	6	14.6
40-44	5	12.2
45 and above	4	9.8
Total	41	100

Source: Primary data

Table 1 above indicates that the area sampled was being plied mainly by young to middle aged miners the majority of whom were men. It is evident that people in the age groups from 20 to 29 years constitute the biggest percentage of the miners (46.3%). These are more active than those who are over 40s who constitute only 20% of the sample. This compares well to what Yakovleva (2007) who noted the age of miners at a site near Ntronang, Ghana to be between 23 and 35 years of age. Table 2 below shows the composition of the miners by sex and age.

Table 2: Composition of respondents by Sex and Age

Age	Sex				Total	Percentage
	Male	Percentage	Female	Percentage		
20-24	5	12.2%	4	9.76%	9	21.95%
25-29	9	21.95%	1	2.44%	10	24.39%
30-34	5	12.2%	2	4.88%	7	17.07%
35-39	5	12.2%	1	2.44%	6	14.63%
40-44	4	9.76%	1	2.44%	5	12.2%
45+	2	4.88%	2	4.88%	4	9.76%
Total	30	73.17%	11	26.83%	41	100

Source: Primary data

About 27% of the miners were women. These demographics compares well with Drechsler (2001) who indicated that of the more than 300 000 artisanal gold miners in Zimbabwe, at least 50% (i.e. more than 150 000) are believed to be women and children. Yakovleva (2007) and Kemp D, Keenan J and Gronow J, (2010) concur that women work in different roles in this

sector. Table 2 indicates that the highest number was found in the 20 to 29 age group who are the most active age group according to this study. There was no evidence of school going children on site as the mining methods are considered to be too risky. The miners working on alluvial gold extraction indicated that the children only worked during school holidays and weekends mainly along the river banks. The women are involved in the processing of minerals. For those in the disused mines, the women were involved in processing by using pestle and mortar as rock crushers. Table 3 below indicates the breakdown according to educational levels and sex of the respondents.

Table 3: Educational background and sex

Educational Background	Sex				Total	Percentage
	Male	Percentage	Female	Percentage		
Primary incomplete	6	14.63%	4	9.76%	10	24.39%
Primary completed	2	4.88%	2	4.88%	4	9.76%
Secondary incomplete	14	34.15%	2	4.88%	16	39.02%
Secondary completed	8	19.51%	3	7.32%	11	26.83%
Total	30	73.17%	11	26.84%	41	100

Source: Primary data

It is evident from table 3 above that none of the miners interviewed indicated having tertiary education. The majority of the respondents 75% had below secondary education. Without such a basic qualification in Zimbabwe, it is difficult to be absorbed into the formal sector, thus the attraction becomes the informal sector. In a research carried out in Ghana, Yakovleva (2007) notes that most miners have a basic education, few have finished secondary school, and several interrupted their education after primary school or junior secondary school in order to pursue employment. The evidence suggests that small-scale mining is seen as a lucrative alternative employment among the less educated rural people.

Closely related to that, table 4 below indicates that half the women are married and the rest are separated or divorced. As noted by Cancian, Danziger and Cottschalk (1993); Spalter-Roth, Hartmann and Andrews (1990); Winkler (1998) and Cattan (1998) who all cite that women's earnings have become increasingly important to families' financial status and this income often

shield these families from poverty. The married women work alongside their husbands to increase the household income while the unmarried have to fend for their families. The majority of the men, that is, 50% of respondents are married.

Table 4: Marital status and sex

Marital status	Sex				Total	Percentage
	Male	Percentage	Female	Percentage		
Married	22	53.66%	5	12.20%	27	65.85%
Single	7	17.07%	0	0%	7	17.07%
Separated	1	2.44%	2	4.88%	3	7.32%
Divorced	0	0%	4	9.76%	4	9.76%
Total	30	73.17%	11	26.83%	41	100%

Source: Primary data

4.2 Mining methods used by used by Small scale miners

4.2.1 Alluvial gold panning

The researchers administered the questionnaire on site and had the opportunity to witness the effects that alluvial gold mining has had on the environment. Alluvial gold does not present itself in a stratum as in a mine but is found as random deposits on the river banks or on the river bed. The miners had dug out tones and tones of sand which they had sifted through till they found gold. The sand in which the gold would have been found is placed in a pan where water is added along with mercury. By continually sifting the pan, mercury then harnesses the gold. The miners pointed out that on a good day, they could get two to three points of gold (1 point is a tenth of a gram) from about a tonne of sand. The huge deposits of sand dotted the river banks seriously affecting the natural flow of water. Observed downstream was evidence of siltation. One bridge was almost toppling over having been affected by the deep pits which had been dug round it. Gold deposits can be found practically anywhere and the gravel farm roads were not spared as miners exploited even the smallest of deposits right on the road. Zimbabwe has enacted laws such as Statutory Instrument 275 [Mining (Alluvial Gold) (Public Streams) Regulations of 1991] that give Rural District Councils (RDCs) powers to control alluvial gold mining but most alluvial gold panners are informal, illegal and nomadic which makes it difficult if not impossible for RDCs to exercise their control and regulatory function, Zwane et al, (2002). The miners involved

in alluvial gold mining constituted 12% of the respondents. As noted by Ramlogan R, (1997) in Thailand, illegal mining along river banks degrades the area.

Fig. 1 below is an example of a hole on the river banks that was left after the gold panning.

Fig. 1 Hole left by the miners along a river bank.

4.2.2 Disused mines

The majority of the miners interviewed, 88%, are working in disused mines which have been abandoned by large scale miners generally because they were no longer economically viable. These mines are situated in and around the town of Shurugwi and the size ranges from very large mines which formally employed more than a thousand people to small ones employing less than 20 people. The mines have been abandoned for over 10 years and do not have any infrastructure like lighting, ventilation, toilets and water pumping facilities left. Miners use rudimentary implements like picks, shovel and crowbars for drilling. They also use dynamite acquired from registered miners at black market prices. The majority of the miners, 89%, are not registered. They are illegal miners and so they mainly work at night using candles or home made paraffin lamps for lighting. The mines do not flood so they are in no danger of drowning.

During the interviews, the miners agreed that the mining methods are dangerous and at least all of them have suffered injuries at some point. The majority of miners highlighted that they have lost between 1 and 6 days due to injuries and one miner stated that he had lost 17 days to injuries. The researchers did not get an opportunity to go underground but the miners interviewed reiterated the dangers of ungoverned mining methods where some miners were even

blasting the pillars that hold up the shafts for a few grams of gold. The other dangers stemmed from the lack of lighting and the instability of the gold strata. One mine, namely Wanderer mine was abandoned when half the mountain buried miners and equipment under tones of rubble in the 1960s. The miners highlighted that they work under considerable risk but struggle on due to the lucrative nature of gold mining.

4.3 Indicators of the perceived benefits

The majority of respondents, (80%), rely on mining as the sole means of earning a living. Some miners increase income from other mining related jobs like gold buying. Those who supplement income by hawking or as general dealers sell mainly to the miners. Table 5 below shows the responses given to the question whether mining was the only source of livelihoods for the miners.

Table 5: Whether mining was sole livelihood

	Sex				Total	Percentage
	Male	Percentage	Female			
Yes	26	63.41%	7	17.07%	33	80%
Not	4	9.76%	4	9.76%	8	20%
Total	30	73.17%	11	26.83%	41	100%

Source: Primary data

80% of respondents indicated that mining is the sole source of livelihood and this information suggests a perception that mining is a full time engagement and is better than the other pursuits in the original homes of the miners. This is supported by data in table 6 below which indicates that the majority of the miners are from the Midlands province but not from Shurugwi town. The miners have migrated to the disused mines leaving economic pursuits in their own areas. All miners originate from rural homes where the major economic pursuit is subsistence agriculture. During the interviews, the respondents indicated that they take gold panning as an opportunity to improve their economic status and thus were drawn to the mines. One miner indicated having 7 years mining experience but the rest have years of experience ranging from 1 to 3 years.

Table 6: Area of origin

Area of origin	Total	Percentage
Within Midlands Province not from Shurugwi	29	71%
Outside Midlands but within Zimbabwe	11	27%
Outside Zimbabwe	1	2%

Source: Primary data

Table 7 below shows the other sources of income for miners. The majority of miners (78%) do not pursue other endeavours and for those that do, the pursuits are generally mining related. Those that sell goods like general dealers and hawking, sell mainly to the miners. Only 2 female miners indicated that they also pursue farming as another source of earning a living. It can be inferred then that mining is important for the livelihood of these miners and provides employment to the semi skilled workers who would otherwise be just general hands earning only a tenth of the present earnings.

Table 7: Other sources of income

Source of income	Sex				Total	Percentage
	Male	Percentage	Female	Percentage		
Farming	0	0%	2	4.88%	2	4.88%
Gold buying	2	4.88%	0	0%	2	4.88%
General dealer	2	4.88%	0	0%	2	4.88%
General hand	1	2.44%	0	0%	1	2.44%
Hawking	0	0%	2	4.88%	2	4.88%
Not Applicable	25	60.98%	7	17.07%	32	78.04%
Total	30	73.17%	11	26.83%	41	100%

Source: Primary data

Table 8 below indicates the responses to question regarding the uses of the income obtained from the mining activities.

Table 8: Uses of income from mining

Income use	Frequency	Percentage

Beer	1	2.44%
Building material	1	2.44%
Clothing and education	2	4.88%
Clothes and food	3	7.32%
Clothing and property	1	2.44%
Cattle	1	2.44%
Clothes	1	2.44%
Family	1	2.44%
Furniture	5	12.20%
Gold buying	2	4.88%
House	3	7.32%
Hawking	2	4.88%
Household Property	13	31.71%
Farming equipment	5	12.20%
Total	41	100%

Source: Primary data

At least 60% of the respondents spend their earnings on capital goods. Some of the capital goods were said to be for resell liker gold buying and hawking. The majority use the money for purchasing household property like furniture. Use of money on clothes was very prevalently mentioned. Only 3 miners indicated that they use the money for immovable property as they indicated that the earnings from small scale mining is an uncertain resource which is available now but may be gone tomorrow.

Table 9 below indicates the responses to the question regarding the type of houses the miners owned before embarking on the mining activities and after.

Table 9 Type of housing before and after involvement in mining

	Before		**After**	
Type of accommodation owned	**Frequency**	**Percentage**	**Frequency**	**Percentage**
None	1	2.44%	1	2.44%
Grass thatched hut	0	0%	1	2.44%

1-2 roomed house	21	51.23%	29	70.73%
3-4roomed house	17	41.46%	6	14.63%
5 above roomed house	2	4.87%	4	9.76%
Total	41	100%	41	100%

Source: Primary data

Table 9 shows the type of housing that the miners owned before and after embarking on a mining career. This was used as an indicator of accruing economic benefits for the miners. At least 50% of the miners had 1 to 2 roomed houses and the other half had even larger accommodation before engaging in the mining activities. In comparison to the period after, some miners seemed to have fared badly as the majority (70%) only had 1 to 2 roomed houses. This indicates deterioration in status after embarking on a mining career.

5. Conclusion

Small scale mining in the Shurugwi area of the Midlands province in Zimbabwe reflects the characteristics of artisanal mining in other parts of Africa especially Ghana and Tanzania. The miners have no tertiary educational qualifications which fact seems to be the driver for them to pursue small scale mining as a viable livelihood alternative. The other attraction is the ease of entry as the majority were not registered and use disused mines which provide ideal camouflage from the police and ministry of mines officials. It can be concluded that though the majority of the miners earned above average earnings there was no significant change in their livelihoods and some were even better off before they started mining. Most of the expenditure was consumptive in nature with very little investment. The indicators that were to use measure economic progress were the assets accumulated. These showed differences in livelihoods before and after the mining activities. For some, the assets depleted when they started mining ventures, while for others it was the opposite.

6. Recommendations

a) The government should come up policies and programs that allow the small scale and illegal miners to come into groups and get into partnership with established mining companies and mine

from the disused mines that are still profitable to mine from using systematic, legal, secure and sustainable means.

b) Despite some of the activities being illegal, there should be intervention through educational programs targeted at sensitise people of the dangers of illegal mining, like the use of mercury to sift gold, prostitution and the risks of being trapped in the holes that the miners dig.

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