



Agrarian transformation and artisanal and small-scale chrome mining on Zimbabwe's Great Dyke geological formation

Grasian Mkodzongi^{a,*}, Joseph Mujere^b

^a Nordic Africa Institute, Sweden

^b University of York (UK), United Kingdom

ARTICLE INFO

Keywords:

Zimbabwe
Artisanal and small-scale chrome mining
Great Dyke geological formation
Mapanzure
Midlands province

ABSTRACT

Despite the growth of artisanal and small-scale chrome mining (ASCM) on the back of Zimbabwe's radical land and agrarian reforms implemented in 2000, there is a dearth of studies on the nexus between the agrarian transformation and the boom in artisanal chrome mining. This paper explores the interface between ASCM and the agrarian transformation engendered by the Fast Track Land Reform Programme in Zimbabwe. The article seeks to address the gap in the literature on artisanal mining and rural livelihood by examining how artisanal chrome mining is reshaping rural livelihoods. The article argues that ASCM and agriculture are greatly imbricated livelihoods with people oscillating between the two livelihoods. It demonstrates how base minerals such as chrome are increasingly becoming an integral part of the livelihoods of communities living along the Great Dyke. The article draws on ethnographic data gathered in Mapanzure communal areas in the Midlands Province of Zimbabwe.

1. Introduction

One of the significant outcomes of Zimbabwe's Fast Track Land Reform, initiated in 2000 is the way it reversed a bi-modal agrarian structure inherited from colonialism in favour of a broad-based agrarian structure which allowed diverse groups of farmers (in terms of class, ethnicity, and gender) to gain access to land and other natural resources (Moyo, 2011; Mkodzongi, 2016; Mkodzongi and Lawrence, 2019; Mkodzongi, 2020a). There is now a large body of literature that has explored the dynamics of artisanal and small-scale (ASM) gold mining in the aftermath of Zimbabwe's Fast Track Land Reform programme (Mawowa, 2013; Spiegel, 2014, 2015; Mkodzongi and Spiegel, 2019; 2020; Chipangura, 2019a and b; Mkodzongi, 2020b; Mkodzongi and Zano, 2020). However, this literature has neglected other forms of artisanal mining, which have dramatically increased in the same period, as well as their interface with agricultural livelihoods. This is especially the case with chrome and other base metals such as tantalite and lithium. This is partly because of the historical importance of gold in Zimbabwe and its critical role in the country's economy (Mkodzongi, 2020b). There is, however, a need to address this fixation with gold by investigating how the extraction of chrome and other base metals, such

as tantalite and lithium, is reshaping livelihoods across Zimbabwe's countryside in the context of an ongoing economic crisis. The reconfiguration of the rural economy (due to the land reform programme) has triggered a diverse range of economic activities based on the extraction of mineral resources (gold, diamonds, chrome, gemstones, sand, quarry, etc.) by people of diverse socioeconomic backgrounds (Mkodzongi and Spiegel, 2018, 2020) (see Table 1, Figs. 1 and 2).

While gold has dominated debates on artisanal mining in post-land reform Zimbabwe, other minerals are also contributing to the livelihoods of rural and urban households and the national economy. This is especially the case for chrome, gemstones, sand, and quarry. The land reform and the Indigenization and Economic Empowerment Act (Chapter 14 of 2007) which was gazetted in March 2008 opened up critical sectors of the economy, especially the extractive sector, to indigenous Zimbabweans. This led to a dramatic increase in the number of artisanal and small-scale chrome miners along Zimbabwe's Great Dyke geological formation, where most chrome mining takes place (Zvishavane, Shurugwi, Lalapanzi, and Mutorashanga). Although chrome production has gone through the usual boom and bust cycles (Maponga and Ruzive, 2002), symptomatic of all extractives, a rise in demand, especially in China, has led to an increase in its production. In

This article is part of a special issue entitled: Artisanal and Small-Scale Mining published in Journal of Rural Studies.

* Corresponding author.

E-mail address: grasianm@gmail.com (G. Mkodzongi).

<https://doi.org/10.1016/j.jrurstud.2025.103675>

Received 5 December 2023; Received in revised form 12 March 2025; Accepted 17 April 2025

Available online 23 April 2025

0743-0167/© 2025 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Table 1
World chrome resources [Source: International Chromium Development Association (ICDA)].

Country	Proven Resource	World Rank	Output (Production)	World Rank
South Africa	72.7.%	1	39.3.%	1
Zimbabwe	13.2.%	2	2.0.%	6
Kazakhstan	4.2.%	3	14.8.%	2
India	0.9.%	5	16.0.%	3
Finland	1.6.%	4	2.5.%	7
Brazil	0.8.%	6	3.3.%	8
Turkey	0.3.%	7		5
Other Countries (Oman, Iran, Turkey, and Albania)	7.1.%	8	22.1.%	4
Total	100.%		100.%	



Fig. 1. Mr. Phiri in his make-shift house.

response, the Zimbabwean government, which a few years ago banned chrome exports in favour of local beneficiation, relaxed the policy and resumed exports (Government Chrome Paper, 2015). This has influenced the rise in artisanal chrome mining along the Great Dyke. Given the difficult economic circumstances currently facing Zimbabwe, artisanal and small-scale chrome mining is now a key source of employment for peasants and other unemployed people. Moreover, the sector is undergoing a rapid transformation due to the increasing involvement of Chinese companies now dominating chromite production. Despite an increase in chrome production and its role as a source of livelihood for many rural households, hardly any research has focused on how its production has unfolded, the social organization of the miners, and its contribution to rural livelihoods.

The article is based on ethnographic data gathered during fieldwork



Fig. 2. Women fossicking for ore from chrome dumps.

in Mapanzure communal areas near the mining town of Zvishavane (Midlands Province), where a large number of people are now engaged in artisanal and small-scale chrome mining. Fieldwork was conducted between 2018 and 2021. Approximately 30 informants were interviewed as part of a broader study investigating the dynamics of artisanal chrome mining along Zimbabwe’s Great Dyke geological formation. To gather the perspectives of the diverse group of individuals involved in artisanal and small-scale chrome mining, a purposive sampling approach targeting artisanal chrome miners, tributors, sponsors, buyers, transporters, caterers, and other key informants was utilized. Research informants were identified along the way to the chrome mines, at beer-drinking places, eateries, and mining sites. We have used pseudonyms to protect the identities of research participants.

While the first section introduces the article and outlines its main arguments, section two provides a historical overview of artisanal and small-scale chrome mining in Zimbabwe. It examines the economic and political contexts that necessitated the introduction of tribute mining arrangements in the rise of chromite mining cooperatives within the context of Zimbabwe’s efforts to promote producer cooperatives in the 1980s. Section three analyses the effects of the Fast Track Land Reform Programme, launched by landless peasants and liberation war veterans in 2000, on artisanal and small-scale chrome mining activities. In addition, it discusses how the land reform programme resulted in villagers not only occupying white-owned farms but also ‘invading’ and illegally mining chrome claims owned by large-scale mining companies (Zimasco and Zimalloys). It further examines how villagers alternated between farming activities and artisanal chrome mining. The section also analyses the impact of Chinese companies’ participation in chromite mining and marketing on artisanal chrome mining and rural livelihoods.

2. The connection between ASM and subsistence agriculture: an overview

Research on ASM increasingly recognises that ASM and subsistence farming are often interconnected. The rural population frequently shifts between agriculture and mining based on seasonal changes and typically reinvest the profits from mining into agricultural sustainability to ensure a stable food supply (Rushemuka and Côte, 2024; Gräser, 2024; Hilson and Hu, 2022; Hilson et al., 2025; Pijpers, 2014; Lahiri-Dutt, 2018). Since the 1980s, researchers have shown an interest in the connections between farming and non-farming livelihoods. However, it was not until the 1990s that they began to recognise the growing significance of ASM within the diverse spectrum of rural livelihoods (Hilson et al., 2025). Scholars interested in the connections between ASM and subsistence agriculture investigate the distribution of labour, the factors influencing livelihood choices, and how earnings from one livelihood are reinvested in another. Although the majority of rural labour is dedicated to farming activities, ASM has become the primary source of income for many rural populations, particularly in areas rich in mineral resources such as gold, diamonds, gemstones, and, more recently, energy transition minerals like lithium, tantalum, and cobalt (Bryceson, 2002; Mocanachie, 2011; Banchrigha and Hilson, 2010; Hilson et al., 2025; Hilson and Hu, 2022). Hilson and Hu (2022) revisit the argument that ASM is driven by poverty and elaborate on the argument that ASM and agricultural livelihoods in Sub-Saharan Africa are often entangled activities.

The diverse and intertwined nature of these rural livelihoods has resulted in the characterisation of rural populations in Sub-Saharan Africa as 'farming miners' or 'mining farmers' (Hilson and Hu, 2022; Banchrigha, S. M. 2006). This aligns with Lahiri-Dutt (2018)'s conceptualisation of rural populations as 'extractive peasants.' Lahiri-Dutt (2018) specifically employs the concept of 'extractive peasants' to illustrate labour mobility between agriculture and artisanal small-scale mining (ASM), and to explore the motivating factors that drive the transition between agricultural and mining livelihoods. Pijpers (2014) argues that while competition does occur, particularly over land, the relationship between artisanal and small-scale mining and agriculture in sub-Saharan Africa is predominantly characterised by co-habitation, symbiosis, and co-existence. Other researchers have investigated ASM through the lens of labour (Rushemuka and Côte, 2024; Gräser, 2024). These works highlight the motivations behind peasants' livelihood choices, how labour is allocated between the agricultural and mining sectors, and how miners reinvest their earnings in other productive sectors. For example, Rushemuka and Côte (2024) used the concept of the 'labour regime' to gain a deeper understanding of the interconnection between ASM and other rural livelihoods. They argue that although more labour tends to be allocated to the agricultural sector, labour productivity in this sector is lower compared to that in the ASM sector (Rushemuka and Côte, 2024).

Since the turn of the millennium, there has been an increase in the mechanisation of the ASM sector, which has significantly transformed both the sector and rural livelihoods (Hilson et al., 2014; Spiegel, 2015; Doumbouya; Dessertine; Vinches; Cerceau, 2024; Gräser, 2024). This upsurge in the mechanisation of ASM has largely been driven by the global scramble for strategic minerals, along with the increasing involvement of Chinese mining companies and individual Chinese nationals in resource extraction across Africa (see Hilson et al., 2014). As noted by Doumbouya et al. (2024, 1) in Guinea, the introduction of mechanisation 'not only boosted productivity but also transformed the socio-technical dynamics of ASGM.' Transformations in the ASM sector have mainly emerged from a global demand for minerals and a rise in mining equipment imports from China. However, while mechanisation in ASM has improved production, it has also led to negative consequences, such as increased environmental degradation and the rapid depletion of mineral resources. Mkodzongi and Spiegel (2020) have explored the question of labour mobility in the context of Zimbabwe's radical land reform programme which also engendered a scramble for

mineral resources. Using the case of artisanal and small-scale gold mining, they argue that the land reform created an opportunity for artisanal miners to access minerals and other natural resources which were previously enclosed to them (Mkodzongi and Spiegel, 2019). This article enriches this expanding literature by examining the relationship between artisanal and small-scale chromite mining and agricultural livelihoods in Zimbabwe, particularly within the framework of Zimbabwe's redistributive land reform programme that began in 2000, the increasing involvement of Chinese mining companies and nationals in the sector, and the mechanisation of ASM.

3. Chrome mining in Zimbabwe: a brief historical overview

Given the very limited academic literature (Chiwawa, 1990; Osim et al. 1999; Maponga and Ruzive, 2002; de Waal and Nhemachena, 2006; Musemwa, 2009; Chitambira et al. 2011; Chakupa, T. 2011; Nyamwanza et al. 2013) on Zimbabwe's chrome mining sector and other base metals, a brief historical overview is necessary to contextualize the current dynamics underpinning artisanal and small-scale chrome mining (ASCM). Chrome mining along Zimbabwe's Great Dyke geological formation dates back to the country's colonial occupation by British settlers in 1890 (Phimister, 1996). Although Zimbabwe was occupied by Cecil Rhodes's British South Africa Company based on rumours of potentially large gold deposits like those that had been discovered on South Africa's Rand, such rumours proved to be largely false and thus, the temporary gold rush to Rhodesia led to disappointments and bankruptcies (Bent, 1896; Kritzing, 2012a and b). As a result, the colonists were forced to venture into agriculture and explore other minerals.

In the early years of colonial occupation, chrome was a relatively unknown mineral; its production was linked to its chemical properties rather than its metallurgical qualities (Phimister, 1996). However, its production and wider industrial usage dramatically increased during World War I, when the mineral's metallurgical qualities became known and were widely applied in the steel industry. The development of Zimbabwe's chrome sector is linked to the shadowy activities of Edmund Davis, who was responsible for the creation of the Rhodesia Chrome Mines in 1908 and the subsequent consolidation of the global chrome sector. Phimister (1996) offered an insightful historical analysis of the Chrome Trust, a cartel established by Edmund Davis that dominated the mining and marketing of chrome globally until his untimely death in 1938. According to Phimister (1996:80):

The early development of chrome deposits in Southern Rhodesia was undertaken by a handful of individuals and small to medium-sized companies. Prominent amongst the latter was the Bechuanaland Exploration Company, in which the BSA Company had been largely interested since the early 1890s, and on whose Board, Davis had sat since 1899.

The prospects of a mineral whose metallurgical qualities were largely unknown at the time made many investors doubtful of its economic potential and thus attracted little investment for its large-scale production. By the early 20th century, the United States was the largest market for chrome, where it was used mainly for its chemical properties in manufacturing dyes and pigments. Its use in alloys and the hardening of steel was largely unknown until after World War I, when it was used in the toughening of steel and other wider applications. As a result, world consumption of chrome 'rose from an estimated 280,000 metric tons in 1924 to about 450,000 metric tons in 1928 by which time chrome was already firmly established in the chemical and metallurgical industries, particularly chromite refractories for lining steel furnaces' (Phimister, 1996:82).

Due to the history of the consolidation of the chrome sector by Davis and his associates, when Zimbabwe attained independence in 1980, 'two transnational corporations, ZIMASCO (formerly a subsidiary of Union Carbide) and Zimbabwe Alloys (a subsidiary of the Anglo-American Corporation) operated the largest mines mainly on podiform deposits

in the southern part of Zimbabwe' (Maponga and Ruize, 2002:115). According to (Chirasha, 2011:79) these two companies 'owned most of the chrome ore reserves, and have the biggest capacity to produce about 450 000 metric tons of product of the almost 500 000 tons-built capacity'. Given the above, the sector has largely been dominated by an oligopoly that controlled chromite production, smelting, and marketing. However, Zimbabwe's radical land and agrarian reforms implemented under a heterodox macro-economic framework underpinned by a 'Look East' policy reconfigured the chromite production sector in favour of a diverse range of players. The depletion of podiform chromite resources has influenced the need to 'widen' production towards artisanal mining as the sector 'has evolved over the years from highly mechanized, deep underground operations to relatively shallow workings of mostly low-grade ores' (Maponga and Ruize, 2002:115). This has, however, created another challenge as low-grade-ores produced by artisanal and small-scale miners tend to be unsuitable for local smelters who prefer high-grade ores that are suitable for their old submerged electric arc smelters. This has undermined local beneficiation as many artisanal chrome producers now rely on Chinese companies to buy low-grade ores for export to China where they can be processed. Apart from market dynamics which have negatively impacted chromium production, ecological limitations have also transformed the sector and the quality of minerals produced. Seam deposits tend to be of low quality but they are accessible to artisanal miners who use rudimentary tools in their mining operations.

Zimbabwe's Great Dyke is estimated to host over 1 billion tonnes of unproven chrome reserves. Despite a large amount of both proven and unproven reserves, Zimbabwe is not listed as a major producer of chrome on the world market. This is mainly due to production challenges facing the major chrome miners and smelters. It has been argued that the chrome sector has the potential to generate 7000 jobs; however, this figure will be difficult to achieve given the many challenges facing the sector (Zimbabwe Cabinet Paper on [Zimbabwe Government Paper on Chrome](#), 2015). The chrome market is dominated by Asian countries such as China and Singapore, while African countries such as South Africa and Zimbabwe have the largest reserves of chrome (approximately 80 %) (Zimbabwe Cabinet Paper on [Zimbabwe Government Paper on Chrome](#), 2015).

Chrome production has been rising due to increased demand from China, although competition from other chrome-producing countries and other local factors, such as the intermittent bans on the export of unprocessed chrome, undermined production. The Zimbabwean government charges a 20 % levy when unprocessed chrome ores are exported; this levy was generally meant to prop up local smelting capacity, which has been facing various challenges. One of the significant challenges is the cost of electricity, which tends to be too high. In addition, erratic electricity supply hinders productivity by making it difficult for local smelters to function at optimum levels. Geological factors also created challenges as production is dominated by low-grade ores unsuitable for local smelters.

The chrome sector has undergone significant transformations, with numerous new companies entering the chromite smelting industry. There are currently over 13 smelting companies operating in the country including (Afrochine, JinAn Corp, Jin En Intl, JinYi Enterprises, Maranatha, Monachrome, Nelson Holdings, Olikon Ferroalloy, Parkinson Enterprises, Wel Mining, Xinyu Mining, ZIMASCO and Zim Alloys (Cabinet Paper on [Zimbabwe Government Paper on Chrome](#), 2015). Most of these new chrome companies are Chinese-owned. Moreover, the oldest and largest of the smelting companies, ZIMASCO, was acquired by Sinosteel, a Chinese company, in 2007. Historically, most of the chrome smelted at ZIMASCO came from the podiform deposits, which are now depleted. As a result, most of the chrome ores come from stratiform seam deposits on the Great Dyke. These tend to be labour intensive and costly to mine. According to the Government of Zimbabwe Cabinet Paper on Chrome (2015:20):

Current ferrochrome production in Zimbabwe is largely dependent on chrome ore that is sourced from seam mining in the Great Dyke due to the depletion of known large podiform deposits over the years. Unlike podiform deposits, which are large ore bodies and relatively easy and cost-effective to mine both on surface and underground, dyke seam mining is labour intensive and more costly. The Dyke ores also tend to be more friable than the podiform ore, which also impacts negatively on the costs of the ore. This is because most of Zimbabwe's ferrochrome-producing furnaces are designed for the consumption of lumpy ore, and can only consume a limited quantity of fines. The fine ore is therefore screened from the lumpy ore and in most instances, stockpiled and only usable in minimal quantities. This change in the characteristic of mineable ore has therefore seen the cost of chrome ores increasing in recent years, at a time when the selling prices for ferrochrome have been decreasing.

The above points to some of the geological challenges facing Zimbabwe's chrome sector. To mitigate the challenges generated by the increased production of friable ore, some smelters, like Zim Alloys, resorted to processing chrome fines into briquettes before feeding them into their furnaces. According to [Shoko and Malila \(2004:291\)](#):

The use of briquettes in the production of high carbon ferrochrome alloys has several operational, metallurgical, and economic advantages. Key among these is the improvement in the metallurgical recoveries and related efficiencies such as energy utilization efficiencies due to the improved meltability and thermodynamic efficiencies.

Furthermore, they argue that chrome 'fines have a massive cost advantage as the fines are a by-product of screening and would otherwise have had no value apart from handling and processing costs' (Ibid: 292). The above shows how technological innovation can help mitigate some of the geological limitations negatively impacting chromite production. Nevertheless, many questions remain about the economic benefits of using briquettes in producing high carbon ferrochrome alloys from low-grade chrome fines. There are also environmental sustainability issues that need to be addressed in the reprocessing of chrome dumps ([de Waal and Nhemachena, 2006](#))

The global demand for ferrochrome has been negatively impacted by Chinese producers, who often receive subsidies from the Chinese government and are strategically situated in proximity to smelters, thereby reducing transportation costs. This makes chrome produced in Zimbabwe more costly due to the long distance to markets. The logistics involved in transporting chrome to the global markets in Asia are further complicated by the geographical constraints of Zimbabwe, which is a landlocked country. Consequently, the chrome must be conveyed to ports in Mozambique or South Africa utilizing either haulage trucks or rail wagons. The depletion of podiform chrome reserves along the dyke has also increased production costs, as the remaining chrome deposits are primarily seams that are significantly more expensive to mine. Moreover, local smelters have struggled to acquire the technology to process the 'fines' through the installation of the Outokumpu Sintering and Pelletizing Technology which is suited to the available resources. According to the Zimbabwe Government Cabinet Paper on Chrome (2015:21):

To effectively utilize fines for the production of ferrochrome, the fines need to be agglomerated with the most proven technology for this process being the Outokumpu Sintering and Pelletizing Technology. Installation of this technology requires significant capital as the plant is installed together with a furnace for the off-gases required for the process. A plant that can produce 600,000 Mt per annum of sintered ore, (which would be the ore requirement for a plant such as ZIMASCO) together with a 60 MVA furnace will require capital in the region of USD 200 million. While there are cheaper technologies, the most proven and effective technology for the sintering process is the Outokumpu process.

As noted above, the Outokumpu technology requires a considerable capital outlay which many of the struggling local smelters cannot afford. As a result, local smelters are facing significant challenges, particularly due to geological changes which have undermined ore quality and efficient production. In addition, global ferrochrome prices have been depressed for a long period owing to oversupply. Unfavourable government policies, particularly the implementation of the indigenization and local empowerment regulations (promulgated in 2010) negatively impacted the mining sector. The indigenization policies have since been reversed under the Mnangagwa government, which came to power in 2017. Although the government has historically emphasized local beneficiation of chrome ores before export, there is no evidence to show that this policy is promoting employment or viability of the sector.

4. Land reform and Artisanal chrome mining in Mapanzure communal areas Zvishavane District

Artisanal and small-scale chrome mining in Zimbabwe can be traced to the 1980s when large-scale chrome mining companies facing viability challenges (due to a slump in global commodity prices) entered into a compromise with the government to retrench some of their workers on condition that they would allow the retrenched workers to inherit loss-making mines and also mine marginal claims under a tribute arrangement (Chiwawa, 1990, Maponga and Ruzive, 2002). According to Maponga and Ruzive (2002:118), tribute mining arrangements in Zimbabwe have to be understood within the context of events leading to the formation of chromite mining cooperatives in the mid-1980s. The decline in base metal prices in the mid-1980s occurred at a time when the Zimbabwean Government was enforcing minimum wage regulations and removing the exploitative colonial contract labour system within the mining sector.

The crisis facing chrome producers forced them to retrench some full-time employees and terminate the contracts of part-time labourers. Negotiations between the government and the two-dominant smelters, Zim Alloys and ZIMASCO led to the government allowing the companies to retrench some workers on the condition that the retrenched workers would establish cooperatives with the assistance of the Zimbabwe Mining Development Corporation (ZMDC). The cooperatives were allowed to work as 'tributors' on claims owned by the companies producing chrome on contract. Under this arrangement, ZMDC provided loans, equipment for hire, and technical advice to the newly formed cooperatives (Maponga and Ruzive, 2002).

Tribute mining arrangements were the dominant contract mining arrangement in the 1980s and 1990s, and these arrangements were at the core of artisanal and small-scale chrome mining. These arrangements were exploitative because they tied the tributors (individuals and cooperatives) to the grantors (large-scale mining companies that owned the claims). The contracts restricted tributors' access to other markets since they were contractually obligated to sell their ore exclusively to the grantor (ZIMASCO or Zim Alloys). Another challenge faced by artisanal chrome miners was that ZIMASCO only accepted high-grade lumpy chrome and was unwilling to buy poor-quality chrome (locally known as nail cast). The dominance of ZIMASCO and Zim Alloys over claims and the market forced miners to sell their chrome to the companies at distorted market prices. This monopoly hindered the democratization of the sector and the involvement of indigenous Zimbabweans in the chrome industry (Zimbabwe Parliamentary Report on Chrome 2013). As a result, artisanal and small-scale miners were forced to engage in side-marketing of some of their chrome to Chinese buyers.

However, the Fast Track Land Reform Programme (FTLRP) in 2000 and its indigenization discourse fundamentally reshaped the politics of resource extraction including base metals. The land and agrarian reform emboldened historical claims of local people over the ownership of resource-rich areas (especially along the mineral-rich Great Dyke which they claimed were their ancestral lands stolen from them by the colonial government (Mkodzongi 2020a). The land reform thus not only

generated a boom in artisanal gold mining in former white commercial farms but also saw a similar upsurge in artisanal chrome mining.

In Mapanzure communal areas, the 'invasion' of white-owned farms by peasants was closely linked to the 'invasion' of chrome claims belonging to ZIMASCO and Zim Alloys by artisanal miners. The 'invasion' of chrome claims was done within the broader context of repossession of land and natural resources. Consequently, it was justified as a way of forcing large-scale mining companies to allow locals to have access to mineral resources. The process of 'invading' illegally mining chrome on company-owned claim was locally referred to as *kubhomba* (literally: bombing involved artisanal miners). This process involved groups of local artisanal miners secretly mining dormant chrome claims ferrying the ore to a safe place before selling the chrome to middlemen. Usually, the chrome would be sold to registered tributors who would, in turn, sell it to large-scale mining companies, and others would sell their ore to Chinese companies who never asked questions about the origins of the ore. The *kubhomba* practice also allowed artisanal miners to operate outside the exploitative tribute mining arrangements dominated by large-scale mining companies. These illicit practices resonate with what Bayat (1997) conceptualises as the 'quiet encroachment of the ordinary.' Bayat (1997:57) describes this as the 'silent, patient, protracted, and pervasive advancement of ordinary people on the people on the propertied and powerful in order to survive hardships and better their lives.' Peasants in Mapanzure, and indeed other communities along the Great Dyke, used the opportunity provided by the land reform movement and the discourse of land reclamation to 'quietly' onto chrome claims owned by large-scale chromite mining to make a living. As Mkodzongi and Spiegel (2013:2152) argue, the land reform programme in Zimbabwe 'allowed peasants to access natural resources that were formerly enclosed under the previous agrarian structure.'

With increased access to land and mineral resources generated by the land reform, villagers' livelihoods were broadened and strengthened. The villagers could alternate between agricultural livelihoods and artisanal mining. Although such practices were not uncommon, an increased number of people used proceeds from their farming activities to invest in artisanal mining and vice versa. For instance, some research participants¹ narrated how they had sold livestock to register chrome claims or to join chrome mining cooperatives (Interview with Mercy Moyo, Lundi, Mapanzure communal areas, 17 September 2021). Others indicated that they used proceeds from farming or sold livestock to raise money to hire excavators or to pay for drilling and blasting. There are also several stories of people who used proceeds from artisanal chromite mining to buy livestock, fertilizers, farming implements, and also to hire farm labour (Interview with Tendai Vandarayi, Mapanzure communal areas, 22 September 2021). It is important to note that although the villagers in the Mapanzure communal area oscillate between the two livelihoods, during the rainy season most of them concentrate on farming and return to artisanal mining after harvesting crops. One of the reasons why they focus on farming during the rainy season is that the mining pits would be filled with water making it expensive to mine. Thus, the mobility between farming and artisanal chrome mining in Mapanzure is partly determined by seasons although some continue with artisanal mining even during the rainy season.

The land reform was, thus, a critical impulse in the diversification of livelihoods among peasants in the Mapanzure communal areas. A combination of land redistribution and the pressure put on large scale mining companies to cede their large claims they speculatively held allowed peasants to increasingly alternate between farming and artisanal chrome mining. This has also witnessed the circulation between financial resources between the two livelihoods. This resonates with Pijpers' (2014: 34) argument that agriculture and mining should not be viewed as competing but as imbricated and co-habiting livelihoods

¹ The names of research informants have been changed to protect their identity.

(Hilson et al. 2024; Traoré et al., 2024)

Peasants who oscillate between farming and artisanal mining fit the Lahiri-Dutt's (2018) conceptualisation of 'extractive peasants.' Lahiri-Dutt (2018: 1561) describes 'extractive peasants' as 'rural workers in less affluent nations who have been shifting to, or alternating with, other livelihoods to make a living through commodity extraction.' The land reform and the 'invasion' of mining claims owned by large-scale mining companies demonstrate how, as Lahiri-Dutt (2018: 1573) puts it, 'extractive peasants also challenge statist and corporatized rights over land and mineral resources, accepted without questioning their legitimacy.' Discourses and practices of resource redistribution in Zimbabwe, thus, transformed both agrarian and extractive livelihoods of peasants.

The local agitation for access to mineral resources under the control of large-scale mining companies gained traction with the ZANU PF government that was keen to push indigenization policies within the context of sanctions that had been imposed by the UK, EU, and the USA in the aftermath of the land reform programme. In 2010, the ruling ZANU PF political party pushed an indigenization drive, especially during political campaigns for re-election as a way of alleviating the effects of the economic sanctions (Mkodzongi, 2016). This gave rise to local forms of resource nationalism among communities living in resource-rich areas along the Great Dyke. Following on the above, the ZANU PF government openly promoted a wide range of artisanal mining activities by allocating mining claims (especially gold and chrome) to unemployed youths aligned to the political party, although this was never formalized. This process opened up the countryside and allowed people of diverse classes, genders, and ethnicities to engage in artisanal mining across Zimbabwe's countryside. Given the challenging socio-economic environment shaped by sanctions and the international isolation of Zimbabwe, a large number of unemployed youths from urban areas and the countryside are now engaged in diverse artisanal mining activities (gold, chrome, sand, and quarry mining). These extractive activities have become a major source of livelihood, especially for the poor.

A combination of the land reform discourse, indigenization policies, and biting economic sanctions became fertile ground for Chinese participation in the artisanal and small-scale chromite sector. As more and more artisanal and small-scale chrome miners got access to independent claims (special grant claims) that had been ceded to the government by Zimasco and Zim Alloys, Chinese companies stepped in to provide contract mining services, hiring mining machineries such as excavators and haulage trucks as well as providing a market for the ore. Given the fact that hiring excavators is expensive, artisanal miners have to rely on Chinese 'sponsors' to meet the cost of hiring such equipment. According to interviews with miners, it costs US\$100 to transport a hired excavator and US\$ 100 per hour to hire the excavator. The miner is also required to cover the costs of diesel used by the excavator during the period of hire (Interview with Dambi 23/03/2018).

Furthermore, interviews with claim owners showed that most of them could not afford to hire the machinery and are thus forced to sub-lease their claim area to a sponsor on profit-sharing arrangements. The sponsor (who is generally a Chinese company) is then responsible for all the costs of production. The arrangement involves a 70-30 % profit-sharing arrangement, with the sponsor getting a lion's share of the profits. As a result, artisanal chrome mining in Mapanzure is increasingly dominated by the Chinese, who are now consolidating the sector to the detriment of artisanal miners. Apart from sponsoring chrome mining activities, Chinese sponsors are also chrome buyers. Most of the miners we interviewed complained of the low chrome prices Chinese buyers offer. When some of the interviews were conducted in 2018, the Chinese merchants were buying chrome ore for between US\$60 to US\$80 per tonne depending on ore quality.

Although many complain about the low prices, artisanal miners have no choice but to sell to the Chinese who, unlike ZIMASCO and other local Ferrochrome producers, are willing to buy low-grade chrome. Chinese merchants accept both low- and high-grade chrome but offer meager

prices, especially for low-grade chrome. Interviews with miners show that the Chinese were buying low-grade chrome at US\$ 20 per tonne while they were buying high-quality ore at between US\$60 and US\$80 per tonne, depending on the market dynamics. During interviews, miners complained that ZIMASCO was only willing to purchase high-grade chrome (with above 45.5 % chrome content) at US\$90 per ton, which was against their expectation of US\$120 per ton. As noted earlier, ZIMASCO was unwilling to buy low-grade ores, which was 39 % (in terms of chrome content). However, the company allowed its tributors to sell such low-grade ore to Chinese buyers. Since the Chinese are open to buying all types of chrome regardless of quality, local miners have welcomed them as this provides them with a market for chrome that they could not sell to major buyers such as ZIMASCO. While the tributary mining arrangements seemed to benefit the Chinese, local miners were happy that at least the Chinese provided them with a market for low-grade chrome, which local smelters did not accept.

Like artisanal gold mining, artisanal chrome mining is characterized by violent conflicts among miners. Interviews with miners show that some criminal elements among artisanal chrome miners removed pegs marking claim boundaries as a way of illegally mining on private claims without an agreement with the owners (Interview with Doriro at Mapanzure 23 April 2018). This resulted in serious conflicts among small-scale miners, which in some places has led to some miners taking each other to court to resolve claim boundary conflicts. However, some miners claimed that court officials were corrupt and could easily be bribed by those with money to get a favorable judgement. The problems facing the artisanal chrome mining sector are similar to those experienced in the artisanal gold mining sector in that they are both characterised by conflicts and exploitative labour arrangements between the miners and sponsors (Interview with Murata at Mapanzure 24 April 2018). Moreover, some conflicts were a result of sponsors failing to pay wages in time. According to John Muroyi a miner working at Petmhazu mine:

I have been working here for 8 years, the working conditions are not very good considering that we work for long hours under hard labor conditions. The mine owner Mr. Mhazu does not care for the well-being of his workers because he does not provide us with protective clothing. We are subjected to very high temperatures during the day and we sometimes work in the rain. This exposes us to diseases as our hands are damaged. The work we do here is hard, we separate chrome from the other rocks using basic tools and our bare hands. We have to work with our wives and children to share the workload and increase our tonnage. However, the mine owner does not pay our salaries in time (Interview with John Muroyi, Muzvondiwa Township, and 10 October 2018)

The above shows some of the exploitative labor arrangements symptomatic of artisanal chrome mining and how they affect artisanal miners who perform most of the labor-intensive work of separating chrome from unwanted stones. Interviews with miners also show how historically, chrome mining in Mapanzure attracted mine laborers from Zimbabwe's neighboring countries such as Malawi, Zambia, and Mozambique. Some of the descendants of these migrant laborers have remained in the area and continue to work in chrome mines.

It is essential to highlight that not everyone engaged in artisanal chrome mining has the privilege of having a piece of land on which they also practice agriculture. Some artisanal miners, especially former migrant mineworkers from Malawi, Mozambique, and Zambia relied solely on artisanal mining. The case of Mr. Phiri, who was interviewed at the Ransan compound at Mapanzure highlights some of the historical legacies of chrome mining in the area (Interview with Mr. Phiri, 6 October 2018). Mr. Phiri is an elderly man of 75 years of age who is involved in the processing of the mining dumps. During the interview, Mr. Phiri complained that his chrome is regularly stolen by illegal chrome miners (Interview with Mr. Phiri, 6 October 2018). He further pointed out that chrome mining is tough since he only has a hoe and a

shovel. Like other miners we interviewed, he pointed out that in most cases he is not paid on time by chrome buyers such as Hichrome Mining (a Chinese-owned company). However, he also observed that *chikorokoza* (artisanal mining) is critical to his livelihood as he does not own any land to practice agriculture. He used to work for a white-owned chrome mining company that left after independence, but he remained at the mine compound.

Artisanal miners locally known as *makorokoza* are also accused by small-scale miners of undercutting them by selling chrome at very low prices to the Chinese. This has led to ongoing conflicts between the two groups. Small-scale miners interviewed during fieldwork complained that *makorokoza* were responsible for falling chrome prices as they were selling their chrome below the market prices. They also accused *makorokoza* of stealing their chrome. *Makorokoza* were also accused of being perpetrators of violent conflicts which affected chrome miners, including some reported fatalities. As in the gold mining sector, the violence experienced by chrome miners must be conceptualized as a class struggle between competing groups over finite mineral resources (Mkodzongi, 2020b). According to Sibanda (interviewed at Mapanzure on 22 November 2018)

Very few locals benefited from ZIMASCO's program of allocating the mining blocks to its workers. The community did not benefit from the chrome mining as most of the profits are being taken by Chinese sponsors who are taking the big share of chrome. The area is now environmentally degraded, with deep pits and artificial dams which have affected the local people's livestock. Cattle, goats, sheep, and donkeys are being trapped into these pits causing serious loss to the inhabitants of the area. Due to chrome mining, prostitution has also increased in the area leading to an increase in sexually transmitted diseases such as HIV Aids. Prostitutes are now frequenting the area due to the high influx of 'Chinese' sponsors and *makorokoza*.

As noted by the informant above, while chrome mining has become a key economic activity for peasants and other unemployed individuals, it is supported by exploitative labor relations that primarily benefit Chinese sponsors and ferrochrome companies such as ZIMASCO, which has also been acquired by a Chinese firm. The fact that ZIMASCO prefers to buy high-grade chrome further undermines the ability of artisanal chrome miners to make a profit from mining. The artisanal and small-scale miners largely extract low-grade chrome from stratiform deposits (seams), which are sold to local Chinese buyers for a very low price (US \$20 a ton), compared to high-grade lumpy chrome which fetched US\$90 a ton.

Due to the involvement of numerous women in ASCM, the activity is supported by gender dynamics that have yet to be fully explored in the literature. During interviews, women complained that there were very few female beneficiaries of ZIMASCO's employee block allocation schemes which could have helped them to become 'tributors' rather than artisanal miners. As a result, women are forced into exploitative labor relations as artisanal miners producing on behalf of sponsors. Their work involves a daily routine of manual work of separating chrome from unwanted gangue material. The removal of the overburden to reach chromite ores and the separation and gathering of chrome is one of the most laborious work undertaken by women in artisanal mining. Interviews with women show that they are paid an average US \$5–20 dollars per ton of chrome gathered. Apart from the low wages, women work without protective clothing in the scorching heat of the low veld, where temperatures can rise to over 30° in the summer. The women are also responsible for their food and other needs, thus further eroding their already low wages. Women are also subjected to verbal abuse by male supervisors as part of an exploitative wage labor regime.

Since women are employed on a casual wage labor basis, the harsh working environment forces them to move from one mine to the other in search of better remuneration and working conditions. To increase their low wages, women are also compelled to work long hours processing mine dumps that were mined and abandoned. Women working on such

dumps largely used an assortment of rudimentary tools such as picks, hoes, shovels, sledgehammers, and some metal tins. Women working on the dumps were usually paid US\$20 dollars per ton of ore.

During interviews, women highlighted many challenges they faced as artisanal chrome miners. Due to the laborious nature of chrome mining, women complained of suffering from fatigue and how this was affecting their marriages as they were too tired to have sex. Others pointed out how manual work was affecting their marriage life as their husbands were now engaged in prostitution as their wives were too tired to have sex as observed by Jane:

I spend the whole day carrying stones, after that, I go home to cook and do other domestic work then after that the husband expects sex, it is too demanding and tiring (TN, Interviewed at Mapanzure on 24 October 2018)

Some women highlighted that chrome mining had helped them to start small businesses such as rearing poultry to supply the local market (Interview with Tatenda 23 October 2018). Other research participants highlighted how they had used the money they acquired from chrome mining to buy domestic utensils such as pots and blankets (Interview with Mary 22 October 2018). Others highlighted how they managed to buy beds, television sets, and building materials to build better houses (Interview with Majury, 23 October 2018). Some were now able to pay school fees for their children, as one woman pointed out '*Vana vedu vava kuenda kuchikoro pasina chinovanetsa, vanoenda vakachena, nemasecheru zvese nembuva, nebhutsu!* (our kids are now going to school with decent uniforms and good school bags) (Interview with Linda 22 October 2018). Some women have benefited from the boom in local chrome production by running some businesses linked to the sector. This was especially true of Rumbidzai Gunduza, who runs a cooking business at Muzvondiwa Shopping Centre. During interviews, she narrated how her cooking business had benefited from the boom in artisanal chrome mining as people working in the chrome mines relied on her kitchen for their food supplies. She further observed that although over five kitchens were operating at the Muzvondiwa Shopping Centre, she had a loyal customer base, providing an important income source. She further highlighted how, on a good day, she sold over 90 plates of *sadza* (a local staple) a day. A plate of *sadza* (a thick corn porridge which is a staple in southern Africa) meal costs US\$1. This means on a good day she grosses an estimated US\$90. Her customers included artisanal miners, transport operators, sponsors, and others whose businesses were connected to chrome mining operations in the area (interviewed at Muzvondiwa Growth point 23 October 2018).

Chrome mining has also spurred a boom in petty entrepreneurial activities such as the buying and selling of second-hand clothes imported from Mozambique. Cross border traders also frequent the area selling electrical goods such as radios, torches, batteries. Local women were also engaged in the growing and marketing of vegetables such as tomatoes and cabbages. The boom in chrome mining has also boosted sales for those running liquor businesses that are now staying open until the early morning hours. The boom in business has also attracted prostitutes from the town of Zvishavane nearby who have now relocated to the area, providing their services to a wide range of clients in the area. This has led to some locals complaining of the potential spread of sexually transmitted infections. ASCM has thus become an essential economic activity that has boosted the local economy by creating employment opportunities and businesses opportunities for local entrepreneurs.

5. Conclusion

In the aftermath of Zimbabwe's radical land reforms implemented in 2000, artisanal chrome mining has become a crucial part of the rural economy along Zimbabwe's Great Dyke geological formation. It is a significant source of employment for rural households and contributes to the growth of other small businesses in the countryside. Although the sector has faced many challenges, such as the global slump in base metal

prices, periodic government bans on the export of unprocessed chromite ores, and the decline in ore quality (Parliamentary Report on Chrome 2013 and Government Paper on [Zimbabwe Government Paper on Chrome, 2015](#)), the sector has rebounded and has attracted Chinese capital which has influenced a new trajectory of mechanisation and consolidation of the ASCM sector.

Although Zimbabwe has large chromite reserves, production has been hampered by many challenges such as the decline in ore quality, high operating costs, government bans on exports, global market dynamics, and lack of capital among local smelters to invest in technological innovation to process low-grade ores. In terms of production and social organization, the artisanal chromite sector shares similar dynamics with artisanal gold mining. Artisanal chrome miners work as wage laborers in other people's claims (tributors) and tend to be underpaid for their labor. The contributors themselves produce on behalf of large-scale mining companies that own the claims. Lack of capital to acquire their claims has forced artisanal miners into exploitative labor relationships with contributors and sponsors. Moreover, some of the artisanal miners have been forced into criminality due to their inability to secure their claims. This has led to conflicts among artisanal miners, contributors, and sponsors. The fact that two large companies own most of the chrome claims has undermined efforts to democratise the sector by allowing indigenous Zimbabweans to participate in the sector. Radical local content laws popularised during the Mugabe era have allowed artisanal miners to enter the sector on the back of Chinese capital, driving the chromite sector's opening to more operators beyond the colonial era monopolistic structure dominated by two companies.

Chinese companies are now dominating the chrome mining and marketing sector. Chinese individuals and companies have been accused of criminal activities involving the illegal export of chrome (The Independent Newspaper 12 October 2020). Some of them have been accused of operating without the requisite paperwork by employing locals as a front for their illicit activities ([Parliamentary Report on Chrome 2013](#)). Major chromite smelters such as ZIMASCO have been acquired by Chinese companies. Other smaller Chinese smelters have also set up shop along the Great Dyke. Chinese companies have become dominant players in the artisanal chrome mining sector as sponsors and suppliers of mining equipment. This is transforming the entire chromite mining and processing sector in favour of Chinese capital. The mechanisation of the artisanal chromite mining sector is also intensifying environmental degradation through pollution and habitat loss ([Osime et al. 1999](#)). Most contributors operating on land leased from large companies such as ZIMASCO cannot rehabilitate the land damaged by their mining operations. Despite the above, the artisanal chromite sector has boosted local economies along the Great Dyke, as a key source of employment and market for agricultural produce. The artisanal and small-scale chrome mining sector is also linked to the wider rural economy as a source of capital invested in smallholder agriculture and other local entrepreneurship ventures. The case of artisanal chrome mining in Zimbabwe discussed in this article demonstrates the growing significance of base minerals as a livelihood option for subsistence farmers and how peasants employ various strategies, some of them illicit, to access minerals resources controlled by large-scale mining companies.

CRediT authorship contribution statement

Grasian Mkodzongi: Writing – original draft. **Joseph Mujere:** Writing – review & editing.

List of interviews

John Muroyi interviewed at Muzvondiwa 10/10/2018.
Mr Phiri interviewed at Ransan compound 06 October 2018.
Sibanda interviewed at Mapanzure 22/11/2018.
Jane interviewed at Mapanzure 24/10/2018.
Tatenda interviewed at Mapanzure 23/10/2018.

Mary interviewed at Mapanzure 22/10/2018.
Linda interviewed at Mapanzure 22/10/2018.
Majury interviewed at Mapanzure 23/10/2018.
Rumbidzia Gunduza interviewed at Muzvondiwa 23/10/2018.

Acknowledgments

The research was supported by the Nordic Africa Institute and the Volkswagen foundation grant number 96974

Data availability

Data will be made available on request.

References

- Banchirigah, S.M., 2006. How have reforms fuelled the expansion of artisanal mining? Evidence from Sub-Saharan Africa. *Resour. Policy* 31 (3), 165–171.
- Banchirigah, S., Hilson, G., 2010. 'De-agrarianization, re-agrarianization and local economic development: re-orienting livelihoods in African artisanal mining communities'. *Policy Sci.* 43 (2), 157–180.
- Bayat, A., 1997. Un-civil society: the politics of the 'informal people'. *Third World Q.* 18 (1), 53–72.
- Bent, T.J., 1896. *The Ruined Cities of Mashonaland, being a Record of Excavation and Exploration in 1891*. Green, and Co, London: Longman.
- Bryceson, D.F., 2002. The scramble in Africa: reorienting rural livelihoods. *World Dev.* 30 (5), 725–739.
- Chakupura, T., 2011. *Environmental Management in Chrome Mining Along the Great Dyke: a Case Study of ZIMASCO Operations* (Doctoral Dissertation. Stellenbosch University, Stellenbosch).
- Chipangura, N., 2019. Towards the decriminalisation of artisanal gold mining in eastern Zimbabwe. *Extr. Ind. Soc.* 6 (1), 154–161.
- Chipangura, N., 2019. "We are one big happy family": the social organisation of artisanal and small-scale gold mining in Eastern Zimbabwe. *Extr. Ind. Soc.* 6 (4), 1265–1273.
- Chirasha, J., 2011. *Ferrochrome Smelting and Smelting Capacity Investment in Zimbabwe*. Southern African Pyrometallurgy, pp. 77–81.
- Chitambira, B., Miso-Mbele, D., Gumbie, M., 2011. *Ferrochrome smelting in Zimbabwe*. In: Presentation to the Zimbabwe Branch Conference. African Institute of Mining and Metallurgy (SAIMM).
- Chiwawa, H., 1990. Co-operatives and contract mining in the Zimbabwean chrome mining industry: the paradox. *IDS Monograph Series* (1), 1–65.
- de Waal, A.A., Nhema, W.Z., 2006. Building employee trust in performance management: the case of a mining company in Zimbabwe. *Int. J. Organiz. Behav.* 11 (1), 1–19.
- Doumbouya, I.K., Dessertine, A., Vinches, M., Cerceau, J., 2024. Mechanization of artisanal and small-scale gold mining in Guinea: socio-technical trajectory of a rural mining site in upper Guinea. *J. Rural Stud.* 112 (2024).
- Government Chrome Paper, 2015. Parliament of Zimbabwe. Harare.
- Gräser, M., 2024. 'Industrial versus artisanal mining: the effects on local employment in Liberia'. *J. Rural Stud.* 111, 2024.
- Hilson, G., Hilson, A., Adu-Darko, E., 2014. Chinese participation in Ghana's informal gold mining economy: Drivers, implications and clarifications. *J. Rural Stud.* 34, 292–303.
- Hilson, G., Hu, Y., 2022. Changing priorities, shifting narratives: remapping rural livelihoods in Africa's artisanal and small-scale mining sector. *J. Rural Stud.* 92, 93–108.
- Hilson, G., Laing, T., Hilson, A., Arnall, A., Mondlane, S., 2025. How does small-scale mining stabilize rural livelihoods in Sub-Saharan Africa? The case of Mozambique. *World Dev.* 185, 106761.
- Kritzing, A., 2012a. Laboratory analysis reveals direct evidence of precolonial gold recovery in the archaeology of Zimbabwe's eastern highlands. In: *Proceedings of 9th International Mining History Congress. Johannesburg 17–21 April*. www.imhc.co.za.
- Kritzing, A., 2012b. *Zimbabwe's Precolonial Mines Identified from a Portuguese Document – with Particular Reference to Manyika in the Eastern Highlands*, vols. L–10. JO-Zimbabwea. ER.
- Lahiri-Dutt, K., 2018. Extractive peasants: reframing informal artisanal and small-scale mining debates. *Third World Quarter.* 39 (8), 1561–1582.
- Maponga, O., Ruzive, B., 2002. Tribute chromite mining and environmental management on the northern great dyke of Zimbabwe. In: *Natural Resources Forum*, vol. 26. Blackwell Publishing Ltd, Oxford, UK and Boston, USA, pp. 113–126, 2.
- Mawowa, S., 2013. The political economy of artisanal and small-scale gold mining in central Zimbabwe. *J. South Afr. Stud.* 39, 921–936.
- Mkodzongi, G., 2016. 'I am a paramount chief, this land belongs to my ancestors': the reconfiguration of rural authority after Zimbabwe's land reforms. *Rev. Afr. Polit. Econ.* 43 (Suppl. 1), 99–114.
- Mkodzongi, G., 2020. Zimbabwe: a gold mining boom amid rapid agrarian change. In: Verbrugge, B., Geenen, S. (Eds.), *Global Gold Production Touching Ground*. Palgrave Macmillan, Cham.
- Mkodzongi, G., 2020. *Land and Agrarian Transformation in Zimbabwe: Rethinking Rural Livelihoods in the Aftermath of the Land Reforms*. Anthem Press.

- Mkodzongi, G., Lawrence, P., 2019. The fast-track land reform and agrarian change in Zimbabwe. *Rev. Afr. Polit. Econ.* 46 (159), 1–13. <https://doi.org/10.1080/03056244.2019.1622210>.
- Mkodzongi, G., Spiegel, S., 2019. Artisanal gold mining and farming: livelihood linkages and labor dynamics after land reforms in Zimbabwe. *J. Dev. Stud.* 1–17.
- Mkodzongi, G., Spiegel, S., 2019. Artisanal gold mining and farming: Livelihood linkages and labour dynamics after land reforms in Zimbabwe. *J. Dev. Stud.* 55 (10), 2145–2161.
- Mkodzongi, G., Spiegel, S.J., 2020. Mobility, temporary migration and changing livelihoods in Zimbabwe's artisanal mining sector. *Extr. Ind. Soc.*
- Mkodzongi, G., Zano, V., 2020. The political economy of artisanal gold mining in Zimbabwe. Johannesburg: SARW.
- Moyo, S., 2011. Changing agrarian relations after redistributive land reform in Zimbabwe. *J. Peasant Stud.* 38 (5), 939–966.
- Musemwa, M., 2009. Contestation over resources: the farmer-miner dispute in colonial Zimbabwe, 1903-1939. *Environ. Hist.* 15 (1), 79–107.
- Nyamwanza, T., Mavhiki, S., Mapetere, D., Dandadzi, J., 2013. An analysis of the challenges faced by small scale chrome miners in Zimbabwe. *Eur. J. Bus. Soc. Sci.* 2 (No.4), 49–58.
- Osim, E.E., Tandayi, M., Chinyanga, H.M., Matarira, H.T., Mudambo, K.K., Musabayane, C.T., 1999. Lung function, blood gases, pH and serum electrolytes of small-scale miners exposed to chrome ore dust on the great dyke in Zimbabwe. *Trop. Med. Int. Health* 4 (9), 621–628.
- Parliamentary Report, 2013. Chrome Mining Sector in Zimbabwe. Harare: Zimbabwe.
- Phimister, I.R., 1996. The chrome trust: the creation of an international cartel, 1908–38. *Bus. Hist.* 38 (1), 77–89.
- Pijpers, R., 2014. Crops and carats: exploring the interconnectedness of mining and agriculture in Sub-Saharan Africa. *Futures* 62, 32–39.
- Rushemuka, M.N., Côte, M., 2024. Artisanal and small-scale mining through a “labour regime” lens: consolidating a research agenda on labour exploitation. *J. Rural Stud.* 105, 2024.
- Shoko, N.R., Malila, N.N., 2004. Briquetted chrome ore fines utilisation in ferrochrome production at Zimbabwe alloys. In: *Proceedings: Tenth International Ferroalloys Congress*, vol. 1.
- Spiegel, S.J., 2014. Legacies of a nationwide crackdown in Zimbabwe: operation chikorokoza chapera in gold mining communities. *J. Mod. Afr. Stud.* 52, 541–570.
- Spiegel, S.J., 2015. Shifting formalization policies and recentralizing power: the case of Zimbabwe's artisanal gold mining sector. *Soc. Nat. Resour.* 28, 543–558.
- Traoré, M., Hilson, G., Hilson, A., 2024. Reimagining entrepreneurship in the artisanal and small-scale mining sector: fresh insights from Sub-Saharan Africa. *Africa J. Manage.* 10 (2), 176–207. <https://doi.org/10.1080/23322373.2024.2349481>.
- Zimbabwe Government Paper on Chrome, 2015. Government of Zimbabwe. Harare.

Web Sources

- Chrome ore drives illicit flow. <https://www.theindependent.co.zw/2019/11/22/chrome-ore-drives-illicit-flows/>:Date. (Accessed 12 October 2020).