

## **THE ROLE OF SMALL-SCALE GOLD MINING IN PROMOTING SUSTAINABLE LIVELIHOODS AMONG LOCAL COMMUNITIES IN KADOMA DISTRICT OF ZIMBABWE**

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### **ABSTRACT**

Small-scale gold mining increased phenomenally in Zimbabwe with the liberalisation of the economy in the early 1990s when the Government of Zimbabwe adopted the Economic Structural Adjustment Programme in 1991. It was initially concentrated along the Great Dyke which stretches from southwest to northeast across the Zimbabwean plateau but it later spread to all regions of the country due to the unspeakable economic crisis in the past decade. It became a viable livelihood strategy among poor families due to uncertainty and anxiety which characterise the Zimbabwean economic landscape. The study investigated the role of small-scale gold mining in promoting sustainable livelihoods among local communities in Kadoma District of Zimbabwe. The sustainability of small-scale gold mining is a contentious issue given the level of environmental degradation and the disruption of social relations taking place in the district. However, the sustainability of the sector mainly rests upon proper regulation by the national government in order to improve monitoring mining activities and remitting of revenue to the fiscal.

**Keywords:** Sustainable Livelihoods, Mining, Gold, Communities, Environmental Degradation, Income, Poverty

### **INTRODUCTION**

Small-scale gold mining is a crucial livelihood activity employing more than 13 million workers and sustaining 80-100 million people worldwide. It produces between 350-800 tonnes of gold per year contributing about 20-30% of global output. The people depending on small-scale gold mining are usually members of poor rural households in developing countries, (Heemskerk and Oliviera, 2003). Small-scale gold mining is viewed as a 'golden' opportunity for the poor, despite the social, environmental and health challenges. It is believed that more than a billion people still earn less than a dollar (US\$ 1) per day due to population increase, (Metcalf, 2008). Some rural populations depend on mining as a primary source of income or as a critical supplement to meagre farming revenues. In most African countries like Ghana, Madagascar and Zimbabwe, small-scale gold mining has become important due to escalating poverty and lack of employment opportunities in the formal sector, (Logan, 2004). Women are increasingly getting involved in small-scale gold mining with about 50% of Zimbabwean and Madagascan women engaged in small-scale gold production, (Hoardley and Limpitlaw, 2004). Small-scale gold mining has become important for so many poor people and other vulnerable population groups since the miners still have limited access to appropriate mining and mineral processing knowledge and technology. In most developing countries, policy and legal frameworks tend to favour environmental protection and the interests of the large concession holders instead of promoting more efficient and safer work practices which could result in the development of more stable mining communities, (Cawood, 2004).

Small-scale gold mining became a commercial activity in Zimbabwe in the 19<sup>th</sup> Century when the British South African Company (BSAC) received a charter to administer the country in 1890, (Wild and Wiltshire, 1971; Metcalf 2008). In the early 20<sup>th</sup> Century, the BSAC liberally supported small-scale gold mining activities by granting mineral concessions and exploration rights to the members of the Pioneer Column. However, the growth of the sector was controlled by recessions, inflation and varying demands for gold. The small-scale miners were often dubbed 'small-workers' to distinguish them from the large-scale gold producers. The small-workers' operations exploited the small deposits that were not profitable for large scale mining and they also took advantage of the cheap African labour, (Metcalf 2008; Hollaway, 1999). In 1906, there were 254 small-workers and by 1909 the number had nearly doubled to 500 miners against nine large scale miners. In 1910, small-workers employed about 34 494 African workers, (Metcalf, 2008). The significant increase of small-workers had been due to the low capital costs and flexibility to move from site to site. Their aim was to produce gold at a low cost with rudimentary machinery and cheap labour. The owners of the mines worked at the site as managers thereby eliminating costs of hiring a site manager. The workers in small-scale mines worked under dangerous conditions and this was also another cost serving method. The workers were paid lower wages than in large mines and at times the workers received nothing when operations were unsuccessful. The sourcing of African labour was forceful with the help of the government. The workers would use hammers, chisels, picks, buckets, ropes and windlass, (Shoko and Veiga, 2004; Menezvenyu, 1992).

After independence in 1980, small-scale mining activities in Zimbabwe increased due to unprecedented poverty, recurrent droughts and the economic structural adjustment programme (ESAP) which resulted in massive retrenchments in both public and private sectors. Unemployment has shockingly increased to over 80% in the past decade due to economic and political crises which drove away foreign and domestic investments. Large-scale mines downsized their operations and even closed due to high operational costs and political uncertainty, releasing many people to small-scale mining. The whole scenario was exacerbated by the collapse of large-scale commercial farming activities following the Fast Track Land Reform Programme in the early 2000s. The miners still exploited the narrow unpredictable discontinuous quartz veins. The miners used the same traditional tools used during the colonial period. They worked on sites lacking proper housing, hygiene and sanitation, clean water as well as educational and health facilities, (Legal Resources Foundation, 2003; Government of Zimbabwe, 1989, 1990 and 1995).

Inadequate public regulation, absence of law enforcement agents and poor medical provisions perpetuate chaos and insecurity in small-scale gold mining areas. Heemskerk and Oliviera (2003) regarded small-scale gold mining as characterised by a labour force that is not formally trained in mining and uses rudimentary techniques for prospecting, extracting and processing of minerals. Small-scale gold mining activities have been widely criticised for being wasteful, inefficient, ineffective, damaging to the environment and dealing in clandestine trading of minerals. It is commonly believed that small-scale mining is largely informal but regulated, short of finance, technologically backward and a greater proportion of this sector's activities are illegal, (Shoko and Veiga, 2003).

The sites also attract commercial sexual activities. Sexually transmitted diseases including HIV/AIDS spread among miners who take the virus to their homes, (Shoko and Veiga, 2004). Socio-economic problems include variable incomes and unreliable contracts which produce economic uncertainty. Crime and violence are rampant as traditional authorities

cannot control deviant behaviour among migrant miners, (Metcalf, 2008; Hollaway, 1999). In addition, small-scale mining impacts on the environment as the biophysical and life support systems are damaged and the hydrogeological system is defiled, (Whitlow, 1990; Nkoma, 1987).

The working conditions are typically hazardous and unhealthy and living conditions deplorable. The internal or operation costs for small-scale mining are borne directly by the miners. These costs include poor safety and health conditions in the mines, (Lockton, 1999). Externalised costs are borne by surrounding communities, such as environmental degradation around the mining area and social disruption in the form of prostitution and alcoholism (Whitlow, 1990; Wild and Wiltshire, 1971). Communities surrounding the mines suffer from environmental degradation, infectious disease and social problems, (Whitlow, 1990; Logan, 2004). These adverse impacts remain for some time in an area well after the small-scale miners have abandoned the area. The profits of the activities are generated by employing family members at wages below subsistence levels resulting in the exploitation of women and children, (Shoko and Veiga, 2003).

However, the resilience of small-scale gold mining activities especially during economic crises has proved to be one of the major sources of livelihoods in local communities where gold deposits are found since they provide income, employment and income for the day-to-day survival. Small-scale gold mining is a very important activity often related to direct and indirect creation of employment as other small-scale enterprises like catering and vending are attracted by viable business in these areas, (Heemskerk and Oliveira, 2003). It results in the generation of revenue for the national treasury and result in related infrastructural development like roads, electricity and commerce.

Hoadley and Limpitlaw (2004) contend that small-scale gold mines can promote sustainable development by increasing the sustainability of poor people's livelihoods. The study sought to establish the role of small-scale gold mining in sustaining local communities' livelihoods and exploring how environmental integrity can be enhanced by ensuring that miners' activities do not irreversibly degrade natural resources within a given ecosystem. The study was also motivated by the concern among policy makers and international development and conservation organisations about small-scale gold mining impacts in Kadoma District. It is believed that policies and programmes directed towards the sub-sector will contribute to poverty alleviation and improve livelihoods among Kadoma communities. The major contention of this study is that small-scale gold mining has a big role to play in improving sustainable livelihoods among rural communities if the government showed political will to support small-scale miners.

## **STUDY AREA**

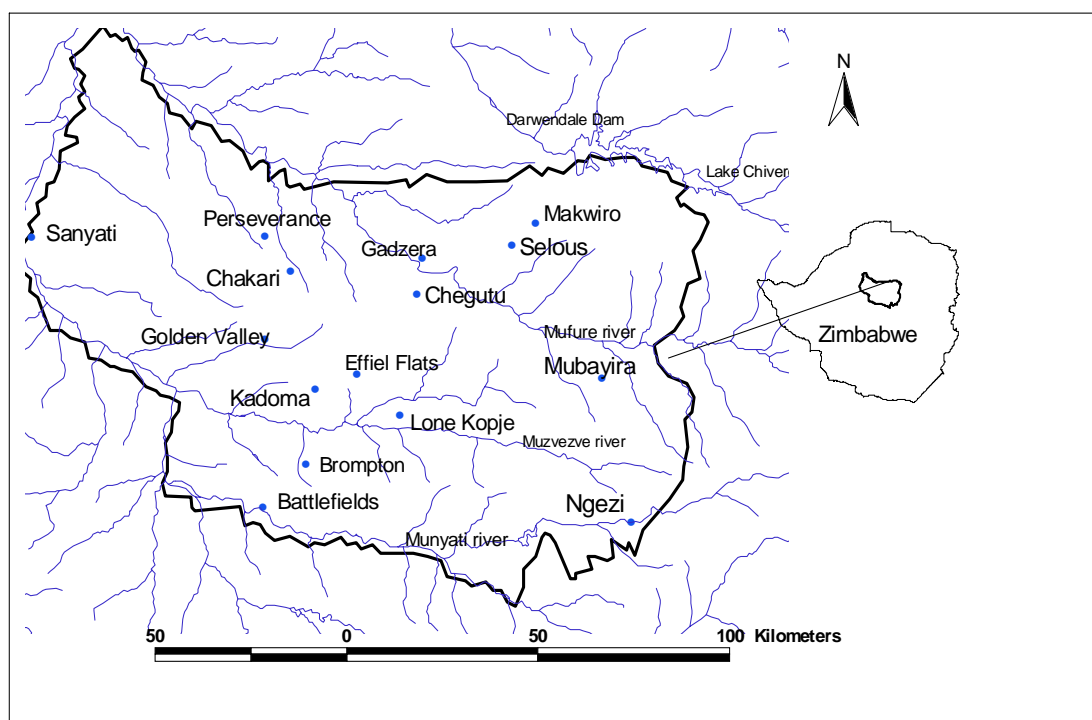
The Kadoma mining district combines the political administrative districts of Kadoma and Chegutu (Figure 1). The district has the largest gold belt deposits in Zimbabwe and with the highest density of small-scale gold miners of the country's gold belts, (Shoko and Veiga, 2004). Since the beginning of the 21<sup>st</sup> century small-scale gold mining activities have taken centre stage as a result of recurring droughts, loss of jobs through resettlement in large-scale commercial farms, retrenchments as a result of ESAP and the closure of large-scale mines around Kadoma ,(Metcalf, 2008).

The District has large mines such as Dalny, Patchway, Golden Valley, Cam and Motor, Brompton, Falcon Venice, Grand Parade and Gadzema near Chegutu. Zimplats has recently begun to mine platinum in the district. Most of these mines like Cam and Motor have stopped operations and some have temporarily shut down. Around these mines are thousands

of small-scale gold mining operations. Shoko and Veiga (2004) point out that there are about 20 000 small-scale gold mines with more than 5000 of them engaged in reef mining in the Chakari-Golden valley axis alone. Between 300 000 and 400.000 small gold miners are sustaining livelihoods of about 2 million people.

The Zimbabwean ‘Great Dyke’ passes through the northern section of the district where platinum group of minerals are mined. Gold in Kadoma occurs in narrow discontinuous quartz veins in the exposed Achaean Core along the northeast-northwest trending Kadoma Anticline. The Chakari-Golden Valley shows the exposed sections of the Lily Fault. The gold host rocks are primarily fine grained chloritic hornblende schists usually former basaltic pillow lavas or ‘greenstones’ and epidiorites. The gold quartz veins are also found in overlying quartz-mica schists of former felsic sediments found on the limbs of the anticline, (Metcalf, 2008).

Most miners stay in abandoned mining compounds at old mines. Some are resettled farmers from resettlement areas. The area has no defined leadership structures and income generation is mostly through gold mining especially during the dry season. Most miners therefore have rural homes in the surrounding communal lands of Sanyati, Mhondoro, Zvimba and Gokwe. Women in mining are said to make up 11% of the miners, (Shoko and Veiga, 2004). There is lack of proper housing, hygiene, sanitation and clean water, educational and health facilities at these small-scale mining sites.



**Figure 1: Map showing Kadoma Mining District. The names indicate mining settlements in the district.**

## RESEARCH METHODOLOGY

The study employed a cross-sectional survey to investigate the role of small-scale gold mines in sustaining livelihoods in Kadoma District. The study targeted small-scale gold miners. These were both registered and unregistered gold miners. A sample of 360 miners was determined. A multistage sampling method was used to identify the respondents. The

district was divided into three enumeration areas, namely; Chegutu-Gadzema, Chakari-Golden Valley and the Battlefields. Nine research assistants were recruited. They were put into three groups and each was assigned to an enumeration area. A snowball sampling method was used to identify mining sites in each enumeration area whereby identified miners were asked whether they knew other mining sites in nearby areas. Ordinance survey maps (O/S) of 1:50 000 scale were also used for locating and verifying mining workings in the enumeration areas. After identifying a site research assistants explained the purpose of the study and terms of confidentiality were guaranteed in order to gain trust of the miners. The research assistants had letters of introduction which they showed the miners for authentication. They administered questionnaires among randomly selected miners at each site. Three hundred and sixty questionnaires were administered among the miners to solicit information on benefits, challenges and mining methods employed by the small-scale gold miners. The research assistants were also assigned to observe and record the activities and living conditions at mining sites.

Document analysis was also employed largely to understand the impacts of small-scale mining in Kadoma district. Desktop research was also done to peruse literature on small-scale gold mining operations and activities in the district. The data were obtained from mining bulletins and reports from relevant government departments such as Mines Department and Zimbabwe National Water Authority (ZINWA).

## **FINDINGS AND DISCUSSION**

### **Small-scale Gold Mining Activities**

Table 1 shows the average number of workers in the four selected mines for this study. The sampled mines had a combined labour force of 114 people who were all males. The total number of permanent workers was 34 people while 80 were casual workers. This is because employment is not stable in small-scale mines. These mines hired casual labour and family members also contributed to the labour force. In most cases, this labour force is connected one way or the other to the mine claim owner. It was noted from the study that the employment of family members was common in small-scale gold mines. At some mining sites, all the permanent workers were family members or relatives of the mine claim owner. The working conditions for the workforce for each mine were well below the stipulations in SI 156 of 1995 on health and safety hence the health and sanitation. Therefore, occupational health measures could be taken through initiative of the mine claim owner on voluntary basis. Similarly, SI 109 of 1990 on management and safety regulations also exempted the mine claim owners from taking stringent safety regulations since the numbers of workers were below the SI stipulation of 150 workers. From all the four sites under study there was a sizeable number of workers staying at the mine claim site.

**Table 1: Number of workers at selected small-scale gold mines in Kadoma District**

<b>Name of mine</b>	<b>Number of permanent workers</b>	<b>Number of casual workers</b>	<b>Total</b>
Buffalo and Tiger	16	30	46
Nobby's Luck	3	12	15
Kumbowedza	9	23	32
Mhazo	9	15	21
<b>Total</b>	<b>34</b>	<b>80</b>	<b>114</b>

The 114 mineworkers work in groups locally referred to as 'syndicates' (Table 2). These syndicates are mostly made up of people who trust each and these were mostly relatives and friends. These syndicates would work in shifts or would sink their own shafts at new points within the claim. The sinking of new shafts by these syndicates has resulted in a proliferation of abandoned mine shafts per mine claim. The syndicates mostly aimed at maximising returns by searching for areas which would yield better gold results.

**Table 2: Working groups 'syndicates' for the four surveyed mines**

Name of mine	Number of working groups	Number of shifts per day	Total
Buffalo and Tiger	4	4	8
Nobby's Luck	5	0	5
Kumbowedza mine	3	2	5
Mhazo syndicate	4	2	6

Buffalo and Tiger Mine operated at a larger scale as compared to the other three mines with a large open cast mine. The mine operations were better organised and the workers got a wage. Nobby's Luck had five working groups. Each group comprised of three people and had its own working shaft. This increased the number of abandoned shafts in the district. The mine workers and the mine owner shared the proceeds after the milling of the gold ore at a ratio of 50% after deductions of expenses by the mine owner. This working environment has resulted in environmental degradation at an increased rate at and around mine claims as the workers and mine owners were after quick returns from little inputs. To reduce the expenses, gold ore was processed where gold nodules were visible at the site using rudimentary equipment and harmful chemicals like mercury to trap the gold. The study found that no heavy machinery was used in mining processes. The miners used shovels, picks with small handles, chisels, hammers, buckets and ropes. Kumbowedza and Mhazo mines operated in a similar way to the Nobby's Luck mine. Each group earned its wage from the proceeds of gold it milled during its shift. This had often meant maximum utilisation of time while working underground. However, the group not working on the shaft would engage in the panning of gold at the site.

Most miners depended on informal mining practices to mine gold which was then sold on the open market. These leakages are difficult to contain because the quantity of gold is small to be easily detected. This had often used as a justification to ban small-scale gold mining activities because of the complexity in regulating the selling of the proceeds. In addition, many small-scale gold miners usually do not pay tax. Therefore, small-scale gold mining is generally viewed as wasteful and also insignificant as it does not contribute revenue to the national treasury.

Working and living conditions were deplorable at all mine sites since workers stay in overcrowded make-shift structures and some workers slept in pits. This made it possible for the miners to try to make as much money as possible in a short period of time. After sharing the proceeds most workers would leave the mine sites for some weeks and even months to spend the money. A large proportion of the money was spent on gambling, alcohol and prostitution.

The study noted that the processing of gold ore in Kadoma District was done by small-scale processing machines. Usually between three and five stamp mills were used to crush the gold ore. The mills used copper plates or separators to trap gold from the crushed materials. However, these were not quite efficient and cyanide tanks were built on the dumpsite to trap more gold that would have escaped the copper plate and the separators. This resulted in the reduction of operational costs.

### **Gold Production in Selected Small-scale Gold Mining**

Table 3 shows the official recordings of annual gold outputs in selected four mines in Kadoma District in 2009 excluding leakages at the mine claims and the milling site. The Mhazo syndicate recorded the highest output (360 ounces), followed by Buffalo and Tiger (261 ounces), Kumbowedza (69 ounces) and Nobby's Luck (52 ounces). The lower figures reported by Kumbowedza and Nobby's Luck mines might be due to higher risks of leakages since there were no sound management systems to closely monitor gold production and marketing. In addition, these were old workings which were exhausted and yielding less gold. The workers worked with little supervision. However, for each mine it took an average of one and a half weeks to produce five tonnes of gold ore. The mean gold yield per load (5 tonnes) is between 11 and 23 grammes. Mhazo Mine Syndicate had a higher gold production figures because of the fixed shifts in operation as the group operated eight hour shift schedules. The miner owner reported that their mine claim was on top of a rich gold reef and production would sometimes rise above 40 grammes per load.

**Table 3: Gold production in selected mines in Kadoma District**

<b>Name of mine</b>	<b>Gold production</b>	<b>Percentage (%)</b>
Buffalo and Tiger	261	35.2
Nobby's luck	52	7.0
Kumbowedza	69	9.3
Mhazo syndicate	360	48.5
Total	742	100

### **Small-scale Gold Mining and Sustainable Livelihoods**

In general, SSGM was realised to be an important source of income for the poor members of the community especially during periods of drought and economic crises. It often acts as a safety net for people who lack diversified livelihood strategies and affected by retrenchments. The study noted that SSGM was one of the major livelihoods in the Kadoma District mainly because of limited alternative but viable survival strategies during times of economic uncertainty. Famine, drought, civil strife and political uncertainty resulted in higher levels of unemployment and also reduced opportunities for traditional livelihood activities.

Moreover, growth in SSGM sector is rapid and the sector is viewed as having quick returns and higher chances of a higher income than most of the traditional livelihoods. Some mineworkers had become rich overnight. During the administration of questionnaires, some miners informally narrated their stories about the assets they purchased by the money they earned from mining. Stories were also told of people who were poor but now driving cars and opened up shops and restaurants using the money they earned from mining.

Table 4 shows selected goods and services purchased using money earned from selling gold. It must be highlighted that most of the money was spent on consumption goods. About 28% of the respondents mentioned that they spent the money on food, 25% on clothes, 14% on electrical gadgets while only 3% spent on remittances. This revealed that most of the miners ventured into mining as a survival strategy rather than as a long-term investment.

**Table 4: Selected goods and services purchased using money from selling gold**

<b>Expenditures</b>	<b>Number of respondents</b>	<b>Percentages (%)</b>
Electrical gadgets	52	14.4
Pay school and hospital fees	32	8.9
Pleasure and recreation	18	5.0
Remittance	10	2.8
Personal items	23	6.4
Food	102	28.3
Clothes	89	24.7
Invest in property	12	3.3
Vehicles	13	3.6
Others	9	2.5
Total	360	100.0

However, the sustainability of this type of livelihood is highly contested due to the high magnitude of environmental degradation associated with SSGM. SSGM activities in Kadoma are viable at the expense of the environment and social relations because most of the miners did not have a sense of entitlement to mining claims. The sector is characterised by volatility and uncertainty since most of the miners did not have permits. The discord in policy and political institutions with regard to the regulation of SSGM activities is exacerbating the vulnerability of most small-scale miners. Therefore, these miners were maximising their chances of getting quick returns at the expense of the environment and social relations. The study noted that environmental degradation and exploitation of labour were unprecedented. Traditional livelihoods such as agriculture were now neglected because of quick money accrued from these mining activities. Moreover, increasing cases of social vices such as prostitution and alcoholism were reported. There was displeasure among the respondents about the spreading of HIV and AIDS in Kadoma District.

As has been highlighted earlier, numerous leaks of gold mean that there are few benefits in terms of revenue to district councils and national treasury. The major beneficiaries were the middlemen who bought gold in small quantities from the mine owners and the mine workers. Since mining activities are individualistic the capital and social benefits were restricted to a few people per claim. It was worse where the miners went for rich gold reefs so as to have quick returns and hence disregarded sustainable use of resources like gold minerals, soil and water.



## CONCLUSIONS

Sustainable development is now a buzzword among development practitioners and most development strategies strive to strike a balance between poverty reduction and sustainable environmental management. The study noted that small-scale gold mining was one of the most important livelihoods among the low-income population groups in Kadoma District. The unprecedented increase in poverty, unemployment, drought events and unreliable alternative sources of income resulted in increasing numbers of people actively venturing into small-scale gold mining. The study also noted that small-scale gold mining was a viable safety net during times of economic uncertainties since it offered a higher income in a relatively short period than most traditional livelihoods like agriculture. However, the results revealed that the destruction of the biophysical environment and the disruption of social relations being caused by this sector were also a major cause for concern. The sector is unstable and characterised by uncertainty due to the use of rudimentary mining techniques and lack of proper registration. There was displeasure among the respondents about the spreading of HIV and AIDS in the Kadoma District. Sexual economies were well established because of high spending of gold miners on prostitution and alcohol.

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