

The Impact of Covid-19 on Gold and Gemstone Artisanal and Small-Scale Mining in Sub-Saharan Africa: The Case of Ghana and Kenya

Abstract:

Artisanal and small-scale miners are facing unprecedented challenges due to the novel coronavirus (Covid-19) pandemic. The paper adopts a practice-based approach to examine the impact of Covid-19 on gold and gemstone Artisanal and Small-scale Mining (ASM) practices in sub-Saharan Africa. It highlights the informality of ASM and discusses how the Ghana and Kenya governments' measures have significantly increased the vulnerabilities of the miners and mining communities. Based on a document analysis of the governments' responses to Covid-19, mining industry reports, and interviews with 29 mining stakeholders in Ghana and Kenya, the paper identifies the economic and social impacts of the Covid-19 pandemic on gold and gemstone ASM in both countries. We highlight the key policy challenges and suggest actions that can help mitigate the negative impacts the pandemic has had on ASM, which include the need to address informality in the ASM sub-sector.

Key words: artisanal and small-scale mining (ASM); Covid-19; informal business; sub-Saharan Africa; sustainable mining; gold and gemstone value chain

1. Introduction

The novel coronavirus (Covid-19) has spread widely across the globe since China announced at the end of December 2019 that a new virus had been identified in Wuhan Province (Huang et al., 2020). On 11 March 2020, the World Health Organization (WHO) declared Covid-19 a new global pandemic (WHO, 2020b). Although the patterns of Covid-19 spread in the first quarter of 2020 were fastest in developed countries like Italy, Spain, United Kingdom and United States of America, the second quarter of 2020 has seen a sharp rise in infections and fatality cases reported in many sub-Saharan Africa countries. The WHO has predicted that 83,000-190,000 people in Africa could die of Covid-19, and 29-44 million could get infected in the first year of the pandemic if containment measures fail (Cabore et al., 2020). There is anxiety that the epicentre of the pandemic is shifting from Europe and North America to the global south (Mahler & Wadhwa, 2020).

The real picture of the spread of Covid-19 in sub-Saharan Africa is difficult to ascertain due to claims of lack of testing capacities and infrastructure in most countries (Hamann, et al., 2020). Nonetheless, a picture is emerging of the extent Africa is affected by the pandemic (see Table 1). According to the BBC coronavirus in Africa Tracker, by 21 October 2020, the continent had confirmed 1,665,552 Covid-19 cases, 256,445 active cases, 1,368,882 recovered, and 40,225 deaths (BBC, 2020). The top five African countries with reported coronavirus deaths were: South Africa 18,656, Egypt 6,142, Morocco 3,027, Algeria 1,873, and Ethiopia 1,371. Ghana reported 47,372 cases and 310 deaths, whilst Kenya reported 45,647 cases and 842 deaths. The two are among the top ten countries in Africa reporting high Covid-19 infection rates with Ghana ranked eighth and Kenya ranked ninth; and according to Gilbert et al. (2020) they have high vulnerability and variable capacities to deal with the virus (see also Brand et al., 2020).

<< Table 1 somewhere here >>

The coronavirus has spread across sub-Saharan Africa with catastrophic effects (Ataguba, 2020). The pandemic has affected national economies, and just like many other business sectors, the Artisanal and Small-scale Mining (ASM) sub-sector has not been spared. ASM in Africa represents a considerable proportion of mining of precious stones such as diamonds, ruby, sapphires, and emerald; precious metals such as gold; bauxite for production of

aluminium; and industrial minerals such as sand and clay. ASM is a source of employment and an important foreign exchange earner in many African countries endowed with natural resources (IGF, 2017). The ASM globally continues to grow considerably and currently employs approximately 42 million people, of whom 13 million work in sub-Saharan Africa, about 70% - 80% are informal workers and 30% – 50% are women (IGF, 2017; Hilson et al., 2018). ASM in Ghana provides direct employment for about 1.1 million people and a further 4.4 million indirectly depend on it for their livelihood (Hilson, 2016a). ASM in Kenya represents a considerable proportion of employment opportunities to the local communities: about 57% of 350,000 population in Taita Taveta County alone (Barreto et al., 2018).

The ASM sub-sector in Ghana and Kenya contributes a significant amount to the continent's gold and gemstone production (IGF, 2017; UNDP, 2015). The 2009 Africa Mining Vision (AMV) of the African Union reports that ASM sub-sector contributes almost all the continent's gemstones production (see also Cartier, 2019) and about 20% of gold (AU, 2009). In 2014, the gold ASM in Ghana produced almost 1.5 million ounces of gold, representing 35% of the total gold production in the country (McQuilken & Hilson, 2016; Wilson et al., 2015). In Kenya, ASM accounts for over 60% of annual gemstone production, contributing 25% to Kenya's foreign income, with an estimated annual national market value of USD 120 million (Barreto et al., 2018).

The Covid-19 pandemic has led to disruption of industries, communities, and economies. All African countries have put in place measures to combat the pandemic although there is anxiety over the limited infrastructure in place to prevent or control the spread of Covid-19. In this article, we adopt a practice-based approach to examine the impact of Covid-19 on gold and gemstone ASM practices in Ghana and Kenya, respectively. We first describe the informality of the gold and gemstone ASM in Ghana and Kenya. We identify four categories of measures: health, welfare, economic, and structural oriented, taken by both the Ghana and Kenya Governments to combat Covid-19. We then evaluate how these have significantly impacted the miners and the ASM sub-sector. The analysis reveals the impact of Covid-19 on ASM production, financing, markets and prices, income and sustainable livelihoods, and the occupational health, safety and well-being of miners. We conclude the paper with a discussion of the implications of our findings for mining policy and management practice.

2. The Informality of Artisanal and Small-Scale Mining in Sub-Saharan Africa

There is no formal definition for ASM although it is described using characteristics of production engineering, market, social and labour practices such as labour intensiveness, low technology and capital investment, low mechanization, poor market and support systems. Lakiri-Dutt (2018, p. 1562) refers to ASM as informal extractivism, and notes that artisanal and small-scale miners are heterogeneous, and the sub-sector “expansive enough to accommodate considerable social and economic diversities in experiences and practices”. The ASM sub-sector is recognised as one of the most indispensable rural economic activities in resource-rich countries that contribute to employment creation, income generation and poverty reduction (World Bank, 2019). Despite the potential for ASM to contribute to the socio-economic development of the African continent, the sub-sector’s economic importance is often disregarded in regulatory and policymaking processes because of its informality (Barreto et al., 2018).

According to Narula (2020, p. 302) informality is “a term used to describe workers, activities and enterprises that are not (or weakly) monitored, regulated or registered by the government, and, by extension, have limited or no access to public support”. In Ghana and Kenya, individuals either independently or in groups, join the informal extractivism as a systemic response to the complex and bureaucratic nature of the mining registration and licensing processes (Hilson et al., 2019) which remain quite unaffordable for economically vulnerable miners (Wilson et al., 2015). Moreover, the lack of access to mineralised lands leads to the migratory behaviour of artisans who move opportunistically from one site to another in search of valuable minerals and stones (IGF, 2017). Many artisanal mines operate illegally without licenses or permits compared to their small-scale mining counterparts whose businesses are more formalised with organisational structures and often operate in defined ‘concession’ areas. The nature of informality has given ASM the erroneous perception of being a problematic sub-sector, operated by rogue individuals on the fringes of the mining sector (Lakiri-Dutt, 2018), which in turn, has led to ASM being often overlooked by regulators, policy makers, and potential investors (Hilson et al., 2019).

2.1 ASM Economic and Social Context

The prevalence of poverty in mining communities continues to fuel the growth of informal gold and gemstone ASM in Ghana and Kenya. Most miners are vulnerable individuals trapped in vicious poverty cycles, and therefore, informal mining becomes “a deliberate production strategy to optimise their chances of moving out of dire poverty” (Lakiri-Dutt, 2018, p. 1569).

Others join the ASM driven by the inability to find alternative work that can meet their immediate basic needs (Hilson, 2016b; Wilson et al., 2015). The majority of artisanal and small-scale miners are engaged in precarious work and have no access to any form of social protection (World Bank, 2013; ILO, 2020). They are often with low levels of education, technical capabilities, and entrepreneurial skills. Their lack of formal education reduces their chances of securing decent employment, and restricts their use of appropriate mineral extraction and processing technologies. The artisanal miners typically use rudimentary mining methods. Comparatively, the small-scale miners often use mechanisation although not as sophisticated as in the large-scale mines. On the one hand, the lack of mechanisation allows for a high labour-intensive sub-sector, which enables thousands of men and women to work on individual basis, as family groups, or as members of cooperatives and other types of legal associations and enterprises (OECD, 2013). Although many artisans live from hand-to-mouth, the income can provide for basic needs like food, health care, clothing and education for their immediate and extended families. On the other hand, the failure to adopt modern methods of mechanisation contributes to the negative impact of the sector on the social, environmental and economic conditions of miners and mining communities in sub-Saharan Africa (ILO, 2013; Wilson et al., 2015).

ASM has many associated environmental and occupational health issues, particularly when practiced informally or with limited technical and material resources. The health and well-being of the miners, their family members and the nearby communities is often adversely affected (WHO, 2016). Artisanal and small-scale miners and mining communities have the potential to be exposed to five different types of occupational hazards: namely, *the physical* (e.g. noise, heat, humidity, lack of ventilation); *chemical* (e.g. mercury, carbon tetrachloride); *biological* (e.g. increased risk of tropical diseases such as malaria and dengue); *ergonomic* (i.e. excessive manual handling, use of poorly designed equipment and lack of access to safety equipment); and *psychosocial* (e.g. repetitive and monotonous tasks, lack of control over the pace of their work, long and awkward hours) (Donoghue, 2004; IGF, 2017). The potentially hazardous environment, working conditions and equipment prevalent in mines, have a negative impact on workers' health, well-being and safety experiences (Pule, 2011). Incidences of occupational accidents and losses in ASM are likely to be higher than in large-scale mining in Africa (WHO, 2016), given the general non-practice of occupational health and safety measures, the prevalence of inappropriate methods of operations, illegal mineral extraction, an

illiterate labour force that cannot read or are unfamiliar with warning signs, and the lack of enforcement of safety legislation (Kyeremateng-Amoah & Clarke, 2015).

2.2 *ASM Gold and Gemstone Value Chains*

The ASM gold and gemstone production contributes to foreign trade and foreign exchange in Ghana and Kenya respectively. ASM relies on multiple local, regional, national, and international players, numerous trade routes, and inter-connected hubs (AMDC, 2017; UNDP, 2015). Essentially, the informal mining co-exists alongside the formal mining in a globalised economy. In this sub-section, we present a snapshot of the gold and gemstone value chains which we posit are distinct in their organising but share a similarity in the symbiotic and exploitative nature of the value chain actors' interactions.

Ghana's gold value chain: In its simplest form, the gold value chain is depicted as a linear relationship and consist of five key players: miners, gold processors, buyers, refiners/jewellers and exporters (see Figure 1). According to the Minerals and Mining Act, 2006 (Act 703), artisanal and small-scale mining is the preserve of Ghanaians (Minerals Commission, 2006). The upstream stakeholders comprise workers on the mining site playing various roles such as the pit or concession owners. Concession owners are either the landowners with surface rights or the licence holders with mining rights, or both. Other stakeholders are the diggers, the chisellers, the jaw crusher operators and the millers. The jaw crusher operators and millers, collectively known as the processors, may sometimes work from processing centres which can be offsite.

The downstream stakeholders include the buyers, refiners/jewellers and exporters. The buyers act as market intermediaries between the miners and processors, and the refiners/jewellers. The buyers comprise the bush-buyers, buying agents and dealers. The bush-buyers normally represents the sponsors of the mining activities or can be a gold buying agent who is licensed by the Precious Minerals Marketing Company (PMMC), the National Gold Assayer. The bush-buyers often buy partially processed amalgam or sponge gold, and subsequently sell the resource to a buying agent who smelts it. The buying agent may sell the gold on the local market to jewellers, or to a dealer who acts as a middleman between the buying agent and the refiner or directly to a refiner. The exporter may double as a refiner. As stipulated in the Minerals and Mining (General) Regulations, 2012 (L.I. 2173), the role of the exporter is to refine or polish the gold in Ghana before export, or to purchase refined or polished gold solely for export (Minerals Commission, 2012). In some cases, the gold processors play multiple roles (e.g. as buyers, refiners, jewellers) in the supply chain. The buyers may also double as refiners/jewellers or even play the role of an exporter (Stahr & Schuttle, 2016).

Despite these market arrangements, some miners find themselves selling directly to unauthorised buyers who come to the mine sites to purchase gold and sell to agents or dealers, who then ultimately sell to the exporter. The gold supply chain is often linked to the mercury supply chain and it trickles in the reverse direction. Gold buyers all along the chain act as importers and distributors of mercury to artisanal and small-scale miners (Fold et al., 2014). The sub-sector has evolved into a highly intertwined group of semi-formal actors operating with varying degrees of legal registrations due to political leniency and rampant corruption in a booming ASM gold sub-sector (Teschner, 2012; McQuilken and Hilson, 2016).

<<Figure 1 somewhere here>>

Kenya's gemstone value chain: The gemstone ASM value chain is multifaceted (see Figure 2). According to the Mining Act No. 12 of 2016 (GoK, 2016), permits to carry out artisanal mining operations are granted to persons who are citizens of Kenya and have attained the age of eighteen years. The upstream stakeholders in the chain include the landowners who give land access for mining purposes to individuals or community organisations; the pit 'owners' or sponsors who finance gemstone extraction; the miners who do the actual gem extraction; and the mineral processors. The benefit to each stakeholder is mainly through sharing the gemstone production: namely, mineral exploration, extraction of the gemstones, separation and sorting, washing the gemstones with water, and shining the gemstones with glycerine. These upstream stakeholders engage in limited processing which involves screening or sieving the ore, picking gemstone pieces by hand, washing and shining of gemstones. The small-scale mines are more mechanised and may use heavy media separators to recover gemstones from the ore. The artisanal miners do not undertake gem cutting but some of the small-scale miners might engage in some value addition.

The downstream stakeholders in the value chain include market intermediaries like the mine site buyers or brokers, the licensed local dealers, the unlicensed foreign buyers, the foreign market agents, illegal export market agents, and also the gem cutters, and the retailers (UNDP, 2015). The broker is ever-present at the closest shopping centres to the mines and buys cheaply from the artisanal miners. Artisanal gemstones make it to the export market in rough form, and mostly through informal channels. The more economically stable artisanal miners will sell to either licensed local dealers or the unlicensed foreign buyers who offer much higher prices.

Gemstone valuation, compared to gold trade, is a technically more challenging task. Gemstone valuation requires skill and expertise which the artisanal and small-scale miners hardly possess and this gives room to their exploitation by the brokers and other middlemen. So far there is very little gem cutting and polishing done in Kenya. There are a few dealers in Voi Town, and better organized dealers with lapidary shops in the cities of Nairobi and Mombasa who cut and polish gemstones before exportation. Over the years, a big hindrance to local gem cutting has been the refusal by the big international buyers to accept locally cut gems alleging that the quality of the cut does not measure to their market demands. To address this challenge, a Gemstone Cutting and Value Addition Centre is being set up by the Government of Kenya in Voi Town in Taita Taveta County.

The trading relationships between those responsible for the production and distribution of the gems are not always cordial. The despairing situation in which the miners work makes them an easy target for exploitation by voracious brokers, dealers, sponsors and other middlemen (Anyona & Rop, 2015). The value chain is also characterised by trading relationships among and between large, small-scale, and artisanal mining sub-sectors, where large-scale miners provide sustenance means to small-scale miners in return for gemstones. Some small-scale miners are known to rent out their land to artisanal miners as well as offer them brokerage services (UNDP, 2015).

<<Figure 2 somewhere here>>

Drawing on the Octopus business model as proposed by Kiggundu & Pal (2018), the gold and gemstone value chains exhibit informal and formal business activities in differentiated parts of the ASM value chain. The ASM operate informal upstream activities in the primary value chain. As discussed in 2.1, the informality in the upstream activities is reliant on casual labour, difficulties in the supply and acquisition of inputs for mineral extraction, and informality in mining sites due to limited land access and ownership. The gold and gemstone artisans face restricted access to finance for investments and are sponsor dependent (Wilson et al., 2015; UNDP, 2015). However, unlike Kiggundu & Pal who argue that research, development and commercialisation (RD&C) activities in the upward value chain “are most likely informal or pirated from illegal or illegitimate sources” (2018, p.363), the ASM relies heavily on indigenous knowledge in prospecting and exploitation of gold and gemstones. The prospecting and extraction processes, unlike the large-scale mining case, occurs simultaneously due to lack of capital and modern technology for locating and determining both the quality and quantity of

minerals (see UNDP, 2015). Moreover, owing to their inability to sustain themselves, the artisanal miners organise themselves mainly into community-based organisations or cooperatives to leverage their resources which introduces elements of formality particularly on governance. Despite such initiatives, problems persist and the miners remain trapped in a vicious poverty cycle where inefficient mining and processing techniques yield a small quantity of product and low profit, which are further exacerbated by lack of investment and exploitation by actors in the supply chain. This results in lost income opportunities for small producers, thereby resulting in insufficient investment in productive technologies and better working conditions, and to a lack of competitiveness (ILO, 2009; AU, 2009; UNDP, 2015; Wilson et al., 2015). Dealing with these challenges are even more pertinent in context of the Covid-19 pandemic as discussed in the next Sections.

3. Research Methodology

The purpose of this study is to investigate how the Covid-19 pandemic has impacted the gold and gemstone ASM sub-sector in Ghana and Kenya, respectively. To get a holistic perspective of the extent of the impact of the pandemic, we adopted a two-pronged approach to qualitative research based on document analysis and interviews with key mining stakeholders. First, we analysed secondary data from governments' policy responses and announcements made to mitigate the spread of the virus; and reviewed related articles published in mainstream national newspapers and mining industry news reports in both countries. This was followed by semi-structured interviews based on predetermined but open-ended questions. In the months of April, May and June 2020 we interviewed a total of 29 gold and gemstone stakeholders in Ghana and Kenya (see Table 2). The participants from Ghana are ASM stakeholders who were recruited from the Tarkwa-Nsuaem Municipality which is one of the traditional gold and manganese mining areas. It has one of the highest population of ASM operators in Ghana. The Municipality also hosts the only mining university in West Africa and two large-scale gold mining companies. The participants from Kenya were all recruited from the gemstone rich Taita Taveta County and are part of the Sustainable ASM research project (www.sustainable-asm.com).

<<Table 2 somewhere here>>

We used purposive sampling to select the participants for the interviews. This enabled us to focus on the experience of the ASM stakeholders in both countries that converge or diverge in

relation to our research objectives. The primary research question this study sought to answer was ‘How has the Covid-19 pandemic impacted the gold and gemstone ASM sub-sector in Ghana and Kenya?’ More specifically, the study sought to understand: a) how the Covid-19 pandemic and the measures implemented by Ghana and Kenya Governments were affecting the artisanal and small-scale mining work as well as the miners’ livelihoods; and b) how the miners and mining organisations were responding to Covid-19 pandemic. Our discussions with the respondents were guided by the following questions:

- i) How is the Covid-19 pandemic affecting a) your mining work, and b) your life and livelihood?
- ii) What are the government’s Covid-19 measures that have affected: a) your mining work; and b) your life and livelihood, and how have these affected you?
- iii) How have a) you and b) your organisation responded to Covid-19?
- iv) What should be done to support the miners and ASM sub-sector going forward?

The governments’ policy reviews, mining industry reports, and the interviews allowed us to analyse the economic and social impacts of Covid-19 which we use to reflect on the way forward for policy and practice. All interviews were recorded and transcribed verbatim to ensure validity. The data was analysed using thematic analysis to identify patterns of meaning across the data set related to the research questions (Braun & Clarke, 2006). Thematic analysis is concerned with mapping the ontological character of social reality with a focus on the experiences, perspectives and real events that people experience (Archer et al. 2016). The themes were generated by looking for commonality, differences and relationships (Gibson & Brown, 2009). The analysis revealed two main themes relating to the impact of Covid-19 on ASM (*i.e. economic impact, and social impact*) and five sub-themes (*i.e. production, financing, markets and prices, income and sustainable livelihoods, occupational health, safety and well-being*) as discussed in Section 5 below.

4. Research Findings: Covid-19 Government Measures in Ghana and Kenya

Ghana and Kenya reported the first Covid-19 cases around the same time. Ghana reported its first cases on the 12 March 2020 when two individuals who had returned to the country from Norway and Turkey tested positive. Kenya reported its first case on the 13 March 2020, of a person who had returned to the country from the USA via London. Subsequently, both Governments set in place measures centred around: limiting and stopping the importation of the virus, containing the spread of the virus, providing adequate care for the sick, limiting the

impact of the virus on social and economic life, and inspiring the expansion of the countries' domestic capability as well as deepening its self-reliance (Akufo-Addo, 2020a, b; Ofori-Atta, 2020; Brand et al., 2020).

Table 3 presents a summary of the most critical policy measures undertaken by the two Governments that directly affect gold and gemstone ASM in Ghana and Kenya. From the document analysis, we identify the following four categories of governmental measures:

- i) Health oriented measures like public health awareness and education, infrastructure development, testing and treatment, etc.
- ii) Welfare oriented measures such as food distribution programmes, cash transfers for the vulnerable in the society, etc.
- iii) Economic oriented measures such as finance and credit (e.g. increased new lending in Ghana; SME credit guarantee in Kenya); tax reductions and wavers (e.g. increased new lending extension of tax filing date in Ghana; PAYE reductions in Kenya).
- iv) Structural oriented measures such as new governance instruments and institutions (e.g. Covid-19 National Trust Fund in Ghana; Universal Health Coverage in Kenya).

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We contend that although both Ghana and Kenya Governments have put in place substantive measures to address the impact of Covid-19 in so far as immediate health and welfare interventions are concerned, the long-term economic and structural measures that benefit ASM sub-sector fall short of ILO's suggested four key response pillars to reverse the negative impact of Covid-19:, namely,

- a. stimulate the economy and employment through active fiscal policy, accommodative monetary policy, lending and financial support to specific sectors;
- b. support enterprises, jobs and incomes, by extending social protection for all and implementing employment retention measures;
- c. protect workers in the workplace, by strengthening health, safety and well-being measures, adapt work arrangements, prevent discrimination and exclusion, providing health access for all and expanding access to paid leave; and
- d. rely on social dialogue for solutions, by strengthening the capacity and resilience of employers' and workers' organisations, strengthening the capacity of governments, strengthening social dialogue, collective bargaining and labour relations institutions and processes (ILO, 2020, p.29).

We revisit these measures in Section 6 in our reflections of the implications for the ASM sub-sector in Ghana and Kenya. The next Section, presents the findings of the thematic analysis, and evaluates the impact of these measures on the lives and livelihoods of miners and mining communities in Ghana and Kenya.

5. Impact of Covid-19 on Gold and Gemstone Artisanal and Small-Scale Mining

Like many other sectors, the Covid-19 global pandemic has negatively affected individual miner's livelihoods, mining communities, mining enterprises and economies. The primary short-term impact has been the significant decline in the demand and the supply of mined resources (ICMM, 2020). The medium- to long-term impact is expected to be reduced investment in new operations, technology and exploration, mothballing of existing mine-sites, laying-off of workers, reducing corporate social responsibility activities, or reductions in taxation and royalties paid to governments (Laing, 2020). Indeed, the Covid-19 preventative and control measures implemented by the Ghana and Kenya Governments, which included travel restrictions, closure of borders, social distancing, nationwide curfews, and hygiene measures continue to have enormous economic, social, occupational health and well-being impacts on miners and mining communities, as highlighted in the interview findings, as examined below.

5.1 Economic Impact

Although the full economic impact of ASM to the national economies of Ghana and Kenya is yet to be ascertained, the coronavirus has had an undesirable economic impact on ASM due to the Covid-19 measures which severely disrupted both gold and gemstones production, trade and investment as analysed below.

5.1.1 Production

The disruption of global supply chains due to border closures and international travels restrictions negatively impacted both gold and gemstone production in Ghana and Kenya. Whereas Gold mining in Ghana was classified as essential for the economy and production continued throughout the pandemic, this was not the case for Kenya gemstone mining which was not considered an essential industry. This led the Taita Taveta County Government to suspend all gemstone mining activities from 26 March 2020 until 4 May 2020. Generally, gold and gemstone ASM is a high-risk investment requiring some capital investments for mineral extraction and processing. The productivity of mine sites decreased significantly because the

miners were unable to access finances required for food, shelter and other operating expenses in the extraction and production process. Scarcity of mining inputs and services was also experienced: for example, as explained by a business owner/miner below, the disruptions of global supply chains and increased costs of transport resulted to further rise in the cost of food and other basic necessities within mining camps.

'I felt the negative side of Covid-19 greatly because mining is my only business. Due to health reasons, I could not get the loan which I applied for from the bank before the lockdown. I also could not visit my mining site for supervision. I could not feed and pay all my mine workers and so I asked some of them to stay at home after 2 weeks and I was forced to pay the remaining workers a percentage of their wages in order to keep them. I am aware the government is helping small businesses, but I have not applied because I don't have all the details. I don't even know if I qualify for assistance.' (KN, Gold Concession owner in Ghana)

"We closed the mine on March 20th because we could not keep it running due to lack of finances to purchase food and to keep the operations going. Due to the virus, food has become expensive and there are no buyers coming in to buy gemstones to help us keep going. Only [large mine] can keep the stones until the market open. They can also feed themselves as they wait. However, those of us who live from hand to mouth, it can be very challenging" (DN, Gemstone Business Owner and Miner 1 in Kenya)

We were curious to know how border closures and travel restrictions had affected the availability of other imported mining inputs such as mercury. ASM in Ghana accounts for 95% of all mercury used in gold extraction. Ghana is yet to ban mercury even though the country has ratified the MINAMATA Convention (see Spiegel & Veiga, 2005). Interestingly, those interviewed observed that mercury was still entering the country through the informal trade routes along Ghanaian porous borders. This demonstrates how informality enabled miners to access mining inputs from other informal enterprises in the upstream value chain in spite of the impact the pandemic was having on formal businesses.

"...I want to believe that due to the porous nature of our borders the liquid metal will continue to enter the country, but maybe at a higher price. Certainly, introducing mercury-free processes will be great but limited movement regime

will prevent experts from going to the field.” (LE, Gold Mining Expert 2 in Ghana)

The Taita Taveta County Government allowed the gemstones mines to re-open from the 4 May 2020 but under strict Covid-19 preventative and mitigating measures. These measures contributed significantly to labour disruptions and reduced production capacities. Mines in Kenya are restricted to a maximum of 15 people working in a mining site per shift. They must also keep a social distance of one and a half metres between persons. This is something that is difficult to implement because a typical artisanal mine pit does not have large enough space to accommodate an optimum number of miners whilst observing the physical space conditions. The Kenya Covid-19 measures demand that mining operations be strictly carried out only by members from the local communities in Taita Taveta County. For identification purposes, the workers on site are expected to wear a nametag duly issued by authorities indicating name, photo and national identification number. This measure effectively excludes any miners who hail from any of the other 46 counties of Kenya from returning to work. The labour disruptions and reduced levels of production affected mining financing and income as discussed next.

5.1.2 Financing

A lack of production continues to negatively affect formal and informal mine financing. Although gold and gemstone ASM is severely undercapitalised, the artisanal miners depend on investors, sponsors, and their own liquidity from gold and gemstones sales to finance extraction and production processes. Unfortunately, due to lack of production and poor market performance, traditional pre-financing network arrangements were disrupted. The small-scale miners with financial capital to invest in production and to stockpile continued with mining production in the difficult times in Ghana, and in Kenya after the ban was lifted. In both Ghana and Kenya, many investors and sponsors stopped supporting the miners. They continued to hold onto their investments in the hope of a better future market environment. The local sponsors and investors also play the role of creditors by lending money to the miners for mining operations. Some of these sponsors are in salaried employment and therefore were unable to provide the much-needed credit because their salaries were either reduced or discontinued during the Covid-19 pandemic. In Ghana, those miners who were in the process of applying for loans during the initial three-week lockdown were unable to do so because the financial institutions in Accra and Kumasi had closed. This delay had adverse effect on their production.

“As the mining activities are done in rural communities mostly in remote areas, most miners were still in the bush even during the three weeks lockdown. However, it is possible that some miners were unable to arrange for finance because the banks were closed and in turn affected their inputs mobilisation” (AN, Gold Mining Expert 1 in Ghana)

In Ghana, despite the two (2%) percent reduction of interest rates by banks as directed by the Government of Ghana, effective 1st April, 2020, many miners were unable to apply for new loans because they had not repaid previous loans. In addition, the Government of Ghana introduced the Coronavirus Alleviation Programme (CAP) to provide support to small and medium-sized enterprises (SMEs) who were affected by the pandemic. In Kenya, the Government’s 8-Point Economic Stimulus Programme which included the SME Credit Guarantee Scheme did not benefit the gemstone miners. In both countries, although ASM falls within the SME bracket, it was obvious from the interviews that many miners had no idea such programmes existed nor were they able to benefit from the schemes due to their informality. Those who had heard of the government’s finance and credit schemes did not know how to access them. The informal artisans could not qualify for both Governments’ credit schemes, VAT refunds, and tax exemptions.

“In addition, the government has set up the Coronavirus Alleviation Programme (CAP) as well as ... reduced Bank interest rates by two per cent (2%). However, many miners have not been able to take advantage of these facilities. For instance, many miners have not been able to service their previous loans and for that reason do not qualify to apply for new loans. In addition, some claim that they have not heard about the CAP” (LE, Gold Mining Expert 2 in Ghana)

“The Government of Ghana is putting in place interventions for several companies including small and medium scale enterprises. If such a facility is extended to small-scale miners, it would be useful.” (AN, Gold Mining Expert 1 in Ghana)

5.1.3 Markets and prices

Due to international travel restrictions, national lockdown measures and the closure of borders, the gold and gemstone ASM has experienced significant disruptions of markets access and supply chains with numerous reports of mineral price volatility (see Laing, 2020). In spite of the current high international gold prices on international markets (e.g. gold prices increased from US\$1, 479/oz in December 2019 to US\$1, 964.20 as of 30th July, 2020), the buying price

of gold at many ASM sites declined due to inadequate buyers occasioned by the travel and movement restrictions. Given that gold and gemstones is a cash business, the local brokers and exporters who rely on their own capital for trading stopped buying gold and gemstones. In Ghana, all 12 respondents interviewed agreed that the initial three-week lockdown in the two major cities of Accra and Kumasi and the closure of borders impacted on the gold supply chain, taking cognisance that the sector had barely recovered from the 2017 imposed two-year ban on small-scale mining activities by the government. A miner with fourteen years of experience in ASM explains below how the lockdown in the major cities of Ghana contributed to local gold price decrease despite the rising international prices at the time:-

“There has been an impact on the ASM sector especially during the lockdown period. Gold price locally went down by more than 20% even though internationally the price went up. Many miners went back to their business after almost two years ban on their activities only for Covid-19 to impact the profitability of their operations negatively. This happened as a result of lack of buyers to buy the gold during the period. Some businessmen took advantage of the situation and bought the gold at a very cheap price, some as low as 25% less the LBMA price. However, the lift of the partial lockdown saw the prices returning to normalcy. This lasted for a few weeks and the government imposed a 3% withholding export tax which was transferred directly to the miners. This has further worsened the plight of small-scale miners” (EY, Gold Miner 4 in Ghana).

In Kenya, over two-thirds of the gemstones mined is usually sold to export markets (UNDP, 2015). The gemstone miners and traders were not prepared to deal with the consequences of the pandemic. The pandemic found traders in a ‘business as usual’ mode with the middlemen having large quantities of gemstones in stock. Most of the export market agents returned to their home countries when the first coronavirus case was reported. The early signs of a possible ban on international flights triggered many cancellations of orders which further diminished the market demand for the minerals. Those interviewed experienced market price fluctuations triggered by both international dealers and local traders' inability to buy gemstones. The latter are mostly based in Nairobi, Kenya’s capital city, and were unable to travel to Taita Taveta County due to the government-imposed cessation of human movement in and out of The Nairobi Metropolitan Area. Further, the pandemic debilitated the jewellery industry which is a main market for gemstones. The curfews, rules of physical distance, and the cap on the

number of people per gathering led to the cancellation of jewellery exhibitions, the closure of jewellery shops, whilst those that remained open had significant reduction in footfall.

“...Nothing is happening because even the few people who often come to Voi to buy [gemstones], everybody is locked down in their own places. So, it is a chain effect and the way I see it, this is going to last for a while. The effects are going to last for a long time. You know the kind of business we are trying to make rocks look pretty, it is a luxury item. Although you know as miners when we are down in the pit it is not at all luxurious for us.” (NO, Gemstone Miner 7 in Kenya)

The limited access to the global market for gold and gemstones, and the uncertainty of the business environment has triggered a buyers’ market. Unlike the financially well-resourced brokers, dealers or large-scale miners with capacity to stockpile, artisanal miners sell their gemstones as soon as they get a buyer as gemstones is their only source of income. This exposes the miners to exploitative middlemen who will buy the gemstones at rock-bottom prices as explained below:

“...Those brokers who deal with exports are not buying gemstones for now, the prices have gone down, and whoever has a lot of money can accumulate a lot of stock so when the market opens, they can sell at very high prices and make good, good profit margins. But as at now, those small-scale miners, the ones who have gemstones are selling at a very low price, that’s number one. [..] Yes, they must sell because they live from hand to mouth with their families and that is the only source of money for them”. (DK, Gemstone Miner 1 in Kenya)

“...as we speak, there has been a number of additions onto the bureaucratic structure of how a miner can acquire a mining licence and operate legally. This has increased the number of people who take advantage of miners. Sometimes miners are not able to go through the processes in time and need to ensure that they are not harassed when they go back to work. All these have contributed a higher risk of exploitation of miners.” (AN, Gold Miner 1 in Ghana)

5.2 Social Impact

The Covid-19 measures have slowed down ASM activities with devastating negative impacts on the livelihoods, occupational health, safety and well-being of miners and mining communities as discussed below.

5.2.1 *Income and sustainable livelihoods*

Artisanal and small-scale miners rely on the gold and gemstones revenue to meet their basic needs. The loss of income translates to a loss of livelihoods for miners and mining communities (AMDC, 2018). As presented above, the shutting down of mines and reduced productivity due to travel restrictions and logistical complications in both supply chain and labour force resulted to reduced income for miners. Further, disruptions to global supply chains generally increased the cost of living for the miners and subsequently, reducing their incomes and depriving them of direct livelihoods. The reduced incomes continue to increase the level of poverty in ASM communities. Those we interviewed felt that women were disproportionately affected due to childcare, home schooling and family responsibilities as observed by a gold miner below. The Ghanaian mining families especially those living in rural communities where mining takes place felt the hardship when schools closed since their children benefit from the Ghana School Feeding Programme (GSFP). During the school closures, the parents had to bear additional costs of feeding their children at home, and this increased the risk of the miners' children going hungry as families were already struggling to meet their daily needs due to insufficient income. The Covid-19 National Trust Fund in Ghana was set up to receive contributions and donations from the public to assist in the welfare of the needy and the vulnerable. At the time of writing the paper, we could not ascertain if the miners had benefitted from the Trust Fund.

“In the small-scale sector, few people are salaried workers. It is more about earning as you work, contract payment and wages. Thus, virtually everybody will be affected including women who form a majority of the workforce.” (WM, Gold Miner 3 in Ghana)

In Kenya, early Covid-19 misinformation led to increased fear of Covid-19 exposure with many miners preferring to stay at home and explore alternative means of livelihoods in order to pay for increased food and healthcare costs as narrated by a miner below. Fortunately, the Covid-19 wave in Taita Taveta County coincided with the rainy season which allowed the mining communities to engage in maize and beans subsistence farming. Those unable to fend for themselves turned to humanitarian aid from well-wishers and humanitarian aid outfits such as the Taita Taveta County Covid-19 Resource Mobilization Team.

“...I have tried diverting to other businesses, but it has become a challenge. As we do the artisanal mining, we also do other business. I also sell second-hand clothes. However, it has become a challenge to get them [clothes] and those in

stock are not selling. There is a time all saloons were closed so that means even the customer numbers reduced. So, we have been affected especially on the side of food because if you don't have money you can't eat and food is very important.” (CM, Gemstone Miner 3 in Kenya)

5.2.2 Occupational health, safety and well-being (HSW)

Many gold and gemstones mines are found in remote areas with little access to appropriate healthcare infrastructure necessary for timely testing and treatment of Covid-19. The conditions in which the miners work and live render them vulnerable to serious environmental, occupational health and safety risks. ASM has mainly been associated with environmental and occupational health issues, particularly when practiced informally or with limited technical and material resources. Given that underground activities require a lot of breathing by the miners, wearing of facemasks is unfavourable to them. The limited testing capabilities in the countries (Brand et al, 2020) mean no one quite knows the health status of another. Hence, the miners are avoiding the normal practice of sharing of mining tools for fear that this could aid the spread of the virus. Notably, the miners are at a higher risk to contract Covid-19 due to their communal living conditions as captured succinctly in the excerpt below. The living hostels are congested with poor sanitation and water provision, both making social distancing and hygiene requirements quite difficult to comply with. Despite the miners' limited income, they must invest in personal protective equipment (PPEs) and purchase sanitisers, water and soap.

“... We don't usually work in a congested environment, the only challenge is in the sleeping arrangement, but while working we keep the social distance. But with sleeping arrangement it is a challenge. You know we sleep in one congested area. We do not have an alternative, maybe if we could get help to make other makeshift structures that would be better, like get polythene, because we usual make the makeshifts using the polythene papers.” (EM, Gemstone Miner 5 in Kenya)

‘At work, we are able to keep social distances. Making sure that all workers have nose mask at all times bring extra cost and sometimes not possible. For example, miners cannot wear nose masks all day long, especially when going inside the pits. ...’ (AB, Woman Gold Miner 4 in Ghana)

The miners work and live in tight spaces that often have poor ventilation and may likely suffer chronic respiratory illness or communicable diseases. Should it happen that a miner contracts Covid-19 virus, it is more likely to spread among all the miners within a short time. During an outbreak such as Covid-19, workers can be affected by the psychosocial hazards arising from the present and future uncertainty of the work situation or from changes in work processes and arrangements. The stress associated with uncertainty can have negative consequences on workers' well-being and mental health, as well as lead to a rise in violence and harassment (both physical and psychological), social stigma and discrimination (ILO, 2020). The mine owners and management are trying their best in spite the uncertainty:

"...We have shared with them [workers] Covid-19 related information and asked them not to worry, in time the government would have controlled the disease and things will go back to normal. In so far as supporting them in any way to keep surviving while out there, will be decided by the management. We have to sit down and decide because we cannot tell for how long the problem will persist, when you say you want to help someone you can't do that for two or three years." (CM, Gemstone Business Owner & Miner 2 in Kenya)

6. "Never Waste a Good Crisis": Discussion and Implications for Policy and Practice

ASM involves a complex interplay of social, economic, technological, environmental and health factors that can vary considerably across local and national contexts (WHO, 2016). The predicament occasioned by Covid-19 has intensified the challenges that the mining industry is facing. Our findings point to the significant negative impact Covid-19 has had on ASM sub-sector in Ghana and Kenya: including, reduced gold and gemstones production, high costs of production, low access to finance, and reduced gold and gemstones prices due to restricted markets. This in turn has led to diminished income for the miners which affects their livelihoods and reduce employment opportunities. Due to the working and living conditions in mining sites, the miners' occupational health, safety and general well-being is compromised. The miners also have no social protection. The disruptions caused by the pandemic are expected to have a significant negative impact on mining economies, and the miners' health, well-being and livelihoods, particularly due to falling prices and reduced demand (see also Laing, 2020).

The Covid-19 crises continues to expose the precariousness of the largely informal ASM as discussed in Section 2. The lack of any evaluations of interventions to improve the miners' health, safety and well-being even prior to the pandemic has been problematic (Tsang et al., 2019; Brand et al., 2020). To reduce the immediate devastating impacts of Covid-19 on artisanal and small-scale miners and mining communities (Human Rights Watch, 2020), and to help build in the longer-term a more resilient gold and gemstone ASM in Ghana and Kenya, concerted efforts from a wide range of stakeholders is needed. We further support the call to address informality in the ASM sub-sector (see Narula, 2020; Lakiri-Dutt, 2018) as opposed to pushing a narrow ASM formalisation agenda (Hilson et al., 2019) which is advanced by national policymakers and global multilateral agencies as the magic bullet for what ails ASM sub-sector. Addressing informal employment in the ASM sub-sector has become even more pertinent in the context of Covid-19 pandemic. The economic measures to protect jobs (e.g. PAYE reduction, reduced VAT and turnover tax rates) have not trickled down to the ASM sub-sector due to its informality. The short-term fiscal and monetary measures put in place by Ghana and Kenya Governments to improve liquidity for SME and cushion employment did not quite benefit the miners. Further, employment and working conditions are important social determinants of health which have significant direct economic impact on the worker, their organisation and society, as well as an indirect economic impact through negatively or positively impacting health, safety, and well-being in several interrelated ways (see Figure 3) (Benach et al., 2013; ILO, 2020).

The impact on workers' health has economic implications for the worker (e.g. loss of earnings), their employer (e.g. loss of productivity), as well as society at large (e.g. increased healthcare costs) (Jain et al., 2018). The negative impact of work and employment conditions on HSW of workers, often extends over long periods of the life span. Therefore, the promotion of health, safety and well-being at work and the improvement of employment and working conditions are at the heart of sustainable ASM more now than ever before (Jain et al., 2018; Pouliakas & Theodossiou, 2013). Furthermore, in the post-Covid era, it is even more important for governments, employers and managers to work towards addressing the challenges relating to employment conditions inherent in ASM, given their significant direct negative economic impact due to the disruptions in the ASM value chain (i.e. mining production, financing, pricing), as highlighted in the findings of the study.

<< Figure 3 somewhere here >>

The informality in the upstream activities of the value chain has left artisanal and small-scale miners more vulnerable. To build a more resilience gold and gemstone ASM sub-sector, we suggest changes in the way various functions in the value chain are executed. Given that miners live from hand to mouth and seem trapped in the poverty cycle, it would be foolhardy to expect that they can build the ability to sustain their livelihoods during pandemics and bounce back on their own. External interventions are necessary. Considering that investors and sponsors cut off their funding streams, it would be wise to establish ASM focused financing and credit schemes that are friendly. The miners should also be empowered to run independent funds, savings entities or cooperatives, for example. The dip in demand witnessed during the pandemic may be minimized through product diversification. Product and service innovations can cushion ASM from external shocks. For example, instead of gemstone miners relying on selling the aesthetic value of the minerals, emphasis could be laid on exploiting gemstones' medicinal characteristics and powers to treat physical, emotional and social ailments as practiced in Asia (see Ferrari & Dahnhardt, 2016).

The ILO's 'Value Chain Guide for Decent Work' reinforces an inclusive market development approach, as it ensures that transactions within the value chain can be done smoothly, ensuring international competitiveness, and avoiding negative external effects such as exploitation of labour and environment. Market system development thus leads to value chain development, as it creates the right environment in which enterprises can do business. Market system development is achievable through social dialogue, through which all main public and private market players are involved in formulating solutions for constraints in the selected value chain (ILO, 2009). In the current context of the Covid-19 pandemic it is important to protect and preserve the hard-won development and security gains related to regulatory legislation of the ASM sub-sector (Hilson et al., 2019), the horizontal integration of informal ASM sub-sector into national industrial policies (Narula, 2020), and supply chain transparency, accountability and due diligence (Human Rights Watch, 2020). However, more needs to be done to change the narratives in the regulatory frameworks that continues to privilege large-scale mining whilst delegitimising informal mining and its positive contribution to national economies (see Lakiri-Dutt, 2018).

The artisanal and small-scale miners have suffered from exploitation by dealers, brokers, traders et cetera along the gold and gemstone value chain. The global value chain governance certainly needs some re-organising. This will require the re-evaluation of the relationship

between the ASM upstream and downstream stakeholders. The hyperextended nature of the gold and gemstone value chains means that corporations do not directly engage with informal and formal ASM activities. However, as global consumers demand to know where products have been sourced and in what conditions, we believe that the Covid-19 global shock presents an opportunity for big exporters and retailers to shorten their supply chain by building closer and more transparent relationships with gold and gemstone ASM producers. These global downstream actors have a social responsibility to integrate sufficiently and sustainably both the formal and informal ASM activities into their supply chains. They can support build the miners' capacities and capabilities to extract and process gold and gemstones whilst paying attention to social, environmental and economic sustainability. The integration of informal mining in the global supply chain should be encouraged, supported and promoted by governments, global industry associations, and development partners (see also Narula, 2020).

All in all, the Africa Mining Vision recognises that ASM is both a poverty-driven and a poverty alleviating finite activity. The ASM need to be transformed into a more sustainable and viable sub-sector. To achieve this, AMV advocates a pluralist, holistic and multi-pronged approach that goes beyond providing technology options to that which seeks to embed ASM into the national rural development strategy (AU, 2011; AU, 2009). Ameliorating poverty in ASM communities will require the development of diversified and alternative livelihoods to ASM. To raise the profile of ASM and draw more attention and resources to it, there is a need to exploit the sub-sector's broader linkages and identify its entry points to broader development agenda, including the Sustainable Development Goals (SDGs) (see also Hilson et al., 2018). This is especially important given the increasing evidence of an inter-linkage between agriculture and ASM, and the role that agriculture plays in providing food security and a safety net to many of the poorest communities (Aizawa, 2016; Hilson, 2016b). The miners' livelihoods are sustainable when they can cope with and recover from stresses and shocks. To sustain positive livelihood outcomes, interventions towards building the ASM sub-sector's capacities to mine sustainably, as well as developing and strengthening institutions that deliver goods and services in mining communities are essential (see Muthuri et al., 2012). It may be more prudent to utilize livelihood-centred interventions that create strong connections with sustainable development in mining communities (Adonteng-Kissi & Adonteng-Kissi, 2018).

7. Conclusion

The pandemic has exposed systemic issues that limit ASM abilities to drive socio-economic development in Ghana and Kenya. Although Ghana and Kenya Governments unveiled economic stimuli programmes which prioritised manufacturing and service industries, it is not yet clear how these programmes directly benefit the ASM sub-sector. We are of the view that new Governments' fiscal stimulus should be directed to the gold and gemstone ASM to safeguard mining economies and livelihoods in mining communities. As the world enters a second wave of Covid-19, the governments ought to develop support programmes to protect ASM workers and families living around the mines, as well as incentivise the supply chain actors to continue operating but within the Covid-19 national and regional containment and control guidelines (ILO, 2020).

As argued in this paper, the informal workers in the ASM are particularly vulnerable during a pandemic as they already face higher occupational safety and health risks and lack sufficient protection. How might informal ASM workers and employers be better organised? What type of social protection are needed, and how should their social security be guaranteed? We need to find answers to these questions. ASM miners will require more training and development because they may continue to work despite restrictions on movement and social interaction as the alternative would be starvation. These informal workers may not be able to comply with the precautions mandated by health authorities as they make the choice between health and income which increases the risk of contagion if not provided with adequate support. The measures to protect ASM workers, particularly those working in informal contexts, should include - among others - education and training on safe and healthy work practices, free provision of PPE as needed, access to public health services and livelihood alternatives (ILO, 2020, p.15).

The continued delivery of short-term and long-term health-focussed solutions by the private, public and non-profit sector actors need to be encouraged both at the community and mining sites level, and also at the national health-sector level. This includes developing health infrastructure, providing health education, supplies and equipment, and health insurance for miners and mining communities. Community approaches should focus on preventing the infiltration of coronavirus into communities and preventing transmission within communities and involve the application of a community engagement approach to ensure that communities' needs are considered and that they have access to trusted and accurate information (Kroll & Temler, 2020). The World Health Organization has developed a guidance on how to develop a

risk communication and community engagement plan when working with specific communities on Covid-19 (WHO, 2020a).

We concur with Narula (2020) that the Covid-19 crisis is an opportunity to upgrade the informality of the ASM sub-sector in Ghana and Kenya. This is a long-term process requiring proper regulation and licensing (Hilson et al, 2019), efficient and effective production processes (Kiggundu & Pal, 2018), and better organising, financing, and marketing systems (Cartier, 2019). So, what legislative and regulatory reforms are required to enable the integration of the informal and formal mining, legitimisation of use of technology and advanced mechanisation for innovation, and upgrading the informality of the ASM sub-sector in Ghana and Kenya? The time is ripe to rethink gold and gemstone marketing and value addition as well as the reconfiguration of the value chain systems to make them more efficient and effective. Although gold, unlike gemstones, is considered a safe haven to hedge against risk and is likely to continue to positively impact on the balance of payments and receipts from mineral royalties; the direct and indirect impact of supply chain and market disruptions on the economy will continue to be felt for many years to come (Ofori-Atta, 2020). The liquidity of gold and gemstone ASM is a critical issue with the production and market disruption during the pandemic. The question of how to keep the supply chain operating and restoring liquidity flow to enable gold and gemstone purchase in rural artisanal communities needs urgent attention. Reactivating and strengthening supply chain systems at the country-levels will help mitigate further direct and indirect impacts on income and livelihoods. This will require government's fiscal, legislative and regulatory support.

Last but not the least, research has a role to play in developing a sustainable and thriving ASM sub-sector in sub-Saharan Africa. Nonetheless, ASM is an under-researched field more so in the gemstone compared to gold sub-sector (see Cartier, 2019). Both countries lack good and reliable data which is important for ASM policy development and evidence-based decision-making. A variety of data, including new data sources, is necessary to build a more resilient and sustainable ASM sub-sector in Ghana and Kenya. How do we develop a more adaptable sector that can withstand shocks? What knowledge and competencies will ASM actors need for a more sustainable future? How do we build these capacities? It is high time Governments, International Agencies (including World Bank, United Nations, African Development Bank, etc) and special-purpose made Inter-Governmental outfits (similar to the Inter-Governmental Forum on Mining, Minerals, Metals and Sustainable Development) deliver health and socio-

economic impacts, as well as secure the future for gold and gemstone miners and mining communities in Ghana and Kenya.

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Table 1: Top ten African countries ranking based on Covid-19 confirmed cases

Country	Total Confirmed Cases	Active Confirmed Cases	Recovered	Total Confirmed Deaths	Case-Fatality
South Africa	706,304	48,080	639,568	18,656	2.6%
Morocco	179,003	27,138	148,838	3,027	1.7%
Egypt	105,705	1,150	98,413	6,142	5.8%
Ethiopia	90,490	45,481	43,638	1,371	1.5%
Nigeria	61,558	3,736	56,697	1,125	1.8%
Algeria	54,829	14,610	38,346	1,873	3.4%
Libya	50,906	22,328	27,832	746	1.5%
Ghana	47,372	398	46,664	310	0.7%
Kenya	45,647	12,283	32,522	842	1.8%
Tunisia	44,450	38,707	5,032	711	1.6%

Source: data extracted from the BBC (2020) - Coronavirus in Africa tracker as at 21 October, 2020.

Figure 1: Gold value chain in Ghana

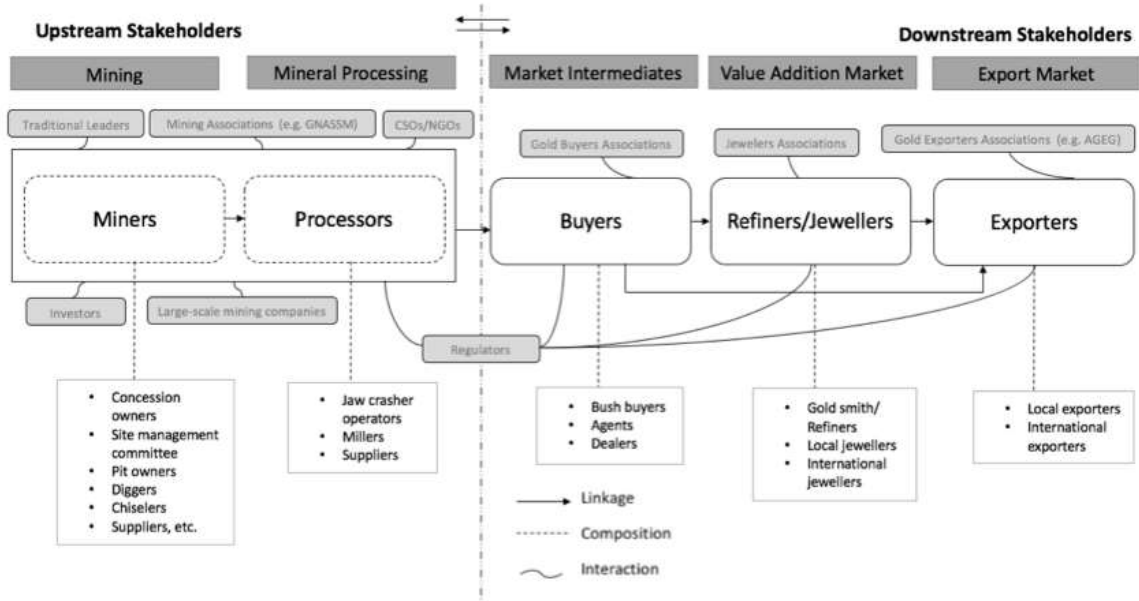


Figure 2: Gemstone value chain in Kenya

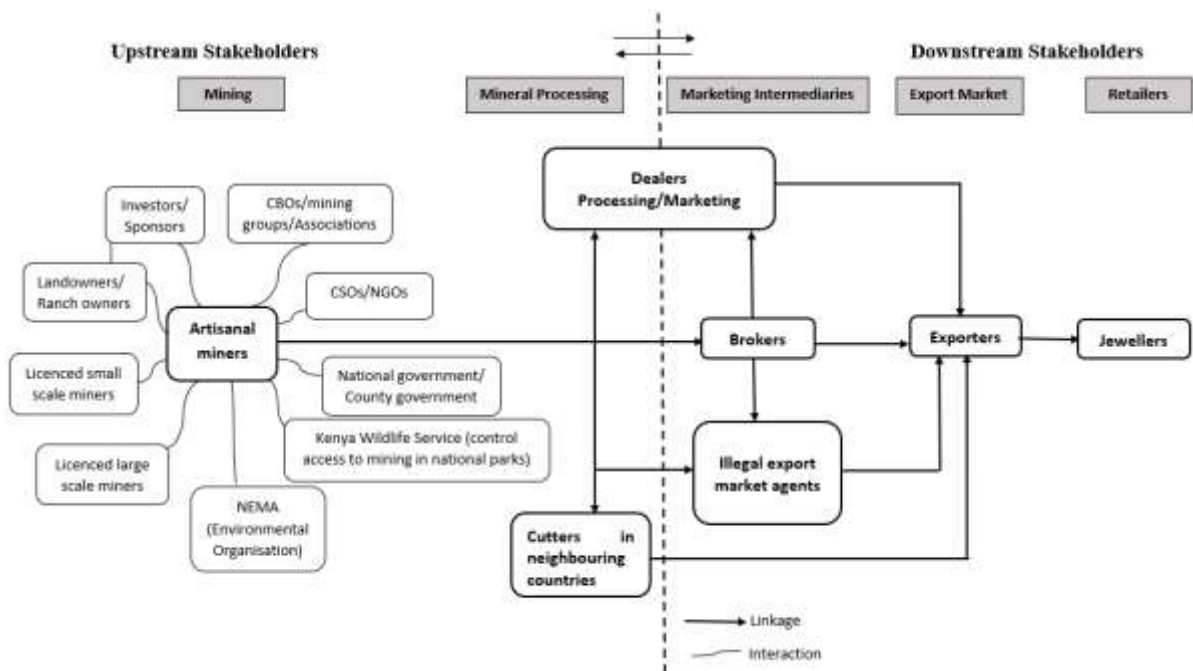


Table 2: Interviews conducted on gold (Ghana) and gemstones (Kenya) mining

Type of Respondents	Ghana	Kenya	Total
Miners	4 small-scale miners	6 artisanal miners 3 small-scale miners	13
Mining Concession Owners	2 mining entrepreneurs	2 individual owners	4
Mining Association Representative	2 (Ghana National Association of Small-Scale Miners; Women in Mining)	2 (Taita Taveta Artisanal Miners Association; Kenya Chamber of Mines)	4
Mining Experts	2 (University of Mines and Technology)	2 (Voi Gemstone and Value Addition Centre; Taita Taveta County Government Department of Mining)	4
Dealers and Exporters	2 individuals licensed gold exporters	2 (Taita Taveta Gemstone Dealers SACCO; individual business owner)	4
Total	12	17	29

Table 3: Measures to combat Covid-19 as announced by Ghana and Kenya Governments between 01 March to 31 May, 2020

Ghana	Kenya
<p>March 11, 2020</p> <ul style="list-style-type: none"> • A \$100 million fund set for COVID-19 preparedness and response • A100-bed capacity facility inside one remote area is set up to quarantine suspected cases; 5,000 pieces of PPE purchased for health personnel across Ghana. <p>March 15, 2020</p> <ul style="list-style-type: none"> • All public gatherings, including conferences, funerals, political rallies and religious activities are suspended for four weeks from 16 March • Private burials permitted effective 16 March but with attendance not exceeding 25 persons and observance of 1- meter social distance • Closure of all universities, high schools, and basic schools, effective 16th March till further notice. • Ban into the country of any traveller (with the exception of Ghanaians and those with resident permits) who, within the last 14 days, has been to countries that have recorded at least 200 cases of persons infected of Covid-19. All arrivals to proceed on a mandatory 14-day self-quarantine. <p>March 21, 2020</p> <ul style="list-style-type: none"> • Parliament passes the Imposition of Restrictions Bill, 2020 to give strong legal backing to the President’s Covid-19 specific directives. • Closure of land, sea, and air borders to human traffic effective midnight 22 March. <p>March 25, 2020</p> <ul style="list-style-type: none"> • Covid-19 dedicated national fasting and prayer day. <p>March 27, 2020</p> <ul style="list-style-type: none"> • A partial lockdown imposed in the Greater Accra and Kumasi Metropolitan Areas from 30 March to 20 April. • Extension of the tax filing date from April to June 2020. A two percent reduction of interest rates by banks, effective 1 April. • Establishment of a Covid-19 National Trust Fund to be managed by an independent board of trustees to receive contributions from the public to assist in the welfare of the needy and the vulnerable. • The Minister for Finance directed to prepare, for approval by Parliament, a Coronavirus Alleviation Programme to address the disruption in economic activities, the hardship of our people, and to rescue and revitalize our industries and to make available a minimum of one billion cedis (GH¢1 billion) to 	<p>March 13, 2020</p> <ul style="list-style-type: none"> • Suspension of all public and social gatherings, including visits to prisons for 30 days effective 13 March. • Commencement of public awareness through door-to-door campaigns on good personal hygiene. <p>March 15, 2020</p> <ul style="list-style-type: none"> • Ban into the country effective 17 March for all people entering Kenya from any country with reported Covid-19 cases with the exception of Kenyan citizens and foreigners with valid resident permits and who must be subject to 14 days self-quarantine or to a government designated quarantine facility at their own expense. • Learning suspended in all educational institutions with immediate effect. Work from home encouraged whenever possible with the exception of essential services. • Cashless transactions encouraged in order to reduce the risks of transmission through physical handling of money. • Hospitals and shopping malls required to provide soap, water and hand sanitizers; premises to be regularly cleaned and disinfected. <p>March 16, 2020</p> <ul style="list-style-type: none"> • A toll-free line 719 is set up by the National Emergency Response Committee to support Kenyans in understanding the prevention and management of suspected Covid-19 cases. <p>March 19, 2020</p> <ul style="list-style-type: none"> • Random testing for Covid-19 to commence in targeted areas from 21 March. <p>March 20, 2020</p> <ul style="list-style-type: none"> • Social distancing measures announced in public transport and in supermarkets. All entertainment joints and bars to close at 7.30pm from 23 March. <p>March 22, 2020</p> <ul style="list-style-type: none"> • Suspension of all international flights effective midnight 25 March with the exception of cargo flights. • All bars to remain closed until further notice. Restaurants to offer only takeaway services. All churches and mosques gatherings suspended. Funerals restricted to family members of up to 15 people. <p>March 24, 2020</p> <p>Testing cascaded to County levels.</p> <p>March 25, 2020</p>

<p>households and businesses, particularly small and medium scale enterprises.</p> <ul style="list-style-type: none"> • The granting by the banks of a six (6) month moratorium of principal repayments to entities in the airline and hospitality industries, i.e. hotels, restaurants, car rentals, food vendors, taxis, and uber operators. <p>April 01, 2020</p> <ul style="list-style-type: none"> • A toll-free line 311 set up by the National Information Centre to support Ghanaians to understand the prevention and management of suspected Covid-19 cases. <p>April 05, 2020</p> <ul style="list-style-type: none"> • The Coronavirus Alleviation Programme (CAP) provides food for up to 400,000 individuals and homes in Accra and Kumasi affected areas of the lockdown. • Absorption of water bills for all Ghanaians for the three months from April 2020 • Roll out a soft loan scheme up to a total of GH¢600 million with a one-year moratorium and two-year repayment period for MSME businesses. • Local companies are engaged to produce PPEs. <p>April 15, 2020</p> <ul style="list-style-type: none"> • Launch of Covid-19 Tracker App <p>April 19, 2020</p> <ul style="list-style-type: none"> • Partial lockdown lifted in Greater Accra and Kumasi Metropolitan Areas effective 20 April. <p>April 25, 2020</p> <ul style="list-style-type: none"> • Facemasks made mandatory in public spaces. <p>April 26, 2020</p> <ul style="list-style-type: none"> • The suspension of all public and social gatherings is extended by two weeks effective 27 April. 	<ul style="list-style-type: none"> • Mining operations suspended in Taita Taveta by the County Government until further notice. • Nation-wide curfew from 7pm-5am effective 27 March through Public Order No.1 • Economic measures to protect jobs announced including PAYE reduction from a maximum of 30% to 25%; 100% tax reduction to Kenyans earning below Kshs. 24,000 (US\$288); reduction of turnover tax rate from 3% to 1% for MSMEs; reduction of corporations tax from 30% to 25%; reduction of VAT from 16% to 14% with effect from 1st April, 2020. • Kshs. 10 billion to support the elderly, orphaned and other vulnerable groups under the cash transfer programme through Ministry of Labour and Social Sciences. • Kshs. 1 billion from the Universal Health Coverage kitty appropriated towards the recruitment of additional health workers. <p>April 01, 2020</p> <ul style="list-style-type: none"> • Kenya to start producing PPEs from 02 April. <p>April 06, 2020</p> <ul style="list-style-type: none"> • Cessation of human movement by road, air and rail out of the Nairobi Metropolitan areas; and in Mombasa, Kilifi and Kwale effective 8th April. • Wearing of masks compulsory outside of homes. <p>April 25, 2020</p> <ul style="list-style-type: none"> • National Hygiene Programme to commence 29 April. <p>April 29, 2020</p> <ul style="list-style-type: none"> • Taita Taveta County Government announces reopening of mines and quarries effective 4 May but under strict rules. <p>May 23, 2020</p> <ul style="list-style-type: none"> • Introduction of 8-Point Economic Stimulus Programme included allocation of KShs. 10 billion to fast-track VAT Refunds and KShs. 3 billion seed capital for SME Credit Guarantee Scheme to promote affordable credit to MSMEs
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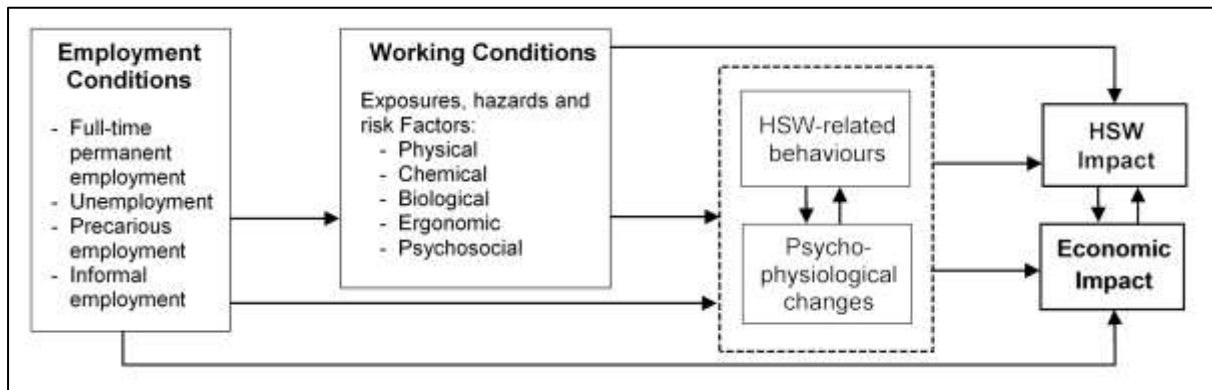
Ghana Sources: Ghana Health Service (2020); Akufo-Addo (2020b); Akufo-Addo (2020c); Covid-19

Presidential Speeches on www.presidency.gov.gh

Kenya Sources: Ministry of Health (2020); Ministry of Finance (2020); Covid-19 Presidential

Speeches on www.president.go.ke.

Figure 3: Economic and health impact of employment and working conditions



Source: Adapted from Benach et al., 2013