

THE IMPLICATIONS OF ARTISANAL SMALL-SCALE MINING ON FOOD SECURITY IN ZIMBABWE*

ZİMBABVE'DE EL EMEĞİ İLE YÜRÜTÜLEN KÜÇÜK ÖLÇEKLİ MADENCİLİĞİN GIDA GÜVENLİĞİ ÜZERİNDEKİ ETKİLERİ

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Abstract: This study investigates the nexus between artisanal small-scale mining and food security in Zimbabwe. While agriculture is traditionally the anchor of the rural economy, there has been a great shift towards artisanal small-scale mining sector. The number of people directly or indirectly involved in small-scale mining continue to increase especially in response to the economic meltdown. The rapid growth in artisanal and small-scale mining has both positive and negative implications for food smallholder farming and ultimately all the dimensions of food security. Different scholars and practitioners have presented different arguments as efforts to explain this phenomenon. Such arguments include agricultural poverty due to climate change, rising prices of minerals, and economic decline, among others. Using data from literature review, this essay, examines the link between artisanal and small-scale mining and food security. This paper is important as it generates knowledge with the potential to shape policies and decision-making processes. It aims to influence the enactment of policies and programs that strike a balance between food security and other economic activities that support livelihoods, specifically for vulnerable communities, in a sustainable manner.

Keywords: artisanal small-scale mining; climate change; entitlements; food security.

Öz: Bu çalışma, Zimbabwe'de küçük ölçekli madencilik ile gıda güvenliği arasındaki bağlantıyı araştırmaktadır. Tarım geleneksel olarak kırsal ekonominin temelini oluşturmasına rağmen, küçük ölçekli madencilik sektörüne doğru büyük bir kayma yaşanmaktadır. Doğrudan ya da dolaylı olarak küçük ölçekli madencilikle uğraşan insanların sayısı, özellikle ekonomideki çöküşe bağlı olarak artmaya devam etmektedir. Zanaatkar ve küçük ölçekli madencilikteki hızlı büyümenin, küçük ölçekli gıda çiftçiliği ve nihayetinde gıda güvenliğinin tüm boyutları üzerinde hem olumlu hem de olumsuz etkileri vardır. Bazı akademisyenler ve uzmanlar bu olguyu açıklamak için farklı argümanlar sunmuştur. Bu argümanlar arasında iklim değişikliğine bağlı tarımsal yoksulluk, artan maden fiyatları ve ekonomik gerileme yer almaktadır. Bu çalışma, literatür taramasından elde edilen verileri kullanarak, zanaatkar ve küçük ölçekli madencilik ile gıda güvenliği arasındaki bağlantıyı incelemektedir ve ortaya çıkan politikaları ve karar alma süreçlerini şekillendirme potansiyeline sahip bilginin üretilmesi bakımından önem taşımaktadır. Özellikle savunmasız toplulukların geçim kaynaklarını sürdürülebilir bir şekilde destekleyen gıda güvenliği ve diğerekonomik faaliyetler arasında bir denge kuran politika ve programların yürürlüğe girmesini etkilemek amaçlanmaktadır.

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Introduction

For decades, Zimbabwe's economy has largely been agro-based. Like many sub-Saharan African countries, however, the country has witnessed unprecedented growth in artisanal and small-scale mining. Accordingly, agriculture and mining have become major economic activities for many outside the formal economy. In 2022, the World Food Program (2022), estimated that Zimbabwe had a total population of 15.6 million of which 63% live below the poverty line while 27% have stunted growth. Agriculture and artisanal small-scale dominate the economy of Zimbabwe. The World Bank (2019) noted that the smallholder agriculture sector employed roughly 70% of the country's economically active people and mining employs 7.1% (Chari, 2021:350). However, the nation faces serious food security challenges. The World Food Program (2022) added that in 2020, 7.7 million people were under food insecurity threat at the peak of the lean season due to erratic rainfall. Various theories have attempted to explain this phenomenon (increase in artisanal mining and increase in food insecurity) including agricultural poverty due to climate change; rising prices of minerals; and economic decline among others. Despite the dearth of literature specifically analyzing the relationship between small-scale mining and food security in Zimbabwe, there is anecdotal evidence that suggests that the rapid growth in artisanal and small-scale mining has both positive and negative implications on the various dimensions of food security (Mkodzongi-Spiegel, 2019). Moreover, issues around the impact of artisanal small-scale mining have usually been investigated from a broader economic perspective rather than its relationship to food security. Given the lack of research and the socio-economic significance of mining and agriculture, it is important to tackle the question: what is the relationship between artisanal mining and food security? To close the knowledge gap, I used a literature review to extract data. These secondary sources of knowledge comprised the examination of journal articles, organizational reports, and newspapers. From the literature reviewed, six key and common themes were identified which formed the foundation of this paper. This research thus fills the gap in the literature on the relationship between artisanal small-scale mining and food security. It specifically investigates the extent to which artisanal mining affect food security. It is the author's expectation that this piece will potentially contribute significantly to shaping policies that especially harmonize seemingly competing sustainable development goals, that is SDG 1(poverty reduction through mining) and SDG 2 (zero hunger through farming) enhance sustainable mining and food-secure communities.

Defining Artisanal Small-scale Mining.

Artisanal and small-scale mining is the extraction or exploitation of mineral resources using rudimentary mechanization such as picks, shovels, wheelbarrows, and panning dishes among others, thus making it manual labor-intensive and less profitable to practice on a large scale (Hentschel vd., 2002; Zvarivadza, 2018). It

is a sector largely associated with a poverty-driven activity, typically practiced in the poorest and most remote rural areas of a country by a largely itinerant, poorly educated populace with few other employment alternatives (World Bank, 2013; Hilson, 2016). Dube vd., (2016) added that artisanal and small-scale mining is usually practiced in informal or illegal setups. It is however very important as more than 100 million people around the world are directly involved in artisanal small-scale mining (World Bank, 2013). In Sub-Saharan Africa, “the sector employs over 25 million people directly, as well as creates millions of additional economic opportunities in the interconnected downstream and upstream industries it spawns” (Hilson vd., 2021:1). It is estimated that by 2020, 500 000 citizens were directly involved in rudimentary mining while 7 million depend on the sector for livelihood (Mambrey vd., 2020). Thus, the sector has become a haven for those economically disenfranchised, among them the youths.

In Zimbabwe, artisanal and small-scale mining is both formal and informal with mining operations being mechanized and semi-mechanized and of varied sizes in terms of production, labor, and capitalization (Maponga, 2003). The industry usually operates in the absence of land rights, mining licenses, exploration, mining mineral exploration permits, or any legitimate documentation (Chari vd., 2021). Masiya vd., (2012) argued that artisanal mining was common even before the country’s independence in 1980. Gold has for years been the common mineral with others (Mambrey vd., 2020). However, its growth is generally attributed to Zimbabwe’s land reform program which was undertaken between 2000-2008 (Chari vd., 2021). The developments gave indigenous people access to and mobility on formerly enclosed and inaccessible farms leading to an upsurge in artisanal mining across the country (Mkodzongi, 2013; Mkodzongi-Spiegel, 2020). Added to that were the adverse impacts of the Economic Structural Adjustments which worsened the economic situation characterized by retrenchment leading to massive urban-to-rural migration (Hilson, 2016). The situation was further complicated by the growing impact of climate change which has rendered the agriculture sector unprofitable. It should also be noted that this period coincided with the global soaring mineral prices, especially gold and diamond (Nyamwe-Grant, 2012). Thus, forcing people into mining should also be factored in when tracing the proliferation of artisanal small-scale mining (Hilson-Garforth, 2012; Osufu vd., 2020). Researchers thus observed massive evidence of food availability decline from the agriculture sector with the two major farming regions, Natural Region 2 and 3 registering 49% and 19% productivity shrinkages (Manyeruke vd., 2013; Mugandani, 2012). On the other hand, the drier areas, Natural Regions 4 and 5 have expanded in size by at least 5.6% and 22.6% respectively due to climate change, increasing the area under arid conditions (Manyeruke vd., 2013).

In addition, the recent economic meltdown, artisanal small-scale mining popularly known as “chikorokoza” has grown to become an important economic activity and a copying strategy for peasants and the unemployed (Mkodzongi-Spiegel,

2020). This is especially accurate for the youths, 62% of whom are under the age of 25 (United Nations Population Fund, 2022). Others observed that the sector has flourished to involve even international players and mostly the Chinese who enjoy the political support of influential figures in government and business (Mkodzongi-Spiegel, 2020). The informal artisanal mining sector provides rents to politically influential figures who have allegedly derailed the efforts to formalize the sector (Garret, 2007; Hentschel *vd.*, 2002). Thus, the sector has been transformed into a political establishment where political power is used to maintain the status quo since they benefit greatly from buying minerals from desperate miners at a bargain and very low prices (Garret, 2007; Hentschel *vd.*, 2002). It is therefore not surprising that artisanal and small-scale mining remains largely illegal (Dube *vd.*, 2016). However, it also remains politically protected and prioritized more than smallholder agriculture which weakens production entitlement (Sen, 1983) and increases vulnerability to food insecurity.

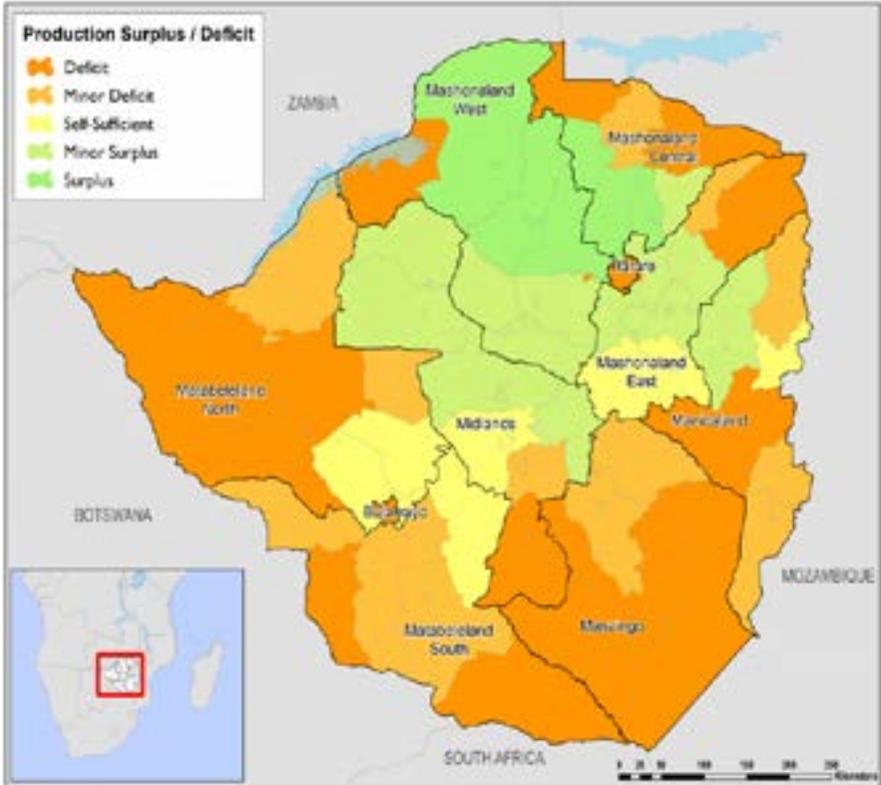
Food security

The Food and Agriculture Organization (FAO) (2012) categorized food security as a situation when people at individual, household, and national levels, always have physical, social, and economic access to sufficient, safe, and nutritious food to satisfy their dietary needs and food preferences for an active and healthy lifestyle (Connolly-Boutin-Smit, 2016). Clapp *vd.* (2022) also brought in agency (degree of control over one's food) as well as sustainability, that is food system practices that contribute to the long-term regeneration of natural, social, and economic systems, ensuring the food needs of the present generations are met without compromising the food needs of future generations to the dynamic of food security. They summed up food security in terms of food availability, accessibility, utilization, stability, agency, and sustainability (Clapp *vd.*, 2022). These aspects have a special connection to agriculture, hence the centrality of farming or food production in this discussion.

Agriculture, farming and food production, and food security

Agriculture is the art, science, and practice of farming, including cultivating the soil, growing crops, and raising livestock, as well as the preparation and sale of the resulting goods to varying degrees (Osufu *vd.*, 2020). The African Center for Economic Transformation, Ford Foundation alludes to agriculture as the economic anchor of most African countries and the producer of most food products that contribute to food security (ACET, 2017b). A study showed that 65% of Africans are involved in agriculture (World Bank, 2019). Agriculture, therefore, forms the backbone of many African communities as food is available through production and strengthens agency and all three types of entitlement; own-production, market-based, and exchange which makes food accessible (Sen, 1982).

Figure 1: Shows the State of food availability in Zimbabwe.



Source: Famines Early Warning Systems Network (2022)

Figure 2: Food price inflation between June 2020 and October 2021 due to the food availability decline



Source: Famines Early Warning Systems Network (2022)

Based on the above images, most of the provinces experiencing a decline in food availability due to reduced production are also facing increased artisanal mining activities. From this background, connections can be made between food security and artisanal small-scale mining in Zimbabwe. The relationship, has, however, both positive and negative implications for food security hence the admission by the African Center for Economic Transformation that artisanal and small-scale mining and agriculture have complex and dynamic connections that are both synergistic and antagonistic (African Center for Economic Transformation, Ford Foundation, 2017). Nunoo vd. (2023) suggests that these complications stem from the background that these economic activities share and compete for factors of production including land, water, labor, and capital. They are further susceptible to the influence of external factors such as supply, demand, and commodity prices (African Center for Economic Transformation, Ford Foundation, 2017). To this end, it is reasonable to argue that the

extent to which mining has a positive or adverse impact on food security is determined by how the country or state views and legislates control over, and access to, its natural resources and the land on which they sit. In this section, I analyze the implications of increased artisanal small-scale mining on agriculture and ultimately food security.

The impact of Artisanal Small-scale Mining on Food Security.

Capital accumulation for smallholder agriculture.

Artisanal small-scale mining has been a coping mechanism for many people living in societies with ailing economies. Thus, it plays an important role in supporting household food security. It was observed that communities in Mhondoro-Ngezi were involved in artisanal and small-scale gold mining to raise capital to support their small-scale farming projects and some other businesses that bring food to the table (Mkodzongi-Spiegel, 2019). This partly answers Cartier and Bürge's question on whether the sector plays a complementary or competing role in agriculture and food security (Cartier-Bürge, 2011). The argument also challenges earlier assertions that artisanal and small-scale mining is "depeasantization and deagrarianization" by injecting capital from the mining sector into farming, therefore, increasing the chances of production (Mkodzongi-Spiegel, 2020). This reduces a household's vulnerability to food insecurity through diversification. Given the disastrous impact of climate change on farming, profits from mining strengthen entitlements to access supplementary food commodities they cannot produce through markets and exchange platforms. Thus, mining through strengthening own-production entitlement (Sen, 1982) also improves mining households' food agency (Clapp, vd., 2022).

A way out of seasonal hunger and food shortages.

With many communities facing seasonal food shortages during the dry season, artisanal and small-scale mining provides a way to reduce this phenomenon. Vaitla vd., (2009) argue that most of the world's acute hunger and undernutrition occurs not in conflicts and natural disasters but in the annual "hunger season, the time of year when the previous year's harvest stocks have dwindled, food prices are high, and jobs are scarce. Because of the seasonality nature of artisanal mining in Zimbabwe, especially the farming regions (those that usually receive relatively high rainfall), smallholder farmers are participating in mining during the non-agricultural seasons broadening their income streams in the dry season. Maconachie vd., (2006) while analyzing the artisanal and small-scale mining sector patterns in Sierra Leone referred to this as "temporary migration" in household economic activities. This, therefore, lessens their susceptibility to seasonal hunger and food shortages common among households that are solely dependent on their own food production through farming. To this end, it is apt to argue that artisanal and small-scale mining helps bring stability to food supplies for households that produce inadequate food up until the next season.

Employment creation.

Given the economic decline and rising unemployment rates in Zimbabwe's urban areas as observed by Mawowa (2013) and the devastating impacts of climate change on rain-fed agriculture (Zenda, 2022), artisanal and small-scale mining creates employment. Many would-be jobless economically active populations (Mawowa, 2013), mostly the youths who constitute the bulk of the country's total population pegged at 67% are directly involved in this sector (Gwasira, 2022). Mining has arguably become home to less educated people who cannot compete for formal jobs but who still need to put food on the table for their families. As stated, more than half a million people in Zimbabwe are informally employed in the sector and the income they earn is spent on more or better food, enhancing local or family food security (Dube *vd.*, 2016). Chigumira (2018) argued that artisanal mining gives rural people another employment option and a way to diversify their income streams. Artisanal and small-scale mining from this standpoint strengthens household market-based entitlements which enables them to have access to food from the markets.

Be that as it may, some contend that while mining activities have created alternative employment opportunities, they have also aggravated poverty among local farmers due to the loss of or shrinking farmland (Chari *vd.*, 2021). Accordingly, the sector has been described as destructive as it "competes antagonistically with agriculture" when it comes to all the factors of production (Osufu *vd.*, 2020). Others expanded this by stating that the heavy dependence on labor-intensive and unskilled labor in both agriculture and mining and the greater probability of opportunities for higher returns available in mining is resulting in a quick outflow of labor towards mining in what they dubbed the Dutch disease mechanism (Hilson-Laing, 2017). The labor migration to the lucrative mining sector is compounding an already complicated situation of low food production due to the low uptake of technology in farming and the small size of farmland (African Center for Economic Transformation, Ford Foundation, 2017a).

Given that farming/food production in rural areas depends on family labor mainly the youths, the labor migration to the mining sector creates a labor force vacuum in the farming sector causing underproduction. As more young people move into mining, the agriculture sector is left with an aging workforce which lowers output (Okoh-Hilson, 2011). This contributes to the food availability decline which exposes households to hunger and in extreme cases malnutrition. It takes away a household's agency and control over the food security situation (Clapp *vd.*, 2022; Sen, 1987).

While some would argue that the income from the mining sector should be used to buy food, however, evidence shows that the food that low-income households buy is usually the staples which are mainly basic carbohydrates with little to no fruits and vegetables needed for a balanced diet (Zhang *vd.*, 2020). Therefore, the food

would be far from being nutritious compared to that obtained through own-production entitlements.

Land use conflict

The influx of artisanal and small-scale miners in Zimbabwe has caused in land use conflicts between miners and smallholder farmers some of which have turned violent. Farming and mining require vast tracts of land, which fuels conflicts over which economic activity to prioritize. Specifically, mining is usually associated with extensive land usage, and it precludes many other human uses or the non-use of that land (Luckeneder, 2021). With the greater probability for high returns in mining, farmers have converted traditionally fertile arable lands into mining spaces which compromises food production. In addition, the violent nature of miners has enabled the successful dislodging of smallholder farmers with no political or financial stamina from their productive farmlands (Adonteng-Kissi-Adonteng-Kissi, 2017; Chari, 2021). Additionally, the involvement of political and economic heavyweights means that poor smallholder farmers have limited chances to fight the miners legally or otherwise (Garret, 2007; Hentschel vd., 2002). The situation is worsened by the land tenure system that according to the Communal Lands Act (20:04), makes the President the sole custodian of and with authority over communal lands. The temptation to accumulate wealth superseding the protection of land-connected people is high. The land tenure system and policy inadequacies of the outdated and chaotic Mines and Minerals Act of 1961 (amended in 1966) (Musemwa, 2019) have been weaponized by politically backed miners to disempower communal and indigenous people. This violates the United Nations Declaration of Indigenous Peoples (UNDRIP) (United Nations General Assembly, 2007) and the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP) (United Nations General Assembly, 2018). For example, the displacements in Shurugwi and Insiza have occurred mainly because of weak state institutions, legislation, and lack of enforcement of mining and environmental rules and regulations (Musemwa, 2019).

In addition, the involvement of local and foreign economically and politically powerful players makes the enforcement of rules and regulations difficult (Mkodzongi-Spiegel, 2020). Such detrimental externalities from artisanal mining have had a direct and severe negative influence on agricultural production (Oxfam, 2013). Thus, the farmland invasions and the violence perpetrated by machete-wielding gangs in the Midlands and Mashonaland Central Provinces disturbed the peace and ultimately farming activities which in turn affected agricultural production (The Herald, September 2, 2020). Taking away the control of land from rural farmers under these circumstances means that they no longer have control over production, access, and stable supplies of food (Clapp vd., 2022; Servin-Moseley, 2022). This has the potential to cause localized cases of food shortages and child malnutrition even when other areas have food available.

Land and Water pollution (degradation)

Miners in this sector rely on the use of harmful chemicals such as mercury which damages both the land and water as well as biodiversity (Magidi-Hlungwane, 2023). The situation is worsened by poor storage facilities and uncontrolled usage of such dangerous chemicals for gold cleaning processes, which then leach into the surrounding soil and water systems, threatening local agricultural production and food supply (Musemwa, 2019). In Zimbabwe, weak legislation governing mining dumps and waste disposal exacerbates the situation, Musemwa (2019). It is disposed into water bodies that contaminate water usually used downstream for smallholder irrigation (Eludoyin, 2017). In addition, wastewater from tailing dams usually finds its way into groundwater and farmlands making it unsafe for domestic or irrigation use (Watari vd., 2019). The Mazoe, Save, Mutare, and Odzi rivers have been contaminated and silted through unregulated and irresponsible gold panning which compromised water quality (Alrumman vd., 2016) for irrigation and the production of horticultural products such as vegetables that are grown along the major rivers. Biological evidence produced by Eludoyin (2017) shows that crop yields especially maize and cocoa in Ghana have drastically fallen owing to heavy metals in soil being absorbed by shallow-rooted plants which either wilt, stunt, or produce low-quality yields resulting in poor diet and malnutrition.

Figure 3: Picture of the heavily silted Mutare River due to unregulated gold panning



Source: Photo captured by the author

In addition, land degradation and water pollution linked to mining are reported as causes of the deteriorating quality of livestock and financial losses thereof in traditional livestock-producing areas of Gwanda and Insiza. The increased gold mining is shrinking grazing land due to deforestation and the burning of grasses (Chari vd., 2021). This imposes other financial costs on farmers who must supplement with expensive feedstock. The loss of natural pastures and the subsequent costs of feedstock leads to high livestock production which many rural farmers cannot afford. As a result, the quality of the meat they produce is low (The Standard, 20 June 2019). The same was also reported about fresh vegetables and fruits where farmers lamented that cities, especially Bulawayo now prefer imported fruits and vegetables to buying from local suppliers. It drives food prices up and weakens entitlements both own production and

market-based for middle and low-income households. It also means food all aspects of food security are undermined. For instance, a household traditionally dependent on vegetable or livestock production for sale loses both control over production and income which creates vulnerability to hunger and food shortages.

Rising costs of living.

Due to influxes of non-local labor that create higher demand for current products, services, and infrastructure, operational mines have the potential to boost the cost of living. These factors contribute to supply and demand price increases, making it more difficult for low-income residents to buy decent quality food in sufficient quantities to feed themselves appropriately. Accordingly, mining areas increase demand for consumer goods, which can be satisfied by local agricultural production, and so contribute to market decentralization, or market migration away from traditional urban centers and toward rural peripheries (Cartier-Bürge, 2011). This would be an advantage to those that are economically active but a disadvantage to the poor rural people who must battle the high cost of living including expensive food as the boom in mining activities creates an artificial demand for consumables. Selling packaged and prepared foods exclusively at mining site markets is another way vendors respond to the needs of busy mining customers but given the relatively low levels of fruits, vegetables, and, in some cases, protein sources in these meals, these convenient meals do not necessarily represent healthy options at mining sites (Zhang *vd.*, 2020). It was observed that an increase in food expenditures on less nutritious foods such as premade foods, sugar, and beverages (Karamba, 2011).

The state of food security among artisanal and small-scale miners and mining communities

In Zimbabwe, gold rushes create temporary settlements, disconnected from the usual ways of life. One characteristic of this setup is the absence of food production through farming. Through market and exchange entitlements, miners camped in remote areas to gain access to food. A mining site market offers an easily accessible opportunity for miners to grab a meal during their workday, but the selection of nutritious options is much more limited than at a larger market. However, as noted, the food utilization component of the food available is usually compromised due to a lack of nutritional content variety (Zhang *vd.*, 2020). There is high consumption of more packaged and ready-to-eat foods, more sugar and fat, and less fruit and vegetables as compared with residents in surrounding rural areas who rely more on locally grown food items (Zhang *vd.*, 2020). Miners usually have access to carbohydrates to get energy but lack other nutritional values. As such, miners are exposed to poor diet and health complications.

Poor hygiene is another challenge that characterizes the nexus between artisanal and small-scale mining and food security. Due to the remoteness of most of the mining hotspots, they lack access to clean water, and in access to electricity to power food storage and refrigeration facilities as noted by Zhang vd. (2020) hence fresh food is limited. Another concern is the absence of a waste disposal system at all markets poses potential health concerns due to the accumulation of food and plastic waste on the market grounds, as well as smoke fumes from burning waste. Health laws, government restrictions, and other established hygiene requirements that are widespread in high-income contexts are typically missing in artisanal small-scale mining operations (Donkor, 2023; Mkodzongi, 2013).

Policy Proposal

Artisanal and small-scale mining as demonstrated in this essay plays a critical ensuring food security and the economy at large. However, because it's illegal and informal, it has negatively affected agriculture and the environment it depends on, hence the claim that the sector is destructive and unsustainable. This is mainly because of the weak institutions, policy inadequacies and lack of harmony and fragmentation of legal frameworks, poor enforcement of environmental and mining rules and regulations among others. To this end, it is reasonable to propose the formalization of artisanal and small-scale mining and its incorporation into the mainstream economy. This would enable miners to have access to land rights, mining licenses, exploration, mining mineral exploration permits, or any legitimate documentation that allows them to operate legally (Chari vd., 2021). It will confine miners to a specific location to protect smallholder farmers from violent farm invasions.

The enactment of modern, comprehensive, and harmonious agriculture, environmental, and mining legal frameworks that allow the coexistence between farming and mining sustainably is a viable option. This allows farmers and miners to work together on the condition of mutual agreement resulting in mining complimenting food production and strengthening food security. Given the political and economic interests of the powerful minority with the power to deliberately block any meaningful steps towards modernizing the economic sector, the task, therefore, requires the highest levels of political will. Belo Horizonte's famous Fome Zero (food security program) case study documented by Chappell (2018) can inspire how governments can deliberately embark on a policy to strengthen food security in sustainable ways.

Conclusion

The evidence presented in this paper to some extent refutes the notion of painting artisanal small-scale mining as only an impediment to the attainment of food security due to its effects on farming. There is clear evidence that mining, if regulated and rules enforced, can result in households improving their economic status thereby

strengthening their command and control over food. Mining has been demonstrated to be an important quick income generation activity that enables vulnerable groups such as the rural, youths, and the unemployed to access food through the markets. This, therefore, helps to prevent episodes of localized shortages while food is plenty on the market. Artisanal mining strengthens entitlements to food hence it should be seen as a complementary economic activity to agriculture which helps families to reach food security status.

In the case of Zimbabwe, however, it is understandable for one to maintain that artisanal and small-scale mining negatively affect agriculture and food security. This is because the growth of this sector exerts unprecedented pressure on resources that traditionally aid the success of agriculture. Such resources include land, capital, labor, and water which are also extensively required for mining. It has been linked with several cases of environmental degradation which leaves the land unsuitable for farming both crop production and livestock husbandry. Rivers have been heavily silted due to mining on the banks and beds which disturbs the natural flow of water. The harmful chemicals used in the gold cleaning processes are solely responsible for contaminating large water bodies and compromising water quality for irrigation and other domestic purposes. Aquatic life has been put at high risk, including fish which is a major source of fatty acids and other nutrients.

With food security sharing huge connections with health and well-being, artisanal and small-scale mining due to its association with poor health and safety and violence exposed the economically active youth to diseases most respiratory ones leading to weakened abilities to work in agriculture or the same sector (Martinez, 2023). In extreme cases, harmful-chemical-related deaths in the small-scale mining sector cannot come as a surprise. Once an active family member gets crippled or dies, the household's vulnerability to hunger and chronic food shortages increases as there will be limited avenues of accessing and making food available for that household. From this angle artisanal and small-scale mining threatens food security and their health-related and life-threatening implications increase food security vulnerabilities (Otamonga-Pote, 2020).

It is also justifiable to argue that the weaknesses in the governance and political systems are deliberately failing to address the competing interest between artisanal mining and food production or farming leading to food availability declines in mining communities. The claim by de Waal (2018) that human behavior and actions such as poor governance and bad political decisions are responsible for creating episodes of hunger and food shortages rather than natural events is therefore vindicated. The paper demonstrated how political figures who should be spearheading legal reforms to protect farmers and allow for co-existence between farmers and miners, reduce land ownership, and land use disputes are at the forefront of fueling violent farmland invasions and environmentally unsustainable mining. To this end, artisanal mining

although capable of earning a few lots of money and strengthening their market-based entitlements, leaves much of the population dependent on small-scale farming and susceptible to food shortages as they lose their land which compromises the state of food security.

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