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# Promoting small-scale mining sector businesses and the role of institutions - a conflict prevention and resolution study in Ghana

Dissertation submitted in fulfillment of the regulations to acquire a doctoral degree in economics (Dr. rer. pol.)

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**Dedication**

I dedicate this thesis to my wife Maria; my son Konadu; my extended family, especially my parents Mr. and Mrs. Kusi Appiah; and my siblings who supported my masters studies abroad before this doctoral scholarship. May God richly bless all of you.

## Executive summary

### Introduction

This study was designed to answer the question of whether resource performance depends more on good governance or existing institutional structures. The specific aims include clarifying the extent to which good governance and institutions promote small-scale gold mining businesses. The first aim is to explain the nature of the human rights challenges in the small-scale mining (SSM) industry, empirically from the perspective of mining managers. The second aim is to investigate the nature, determinants, and frequency of conflict that are associated with SSM. Finally, the third aim is to discuss the challenges SSM operations face and the methods to confront these. The findings demonstrate that in the context of the efforts to spur economic development, the exploitation of mineral resources has the potential to bring about far-reaching environmental and social changes. These changes can create opportunities, but they also represent a business risk for corporations and a social risk for communities.

Consequently, there is a pressing need to investigate the recent threats to mineral resource exploration relating to economic development, peace, and stability and the survival of private businesses. These threats are particularly severe for less-developed countries that are net exporters of natural resources, and such nations could use these resources to drive economic development and decrease their dependence on aid from developed countries. In most cases, however, owing to the lack of strong institutions, mismanagement of mineral and other natural resources has fueled social conflict without producing meaningful development.

In addition, there is often the perception in countries such as Ghana, the subject of this study, that mining, regardless of its benefits, is responsible for significant environmental damage and Human Rights Adverse Impacts (HRAI), including child labor and exploitation, displacement of rural households, and violence. Therefore, investments in the mining sector

and associated businesses have often faced stiff resistance. However, given the right institutions, small-scale gold mining and associated activities can prove beneficial to, and be accepted by, society and can attract further investment. On the contrary, under the wrong circumstances, this type of mining can affect society negatively. At the very least, poor management of SSM can prevent the nation from realizing the anticipated benefits from mining to the business community and the broader society. The evidence from large-scale mining (LSM), particularly in the wake of the civil war, indicates a correlation between mineral resources and conflict. We know less about the nature, frequency, and causes of conflicts that afflict households in Ghana's SSM communities. Accordingly, there is a need to research methods for preventing human rights violations and creating shared value in the SSM sector through social development and renewed incentives for investment. This thesis represents an attempt to fill this gap by exploring whether the capacity of resources (in this case, gold mining) to spur economic development (by creating competitive SSM businesses, improving livelihoods, or reducing poverty) depends on governance structures and whether there is a correlation between SSM and conflict using the context of a non-civil war country.

Three central ideas informed this thesis. The first concern is the challenges facing SSM activities that play a vital role in the Ghanaian economy. The second concern is the importance of the role played by institutions in the development of SSM amid a renewed interest in investment in this sector. The third concern is that the changing social expectations are a crucial aspect of sustainable mining and the protection of human rights.

**Research objectives, methods and thesis layout**

This thesis has three primary objectives. First, it probes the observational conditions of child labor by examining the reasons why SSM managers employ children. Second, it examines conflict and its frequency in SSM communities. Third, it explores ways to increase

the social acceptance of SSM as part of efforts to sustain the mining sector businesses by explicitly identifying the critical challenges involved. These objectives are addressed in Chapters 2 through 4. These three empirical chapters follow the introduction set out in Chapter 1 and precede a conclusion in Chapter 5. The study employs mixed methods, relying on both quantitative (Berman et al., 2012; Humphreys et al., 2008; Rustad et al., 2016) and qualitative approaches to address the issues discussed and thus makes use of direct observations, semi-structured interviews and informal conversations with key informants, representative data for Ghana, focus group discussions, and household surveys for data collection. Statistical software programs including STATA 14 and Microsoft Office applications were used for data management and analysis. The limitations of the data collection include the respondents' reluctance to provide information about SSM owing to the secrecy associated with these operations in Ghana and security concerns; a further limitation concerned reaching the targeted sample size. After careful consideration of alternative extractive minerals, we decided to focus on gold.

However, the focus on gold and a specific region does not limit the applicability of this study and the recommendations put forward. The insight offered by this research may be equally applicable to the SSM of related minerals throughout Ghana and other countries with similar conditions.

**Chapter synopses**

Chapter 2: *Analyzing child labor issues in the Ghanaian SSM.* Children employed in mining work in dangerous conditions, such as unprotected mining pits in rural areas due to lack of legal protection, and this has long been a problem in Ghana. The analytical considerations regarding mining-oriented development policies and practice indicate the need to restructure child-protection measures to address SSM. Additionally, there is a lack of

empirical research that can help to answer the following essential issues: the role of child labor in the supply chain of small-scale gold mining; the impact of SSM on child development; the reasons why SSM managers employ children; and how child labor relates to the aspects of mining governance such as site allocation, licensing, and market intermediaries are all unclear. Chapter 2 attempts to fill this gap in the research by exploring the perceptions of managers of small-scale gold mining operations about involving children in mining. The findings suggest that child labor is fundamentally driven by group inequalities among households and remains a particular problem in the SSM sector. Government policies have created an enabling environment, so new standards for monitoring and policy incentives are necessary to increase the effectiveness of institutions sufficiently to alter the current unacceptable behavior of corporations. Further, poor households in mining communities must receive appropriate social protection or alternative support if there is to be a significant decrease in child labor.

Chapter 3: *Analyzing the determinants of conflict in SSM in Ghana*. Gold and other extractive resources have played a crucial role in spurring economic development in Ghana. Consequently, since 1983, this sector has been the recipient of a significant policy intervention, the Economic Recovery Program (ERP), which has served as a cornerstone of efforts to transform the economy. Currently, gold mining in the SSM sector is a critical component of national mineral exports and has the potential to improve macro-stability and rural livelihoods. The present restructuring policy, which was implemented to promote the mining sector, includes the dedication of a section of the Minerals Commission, among other institutions, to guide companies and hold them responsible for SSM development. The SSM sector has been responsible for around 35% of Ghana's total gold production, a share that has been increasing since 2014. Historically, from the time when mining demonstrated its economic viability in Ghana, tough issues including human rights violations, widespread

violence, and the disruption of social cohesion have been associated with the sector. These negative impacts are nowhere more evident than in the mining communities of Ghana's Ashanti Region, but empirical research on the determinants of violence in these contexts is scarce.

The aim of Chapter 3 is to fill this gap in the research by presenting evidence from an empirical study involving a household survey of two districts in the Ashanti Region. This survey identified the challenges relating to land rights, socio-economic inequality, and the negative impact of mining itself as the three primary ways in which violence afflicts households in mining communities in a non-post-civil war context. The findings described in this chapter further demonstrate that artisanal mining is not itself the prime determinant of conflict and, if it is adequately managed, it can contribute to a reduction in the frequency of specific disputes while horizontal or group inequalities reinforce greed and grievances in ways that promote disputes involving households. Based on these considerations, a proactive governance mechanism appears necessary to mitigate the conflict associated with mining in Ashanti communities. Such an arrangement could ensure the adequate monitoring of mining standards and the enforcement of concession rights in ways that improve mining sector businesses.

Chapter 4: *Analyzing the impacts of mining on the social appreciation of mining*. Could good governance and responsible mining practices on the part of corporations have prevented the current national crisis in Ghana's SSM? Good governance plays a crucial role in managing resources in ways that positively affect the livelihood of the poor in countries like Ghana. As it happens, the nation's SSM sector has been under a nationwide moratorium since July 2017. The moratorium action affected most areas of the Ghanaian economy, especially the mining companies, as might be expected. According to the arguments advanced here, the creation of enabling environments and working arrangements through institutional structures

can determine the success and failure of businesses. In this chapter, we proceed from the assumption that good governance and responsible mining practices are interrelated and undertake the following: (1) an assessment of the current empirical conditions under which mining companies operate as a step toward identifying the challenges with the social acceptance of SSM and (2) an account of the influence of governance on the social acceptance of mining, particularly in the context of the current moratorium on Ghana's SSM.

The findings presented in Chapter 4 demonstrate that currently in Ghana, the adverse effects of mining on society far outweigh the benefits, particularly when it comes to the degradation of environmental resources; indeed, this imbalance between disadvantages and advantages explains the current nationwide crisis. Thus, Ghanaian society is likely to continue to withhold social operating licenses (SOLs) from companies should the current behavior persist. A sound governance structure guided by a sound technical policy is recommended to incentivize managers to pursue responsible, clean mining practices that will encourage the reversal of the current ban.

**Main conclusions and policy recommendations**

The potential impact of the findings presented in this thesis extends beyond informing the debate regarding the relative importance of good governance and resource performance to the broader academic discussion of natural resource governance and conflict management in the field of institutional and developmental economics. This research also contributes to the discourse regarding the impacts of SSM, which has been primarily dominated by attempts to characterize and quantify SSM operations. Thus, much of the previous research has concentrated on untangling the dynamics of human rights and the environmental sustainability challenges associated with the SSM sector and elucidating the fundamental causes (and possible mitigations) of the current problems. This thesis adds to the literature on

the role of corporations and institutions in promoting SSM by examining the ways in which SSM can improve the way of life for the poorest residents of the Ashanti Region through clean, "responsible and sustainable mining" and work to minimize horizontal inequalities that reinforce greed and grievances among groups involved in mining conflicts. The support of both private corporations and state institutions is required to promote clean mining as a win-win proposition for the small-scale gold mining sector.

The thesis advocates for strict technical guidelines on sustainable and responsible mining practices in addition to efficient monitoring standards. While there is undoubtedly a need for better mining principles and improved monitoring, the concern here is to establish the necessary perspectives to observe the relationships between governance and resource performance and between resources and violence and then to suggest methods of mitigating mining-related conflicts. This work also highlights the need for good governance to promote SSM and related businesses and thereby improve the economy. Therefore, the sector must be able to co-exist alongside established income-generating activities with minimal or no human rights and environmental problems, unlike the current situation. Finally, we argue here that the SSM sector, while it contributes significantly to the income of rural households and is more effective in attracting both financial and human resources than other areas, is responsible for an enormous negative impact on society, and this makes it an unattractive sector. The implementation of good governance practices, including innovations that help businesses mitigate the adverse effects of SSM, has the potential to spur the sustainable development of Ghana's economy.

Concerning policy recommendations, the findings presented here demonstrate the need for a clear policy regarding innovative and responsible or "clean" mining and good governance. This would involve instituting "workable arrangements" through which essential stakeholders, including companies, communities, and local citizens, combinedly take

decisions concerning mining and mitigation processes. Good governance would also involve revamping child protection policies and developing safe working conditions beneficial[1] to children. While serving as the basis for abolishing exploitive child labor in dangerous situations, good governance policies would involve pursuing an approach that targets conflict as a means to mitigate mining-related violence, and it would need to include the pursuance of mining development programs that complement current regulatory policies. In sum, innovative mining, together with post-mining reconstruction (as a means to conserve environmental resources) and appropriate alternative but similarly high-income-generating enterprises, represent vital steps for stabilizing communities such as those in Ghana's Ashanti Region that have been ravaged by poorly managed SSM operations.

[1] That is, if the employment of a particular child supports his or her development in terms of education, health, and so forth

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**Equations**



**Abbreviations**

ASM: Artisanal Mining

DFID: Department for International Development

DRC: The Democratic Republic of Congo

ERP: The Economic Recovery Program

GLSS: Ghana Living Standard Survey

GSS: Ghana Statistical Service

HIIK: The Heidelberg Institute for International Conflict Research

ICMM: International Council on Mining & Metals

IIED: The International Institute for Environment and Development

ISSER: Institute of Statistical, Social and Economic Research

JHS: Junior High School

LSM: Large Scale Mining

OECD: Organisation for Economic and Co-operation and Development

PMMC: Precious Minerals and Marketing Company

PNDCL: Provisional National Defence Council Law (Ghana Law Reform Commission)

SDGs: Sustainable Development Goals

SLO: Social Livelihood Outcome

SLP: Social Livelihood Plan

SOL: Social Operating License

SSC: Small-Sized Companies

SSM: Small-Scale Mining

SSS: Senior High School

UN: The United Nations

USAID: The United States Agency for International Development

# 1. Introduction, research problem, and justifications

## 1.1. Introduction

This thesis offers an assessment of how SSM sector businesses are promoted and, in particular, the role of institutions in preventing and resolving mining-related conflicts in Ghana. This assessment has three main components. First, it takes into account the potential impediments to eradicating the child labor supply chain in SSM operations, which is in line with one of the United Nations' Sustainable Development Goals (SDGs).[2] Additionally, this thesis represents the first attempt to make empirical, econometric (formal) estimations of the elements of conflict in Ghanaian communities dominated by SSM operations. Third, an attempt is made to unravel the challenges of appreciating the social dimensions of SSM in Ghana, with specific reference to the current moratorium on mining. We selected this structure as the best method for presenting the key findings, specifically because the performance of a natural resource depends on the governing institutions and the management of resources (in this case, mining) is related to conflict in a non-civil war setting. Also discussed in this chapter are the global perspectives on mining as they pertain to Ghana. The contribution of SSM to the Ghanaian economy is then explored in some detail and serves as a background for articulating the research problem and as a description of the reasons for completing this research, in particular, because of the significant gaps in the research mentioned above. The chapter concludes by demonstrating how the present study assists in filling this gap. The findings establish that mining has the potential to spur economic development and to generate social and environmental change with respect to work, health, land use, social interconnection, and the economy. There are both business risks for

[2] UN SDGs, 2015: No.8:8.7, "… taking immediate and effective measures to eradicate forced labor… elimination of ALL forms of child labor" by 2025. The potential challenges for researchers and policy actors in realizing this directive are discussed in Chapter 2.

corporations (high costs of operation in the case of conflict, the objection to SOLs, etc.) and social risks for communities (social disintegration due to violence, child labor, environmental pollution, land degradation, etc.) in the exploitation of minerals (in the present case, through gold mining) that demand attention.

## 1.2. Background

Natural resources, both renewable and non-renewable, are crucial sectors of most economies. The manner in which natural resources are managed and exploited determines whether they are beneficial (a blessing) or not (a curse) to those who inhabit the countries in which they are found (Berman et al., 2013; Collier et al., 2004; Cuvelier et al., 2014; Parker, 2015; Hilson and Yakovleva, 2007; Hoeffler, 2004; Frankel et al., 2010; Humphreys, 2008; Maystadt et al., 2014; OECD, 2005; Ross, 1999; USAID, 2005). Realizing the blessings without suffering from the curses requires responsible and active management by decision-makers and other players in natural resource sectors. Extractive minerals and similar resources, such as gold, diamond, bauxite, gems, and oil and gas, have the potential to stimulate significant economic development in Sub-Saharan African (SSA) countries such as Ghana (Ayee et al., 2011).

In most SSA countries, including Ghana, improvement in the regulations governing the use of resources has had positive results in terms of attracting business investment in the mining sector (Akabzaa, 2009; Campbell, 2004, 2010, 2012; Hilson, 2012; Banchirigah, 2006; Haselip and Hilson, 2005; Ayee, 2001). This renewed interest in investment has placed Ghana and many of the SSA countries in the global spotlight in discussions of mining development and the related issues of sustainability, human rights, and environmental safety; therefore, these issues are considered to have a profound impact on the quantity and duration of future investment in the region.

Amid assurances of economic development and prosperity for the poor, the mining sector, in particular SSM, is portrayed as being responsible, in some instances, for conflict and civil war (Drimmer et al., 2010; Frankel, et al., 2010; Macartan, Humphreys, and Weinstein, 2008; OECD, 2013; Hailu, et al., 2012; United States Institute of Peace, 2007; USAID, 2005; Wolff, 2004). Research has associated mining with environmental devastation, unsafe working conditions, damage to infrastructure, child labor, diseases, violence, and numerous other social problems (Armah et al., 2016; Hilson, 2009; Jennifer, 2005; Kusi Appiah and Wieland, 2016; Tschakert and Singha, 2007). Mismanagement of mineral resources has been linked to civil wars in countries including the Democratic Republic of Congo (DRC), Angola, and Sierra Leone (OECD, 2013; USAID, 2005), while the anticipated benefits of these resources have not materialized. In the DRC, corrupt practices and unhealthy competition have given rise to the phenomenon of "conflict diamonds."

There is, of course, a rich body of literature on mining, but most of it that concerns conflict-affected countries is devoted to LSM operations (Bell and Wolford, 2014; Collier et al., 2004; Hoeffler, 2004; Maystadt et al., 2014; OECD, 2005; Ohmura, 2012). Of the few studies on SSM, Humphreys (2008) investigated the determinants of individuals' participation in conflict in Sierra Leone. In the case of Ghana, research has mainly taken the form of qualitative assessments of the environmental effects (Hilson and Hilson, 2015; Hilson and Yakovleva, 2007; Jonathan and Isaac, 2014; Kessey and Arko, 2013), conflict (Armah et al., 2014; Bush, 2009; Crawford and Botchwey, 2016; Emmanuel, 2015; Hilson, 2002; Hilson and Yakovleva, 2007), and the spatial dynamics thereof (Patel et al., 2016). Another important study by Andrews (2016) explored the challenges of corporate social responsibility in Ghana's domestic mining sector from a mostly historical perspective. Reliable data and information on SSM are relatively scant (Ghana Chamber of Mines, 2015),

and no empirical inquiry into the role of governance in promoting SSM sector businesses, the sustainability of mineral resources, or preventing conflict associated with SSM is yet available.

The argument put forth in this thesis is that the current interest in investment in the SSM sector can be sustained, and even stimulated, by the higher availability of reliable information on the dynamics of the social expectations relating to mining development. New evidence is presented here regarding the role of traditional institutions and corporations in creating and maintaining governance frameworks and responsible management. Through qualitative and quantitative assessments, this thesis provides evidence of the potential for SSM sector businesses to promote the well-being of communities and households in Ghana.

## 1.3. The mineral economy of Ghana

Ghana is the second-largest producer of gold in Sub-Saharan Africa, after South Africa. The country's vast mineral resources also include manganese, bauxite, diamonds, mica, columbite, natural gas and oil, clays, tantalite, silica sand, salt, and quartz. Mining, along with other land and forestry sectors, has undergone a significant restructuring in terms of policies and regulations designed to attract capital investment (Carson et al., 2005). In Ghana, the mining sector is projected to have a significant positive economic impact on some industries and to help alleviate poverty in general, thus improving the standard of living (ICMM, 2007; African Trade Policy, 2011). Gold, however, remains the critical mineral resource contributing to Ghana's economy, accounting for at least 95% of the annual mineral-related revenue (International Council on Mining & Metals, 2015; Minerals Commission of Ghana, 2015). Ghana's extractive sector is responsible for 37% of the national exports, of which gold again makes up the bulk. Moreover, while the output of other minerals has been decreasing, the production of gold grew from 63 tons in 2004 to

approximately 80.5 tons in 2008 (Ghana Chamber of Mines, 2000–08; Mineral Commission, 1996–2006). By another measure, gold production rose from 535,052 ounces in 1990 to 4,313.190 ounces by 2012, remained relatively constant at 4,249.902 and 4,341.607 in 2013 and 2014, respectively, and fell to 3,500.022 in 2015 (Figure 1).

The reform of the minerals and mining law (PNDCL 153) under the ERP has been associated with a significant increase in Ghana's gold production (Addy, 1998). In 2006, the current regulation, Act 703, was implemented under the auspices of the country's Minerals Commission, which entrusts all public lands to the head of the government. This dictates that all mineral deposits in their natural state, underground or on the surface, in rivers or streams, including strategic economic zones covered by the territorial sea, are the property of the Republic of Ghana. There have been promising investments in the SSM and oil and gas sectors after the implementation of these mining reforms. However, the high cost of doing business and the challenges relating to, among other things, human rights, environmental sustainability, corruption, security arrangements, resettlement, and compensation have created conflict flashpoints in mining areas (Carson et al., 2005).

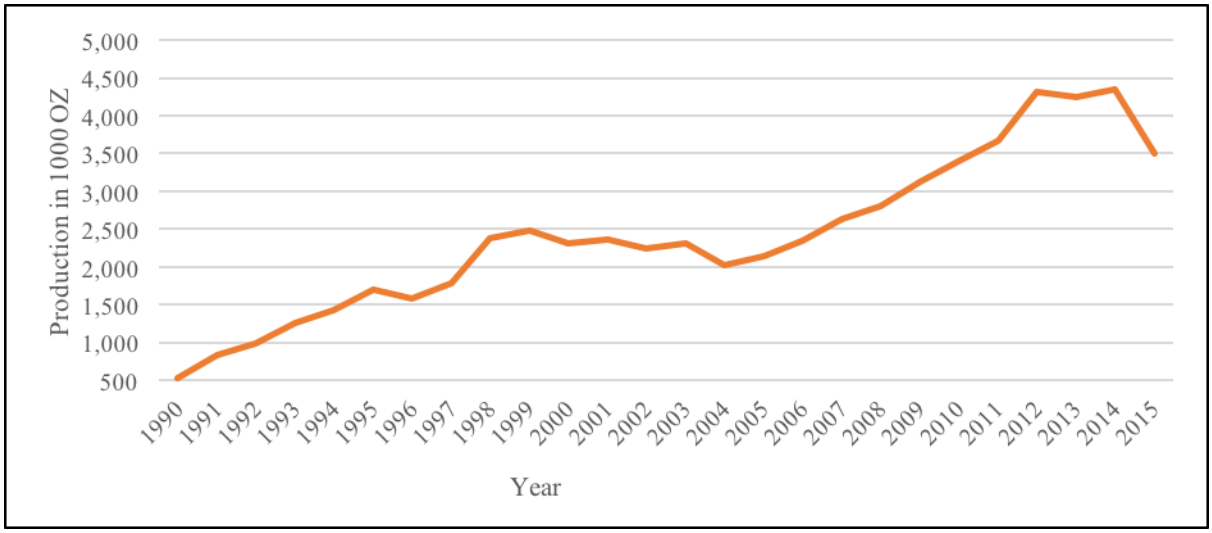


Figure 1: Trend of Ghana's total gold production from 1990-2015
Source: Data from minerals Commission of Ghana, 2015

## 1.4. The contribution of artisanal mining in Ghana

SSM is often considered in combination with artisanal mining as "artisanal and SSM" or the ASM sector, and this sector has grown in Ghana to the point where it has immense economic importance throughout the country. Indeed, regarding job creation and increased tax revenue and wealth in general, ASM is surpassed in importance in Ghana only by the agricultural and manufacturing sectors. Its enormous contribution to government revenue has been increasing over the years, especially since 2007 (PMMC, 2016, Figure 2), and the trend that began with the formalization process in 2006 is expected to continue.[3] Mineral exports in 2016 are reported to have increased by about 53%, with earnings of US$ 5,060 million (ISSER, 2016). The rise in the volume of gold exported and its unit market price is the cause of this change.

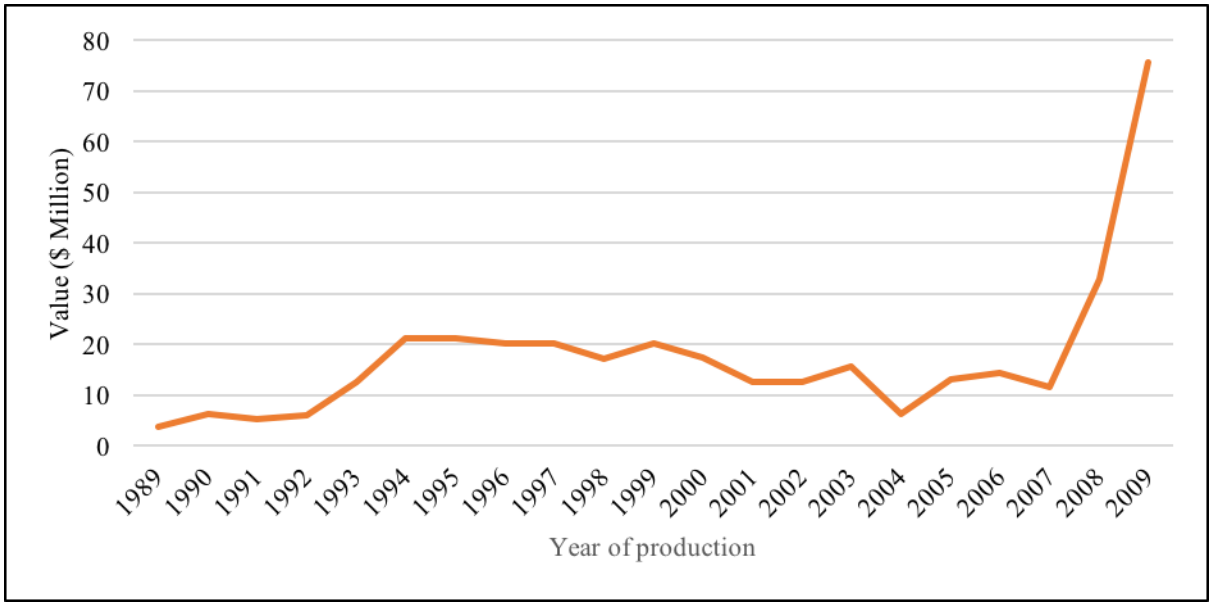



Figure 2: Gold export from the small-scale mining 1989 – 2009
Source: Data from the PMMC report, 2016

[3] Data from 2010 was not available for this research. However, gold production and export from the SSM sector is likely to double because of the recent expansion of operations throughout the country, the increase in prospecting, and the increase in the number of mining licenses that have been issued by the Minerals Commission in past years, as disclosed during interviews with the commission in Accra in 2015.

Furthermore, the contribution to Ghana's total gold production by the ASM sector rose from 2.2% in 1989 to 34.4% in the year 2014 (MinCom, 2015; ICMM, 2015). The available data indicate an upward trend in ASM gold mining that mirrors the total national average output since 1990. Production, therefore, declined from 2015 (Figure 3). These statistics indicate the significance and further potential of ASM as a source of the nation's gold production.

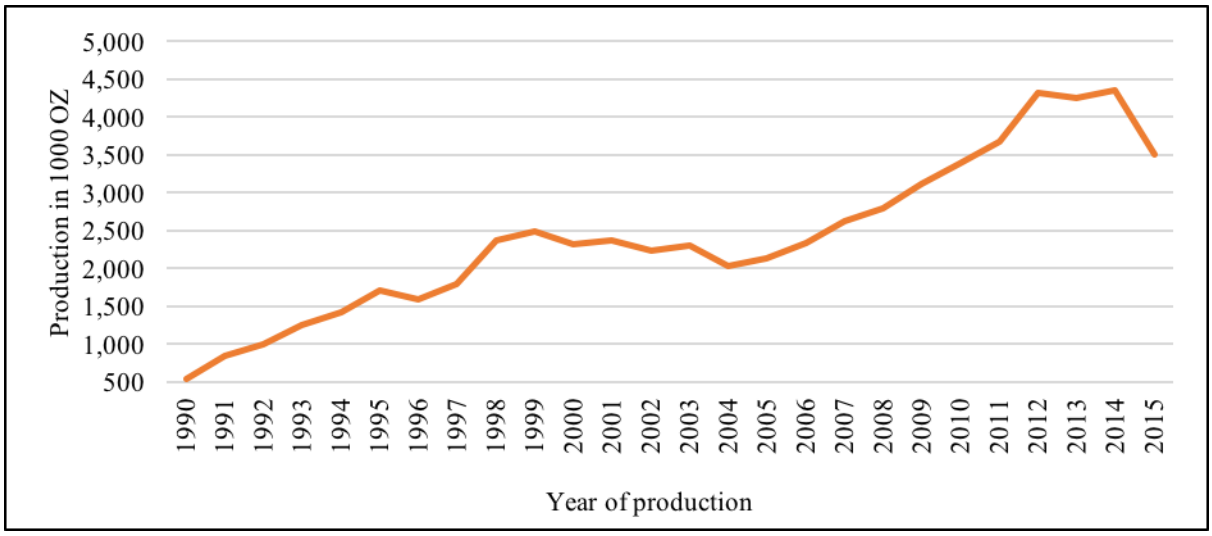


Figure 3: Share of Small-Scale gold mined to the total gold production in Ghana
Data from the Minerals Commission of Ghana, 2017

The ASM sector currently support over 4.5 million people (IIED, 2016). The labor tasks of people working in this sector are diverse, with skilled machine operators, general laborers, supervisors, secretaries, and translators. There is enormous diversity even in the ASM workforce in terms of age, education, gender, and social status. Therefore, children as young as eight and students of all educational levels (primary and high school, college, and post-graduate) actively engage in small-scale gold mining. Approximately 70% of workers are unskilled and provide services such as cleaning, hauling, and on-site trading, while only approximately 30% perform technical tasks involving machinery or clerical functions.

The ASM sector, both legal and illegal, is currently booming. The growth in legal mining operations may be due to the effectiveness of the policy mentioned above and reforms in attracting private investors, while the increase in illegal mining may be due to mass unemployment (i.e., poverty-driven), inadequate enforcement of mining laws that make it easy for miners to ignore regulations, or a combination of both factors. The low capital costs required for starting ASM operations also drive the sector. Various barriers need to be surmounted to improve the efficiency and environmental sustainability of the industry. The 2016 International Institute of Environment and Development report (IIED, 2016, p. 6) pointed to the lack of access to land, financing, and licenses as significant barriers.

It is worth observing again that the ASM sector is believed to play a role in many pressing social, environmental, and human rights challenges in Ghana. Comprehensive and credible research that can inform policies designed to address these challenges is accordingly highly desirable. The information generated by such research can assist mining developers, investors, and other policy actors in constructing development strategies for the sustainable development of the Ghanaian mining industry.

## 1.5. Research problem, objectives, and goals

The following discussion places the research problem, objectives, and normative justifications for the approach taken in the context of relevant literature.

### 1.5.1. The problem statement

The restructuring and formalization of the SSM sector are expected to reduce gold smuggling, increase the national gold production and private investment, create employment, and improve the standard of living because of the competition among small-sized companies

(SSC). The ERP implemented in 1983 was developed to safeguard businesses in the export sector. The mining sector was identified as one of the key sectors in this effort to revitalize the economy, with the formalization of SSM operations given particular attention. Of the natural resources promoted by the national policy to attract investment in Ghana, gold has long been of particular strategic economic importance.

Nevertheless, SSM operations and related businesses are struggling to cope with the growing demands that they assume the social, ethical, and environmental responsibility for their actions in the communities in which they are located. Dissatisfaction has arisen owing to the lack of effective institutional services in terms of the issuing of concessions, monitoring of land ownership rights and mining activities, and enforcement of mining standards, and because of the cooperation among stakeholders. Mining communities have suffered forced evictions from farmlands and violent attacks. The primary motivation for this thesis is the need to appraise institutional roles and their impact on the sustainable development of SSM businesses critically, in particular, a study that takes into account supply chains, human rights, adverse environmental impacts, and sustainable management. To fill this gap in the literature, this thesis has assembled evidence from the Amansie West and Bosomtwe Districts of Ghana's Ashanti Region to answer three critical questions regarding mining, human rights, and environmental challenges:

1. What are the empirical realities of child labor in SSM operations?
2. What are the causes of violence in the SSM sector?
3. How do the empirical conditions under which mining companies and institutions operate relate to their acquisition of SOLs?

Objectives: To address the above research questions, this thesis presents the analyses of human rights and environmental challenges relating to the SSM supply chain and the influence of governing institutions, examining specifically the relationship between resource performance and governance structures. In an effort to assess the motivations for corporations to take responsibility for their actions, the empirical analysis will explore the nature and determinants of child labor and violence in mining communities and how institutions, including corporations, promote sustainable and responsible management of SSM. More specifically, the thesis:

1. describes the empirical conditions of SSM and child labor issues,
2. identifies the determinants of violent conflict in SSM, and
3. analyzes the influence of SSM and institutions on the development of a SOL under the observed current conditions.

### 1.5.2. The justifications and rationale of the study

In addition to providing answers to the analytical assessment of institutional roles and their impact on the sustainable development of the SSM sector, this section of the thesis takes a normative stand in justifying the need for an assessment of SSM in Ghana.

### 1.5.3. Normative justification of the problem

Although problems relating to extractive minerals in Ghana are significant, they do not justify the classification of the output of Ghanaian mines as conflict minerals under the U.S. Dodd-Frank Act or the Heidelberg classification scale (HIIK, 2015) (see section 3.1), as is the case with crystals from countries such as the DRC. Nevertheless, the rate at which SSM operations are arising throughout Ghana, together with the violent conflict, the unsustainable

exploitation of natural resources (in particular, relating to water and land), and other environmental challenges, deserve investigation. The goal here is to characterize SSM-related conflicts, to identify the major causes of these conflicts, to estimate their impact on human rights, and to describe the best practices for the economic organization of transactions through workable institutions or cooperation. These issues are crucial to the survival and development of the mining sector and the full realization of the social benefits that it can offer.

Ineffective institutional management around the monitoring of mining standards and the enforcement of regulations and land property rights (as a means to ensure conflict-free concessions) relating to SSM sector businesses fosters human rights violations, most dramatically in the form of violent conflict. While Ghana's exploitation of natural resources is expected to boost the country's economy, it remains uncertain whether this sector is immune to the so-called resources curse syndrome (ICMM, 2007). If this is the case, the scarcity of current information regarding child labor and exploitation, environmental destruction, and food insecurity in mining communities provides the normative justification for the present research inquiry. The consideration of fundamental human rights, such as the right to live, provides another rationale for the research into any activity that has the potential to incite violence, as according to the United Nations Guiding Principles (UN 2011, pp. 5-6), every individual has the right to enjoy peace and not be killed. This thesis seeks to contribute to the discussion of the prevention and proper management of conflict as a means to address these problems and to improve the understanding of how institutions and corporations can ensure human rights, environmental safety, and sustainability while engaging in mining.

### 1.5.4. Relevance of the argumentation and contribution to the literature

Previous studies of Ghana's mining sector have focused on the problems faced by large-scale operations. Thus, for example, to assess the impact of minerals on the country's macro-economy, Ayee et al. (2004) examined the economic and business prospects of Ghana's mineral extraction industry, including oil and gas exploration. Similarly, Hilson and Yakovleva (2007) conducted a critical analysis of mining-related conflict through a case study of the Gold Star Mining Company, a large-scale firm. Large-scale environmental destruction and human rights abuses, including child labor and violent conflicts, however, usually involve small-scale gold mines. The current IIED (2016) report sought to identify the main barriers in the formalization of ASM in Ghana.

Moreover, there has only been limited analysis of the role of institutions in promoting SSM sector businesses. In the case of Ghana's Ashanti Region, where the country's major mining activities take place, studies on the effectiveness of institutions in these efforts and conflict prevention and resolution are lacking in particular. A survey of earlier studies demonstrates that the focus has been on post-conflict reconstruction (Maconachie, 2016) and that this work has relied on a cross-country data set while failing to consider micro-level factors (Collier et al., 2004; Collier and Hoeffler, 1998; Hoeffler, 2004; Ross, 2014). There has been some analysis of the debate on granting social and legal mining licenses (Jenkins and Yakovleva, 2006; Kurlander, 2001; Lynch-Wood and Williamson, 2007; Moffat and Zhang, 2014; N. Ghauri, 2015; Owen and Kemp, 2012; Prno and Slocombe, 2012), but there has been far less research on the topic in pre-conflict settings or at the level of sub-national data (Koubi et al., 2014).

In attempting to fill this literature gap, this thesis approaches the issues involved from multiple perspectives, taking into account the business, political, and social dimensions of SSM-related activities using approaches developed in the field of institutional and

developmental economics. Presented here are detailed discussions of mining supply chain challenges, including child labor and violence, based on observations of pre-conflict settings. Additionally, this thesis offers insights into the conditions under which mining companies operate and their role in shaping the social perceptions of mining licenses. More importantly, this thesis provides a unique insight into the field of resource management regarding the promotion of businesses in a volatile sector. The discussion of social and legal licenses for mining demonstrates the power of merging concepts to improve the responses to emerging or persistent issues relating to sustainability. In this respect, the focus moves away somewhat from the role of government policy in coordinating SSM activities in Ghana in light of the prevalence of problems associated with SSM. In sum, the thesis is presented as a theoretically sound scientific monograph intended to make a meaningful contribution to the knowledge base that informs policy practitioners and managers in the extractive minerals industry and to inspire other researchers.

This thesis employs an empirical approach that provides the basis for a comprehensive understanding of issues surrounding SSM businesses and the role of government mining policies and institutions. Formal survey techniques combined with qualitative techniques assist in supporting the findings and observations to guarantee a more accurate picture of the situation on the ground. Anthropological approaches can be of use in interpreting insights from the perspectives of local actors, structures, and power relations, but in isolation, they are insufficient in providing a comprehensive account of a wide array of intervening variables. A mixed-methods approach accordingly seems appropriate for the analysis carried out in this thesis. For this analysis, we selected two districts with similar characteristics from within a single region in consultation with various experts from Ghana's Minerals Commission at the national, regional, and district levels.

## 1.6. Choosing the study region

Figure 4 below depicts the regional boundaries of the Ashanti Region on a mineral map of Ghana. The region was chosen for this research because of its long-standing economic importance to the country based on its agriculture and extractive minerals, including both SSM and LSM of gold and diamonds. The Ashanti Region is significant for Ghana's food security; it grows most of the country's staple foods and commercial cash crops, including cocoa beans, owing in part to its rich tropical forest. Indeed, cocoa farming, which is a significant source of foreign exchange in the agricultural sector, is threatened by small-scale gold mining and the associated violent conflict. According to Ghana's Population and Housing Census (2010), the Ashanti Region was home to 19.4% (amounting to 4,780,280 people) of the country's total population in 2010.

While the conditions of doing business in Ashanti are similar to those in most other developing countries, the cost of doing business is relatively lower than in other parts of Ghana. Thus, it is estimated that the investment cost per job in the SSM sector in this region ranges from 10 to 12 USD, and so investing is economically feasible (UN, 1992). The industry thus remains attractive despite numerous social and human rights problems. All these issues demand critical research and analysis.

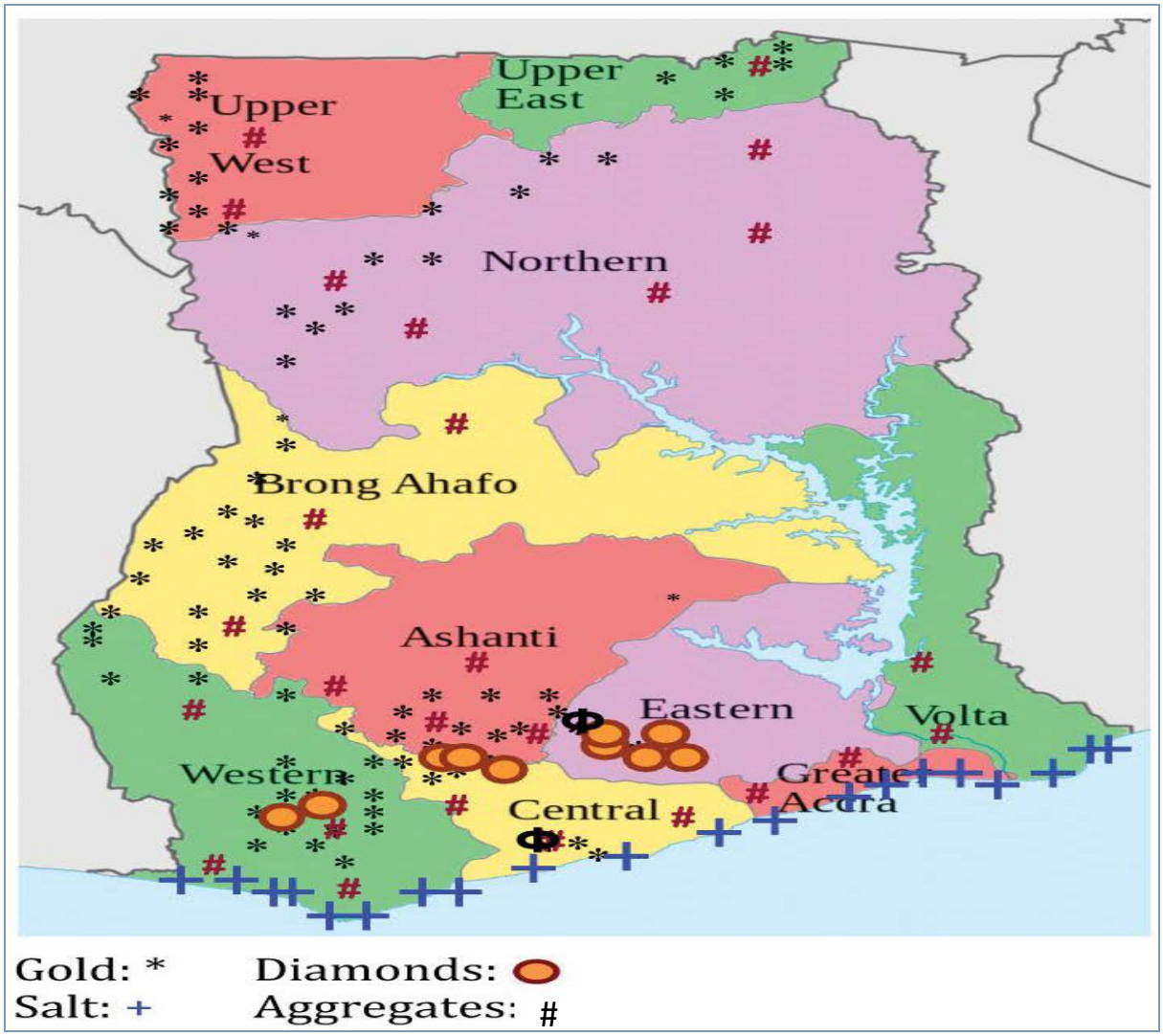


Figure 4: Small-scale mining areas
Source: Adapted from Amankwah (2015) in IIED (2016)

According to the 2010 Population and Housing Census, the Ashanti Region has a high rate of working children aged 5-14 years, with higher rates in rural areas (8.2%) than in urban areas (2.1%). The mining sector employs children aged between 8 and 14 years and more girls (4.8%) than boys (4.7%).[4] Furthermore, the presence of a significant proportion of economically inactive women, especially in the 35-39 age group, calls for investigation, as such inactivity is not expected among those aged less than 70 (GLSS, 2010). On the contrary, the agriculture sector employs the most significant percentage of workers (30.5%), most of

[4] Ghana Statistical Service, 2010, Population and Housing Census for Ashanti Region, p. 108.

whom are women. It might be the case that women are excluded from SSM jobs, and this makes them turn to farm activities. These considerations were the primary reasons for the Ashanti Region to be chosen as the focus of this study.

### 1.6.1. Selection of study districts

Based on discussions with experts regarding Ashanti areas where SSM activities and businesses are concentrated, two districts (Figure 5), Amansie West and Bosomtwe, were selected (see section 3.5.2). The economic importance accorded to these districts is consistent with statements from SSM management officials at Ghana's Mineral Commission, Accra. The two districts have similar socio-economic characteristics regarding mining-related conflict and its effects and their contribution to the production of the region's food, fish, and cash crops such as cocoa in the case of Amansie West. The current national census report identified agriculture as the leading employment sector in these districts, accounting for 59.2% in Amansie West (Ghana Statistical Service 2014a) and 28.1% in Bosomtwe (GSS, 2014).

According to Ghana's Minerals Commission, Amansie West is one of the districts in the Ashanti Region most affected by SSM activities, ahead of Amansie Central, Atwima Mponua, and the Adanse South. Mining and quarrying employ 16.5% of the labor force in Amansie West, making it the second-largest source of employment after the agricultural sector. The sector employs only a few laborers in Bosomtwe, but mining activities in that district are expanding rapidly. As mentioned earlier, SSM is estimated to employ millions of people nationwide (Banchirigah, 2008) and has recently proliferated countrywide.

### 1.6.2. Amansie West district

The district is located within Longitude 6.05 º, 6.35 º and Latitude 1.40 º, 2.05 º North, with a total land area of about 1,230 sq km. As one of the largest districts in the Ashanti region, it hosts major and minor rivers that include the Offin, Oda, Jeni, Pumpin, and Emuna; all of these are essential for fishing, farming, and as a source of drinking water to most rural communities. In addition, the district has four central forest reserves, but illegal mining is threatening the existence of these forests. They include the Oda River Forest Reserve, Apanprama Forest Reserve, Jimira Forest Reserve, and Gyeni River Forest Reserve.

### 1.6.3. Bosomtwe district

The Bosomtwe district is one of the largest in the Ashanti Region. The area is found within the Latitudes 6º 24º South and 6º 43º North and 6º 43º North and Longitudes 1º 15º East and 1º 46º West, with a total land area of about 422,5 sq km. Major and minor rivers run through the district, including the Oda, Butu, Sisi, Supan and Adanbanwe, which are essential for fishing, farming, and as a source of drinking water for most of the rural communities in Amansie West. Among the natural resources endowed with the district include gold, clay, rocks, sand and stone deposits, forest resources, and Lake Bosomtwe, all of which are threatened by illegal mining.

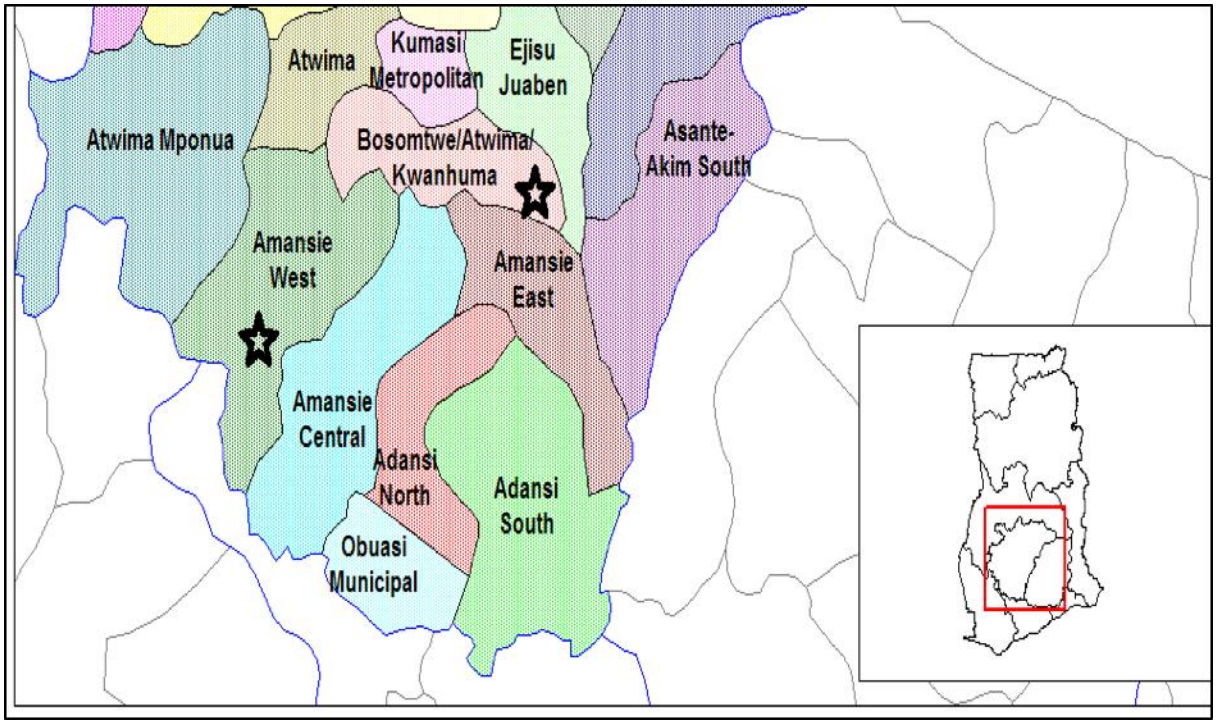


Figure 5: District map showing Amansie West and Bosomtwe districts
Source: Atlas map of Ghana

Each argument put forward in support of this study helps understand why governance structures are crucial in promoting or preventing companies to embark on sustainable and clean mining concerning human rights and socio-economic and environmental issues.

### 1.6.4. Theory applications and argumentations

This thesis primarily applies governance theories in assessing the influence of institutions on the management of SSM activities. However, we used other specific supportive theories in discussing the various themes that emerged in each thematic chapter. A functional governance structure must be in place to promote the small-scale gold mining sector businesses through the coordination of activities of critical levels in the supply chain. Achieving clean mining requires unflinching coordination of efforts from all key institutions

to align their operations within a sound economic governance structure (Kirsten et al., 2009:35).

Figure 6 displays the general governance conceptual framework for this study, which was adopted from Kirsten et al. (2009). For conceptualizing particular objectives, in each chapter, we referenced the specific governance theory. Society is believed to own the useful capital necessary for the establishment of businesses and the development for mutual gains. According to the Department for International Development (DFID) guidelines on sustainable livelihoods (DFID, 1999), this includes natural (tangible and intangible such as clean environment, land, forest, and minerals among others), physical (the necessary infrastructure to support life necessities; physical environment, adequate water supply and sanitation, clean and affordable energy, and access to information among others), human (skills, knowledge, capacity to labor, and good health), social (resources upon which people draw to pursue their livelihood objectives; membership groups, networks and connectedness; and so forth), and financial (the availability of cash or equivalent that supports production or consumption) capital. The existence of these assets may also influence the functional efficiency of intervening structures. For instance, some natural resources capital has been demonstrated as being associated with civil war (Cuvelier et al., 2014; OECD - Development Assistance Committee, 2005; M. L. Ross, 2008; Rustad et al., 2016). The capital is transformed to achieve the desired objectives by both policy actors, business, and the society through the transformation of structures and processes by the intermediate structures of government organization and the private sector utilizing the peculiar method. The social livelihood plan (SLP) demonstrates how society combines available assets to construct diverse portfolios of activities, shaped by the intervening process, to achieve their livelihood objectives. The expected social livelihood outcome (SLO) would include improved income status (that is less or no poverty), enhanced human rights protection (less child labor and less

violence at mining sites), increased well-being (including a safe and clean environment from clean mining), improved food security, and a more sustainable use of natural resources. The first proposition is that the SLO is achievable if institutions are efficient, that is, the economic performance of natural resources in alleviating poverty depends on governance structures.

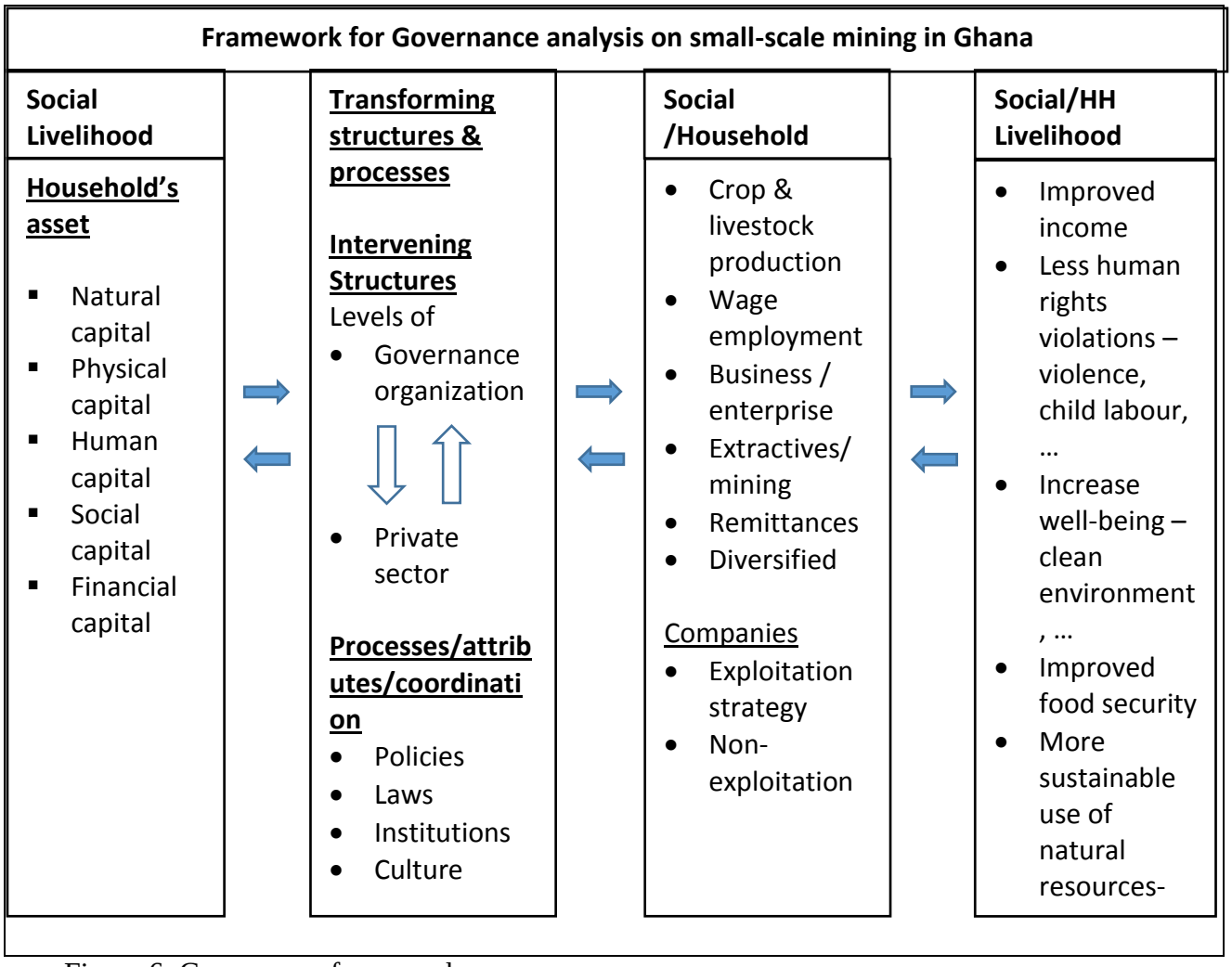



Figure 6: Governance framework
Source: Ideas adapted from (DFID, 1999; Drinkwater and Care, 1999; Ellis, 1999; Dorward and Omamo., 2009:97)

A governance organization can have both short- and long-term effects on the concerns of the private sector, such as SSM, through its policies, laws and regulations, institutions, and culture, allowing a kind of trade-off concerning how it performs its functions. Accordingly,

the second proposition is that, when good governance creates an enabling environment, the private sector, including mining companies, stands to benefit and will produce social output that improves SLOs. Thus, we argue here that SLOs cannot ensure human rights and environmental sustainability when SSM companies employ exploitative strategies and suffer from poor management, thereby increasing social costs as well as the companies' own operating costs in the long term. A non-exploitative approach, by contrast, involves none of these drawbacks.

## 1.7. Justifications for the application of governance theory

Economic governance theories, which represent one branch of governance theory, are useful for the examination of the order, structure, and workability of arrangements for the management of certain specific economic transactions (Wieland, 2014; Williamson, 2005). The commercial activities involved in the production and distribution of resources require coordination and monitoring of traditional and non-traditional institutions (Kirsten et al., 2009) in what Williamson (2005) termed "workable arrangements." According to various conflict theories, the problems relating to inequality are the primary source of the social life competition that leads to all forms of conflict[5] (Collins, 2012; Corte and Montolio, 2014).

The governance of economic transactions involving the harnessing of natural resources, that is, the use and management of natural resources including mining, is intended to reshape the interest and rationale of economic agents in producing social outcomes in hosting communities and countries. To ensure desirable social results, including maintaining competitive industries and corporations in the exploitation of extractive minerals, sound governance is necessary for ordering economic transactions through working arrangements

[5] Lewis Coase (1913-2003) described this competition as "a struggle over values and claims to scarce status, power, and resources in which the aims of the opponents are to neutralize, injure, or eliminate their rivals."

that accommodate both traditional and non-traditional institutions. Economic management is a vital aspect of this effort, and therefore we acknowledge the causal relationship between institutional efficiency and economic development as Chang (2017) argues. Some studies have demonstrated that the interests of shareholders, customers, and regulators are at least in part conflicting and that these stakeholders have little power to coerce companies to mitigate the unintended social consequences for people and the environment (Salzmann and Ionescu-somers, 2005). Hence, managers and shareholders alone cannot be responsible for reducing the adverse effects of mining on the broader society. In other words, we cannot look to companies alone for mitigation strategies. Therefore, there is a need for a holistic governance structure for the economic activities of the mining sector.

There are of course other approaches to natural resources management beyond governance, including transaction costs theory, property rights theory, institutional theories, and legitimacy theories. To manage the adverse effects associated with mining appropriately, this study applies the economic governance theory in the discussions on how to achieve this objective. Part of the appeal of this approach lies in its flexibility when it comes to its use in combination with other theories.

To be more specific, the economic governance theory helps to assess the various factors that shape the behavior of economic agents in the SSM sector regarding the management of extractive minerals and land resources and therefore plays a role in determining the levels of conflict, environmental destruction, and adverse effects on the rural way of life, child labor, and exploitation. These issues involve politics, society, and business and require the careful attention of economic governance structures to realize both social and competitive outcomes. This study explores and synthesizes the benefits of the unwritten rules of society that have guided SSM transactions as much as codified formal laws. Economic governance can be

integrated into existing arrangements to update or re-orient them by forming or strengthening working arrangements that favor social and economic harmony.

The argument here is that the best way to create social value in the mining supply chain is through the application of a sound economic governance theory in preference to other theories. Thus, for instance, the property rights theory concerns efforts to ensure effective ownership rights of various resources but is by itself insufficient to address the human rights challenges associated with the management of the mining supply chain. Moreover, equal property rights alone cannot ensure the effective functioning of the extractive minerals trade when it comes to managing the adverse impacts associated with mining since it assumes an efficient land market. Unfortunately, owing to weak governance and limited institutional capacity, such a market environment barely exists for either farming or mining land in Ghana. The land market that is available for infrastructural development remains insufficient to mitigate the conflicts in this sector. Therefore, an effective institutional framework at the economic governance level is necessary (Williamson, 1994, p. 3).

Similarly, the transaction cost theory as proposed by Coase (1990) is not applicable here owing to the non-zero costs of transactions for negotiations, such as valuing assets for contracts, contract tendering, bidding, and the transfer and purchase of the rights of a given resource. At a more fundamental level, the unending steps of the various bureaucratic procedures that must be followed by applicants for mining licenses in Ghana are just one example of the transaction costs involved in SSM activities.[6] Furthermore, based on the agency theory, the proposal to reduce the high cost of monitoring transactions and agents is not feasible owing to unavoidable shirking in the management of the problem at hand. The issues of violent conflict, child labor and exploitation, land rights disputes, and the unintended negative impact of mining on the environment and the livelihood of rural mining

[6] For the procedures involved in obtaining a mining license, see the Minerals Commission's mining policy document in Mining Act 703 of 2006.

households cannot be coordinated expertly by the various agents in the absence of effective mining governance. This proposal would instead increase transaction costs without solving the problem of agents' self-interest.

Suchman (1995, p. 574) defined the legitimacy theory as the "generalized perception or assumption that the actions of an entity are desirable, or appropriate within some socially constructed system of norms, values beliefs, and definitions." Although companies manage legitimacy as a means of surviving by adapting to social expectations and selecting stakeholders that support their agendas (Oliver et al., 2006), this approach is less useful for managing the problem at hand. As companies are unable to predict the (changing) expectations of society, the legitimacy theory is only of limited use in explaining how to deal with a specific issue. It is useful to note that the perceptions and expectations of a society are not static; they evolve in response to the empirical conditions of companies. In this respect, the impact of mining on the social, environmental, and economic structures of host communities would be expected to shape societal perceptions in ways that cannot be accounted for by the legitimacy theory.

By focusing on institutions and a set of related rules for governing the interactions of economic agents within the action arena, economic governance theory offers a framework for understanding the nature of both formal and informal institutions regarding the fundamental economic problems that they try to solve. These problems include management of shared resources, such as fish stock, pastures, land, minerals (mining), woods, lakes, and groundwater (Ostrom, 1990). The crucial aspects of formal institutions include rules, regulations, and monitoring enforcement strategies that protect property rights and transfer. Essential elements of informal institutions involve working arrangements that support production and transactions involving specific economic or social goods outside the context of the markets (cf. Williamson, 2005; Wieland, 2014).

Wieland (2014, p. 16) has characterized governance ethics concerning the realization of the inherent moral dimensions of economic transactions. These include formal and informal institutions at work within a given institutional setting, individual self-monitoring, the mechanism of the person involved, and the nature of the coordination and corporation mechanisms of economic organizations. In other words, governance ethics help to integrate morality into commercial transactions.[7] This thesis empirically discusses and analyses the critical aspects of moral-economic problems relating to Wieland's governance ethics, such as child labor and food security threats in mining communities. Data from field observations can reveal how small- and medium-sized mining companies obtain SOLs. The goal, then, is to examine how the management of moral, economic problems shapes the perceptions of society regarding a company's right to mine.

No attempt is made to integrate Wieland's propositions in this thesis; rather, the analysis focuses on how institutions and mining corporations through their functions govern or manage human rights and environmental challenges, for example, by promoting clean mining and a competitive SSM sector within the framework of economic governance. State institutions have the power to inhibit the provision of public goods through private investments (Berman et al., 2014). As a contribution to the literature on private investment in the SSM sector, this thesis examines Ghana's mining policy to identify the functions of institutions and modes of economic governance that can promote SSM sector businesses.

[7] Wieland, Governance Ethics, Springer, 2014. For Wieland, governance ethics concerns the performance capacity of the economy in realizing a society's moral claims in terms of integrity, compliance management (e.g., the avoidance of child labor, violent conflicts, and environmental destruction in mining areas), and social responsibility in economic activities.

## 1.8. Overview of key concepts and definitions

In the discussions that follow, this thesis emphasizes sustainability, mining supply chain human rights, child labor, and conflict management, and the interplay between good governance, institutions, and companies concerning resource management; concepts that will be discussed in turn.

### 1.8.1. Theoretical definition of terms

#### 1.8.1.1. Good governance principles and institutional structures

Good governance used in international development literature describes how public institutions lead public affairs and supervise public resources (Cundill and Fabricus, 2010). Governance provides the social environment that allows rulemaking, joint decision action, and institutions for social coordination (Dietz et al., 2003). This thesis, therefore, defines the term good governance to include the interaction among the various structures such as traditional Ghanaian society (social structures), the political institutions (mainly state institutions), and the corporate body and how these bodies make decisions, share power, and exercise responsibilities that ensure clean mining including accountability toward the management of natural resources. Good governance would support the interest of stakeholders of a company and the community's in a balance concerning clean mining.

An interplay between good governance exists (for example, making rules and laws and law enforcement) and providing an enabling environment, for instance, constituting viable institutions to make sure that structures are in place to support the correct observation of conventions, codes of conduct, and rules by all stakeholders including companies. Weak governance and institutional infrastructure, for example, may have a direct adverse effect on growth (El Anshasy & Katsaiti, 2013), even though poor growth may also be brought about

by weak governance, and vice versa. The causal relation may account for the interplay between good governance (both political and traditional structures), institutions, and company practices.

This study argues that good governance principles would ensure that political structures support the effective functioning of institutions and could make institutions viable tools that encourage responsible mining practices. The institutions here would include both state political, regulatory institutions (the lands commission, minerals commission, environmental protection agencies, and so forth) and non-state traditional institutions such as local traditional leaders, and the peace council.

### 1.8.2. Human rights challenges of the mining supply chain

At this point, we survey some of the human rights challenges or violations associated with mining discussed in the literature. There are challenges peculiar to artisanal mining in developing countries, including Ghana, regarding the United Nations Human Rights guiding the principles of business (2011).

These guiding principles recognize that businesses play vital roles in the societies in which they operate. The first and second principles emphasize the responsibilities of companies to respect international and national rules relating to human rights and to prevent abuses thereof; the third principle ensures that corporations enforce international, federal, and local human rights laws. Respect for human rights in business operations must take into account not only workers but also the broader society. The state, on the other hand, has human rights duties regarding legislation and enforcement, effective governance, and supporting institutions that protect their citizens' rights to live in a healthy environment, to benefit from natural resources, and to enjoy peace in their communities. These considerations

are essential in light of the potential risks that mining activities pose to Ghanaian communities.

Businesses in gold mining and other extractive enterprises have long been associated with high social risks, including those relating to human rights and the environment. It is these external aspects that threaten the appeal and competitiveness of extractive industries (Rees et al., 2012). Exploitation of minerals in Ghana does not differ qualitatively from elsewhere; there have been significant unintended effects on humans and the environment. Extractive minerals such as gold, tin, tungsten, coltan, and copper are important for domestic and industrial uses in appliances, machinery, and tools in daily activities, including the components of automotive and aircraft engines (the transportation and aviation sectors), surgical instruments (health), and capacitors (electronic and consumer industries). This sector deserves more significant attention because of the worldwide demand for minerals and the supply chain challenges associated with them.

However, the mining of these metals in most cases involves children who often face severe risks to their health, safety, and prospects, especially in ASM activities (Hinton, 2005; ILO, 2005). Violence and conflict over the exploitation of natural resources, including mining, is a related area of concern. The petroleum industry has been associated with economic inequality, elite capture, denial of access to resources, poverty, and political corruption (Langer and Stewart, 2013; Humphreys et al., 2008). The literature described individual countries as having a high risk of conflict owing to the civil war that was caused by the mismanagement of mining operations (OECD, 2013).

### 1.8.3. Sustainability

Attempts to address sustainability have become management tools for resolving conflict in large-scale projects (Franks et al., 2014) and crucial considerations concerning business

survival and community growth (Popa and Salanță, 2014). Thus, firms that behave responsibly and have impressive records for sustainability may enjoy enhanced competitiveness owing to positive relations with the communities in which they operate. The demand for sustainability in the mining sector requires managers to think creatively about identifying efficient ways of using natural resources that minimize the environmental impact on the broader society. The success of most activities that significantly affect the environment depends on the sustainable management of these effects on society, mining governance and policy schemes, and the empirical conditions of mining operations. The understanding of sustainability in this thesis refers to mining activities that promote less negative (or more positive) social outputs as well as competition among corporations through the efficient use of both the environment and workers. To be precise, ensuring clean mining as proposed by this thesis involves facilitating sustainability regarding environmental and socio-economic structures and SSM enterprises.

### 1.8.4. Organization of the thesis

The critical observations presented in this study relate to the reality of child labor in SSM. Among the main issues addressed include whether mining causes conflict; whether gold itself or instead management of its extraction is problematic; why land resource ownership issues are associated with conflict between households and mining communities; whether mining offers greater remuneration than farming; and, if so, why rural households and Ghanaian society, in general, oppose granting SOLs to small-scale gold mining businesses through the present moratorium.

The remainder of the thesis is organized as follows. Chapter 2 focuses on child labor in SSM at the supply level, using a mixed methods approach to identify the reasons why mining managers employ children. Specific questions explored include the continued employment of

children when machines are available and why parents encourage or allow their children to participate in such a dangerous activity. Chapter 2, in short, presents an empirical analysis of the human rights challenges confronting the SSM sector in the Ashanti Region.

Chapter 3 provides the econometric estimations of the frequency and determinants of human rights violations in SSM communities and concludes by identifying the predictive factors, such as horizontal inequalities and insufficient regulatory monitoring of land rights, for the adverse outcomes of mining, in particular demonstrating the association of a significant ethnic group with certain types of violence in mining communities. The discussion in this chapter touches on the nature of common forms of conflict in these communities, the frequency with which and ways in which households encounter conflict, and potential mitigation policies; it thus centers on the horizontal inequality and greed and grievance hypotheses.

Chapter 4 presents empirical evidence on the role of governance in the development of the small-scale gold mining sector. In promoting this development, the two critical issues are the negative impacts of mining on the perceptions of social licenses for mining and the empirical conditions of extraction in the context of the current moratorium on SSM in Ghana. In this chapter, the analysis focuses on the influence of governance and mining corporations on the availability of SOLs in SSM communities in the Ashanti Region. The study in this chapter is designed to reveal the influence (roles) of institutions and the empirical conditions of mining corporations on obtaining an SOL. Taken into account are situations in which the impact (mainly harmful) of mining on aspects of the environment, such as water and land resources, has been significant.

Chapter 5 offers a summary of the thesis, a discussion of the significant results, and the critical policy propositions. This concluding chapter also highlights the challenges that need

to be explored in future research. As a further contribution to the literature on SSM, this thesis hopes to serve as the basis for a published book.

**Reference**


Addy, S. N.,1998. Ghana: revival of the mineral sector. Resources Policy, 24(4), 229 - 239.

Akabzaa, T., 2009. Mining in Ghana: implications for national economic de- velopment and poverty reduction. In: Campbell, Bonnie (Ed.), Mining in Africa: Regulations and Development. Pluto Press, New York, 25–65.

Amankwah, R, 2015. Presentation at Inception Workshop for the ratification and early implementation of the Minamata Convention on Mercury Project in the Republic of Ghana, Accra, 22 October 2015. Cited in IIED, 2016.

Lincoln A., Bursey D., V.W., 2015. Rethinking Social Licence to Operate: A Concept in Search of Definition and Boundaries., BCBC: Environment and Energy Bulletin.

Foreign Affairs, 2008. Blood Barrels Why Oil Wealth Fuels Conflict By Michael L. Ross.

African Treade Policy, 2011. The Challenges and Opportunities of Ghana ' s Offshore Oil Discovery Africa Trade Policy Notes.

Allen, S., Cunliffe, A.L., Easterby-Smith, M., 2017. Understanding Sustainability Through the Lens of Ecocentric Radical-Reflexivity: Implications for Management Education. J. Bus. Ethics. doi:10.1007/s10551-016-3420-3

Anca M. Cote and Kevin K. Tsui, 2010. Oil and Conflict: What Does the Cross-Country Evidence Really Show? * Anca M. Cotet † and Kevin K. Tsui ‡ Ball State University and Clemson University February 2010. Business 1–39.

Andrews, N., 2016. Challenges of corporate social responsibility (CSR) in domestic settings: An exploration of mining regulation vis-??-vis CSR in Ghana. Resour. Policy 47, 9–17. doi:10.1016/j.resourpol.2015.11.001

Anker, R., 2000. Conceptual and research frameworks for the economics of child labor and its elimination. ILO Work. Pap.

Appiah, M.K., Feike, T., Wiredu, A.N., Mamitimin, Y., 2014. Cotton Production, Land Use Change and Resource Competition in the Aksu-Tarim River Basin, Xinjiang, China. Q. J. Int. Agric. 53, 243–261.

Armah, F.A., Boamah, S.A., Quansah, R., Obiri, S., Luginaah, I., 2016. Working conditions of male and female artisanal and small-scale goldminers in Ghana: Examining existing disparities. Extr. Ind. Soc. 3, 464–474. doi:10.1016/j.exis.2015.12.010

Armah, F.A., Luginaah, I., Yengoh, G.T., Taabazuing, J., Yawson, D.O., 2014. Management of natural resources in a conflicting environment in Ghana: unmasking a messy policy problem. J. Environ. Plan. Manag. 57, 1724–1745. doi:10.1080/09640568.2013.834247

Aryee, B.N.A., 2001. Ghana ' s mining sector : its contribution to the national economy. Resour. Policy 27, 61–75.

Ayee, J., Soreide, T., Le, T.M., 2011. Political Economy of the Mining Sector in Ghana. Policy Res. Work. Pap. 5730 48.

Bell, C., Wolford, S., 2014. Oil Discoveries, Shifting Power, and Civil Conflict. Int. Stud. Q. 59, 517–530. doi:10.1111/isqu.12150

Berman, E., Felter, J., Kapstein, E., Troland, E., 2012. Predation, Economic Activity and Violence: Evidence from the Philippines. NBER Work. Pap. 18375.

Berman, E., Felter, J.H., Shapiro, J.N., Troland, E., 2013. Modest, secure, and informed: Successful development in conflict zones. Am. Econ. Rev. 103, 512–517. doi:10.1257/aer.103.3.512

Berman, N., Couttenier, M., Rohner, D., Thoenig, M., 2014. This Mine is Mine! How minerals fuel conflicts in Africa. Discuss. Pap. No. 10089 44.

Bitsch, V., 2005. Qualitative Research: A Grounded Theory Example and Evaluation Criteria. J. Agribus. 231, 75–91.

Bush, R., 2009. "Soon there will be no-one left to take the corpses to the morgue": Accumulation and abjection in Ghana's mining communities. Resour. Policy 34, 57–63. doi:10.1016/j.resourpol.2008.02.002

Buxton, A., 2012. MMSD + 10 : reflecting on a decade of mining and sustainable development. In: Proceedings of the IIED Sustainable Markets Discussion Paper. London UK.

Carroll, A.B., Shabana, K.M., 2010. The Business Case for Corporate Social Responsibility : A Review of Concepts , Research and Practice. Int. J. Manag. Rev. doi:10.1111/j.1468-2370.2009.00275.x

Chang, H., 2017. Institutions and economic development : theory , policy and history 473–498. doi:10.1017/S1744137410000378

Collier, P., Hoeffler, A., 1998. On economic causes of civil war. Oxf. Econ. Pap. 50, 563–573.

Collier, P., Hoeffler, A., Söderbom, M., 2004. On the Duration of Civil War. J. Peace Res. 41, 253–273. doi:10.1177/0022343304043769

Crawford, G., Botchwey, G., 2016. Conflict, collusion and corruption in small-scale gold mining in Ghana: Chinese miners and the state. Colloquium Paper No.48., in: Global

Governance/politics, Climate Justice & Agrarian/social Justice: Linkages and Challenges. The Hague, Netherlands.

Cuvelier, J., Vlassenroot, K., Olin, N., 2014. Resources, conflict and governance: A critical review. Extr. Ind. Soc. 1, 340–350. doi:10.1016/j.exis.2014.07.006

Dahlsrud, A., 2008. How Corporate Social Responsibility is De fined: an Analysis of 37 Definitions. Corp. Soc. Responsib. Environ. Manag. 13, 1–13. doi:10.1002/csr

Davis, R., Franks, D., 2014a. "Costs of Company-Community Con ict in the Extractive Sector" Corporate Social Responsibility Initiative Report No. 66. Cambridge MA: Harvard Kennedy School.

Davis, R., Franks, D., 2014b. Costs of Company-Community Con ict in the Extractive Sector 66.

Department for International Development, P. by K.P.C.J.D.W.A., 2000. Design and pilot implementation of a model scheme of assistance to small scale miners. Starffordshire UK.

DFID, (Departement for International Development), 1999. Sustainable Livelihoods Guidance Sheets Framework Introduction Vulnerability Transforming. Context 26. doi:10.1002/smj

Dixit, A., 2003. On Modes of Economic Governance. Econometrica 71, 449–481. doi:10.1111/1468-0262.00415

Dominic P. Parker, B.V., 2015. Resource Cursed or Policy Cursed? U.S. Regulation of Conflict Minerals and the Rise of Violence in the Congo* 1. doi:10.1017/CBO9781107415324.004

Drimmer, J.C., Phillips, N.J., Llp, J., 2010. Sunlight for the Heart of Darkness: Conflict Minerals and the First Wave of SEC Regulation of Social Issues 86, 1–23.

Dubiński, J., 2013. Sustainable Development of Mining Mineral Resources. J. Sustain. Min. 12, 1–6. doi:10.7424/jsm130102

Eli Berman, Joseph Felter, E.K. and E.T., 2014. Predation , Taxation , Investment , and Violence : Evidence from the Philippines.

Emmanuel, A.O., 2015. Mining and conflict in the Akyem Abuakwa Kingdom in the Eastern Region of Ghana , 1919 – 1938 2, 480–490. doi:10.1016/j.exis.2015.04.002

Epstein-Reeves, J., Weinreb, E., 2013. Pioneers of Sustainability - Lessons from the trailblazers, WeinrebGroup.com. Chicago.

FAO - ISEAL Alliance Discussion Paper, 2010. A Conceptual Framework for Progressing Towards Sustainability in the Agriculture and Food Sector.

Franks, D.M., McNab, K, Brereton, D, Cohen, T, Weldegiorgis, F, Horberry, T, Lynas, D,

Garcia- Vasquez, M, Oñate Santibáñez, B, Barnes, R and McLellan, B., 2016. Designing Mining Technology for Social Outcomes: Final Report of the Technology Futures Project. Brisbane.

Franks, D.M., Davis, R., Bebbington, A.J., Ali, S.H., Kemp, D., Scurrah, M., 2014. Conflict translates environmental and social risk into business costs. Proc. Natl. Acad. Sci. U. S. A. 111, 7576–81. doi:10.1073/pnas.1405135111

Geenen, S., 2014. Dispossession, displacement and resistance: Artisanal miners in a gold concession in South-Kivu, Democratic Republic of Congo. Resour. Policy 41, 90–99. doi:10.1016/j.resourpol.2013.03.004

Ghana Chamber of Mines, 2015. Mining in Ghana – What future can we expect ? Mining : Partnerships for Development 13–39.

Ghana Chamber of Mines, 2014. Report on the Performance of the Mining Industry ( 2014 ). Accra.

Ghana Statistical Service, 2014a. 2010 Population and Housing Census; Profiel on Amansie west district. Accra.

Ghana Statistical Service, 2014b. Ghana Living Standards Survey Round 6; Labour Force Report.

Goel, M., Ramanathan, M.P.E., 2014. Business Ethics and Corporate Social Responsibility – Is there a Dividing Line? Procedia Econ. Financ. 11, 49–59. doi:10.1016/S2212-5671(14)00175-0

Government of Ghana, 2009. Government of Ghana's Response to United States Department of Labour's Report on Child /Forced Labour in Foreign Countries. Accra.

Greene, W., Hensher, D., 2009. Modeling ordered choices. Unpubl. Manuscr. 1–278. doi:10.1037/0021-9010.91.1.97

GSS, 2010 Population and Housing Census, Atwima kwanwoma district.

Hailu, D., Rendtorff-Smith, S., Gankhuyag, U., Ochieng, C., 2012. Toolkit and Guidance for Preventing and Managing Land and Natural Resources Conflict. United Nations Interag. Framew. Team Prev. Action 51. doi:10.1038/206985b0

Hentschel, T., Hruschka, F., Gmbh, P., 2003. Artisanal and Mining Challenges and Opportunities.

HIIK, H., 2015. Conflict Barometer 2015. No. 24. By Heidelberg Institute for International Conflict Research. Heidelberg.

Hilson, G., 2010. Child labor in African artisanal mining communities: Experiences from Northern Ghana. Dev. Change 41, 445–473. doi:10.1111/j.1467-7660.2010.01646.x

Hilson, G., 2009. Challenges with Eradicating Child labor in the Artisanal Mining Sector : A

case study of the Talensi-Nabdam District , Upper East Region of Ghana. Pap. Deliv. to Rethink. Extr. Ind. Conf. York Univ. Toronto, 5-7 March 2009 1–25.

Hilson, G., 2002. An overview of land use conflicts in mining communities. Land use policy 19, 65–73.

Hilson, G., Hilson, A., 2015. poverty and sustainability Critical reflections on the formalisation of small-scale mining in Ghana.

Hilson, G., Yakovleva, N., 2007. Strained relations: A critical analysis of the mining conflict in Prestea, Ghana. Polit. Geogr. 26, 98–119. doi:10.1016/j.polgeo.2006.09.001

Hoedo, A., 2014. Th he Effe ects of Small Scale Gold G M ining o on Livin ng Con nditions s : A Ca se Stud dy of th he West t Gonja a Distric ct of Ghana a 151–164.

Hoeffler, P.C. and A., 2004. Greed and grievance in civil war. Int. Aff. 56, 563–595. doi:10.1093/oep/gpf064

International Council on Mining & Metals, 2007. Ghana Country Case Study The challenge of mineral wealth : using resource endowments to foster.

International Council on Mining & Metals, 2015. Mining in Ghana – What future can we expect ? Mining : Partnerships for Development 13–39.

International Institute for Environment and Development (IIED), 2001. A contextual review of the Ghanaian small-scale mining industry, Mining, Minerals and Sustainable Development. London UK.

International Labour Organizations, 2007. G irls in M ining: Research findings from Ghana, Niger, Peru and the United Republic of Tanzania. Switzerland.

IIED. (2016). International Institute for Environment and Development (IIED) Country Report. Artisanal and small-scale gold mining in Ghana Evidence to inform an 'action dialogue'.

ISSER. (2016). The State of the Ghanaian Economy in 2015. Isser, 246.

Jeffrey A. Frankel, 2010. THE NATURAL RESOURCE CURSE: A SURVEY (No. 15836), NBER Working Paper Series.

Jenkins, H., Yakovleva, N., 2006. Corporate social responsibility in the mining industry: Exploring trends in social and environmental disclosure. J. Clean. Prod. 14, 271–284. doi:10.1016/j.jclepro.2004.10.004

Jennifer.J., H., 2005. Communities and Small-Scale Mining: an Integrated Review for Development Planning. Washington DC. NY.

Jonathan, O., Isaac, A., 2014. Environmental and rural livelihoods implications of small-scale gold mining in Talensi-Nabdam Districts in Northern Ghana. J. Geogr. Reg. Plan. 7, 150–159. doi:10.5897/JGRP2014.0447

Kemp, D., Worden, S., Owen, J.R., 2016. Differentiated social risk: Rebound dynamics and sustainability performance in mining. Resour. Policy 50, 19–26. doi:10.1016/j.resourpol.2016.08.004

Kessey, K.D., Arko, B., 2013. Small Scale Gold Mining and Environmental Degradation , in Ghana : Issues of Mining Policy Implementation and Challenges Introduction Ghana has a long history of small scale gold mining , but at the peak of colonial exploration ; Europeans introduced larg 5, 12–30.

Kirsten, J.F., Dorward, A.R., Poulton, C., Vink, N., 2009. Institutional Economics Perspectives on African Agricultural Development. doi:10.2499/9780896297814BK

Koubi, V., Spilker, G., Böhmelt, T., Bernauer, T., 2014. Do natural resources matter for interstate and intrastate armed conflict? J. Peace Res. 51, 1–17. doi:10.1177/0022343313493455

Kurlander, L.T., 2001. Newmont Mining : The social license to operate Newmont Mining : The social license to operate 1–4.

Kusi A. Michael, and W.J., 2016. Is Eradicating Child labor by the Year 2025 Feasible? Insights from Small-Scale Mining Operators in the Amansie West District of Ghana. Br. J. Econ. Financ. Manag. Sci. 11, 91–106.

Labour, I., Organization, 2003. Report for discussion at the Tripartite Meeting on Social and Labour Issues in Small-scale Mines. Geneva.

Langer, A., Stewart, F., 2013. Horizontal Inequalities and Violent Conflict: Conceptual and Empirical Linkages. Cent. Res. Peace Dev. - Work. Pap. doi:10.4324/9780203105962.ch9

Lynch-Wood, G., Williamson, D., 2007. The social licence as a form of regulation for small and medium enterprises. J. Law Soc. 34, 321–341. doi:10.1111/j.1467-6478.2007.00395.x

Macartan Humphreys, Weinstein, J.M., 2008. Who Fights? The Determinants of Participation in CivilWar. Am. J. Pol. Sci. 52, 436–455.

Maconachie, R., 2016. The extractive industries , mineral sector reform and post-con flict reconstruction in developing countries. Extr. Ind. Soc. 3, 313–315. doi:10.1016/j.exis.2016.03.004

Majoch, A.A.A., Hoepner, A.G.F., Hebb, T., 2016. Sources of Stakeholder Salience in the Responsible Investment Movement: Why Do Investors Sign the Principles for Responsible Investment? J. Bus. Ethics 140, 1–52. doi:10.1007/s10551-016-3057-2

Maystadt, J.-F., Luca, G. De, G.Sekeris, P., John Ulimwengu, 2014. Mineral resources and conflicts in DRC: A case of ecological fallacy? Oxf. Econ. Pap. 66, 721–749. doi:10.1093/oep/gpt037

International Institute for Environment and Development (IIED), 2016 Country Report. Artisanal and small-scale gold mining in Ghana Evidence to inform an 'action dialogue'- pubs.iied.org.

Carson M., S.C., Dickman J., Gummerson E., Lee T., Miao Y., Teranishi N., Tully C., and Uregian C., 2005. Managing Mineral Resources through Public-Private Partnerships. Working paper WWS591c, Woodrow Wilson School of Public and International Affairs. Princeton University, Priceton NY.

Minerals Commission of Ghana, 2015. Artisanal & Small Scale Mining (ASM) Framework.

Minerals Commission of Ghana, 2006. Minerals and Mining Act , 2006 1–59.

Moffat, K., Zhang, A., 2014. The paths to social licence to operate: An integrative model explaining community acceptance of mining. Resour. Policy 39, 61–70. doi:10.1016/j.resourpol.2013.11.003

N.Ghauri, B.I.P. and P., 2015. Determinants influencing CSR practices in small and medium sized MNE subsidiaries : A stakeholder perspective. J. World Bus. 50, 1–33.

O'Brien, R.M., 2007. A caution regarding rules of thumb for variance inflation factors. Qual. Quant. 41, 673–690. doi:10.1007/s11135-006-9018-6

Oecd, 2013. OECD - Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, OECD. doi:10.1787/9789264185050-en

OECD - Development Assistance Committee, 2005. Valuable Minerals and Violent Conflict 1–10.

Ohmura, H., 2012. Natural Resources and the Dynamics of Civil War Duration and Outcomes 1–29.

Owen, J.R., Kemp, D., 2014. "Free prior and informed consent", social complexity and the mining industry: Establishing a knowledge base. Resour. Policy 41, 91–100. doi:10.1016/j.resourpol.2014.03.006

Owen, J.R., Kemp, D., 2012. Social licence and mining : A critical perspective. Resour. Policy 1–7. doi:10.1016/j.resourpol.2012.06.016

Owusu, O., Wireko, I., Mensah, A.K., 2016. The performance of the mining sector in Ghana: A decomposition analysis of the relative contribution of price and output to revenue growth. Resour. Policy 50, 214–223. doi:10.1016/j.resourpol.2016.10.006

Patel, K., Rogan, J., Bebbington, A., 2016. Evaluating conflict surrounding mineral extraction in Ghana : Assessing the spatial interactions of large and small-scale mining. Extr. Ind. Soc. 3, 450–463. doi:10.1016/j.exis.2016.01.006

Paul Co, Anke Hoeffl, P.L.B., 2003. Confl ict Minerals by Cold War, United Nations, Development Program 216, 82–88.

Pies, I., Hielscher, S., Beckmann, M., 2009. Moral Commitments and the Societal Role of Business : An Ordonomic Approach to Corporate Citizenship. Bus. Ethics Q. 3, 375–401.

Popa, M. and Salanță, I., 2014. Corporate social responsibility versus corporate social iresponsibility M & M. Manag. Mark. Challenges Knowl. Soc. 9, 135–144.

Porter M.E., and Mark R. Kramer B., 2011. Capitalism is under siege. Creating Shared Value. Harvard Bus. Rev. 89, 62–78. doi:10.1108/09600039410055963

Prno, J., 2013. An analysis of factors leading to the establishment of a social licence to operate in the mining industry. Resour. Policy 38, 577–590. doi:10.1016/j.resourpol.2013.09.010

Prno, J., Scott Slocombe, D., 2012. Exploring the origins of "social license to operate" in the mining sector: Perspectives from governance and sustainability theories. Resour. Policy 37, 346–357. doi:10.1016/j.resourpol.2012.04.002

Precious Minerals Marketing Company (PMMC), 2016. Gold export from the small-scale mining 1989 -2009.

Rees, C., Kemp, D., Davis, R., 2012. Conflict Management and Corporate Culture in the Extractive Industries: A Study in Peru 1–38.

Ross, M., 2013. The Politics of the Resource Curse: A Review. SSRN [online] http//ssrn. com/abstract 1–29.

Ross, M., 2008. But seriously: does oil really hinder democracy?

Ross, M.L., 2014. What have we learned about the resource curse ? 1–28.

Ross, M.L., 2008. Does Oil Hinder Democracy? World Polit. 53, 325–361. doi:10.1353/wp.2001.0011

Ross, M.L., 1999. The Political Economy of the Resource Curse. World Polit. 51, 297–322. doi:10.2307/25054077

Royal Swidish Academy of Sciences, 2009. Economic governance: Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2009. [WWW Document].

Rustad, S.A., Østby, G., Nordås, R., 2016. Artisanal mining , con fl ict , and sexual violence in Eastern DRC. Extr. Ind. Soc. 3, 475–484. doi:10.1016/j.exis.2016.01.010

Salzmann, O., Ionescu-somers, A.; U.S., 2005. Corporate license to operate ( BCS ) - review of the literature and research options. Forum for CSM. Lausanne, Switzerland.

Stoop, N., Buraye, J.K., Verpoorten, M., 2016. Relocation, reorientation, or confrontation? Insights from a representative survey among artisanal miners in Kamituga, South-Kivu (No. IOB 2016-09. ISBN 2294-8643).

Tschakert, P., Singha, K., 2007. Contaminated identities: Mercury and marginalization in Ghana's artisanal mining sector. Geoforum 38, 1304–1321. doi:10.1016/j.geoforum.2007.05.002

United Nations, 2015. Transforming Our World: the 2030 Agenda for Sustainable Development 1. New York.

United Nations Human Rights, 2011. Guiding Principles on Business and Human Rights Guiding Principles on Business and Human Rights 1–35.

United States Deapartment of Labour's Bureau of International Labour Affairs, 2013. Ghana Ghana.

United States Institute of peace, 2007. Natural Resources , Conflict , and Conflict Resolution. Washington DC. NY.

USAID, 2005. Minerals & Conflict. A Toolkit For Intervention.

van Duuren, E., Plantinga, A., Scholtens, B., 2016. ESG Integration and the Investment Management Process: Fundamental Investing Reinvented. J. Bus. Ethics 138, 525–533. doi:10.1007/s10551-015-2610-8

Wieland, J., 2014. Governance Ethics: Global value creation, economic organisation and normativity. Berlin et al.: Springer., Berlin.

Wolff, S., 2004. Economics of Conflict and Peace.

World Bank, 2011. Political economy of the mining sector in Ghana. The World Bank Africa Region, Public Sector Reform and Capacity Building Unit (No. 5730). Accra.

## 2. Analysis of child labor issues in Ghanaian SSM

Abstract

In Ghana, children are employed for various reasons, including child exploitation or jobs for their development such as working to finance education, and so forth. Consequently, the employment of children at dangerous mining sites is commonplace and seems unending. Empirical accounts from the sector advocate for the need to protect children. However, there is a shortage of information to allow us to address the following questions: What motivates managers to employ children despite existing regulations? How does mining governance affect child labor? The chapter applied country representative data and direct interviews with regulatory institutions for assessment. It argues that understanding the current trends, challenges, and experiences of miners will provide a better way of organizing policies toward child labor eradication and contribute toward effective implementation and realization of the new Sustainable Development Goal, 8:8.7 "…effective measures to eradicate forced labor..." (UN, SDGs, 2015). The results reveal that child labor still exists in the Amansie West and Bosomtwe districts of Ghana. The existence of the inadequate monitoring of mining practices on both mining operators and gold buyers in the sector, connected with unsuitable social intervention programs to support the vulnerable, including the homeless and single-parent households, encourages child labor. In addition, the unethical operator acquisition of concessional land and the unhealthy competition on the part of on-site gold buyers reinforce the negative behavior of operators and encourage child labor. An institutional and market-oriented shared-value creation is discussed to alleviate child labor. [8]

[8] A shorter version of this chapter is published in the British Journal of Economics, Finance, and Management Sciences, Vol. 11 issue 01, 2016. "Eradicating child labor in mines by the year 2025 – an SDG target: insights from ASM mining operators in the Ashanti, Ghana."

## 2.1. Introduction

Since the Gold Coast era, Ghana has demonstrated a long history of mineral resources endowment. Studies have established that the contribution of mineral proceeds to the country's development is uncertain. Therefore, factors such as bad contractual arrangements, incentive problems that characterized institutional and political challenges, among others, impede the progress, as found by Ayee J, Soreide T, Shukla G, and Le T. (2011) and Jensen W. (2004). Since 1999, gold has been the primary single forex earner yet its contribution to the socioeconomic effects on Ghanaian people is minimally felt, and this has been declining ever since. As predicted, the mineral economy is expected to affect Ghana's economy positively (African Trade Policy 2011; Hinton 2007). The Minerals Commission estimates that small-scale miners contribute to about 28% of total gold production in 2011. It significantly contributes to employment generation by employing over one million active workers (including the "galamsey"; unregulated peasant miners) more than the total employment offered by LSM [ISSER, 2008]. Unintentionally, most of the benefits trade-off with a social cost: child labor in the SSM sector.

The United Nations new 2030 agenda for the Sustainable Development Goals (SDGs) [United Nations, 2015], that seeks to protect the people, the planet, and prosperity, will not be realized entirely in low and middle-income countries especially goal number 8, section 8.7; "taking immediate and effective measures to eradicate forced labor and all worst forms of child labor." The goal, in general, is requesting the effort of all countries, businesses, and non-governmental organizations to promote sustained, inclusive, and sustainable economic growth, and full and productive employment for all including decent work by the year 2025. This goal will be lost by low- and middle-income countries if child labor in the SSM sector is not critically examined. Inequitable distribution of income and unhealthy competition for scarce but limited natural resources as argued by Kusi Appiah et al. (2014), persists in low

and middle-income (less developed and developing) countries. Similarly, in Ghana, these conditions compel children from most households in mining communities into mining, despite the significant contribution of gold to the Ghanaian economy as reported by the Ghana Chamber of Mines in 2014.

Child labor threatens middle and low-income countries because of its driving forces and effects. Some reports allude that child labor affects and generates poverty, broken homes, outdated cultural practices, escalating unemployment rates, and illiteracy, among some of the intricacies (GLSS, 2014). The SSM sector records some of the worst forms of child labor nationwide amid a high rate of gold production. We further estimated that the Ashanti region is third on the list of areas where mining is the primary economic activity after the Upper East and Western regions with 23%, 27%, and 26% respectively.[9] From the same data, the area has 654 communities where mining is the dominant economic activity, with 504 of these hosting SSM and 364 communities hosting child laborers. Most children aged 5 to 17 work, on average, 31 to 105 hours per 7 days in activities that are classified as the worst forms of child labor by the International Labour Organization (ILO, 1999) in the region. The Amansie West and Bosomtwe districts of Ashanti are on the list of the most affected communities in the area. This alarming rate of child labor, if not checked, would lead to tremendous adverse effects more significant than those posed by the agricultural and the service sectors, the current sectors with the most child labor. The rest of the sections are organized as follows; section two presents the background and related research, section three presents the results, and section four presents the discussion, findings, and lessons learned. Most Sub-Saharan African countries are exasperated with the primary forms of child labor in the SSM sector, which includes family-related child labor, bonded child labor, and self-employed child labor (Hinton, 2005). Bonded child labor, as discussed by Hinton (2005), is used for loan

[9] Statistics: own calculations based on the GLSS 6 data.

resettlements, and the child is provided for this resettlement. This arrangement is usually against the will of the child and endangers their health and development. Family-related child labor occurs when the family's primary source of income activity is mining, and therefore the children automatically become mining workers who contribute to the household income. Self-employed child labor is a survival plan often for the poorest, neglected, and orphaned children.

## 2.2. Background and related research

Some studies on the sector have covered the Northern region of Ghana and explicitly the regulatory and ecological challenges, while others such as Hilson (2009) analyzed the progress of interventions by local NGOs to withdraw about 150 children from mining work. That research found that the NGOs intervention program did not tackle the underlying issues and therefore ended up creating more confusion in that study area. Relatedly, the ILO studies and reports on child labor in artisanal mining from Ghana, Peru, and the United Republic of Tanzania (2007) focused on girl's roles and the effect on their livelihoods. It found that most girls were promised a better life by their parents if they migrated to work on mining sites. The study also contends that more girls than boys constitute the 49% of child labor found doing hazardous work. Other studies including the United Kingdom's Department for International Development (DFID) report (2000), which analyzed the negative and positive effects of SSM on the environment and economy extensively. As part of an integrated review of development planning, Hinton (2005) found significant adverse environmental effects of artisanal mining and considerable income gains to beneficiaries from her work on communities and SSM. Additionally, Hoedoafia (2014) examined the effects of SSM on living conditions in the Gonja West district of Ghana and found that child labor has an adverse effect on SSM.

Other researchers attribute the inability to monitor child labor in illegal mining, the lack of social infrastructure, and poor living conditions in rural communities (IPEC, 2004; Gunn and Priester, 2004; Wasserman, 1999) as the fundamental causes. There are fewer available studies that investigate child labor issues from the perspective of small-scale mining operators (SSMOs) in the Amansie West district, especially on what motivates them to employ children to acquire mining concessions. In addition, less is known about the possibilities of the regulatory bodies in creating shared-value toward child labor mitigation for the study districts. This chapter helps bridge this grey area by providing the current insights and contributes to the development of effective policies toward child labor mitigation and the implementation of SDG goal number 8.

This chapter also offers mitigation strategies to the underlying causes of child labor in the study region. We can achieve the above SDG by drawing upon findings from key informant interviews in the industry, in addition to the current country representative data from the Ghana Statistical Service- Living Standard Survey round six (GLSS 6). We conclude that child labor activities exist in the SSM sector, and companies will face business risks if child labor is poorly managed.

## 2.3. Mining policy and child labor

SSM or artisanal mining currently forms an integral part of Ghana's economy. Since 1989, the PNDCL 218 has regularized SSM activities, which were then illegal prior to the enactment of that law. This statutory framework was enacted to promote and regulate the orderly development of the sector and to reverse the mass smuggling of gold out of Ghana. The Precious Minerals Marketing Corporation, now the Precious Minerals Marketing Company (PMMC), was inaugurated to promote the development of small-scale gold and diamond mining including outright purchase from miners and the issuing of licenses for

private investments on their behalf. In addition, to regularize the activities of illegal mining to acceptable practices, the Minerals Commission of Ghana is mandated to issue licenses for all SSM activities.

Ghana's framework for child labor supported by the Children's Act 560 of 1980, cited in the Ghana Statistical Service child labor report (2014, b.p.1), explains that children under 15 years are not allowed to work in any form of formal job, with a few exceptions to non-dangerous family work for children aged 13 to 14 years, who can do non-profit or paid light activities for their families. Although this Act is complemented by the 1999 International Labour Organizations Convention on the eradication of all of the worst forms of child labor, unfortunately, it has not realized a strong effect on Ghana's SSM sector. The same report indicates three significant remedial policies: the Ghana Child Labour Monitoring System (GCLMS), the Hazardous Activity Framework for the Cocoa Sectors of Ghana (HAF), and the Standard Operating Procedures and Guidelines (SOPs) for Child Labour Elimination in Ghana. These were designed specifically for Ghana to correct the problem but they are often ignored, and there is limited implementation due to governance challenges.

In addition, the minerals commission believes that the Minerals and Mining Act 703 of 2006 allows only Ghanaians of 18 years and above to acquire and operate SSM concessions that cater for child labor. The Commission further trusts that the 2012 mining regulation also allows only adults over the age of 21 and above to work in underground mining activities. Both laws in addition to the mentioned policies are supposed to reduce child labor in the mining sector. Similarly, as argued (Stewart, 2011; Stewart and Brown, 2007; ILO, 2007), the remedial policies to address inequalities including those leading to child labor in mining, generally for middle- and low-income countries including Ghana, are unfortunately missed.

## 2.4. Methods and data

### 2.4.1. Study area

Reliable statistics demonstrate that children account for about 43.0% of households in both districts with the average household size of 4.5 per household (GSS, 2010a). In addition, the districts have a higher dependency ratio of 84.9% and 83.2% (GSS, 2010: a and b), respectively (Amansie West and Bosomtwe), with respective higher age dependency ratio for boys (85% and 87%) than girls (84.5% and 80%). Of these children, approximately 66% have attained economic age (15 years and above), but are unemployed and searching for jobs in Amansie West, which is less than their compatriots in Bosomtwe district (73%) [GSS, 2010b]. The main mining activities in both areas are SSM operations. However, few of the existing industrial operations such as cassava processing and local dry gin distillation obtain their raw materials from agriculture for the Amansie West while agriculture, fishery, forestry, and carving make up the dominant industry for the Bosomtwe district. These characteristics indicate that there is a high tendency for poor households in the communities to intensify mining activities, a feature that is peculiar to low- and middle-income countries with less alternative economic activities as argued by Hinton (2005). Research has demonstrated that the impact of SSM is predicted to be significant in improving the lives of poor people. More so, a substantial number of people depend on artisanal mining as put forward by an ILO meeting in Geneva (2003), and this view is shared among poor household communities including the residents of the Amansie West and Bosomtwe districts of Ghana.

The Minerals Commission identifies Amansie West district as one of the areas with the highest incidences of child labor in the country. It is ranked first on the list of areas that host child activities in SSM ahead of other districts such as the Amansie Central, Atwima Mponua, the Adanse South, and Bosomtwe districts. Ghana's 2010 population and housing

census found that 16.5% of labor in Amansie West is in the mining sector while 0.6% of labor in the Bosomtwe district is in the mining sector (GSS, 2014a). A majority of the employment in both districts was in the private informal sector (approximately 94%). The same reports illustrate that although general economic conditions and living conditions for access to basic needs are weak, over the past eight years there has been a migration of economically active labor to the region and both districts.

### 2.4.2. Methods and data

The study uses descriptive statistics and a qualitative analysis to examine the evidence via perceptions and secondary data obtained. Valuable information was sourced from essential institutions such as the Minerals Commission, Precious Minerals Marketing Company (PMMC), and eight SSMOs. Secondary data was collected from the Ghana Statistical Service (GSS), whereas key-informant and in-depth interviews were conducted first with the regulatory institutions such as the Minerals Commission division for SSM and the PMMC and then followed up with semi-structured interviews with SSMOs. The GLSS 6 data on child labor has valuable indicators for monitoring the worst forms of child labor in Ghana at national, regional, district, and community levels. Indicators captured from the mining sector include income, hours of work, age distribution, among others. The GLSS 6 data is national representative data for monitoring the impact of programs and policies on the welfare of the Ghanaian population. The study gathered useful information and follow-up via in-depth field interviews on critical variables of interest from SSM operators in the districts.

### 2.4.3. Observations from the key interviews

Brief observations demonstrate that the Minerals Commission, which manages the certification of SSM operators, does little to monitor SSM activities, and managers affirmed this during field observation and interviews. Doubtfully, the Commission asserts that child labor only occurs with illegal miners. Furthermore, the PMMC as the state-owned enterprise is backed by the Limited Liability Companies Act 179 of 1963 and authorizes the purchase of licenses to potential individuals and companies to purchase gold and diamond from small-scale miners. Furthermore, it also buys gold and diamond from artisanal miners, and exports all diamonds from Ghana under the 2003 Kimberly Certification Act, backed by Ghana's law 652. However, the organization only works with for-profit businesses and show no concern for other social and environmental issues. Furthermore, the PMMC fails to regulate or monitor the activities of their clients (private buyers of gold from SSMs) whom they have authorized (issued buying license) to do business on their behalf.

## 2.5. Results and discussions

The analysis from GLSS 6 data illustrates that children begin working at mining sites arduously as young as five years old as a minimum, 11 years old as the average, and 17 years old as the maximum in the Ashanti region.

Table 1: History of child work

| When carrying out work | | | |
|---|---|---|---|
| Student | Frequency | Non-Student | Frequency |
| After school | 40 | During the day, 6 am to 6 pm | 1,335 |
| Before school | 4 | Evening/night | 13 |
| Both before and after school | 7 | Both day and evening | 31 |
| On the weekends | 363 | Weekends | 214 |
| During missed school hours | 47 | Sometimes, daytime | 20 |
| Vacation | 13 | | |

Source: Estimated from Ghana Living Standard Survey 6 data

Table 1 illustrates that (out of 2,220 households sampled) more children between the ages of 5 and 17 are engaged in SSM, and those who are not in school carry out activities between 6 am and 6 pm (1,335). Other children from the same category work on weekends and at night, with most students working on weekends (363). Additionally, some students miss school for mining work in the Ashanti region. The data demonstrates 1,613 cases of child labor for non-school going children and 474 school-going children. Some child miners work on average four and half hours per day with an extreme ranging from 10 to 15 working hours per day. Correspondingly, we estimate from the same data that child workers receive on average 417 Ghana cedis per week (60 a day) and maximum earnings of 3,450 cedis per week (492 a day)[10], for those children who devote most of their time to working at mining sites as their primary source of economic activity (GLSS 6).

The analysis from the field interviews illustrated in Figure 7 demonstrates that 88% of the mining operators employed children at their SSM site (first exhibit from Figure 7). Most of the respondents (78%), also responded that they employ children below 17 years old

[10] One Ghana cedi (¢) is equivalent to 0.23 US$ based on 2017 interbank rates at the Bank of Ghana.

(second exhibit from Figure 7). Comparatively, several revelations existed within and across different working operator groups per their definition of license holdings for mining; license holders (group a, third exhibit) and non-license holders (group b, third exhibit). Figure 7, the third exhibit, reports that only 33% of the SSM operators indicated that they operate with a license. When the managers responded to their awareness of any law that debars offering children employment, their views were equally divided into "yes" and "no" (50% toward each level, exhibit number 4 from the left). Awareness of both national laws and local community regulations on child labor, especially at mining sites, were indicated by those who knew about the existing rules against child labor.

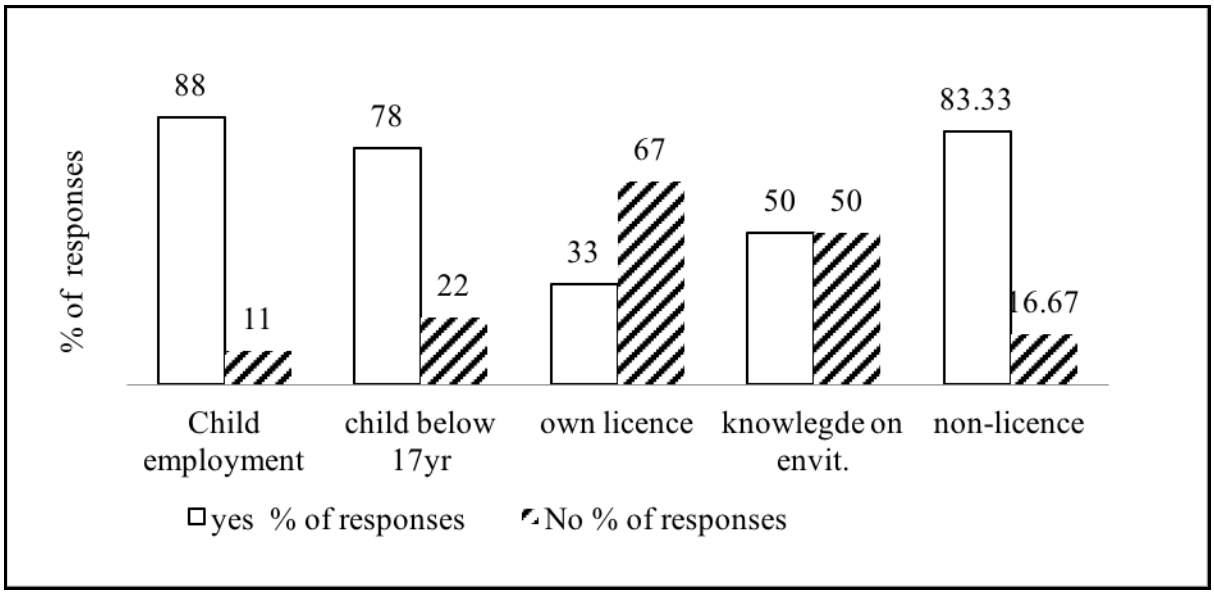
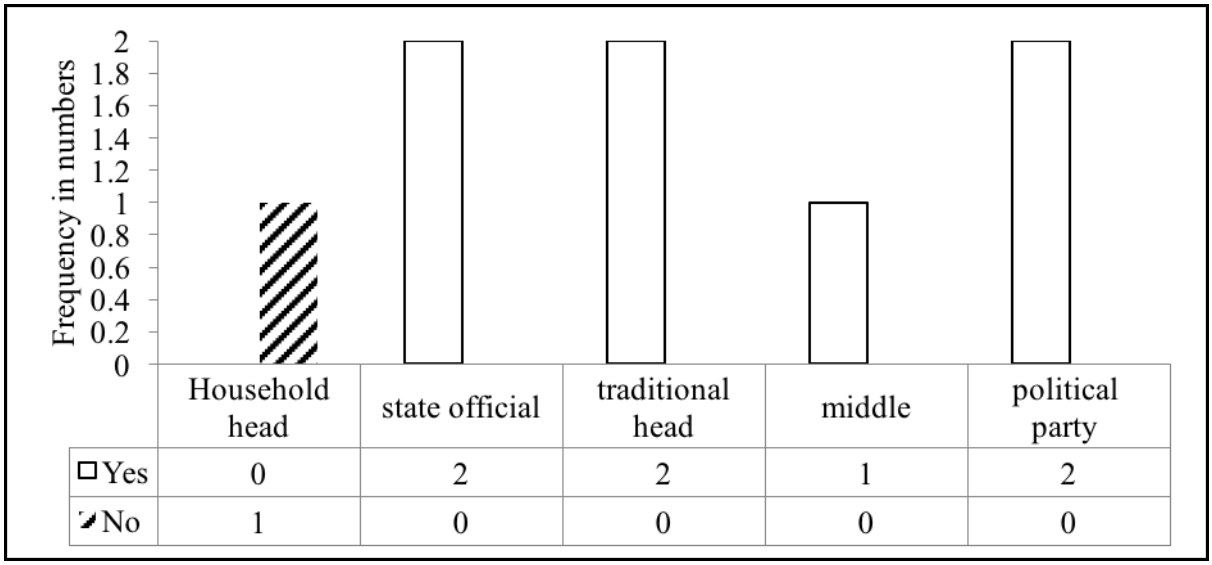



Figure 7: General descriptive statistics
Source: Estimated from field data

The findings indicate that the licensed miners were less associated with child labor than their peers. This result could be explained by the weak monitoring and enforcement of regulations since miners are aware of the existing laws yet act against the rules on mining and child labor. In addition, there are other reasons besides poverty and weak law enforcement including those discussed (section 2.5.3) that influence child labor.

### 2.5.1. Mining concessions

Further subgroups among the non-license holder group (b) were identified (fifth exhibit from the left in Figure 2). The two sub-groups consist of those working with other people's licenses (83%) and those who engage in mining without any permit (33%). For instance, two operators indicated that they work with their own license (category 1), two others work with someone else's license (group 2), and the other four work without any permit (group 3) [see Figure 8]. Those who owned licenses also indicated that they obtained mining concessions from a state official (100%). However, above 50% (2/4) of the non-licensed miners of all types (Figure 8) obtained mining concessions from either a political party official, state official or a traditional head, while 20% obtained concessions from intermediary people popularly known as "middle men/women." Specific examples across the group of non-licensed managers revealed that those who work with someone else's license, but received mining concessions from a household head, do not employ children at their site. Except for acquiring the mining site from the heads of households, we also found that miners who received mining concessions from bodies other than the Minerals Commission were more associated with child labor.




| | Household head | state official | traditional head | middle | political party |
|---|---|---|---|---|---|
| Yes | 0 | 2 | 2 | 1 | 2 |
| No | 1 | 0 | 0 | 0 | 0 |

Figure 8: Sources of mining concession and child labor
Source: Estimated from field data

### 2.5.2. Major child labor activities at mining sites

According to the mining operators, the major activities undertaken by children at the mining sites include; self-service (below 15%), which is what they termed as "working without been hired," transporting of sand (20%), water fetching and stonewashing (over 25% each), and digging (below 10%) as portrayed in Figure 9. The findings were that children suffer significant life-threatening health and physical conditions, aside from the psychological consequences, which are widely discussed in the literature (Hinton, 2005; Gunn and Preister, 2004; IPEC–ILO, 2004). This damage usually arises from exposure to dangerous substances including mercury, acidic drainages, cyanide, and extreme heat due to lack of proper ventilation because of poor working conditions and lack of appropriate working equipment.

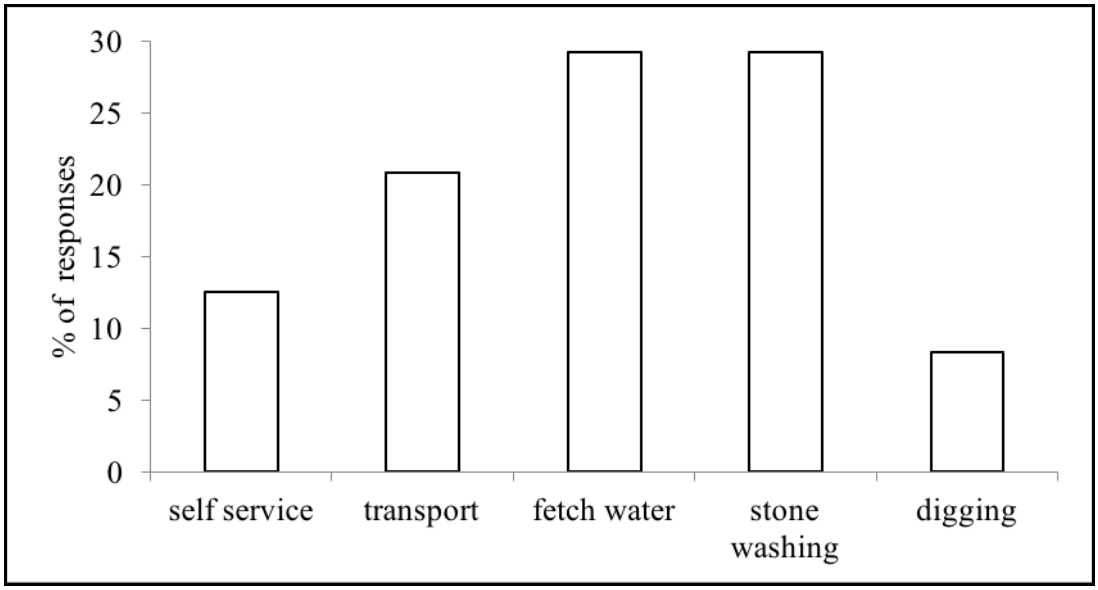


Figure 9: Major child activity type at a mining site
Source: From field data

### 2.5.3. Reasons for employing children

The analysis of the reasons for using child labor in mining sites revealed that the majority of operators argue in favor of child employment. Some reasons included that the parents brought the children to the mine for paid jobs (27% of responses), and others (20%) argued for children to work at the mines to enable the children to pay their school fees. Approximately 13% of respondents were in favor of child labor because it offered jobs to homeless children or it reduces operational costs. In addition, 7% were in favor of child labor because children are easy to control, or they lack the required skills, respectively (Figure 10).

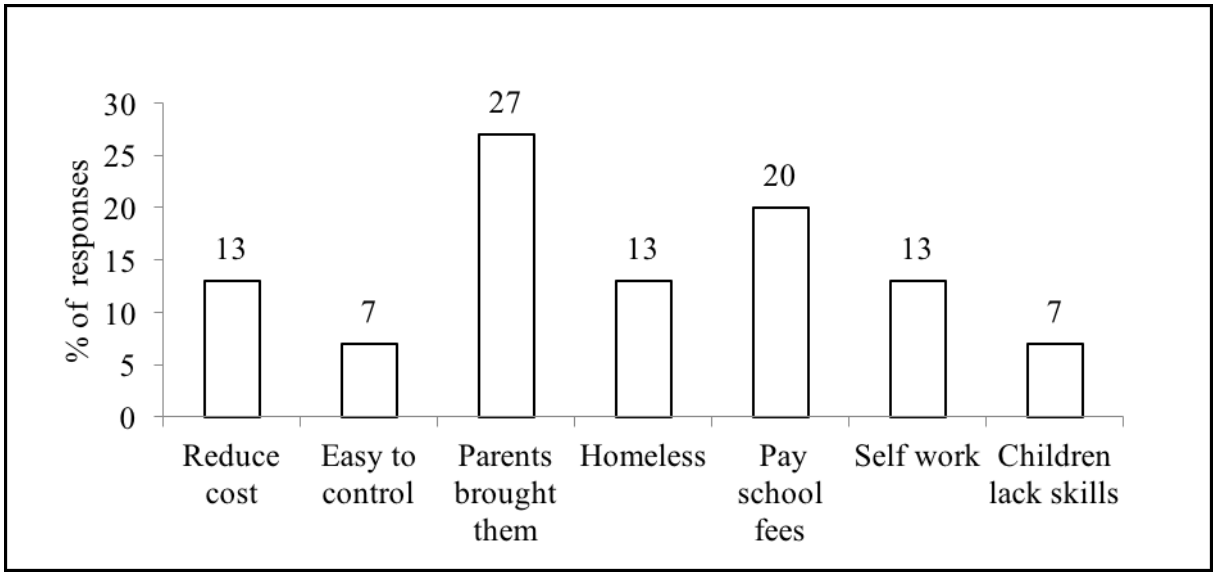


Figure 10: Reasons for or against child employment
Source: Estimated from field data

Similarly, views within the groups do not differ much from the previous reasons for employing children. For instance, license holders who engage children are of the opinion that children come to search for gold themselves and their parents bring them at other times. Although non-license holders hire children to reduce operational costs (about 15% of responses), 23% of reactions indicate (for each) that the children informed them that they needed the work to pay their school fees; sometimes, their parents brought them for work. More so, approximately 7% of respondents indicated that one could meet children already working on the mining sites because "they come by themselves," or "others are homeless," respectively. In addition, 7% of respondents are also of the view that children lack the skills to be employed on mining sites as a reason to reject their labor; whereas an insignificant number of respondents refused to comment on this question (see Figure 11.)

These findings support the results by the Afrikid's "Operation Sunlight Feedback Report" that concluded that concession holders target children as cheap labor in the Northern region of Ghana. This could be because their parents brought them to the mining sites or because most children offered themselves to work on the mining sites by their own free will.

This is in contrast to the findings by Hinton (2005) that most children in Tanzania were forced to work on mines; this demonstrates that child labor in Ghana is different to other countries. We found further evidence that child labor in Ghana is poverty motivated, which is in agreement with the findings from Hilson (2010) and is also consistent with some research (Hentschel et al., 2003) that found that low family income influences parents' decisions to persuade their children to undertake mining activities. The lack of formal social support for impoverished households coupled with a lack of alternative employment in the rural communities explains this outcome. From the manager's perspective, weak institutional capacity in services and inadequate monitoring of mining standards concerning child labor significantly influence the existence of child labor. Factors such as illegal mining, the lack of proper concessions, lack of access to adequate wages (in particular from mining) that created a good livelihood, may not have the need for their children to work, and the lack of social support to rural households are the key challenges to consider in mitigating policies.

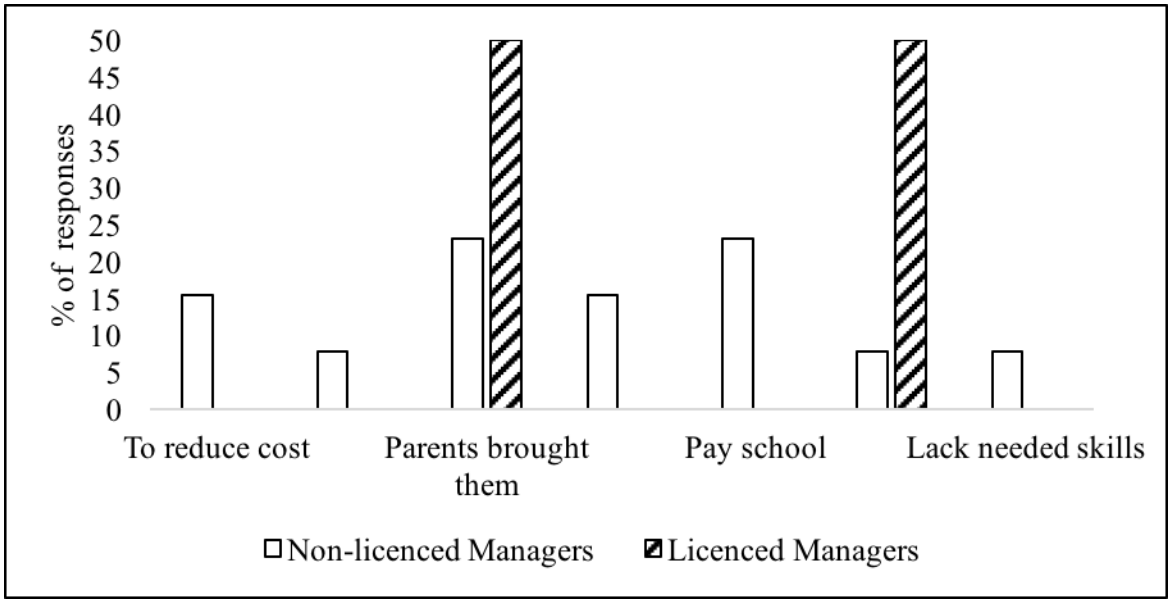


Figure 11: Why employ child? Views among groups
Source: Obtained from field data

### 2.5.4. SSM license authority

Although all the operators who responded to the survey were aware of the existing international laws (12%), national laws (25%), and community laws (63%) that prohibit child labor, they still used arguments from the indicated reasons in support of their decision to employ children (Figure 12). Mining operators of all types engage children for various reasons. Therefore, it is interesting to question the source of their license. In general, 80% cited the Minerals Commission as the issuer of their license, and even though only the commission can issue a valid license, the rest claimed that traditional leaders issued their license. Further inquiry within the permit holding groups revealed split sources of mining permits. Approximately 50% received mining permits from either a traditional leader or the Minerals Commission. All the non-license holders, except those working with licenses other than their own, cited the Commission as the issuer.

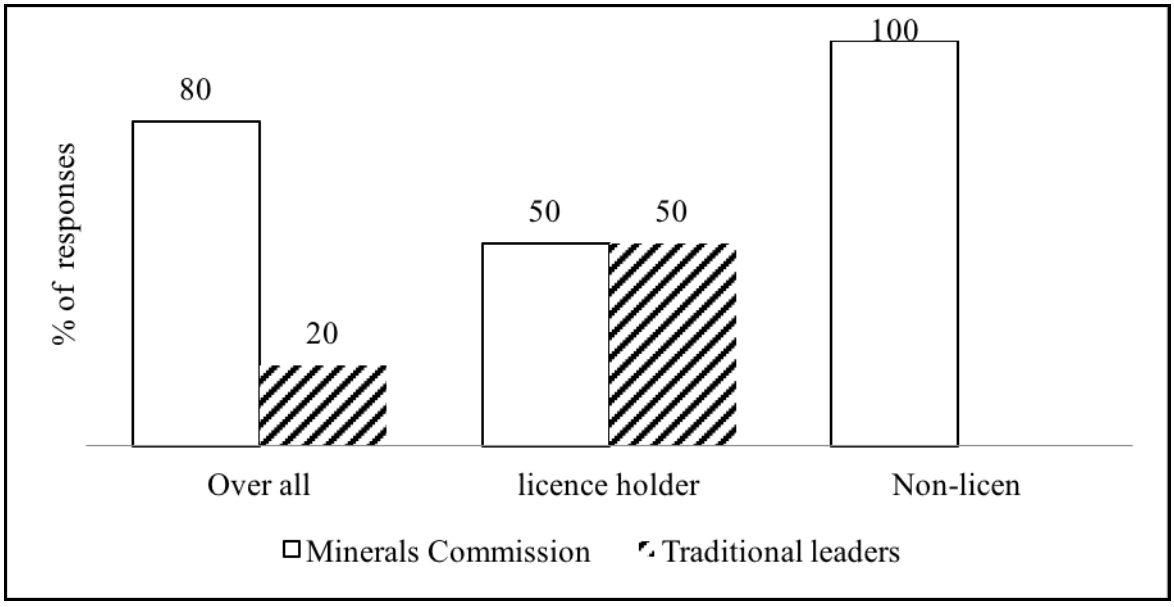



Figure 12: Licensing authority
Source: Generated from field data

### 2.5.5. A market outlet for gold mining

Market access or the outlet of daily gold mined was examined to determine how the gold market could influence child labor using appropriate mitigating strategies. Inquiries into the market outlet for the daily gold mined indicates that most of the gold is sold to foreign private individuals, followed by Ghanaian private individuals, and the rest is sold to other unidentified buyers in the district. Knowledge of this informs the useful mitigations by demonstrating the dominant hand in the market (see Figure 13.) Gold-mined is either sold on the mining site, at offices located in the community, at nearby villages, in the city, or at undisclosed locations to individual Ghanaians (over 50% of responses), foreigners (above 40% of responses), or to unidentified gold merchants (less than 10% of responses). The results indicate that the depth of the private market involvement in the SSM of gold is not carefully monitored. Therefore, a good governance mechanism must be put in place for effective child labor regulation and to prevent the sector from becoming a place for converting child workers into child mercenaries that could support illegal armed activities.

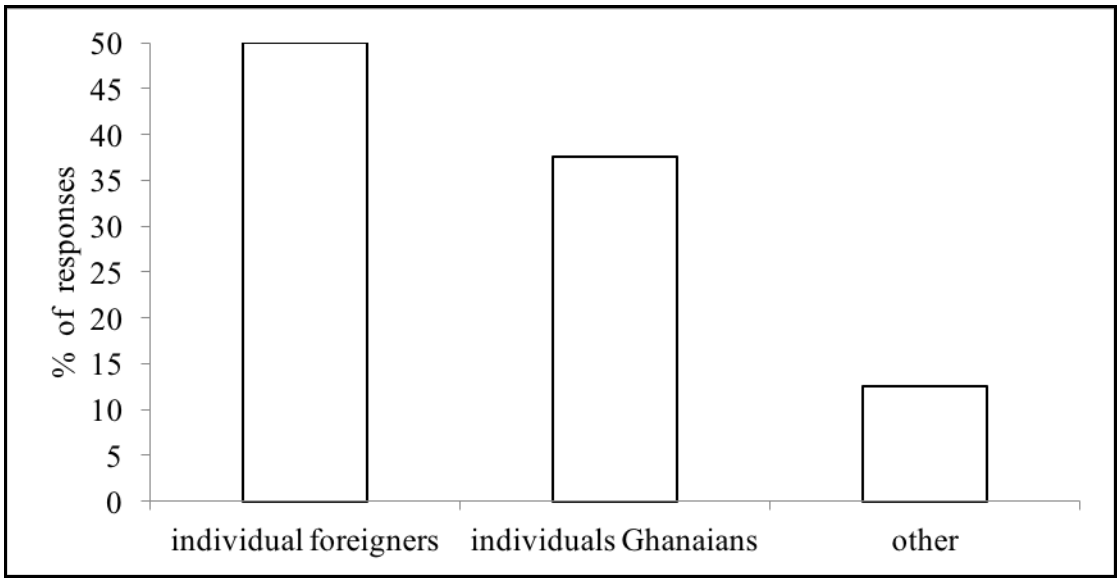



Figure 13: Market outlet of gold-mined
Source: Generated from field data

### 2.5.6. Social responsibility knowledge of business partners

Informatively from Figure 14, we reported that most respondents are of the view that their business collaborators care less about their health, and the health of the community in general, and that 75% of respondents across the group affirm this position. However, only 13% of illegal miners suggested that their business partners care for the health of the community and that of their workers. Meanwhile, 100% of legal miners were of the view that their partner buyers do not care about the health of suppliers or of the mining communities. We found that 66% of managers working with other people's license hold similar views, with 16% of them indicating that their clients care for the health of workers and the communities health. Marginally, the views among illegal miners, the third category, are similar with 50% registering their disappointment on the neglected social responsibilities and 25% believing that buyers care about their suppliers' health and the health of the community inhabitants.

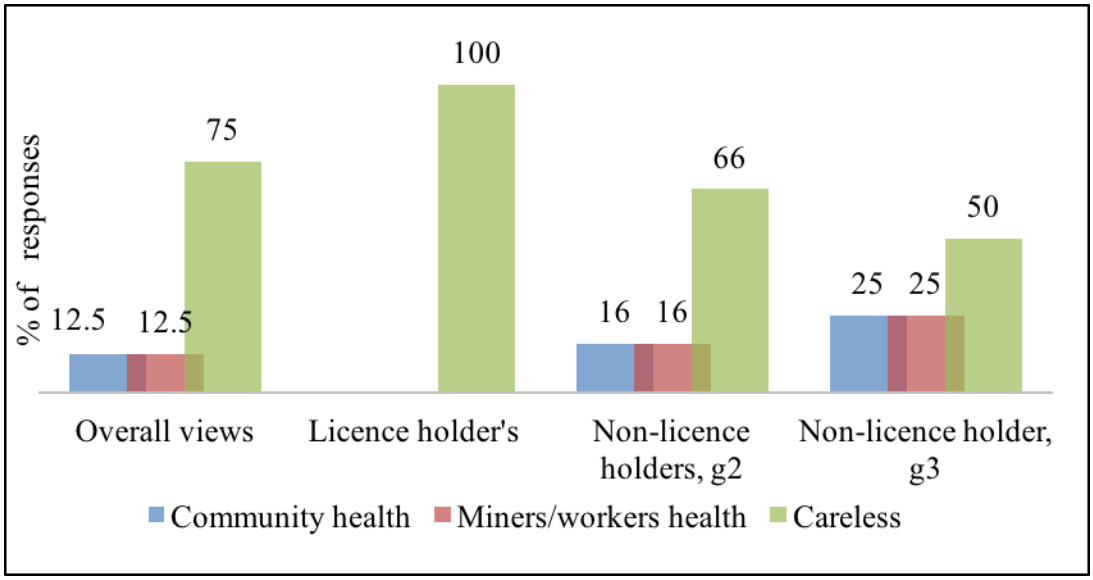



Figure 14: Social responsibilities from gold buyers
Source: Obtained from field data

### 2.5.7. Training on responsible mining and environmental safety

When asked about training skills on better mining standards for the environment, safety, and responsible sourcing, 75% of the respondents said they had received training and the remainder said they had not. Within the category groups, all the license holders deny receiving training on best mining practices. Likewise, 66% of the illegal miners held similar views (Figure 15). The results here suggest that the establishment of a future relationship between the miners and the communities in which they operate would be negative due to the knowledge deficit of what compromises the mining safety standards for people and the environment.

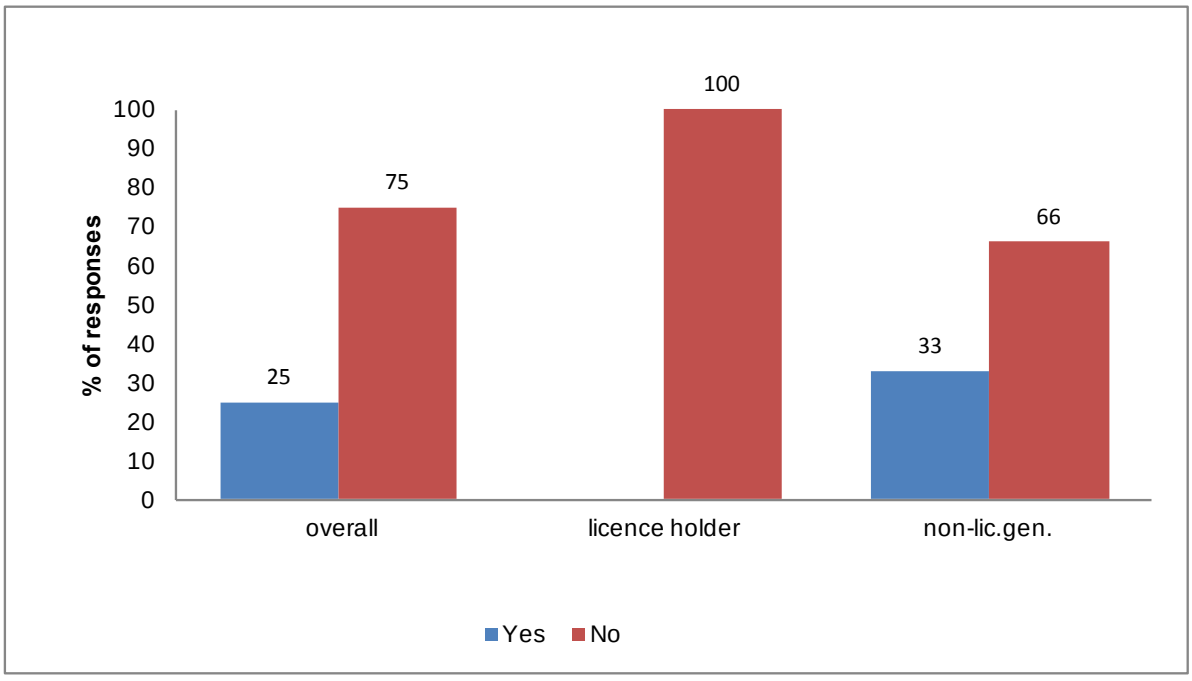



Figure 15: Mining training received
Source: Obtained from field data

### 2.5.8. Mitigating child labor at mining sites

Among the SSM operators interviewed, the results suggest that putting guidelines in place to guide child employment in the sector would be the best strategy to mitigate child labor rather than an outward ban. Government guidelines, for instance, should allow teenagers from ages 16 to 17 years to work on vacation and at weekends. Some members of the community are already implementing this strategy in some cities, and this is proving successful. We suggest that an exception should cover children from single parents who cannot meet the financial responsibilities of their children's education completely. These children must be allowed to work to support their education should the requirement be met. More so, local traditional leaders together with the unit committees (a Unit committee is a state elected members at the local level which carry out other functions including setting out particular guidelines in agreement with local traditional leaders, etc.) should be motivated to monitor the locally agreed guidelines jointly. This collaboration will ensure that miners strictly respect the guidelines to protect their children's interest.

As argued by Anker (2000), child labor (child gainful activities at that is not exploitative) is for the benefit of the child, which includes working to pay school fees, for food, and medical services, while child labor (exploitation) is against the interest of the child. In relation to this, we identified that the monitoring of child labor associated with SSM is insufficient. The results suggest that the district has not received any formal policies on mitigating this type of child labor, from either the state or non-state actors. Comprehensive information on this would enable policy actors to distinguish child employment from child exploitation. Clear guidelines are needed in this direction to ensure the sustainability of intervention plans.

## 2.6. Findings and discussions

The results on earnings suggest that children between 11 and 17 years old earn on average 417 cedis (106 $ at 2016 February rate) for 31 hours of work per week, a substantial amount for working at mining sites. This revelation demonstrates that children work, on average, over 4 hours per day for an amount of 60 cedis (15.29 $ at 2016 February rate). Due to this tempting wage, in addition to poverty, the unhealthy competition for resources, the lack of alternative jobs for vulnerable households, and less or no social support for families, parents are compelled to persuade their children into mining jobs. Consistent with the findings of other studies and reports such as Hoedoafia (2014), DFID (2000), and ILO (2007), children engage in strenuous activities in the SSM sector such as manual digging, draining water from pits, and transporting and washing sand mingled with mercury.

We establish further that mining land concession rights influence the manager's decision to employ children or otherwise. For instance, managers who obtain site concessions through unapproved channels encouraged child exploitation. Those who received grants from political party affiliates, state officials, or traditional heads tend to violate child labor laws and employ children on site. However, those who acquired sites through private intermediaries recorded low incidences of child labor, while those who obtained sites from household heads employed relatively fewer children. Certainty on both ownership and the transfer of land rights lowered the operational cost of companies by paying the right amount and so employing children on mining sites to defray the costs was not necessary. On the other hand, if concession acquisition is not transparent and somewhat bureaucratic through the political options, the operational costs of securing concessions increases due to bribery and corruption. Profit-motivated operators are tempted to hire desperate and vulnerable children and exploit them to offset their management costs.

Revealingly, with social responsibilities, we established that gold buyers do nothing or very little in the communities where they mine the resource (see Figure 14). These views did not differ among and across the various groups of small-scale miners we interviewed, which affirms the position of the communities. The buyers only care about the gold and are unconcerned about all the other things in the community including healthy working conditions and the health of the city. This portrays the irresponsible sourcing of gold in contrast to the existing international working guidelines on due diligence and responsible sourcing such as the guidelines of the Organization of Economic Cooperation and Development (OECD, 2013). Companies should invest in social projects that would improve the incomes of poor households, thus reducing the incidence of pushing the community toward mining jobs.

The views shared among license holder operators on offering children jobs as child miners indicate that children avail themselves for work irrespective of any other reasons because the operators were ready to employ them whether they were sacrificing school or not or forced to work or not. Noticeably, the views differ within the non-licensed operator groups; the majority in this group responded that children needed money to pay for school fees, or that the children's parents forced them into employment. Others employ homeless children to help the homeless children and help society, in addition to the cost reduction argument. Finally, some of the respondents based their decisions to employ children on the ease of controlling them and others did not work with children because children lack the required skills (Figure 10). The children viewed the operators as helping them to survive or improve their lives and those of their families.

We found that the managers were aware of the existing laws; however, they acted contrary to these laws due to weak law enforcement. Another probable factor is the existence of favoritism that favors a few political affiliates in the mining concession bidding processes,

which encourages corruption. Subsequently, offenders go unpunished by the law. The finding that SSM is coupled with bribery and corruption is consistent with the findings from an ILO report (2003). Respondents confirmed this during the interviews when some of the respondents reacted, "our big boss paid our way with the police and the chiefs, so we do not have any problems with our activities." That is, they have exchanged money for protection from the law irrespective of what they do.

We found that the appropriate guidelines and incentives for mitigating child labor are insufficient. Child labor can be reduced by putting the appropriate guidelines in place notwithstanding the reasons provided by the respondents as to why they employ children. A practical direction should be independent of all the factors outside of what the instructions specify and should be drawn in collaboration with mining operators and the local community leaders, together with the state. The revelations demonstrate that child labor in the mining sector needs close collaboration with both the mining operators and local community leaders, and strict state monitoring would be an effective way of combating the problem. It further demonstrated that local associations of small miners succeeded in controlling and preventing pupils from working on school days. In most cases, they turned down school going children who offered their labor instead of attending school. This was co-implemented by the unit committee, which demonstrates that state collaboration can be a useful tool to reduce child labor.

Unfortunately, most of the operators interviewed affirmed that they had not received any formal or informal training on best mining and environmental practices, or safety. This catalyzed the exposure of workers including children to injury and unsafe practices, such as handling dangerous chemicals that lead to illness and the significant degradation of water and land resources. Consequently, this reinforced the poverty cycle in the sector. This finding is consistent with Hinton's results for her policy development planning initiatives for SSM in

Peru, Sri Lanka, and Ghana (2007). Due to the lack of operational safety, children face illness, and injury, especially with illegal mining (IPEC, 2004; Gunn and Priester, 2004; Wasserman, 1999), and worst of all, the persistent occurrence of violent outbreaks. We discovered that problems such as physical assaults among miners, becoming trapped in pits, frequent gun attacks, and police attacks were some of the incidences that workers usually experienced at mining sites (see chapter 3). Hence, children witness most of this violence, and this is unhealthy for their emotional and psychological development, as discussed by Collier and Hoeffler (2003) and the OECD (2013) report.

Market outlets consisting of foreign and local nationals have a significant role in contributing to the eradication of child labor as a form of creating shared value. If this happens, society will better understand that business competition and profits are not at the expense of social safety, thus ensuring long-term mining investments. As child labor in SSM affects child development, addressing both the economic and social problems means creating shared values that are based on win-win principles (Pies et al., 2009). The PMMC, operating under the Kimberly standards certification, has a role in monitoring the sources of gold and diamonds from their downstream suppliers to make sure they are free from subjecting children to harsh conditions (long hours of work) during the extraction processes.

Apart from the market initiatives of the PMMC, the mineral buyers have a role of creating shared value by redefining productivity in the value chain to include the responsible sourcing of gold devoid of the worse forms of child labor on the part of their clients. In addition, as social harms can create internal costs for firms as argued by Michael Porter and Mark R. Kramer (2011), the SSM sector market players should consider the decisions and opportunities in integrating child labor mitigation strategies into their production function as a way of creating shared value for a win-win case to both the society and the business.

Operationally, companies (both local and developing country multinationals) in the sector can undertake community-based initiatives to monitor the mitigation of child labor.

Even though some remedial policies have been proposed and implemented, new ones are expected to commence concerning free secondary education. The open and compulsory primary education policy is already underway yet most children are not in school. Some policy analysts interviewed attributed primary school dropout rates to the ineffective government system of making the financial commitment to ensure that children are in school and are adequately cared for. This revelation confirms the position of some parents that the free basic school program is not realistic as parents must still support the school with studying materials including desks and other learning materials, which is the largest part of the burden. This finding supports the ILO (2007) results that found that effective remedial policies to reduce child labor in the small-scale gold mining sector are insufficient.

### 2.6.1. Conclusions and lessons

In general, the findings concur with the results of Hailu et al. (2012) that the exploitation of diffuse mineral deposits compared to point deposits are likely to be associated with child labor. The reason is due to the flourish of artisanal miners who are more likely to use child labor compared to LSM.

The findings indicate two possibilities or forms of child employment in the SSM sector based on the motives of parents that need exhaustive research and policy attention: first, child employment for the development of children, especially for school going children, and second, teenagers (non-students) with mining as their primary employment. Irrespective, of the nature of the working conditions, dangerous or safe, these two arguments form the basis of child labor. We confirm this with mining site observations and interviews with working

children.[11] Two children indicated that they were working to support their family budget and the remainder stated that they were working for their education (buying food, books, tables, and shoes for school). This revelation demonstrated that more research is necessary to guide the existing forms of child labor and support safe child employment that will promote child development and discourage all other activities that exploit and impede child development.

We could also infer that child employment has implications for households, children, the government, and the businesses involved. Close examination and analysis are required to put children safety and development ahead of all other interests. Most of the working hours of children occurred either after school hours or on weekends (Table 1). This phenomenon indicates that some children work mainly to be economically active and this may be good for their development if the right conditions are met; the conditions include a safe environment, with appropriate working and safety tools; the non-interference of any of their development processes including education; non-exploitative work; and good health.

Generally, both license-issuing bodies through their indirect or direct mandates affect the prevalence of child labor in the SSM sector. Moreover, we found a lack of good governance and poverty as the primary factors driving child labor in the SSM sector. These include specific factors such as monitoring, lack of alternative jobs and social support, land property rights, and concessional bidding and awarding. Thus, effective governance for example in land rights adjudication, for the discussed reasons, is the reduction or eradication of child labor. Therefore, future studies should consider analyzing the inter-relations and governance structures (including the role of traditional African institutions) in the management of SSM sector related issues. Finally, companies including both local and internationally (upstream and downstream) sponsored have a significant role via sponsoring programs and conducting

[11] Two 13-year-old boys and three 15-year-olds (a girl and 2 boys). In the presence of site operators, and with his permission, taking both the position of a parent and a manager at that time.

due diligence of their clients toward child labor, and mitigation as a form of creating shared value while supporting competitiveness in this sector.

Furthermore, we conclude that a high number of children are still employed in the SSM sector in the Amansie West and Bosomtwe districts. Cash incentives and other compelling factors, such as poverty and the lack of appropriate intervention policies, entice children into employment and working for extended hours. Children offer themselves to work on their free will or work under the influence of their parents. However, mining operators on their part lack training in responsible resourcing and are willing to employ the services of children that will allow them to control child workers easily, and this reduces operational costs. In contrast, few operators will hire children if they do not have the required skills.

The revelations here demonstrate that the child labor challenges in SSM in Ghana fall under two of the three conditions of child labor discussed by Hinton (2015); for the districts in this research, child labor is either self-employed or the family context form of child labor, with no incidences of forced child labor. Furthermore, we found that self-employed children have no alternative to whom they sell their gold other than the given site manager (section 2.6.2).

Lessons toward the successful implementation and achievement of 8.8 of the Sustainable Development Goals Agenda 2025, that is, eradication of all of the worst forms of child labor, require critically analyzing Ghana's SSM sector. However, the nature of child labor problems in the SSM sector from the study districts is complex. Therefore, we recommend critical considerations of the industry due to the various circumstances surrounding the socioeconomic dynamics. Despite existing regulations in the country, factors such as the high rates of poverty, parentless or orphaned children, single parents, and inadequate social protection support for vulnerable households in the districts still impede the efforts to eradicate child labor. Policy focus should factor the perspectives of SSM operators in drafting

supportive policies for the affected communities. The following recommendations should be synchronized to create synergy toward mitigation.

The concessional lands process, monitoring of land rights, and mining license acquisition should all be less bureaucratic but fair to eliminate corruption and favoritism. Traditional leaders and landowners should condition concessional transfers on the reduction of child labor at the mining sites. We recommend that both landowners and the Mineral Commission should monitor and enforce these agreements as a base for concession acquisition. The enforcement of concession monitoring will be a positive step toward shared value creation for the society. More so, warranting that the children who are an economically active labor force are schoolchildren, the establishment and monitoring of collaborative guidelines on employment during vacations and weekends, and on minimum working hours might help ensure the safety of children. Furthermore, age specifications and rules for vacations and weekends should be in place, before allowing this age group to work on "light" activities as stipulated by Ghana's Act 560 ("children aged 13 to 14 years are permitted to engage in light family work").[12]

In the absence of social support such as the appropriate interventions for homeless children and children from single parents, there will be children who cannot meet their basic education needs. Therefore, comprehensive guidelines for working on vacations or weekends for economically active children are recommended to reduce the negative effects of child employment. Instructions in that direction are highly recommended if this action does not impair the education, development, and health of children. Since this has proven successful in some communities when implemented in conjunction with local traditional leaders and local committees, it needs more policy focus; therefore, further research is required to achieve this objective.

[12] This can be reviewed to include realistic permitted hours if it is found to support the development of children, in particular homeless children.

Furthermore, the free market has a role especially the buyers that influence child labor eradication in the SSM sector. Therefore, good governance can change the behaviors of market players through regulations and market incentives to counter child labor. We recommend that the policies targeting private entities should discourage child labor as the private market plays an invaluable role in the SSM gold market. More decisively, certificate conditions must tie punitive measures to buyers who violate the rules by buying from mining operators who encourage children and operators who utilize child labor and reward managers who desist from child labor. Additionally, monitoring the activities of buyers is necessary to reduce child labor in the sector. To implement institutional good practice with regard to the regulatory bodies, we recommend that all institutions including the PMMC, partner buyers and exporters of gold and diamonds mined by small-scale companies on behalf of the government, and the Minerals Commission (issuer of mining license) monitor the activities of license holders (their clients) in order to correct the behavior of violators. Doing so would mean creating win-win shared value for the businesses and society.

## **Reference**:


Afrikids, 2007. 'Operation Sunlight Feedback Report'. London: Afrikids.

Abraham L., Bursey D., V.W., 2015. Rethinking Social Licence to Operate: A Concept in Search of Definition and Boundaries., BCBC: Environment and Energy Bulletin.

Foreign Affairs, 2008. Blood Barrels Why Oil Wealth Fuels Conflict By Michael L. Ross.

African Trade Policy, 2011. The Challenges and Opportunities of Ghana ' s Offshore Oil Discovery Africa Trade Policy Notes.

Allen, S., Cunliffe, A.L., Easterby-Smith, M., 2017. Understanding Sustainability Through the Lens of Ecocentric Radical-Reflexivity: Implications for Management Education. J. Bus. Ethics. doi:10.1007/s10551-016-3420-3

Anca M. Cote and Kevin K. Tsui, 2010. Oil and Conflict: What Does the Cross-Country Evidence Really Show? * Anca M. Cotet † and Kevin K. Tsui ‡ Ball State University and Clemson University February 2010. Business 1–39.

Andrews, N., 2016. Challenges of corporate social responsibility (CSR) in domestic settings: An exploration of mining regulation vis-??-vis CSR in Ghana. Resour. Policy 47, 9–17. doi:10.1016/j.resourpol.2015.11.001

Anker, R., 2000. Conceptual and research frameworks for the economics of child labor and its elimination. ILO Work. Pap.

Armah, F.A., Boamah, S.A., Quansah, R., Obiri, S., Luginaah, I., 2016. Working conditions of male and female artisanal and small-scale goldminers in Ghana: Examining existing disparities. Extr. Ind. Soc. 3, 464–474. doi:10.1016/j.exis.2015.12.010

Armah, F.A., Luginaah, I., Yengoh, G.T., Taabazuing, J., Yawson, D.O., 2014. Management of natural resources in a conflicting environment in Ghana: unmasking a messy policy problem. J. Environ. Plan. Manag. 57, 1724–1745. doi:10.1080/09640568.2013.834247

Aryee, B.N.A., 2001. Ghana ' s mining sector : its contribution to the national economy. Resour. Policy 27, 61–75.

Ayee, J., Soreide, T., Le, T.M., 2011. Political Economy of the Mining Sector in Ghana. Policy Res. Work. Pap. 5730 48.

Bell, C., Wolford, S., 2014. Oil Discoveries, Shifting Power, and Civil Conflict. Int. Stud. Q. 59, 517–530. doi:10.1111/isqu.12150

Berman, E., Felter, J., Kapstein, E., Troland, E., 2012. Predation, Economic Activity and Violence: Evidence from the Philippines. NBER Work. Pap. 18375.

Berman, E., Felter, J.H., Shapiro, J.N., Troland, E., 2013. Modest, secure, and informed: Successful development in conflict zones. Am. Econ. Rev. 103, 512–517. doi:10.1257/aer.103.3.512

Berman, N., Couttenier, M., Rohner, D., Thoenig, M., 2014. This Mine is Mine! How minerals fuel conflicts in Africa. Discuss. Pap. No. 10089 44.

Bitsch, V., 2005. Qualitative Research: A Grounded Theory Example and Evaluation Criteria. J. Agribus. 231, 75–91.

Bush, R., 2009. "Soon there will be no-one left to take the corpses to the morgue": Accumulation and abjection in Ghana's mining communities. Resour. Policy 34, 57–63. doi:10.1016/j.resourpol.2008.02.002

Buxton, A., 2012. MMSD + 10 : reflecting on a decade of mining and sustainable development. In: Proceedings of the IIED Sustainable Markets Discussion Paper. London UK.

Carroll, A.B., Shabana, K.M., 2010. The Business Case for Corporate Social Responsibility : A Review of Concepts , Research and Practice. Int. J. Manag. Rev. doi:10.1111/j.1468-2370.2009.00275.x

Carson M., S.C., Joseph Dickman, Elizabeth Gummerson, Therese Lee, Yanliang Miao, Noriko Teranishi, Catarina Tully, and C.U., 2005. Managing Mineral Resources through Public-Private Partnerships. Working paper WWS591c, Woodrow Wilson School of Public and International Affairs. Princeton University, Priceton NY.

Chang, H., 2017. Institutions and economic development : theory , policy and history 473–498. doi:10.1017/S1744137410000378

Collier, P., Hoeffler, A., 1998. On economic causes of civil war. Oxf. Econ. Pap. 50, 563–573.

Collier, P., Hoeffler, A., Söderbom, M., 2004. On the Duration of Civil War. J. Peace Res. 41, 253–273. doi:10.1177/0022343304043769

Crawford, G., Botchwey, G., 2016. Conflict, collusion and corruption in small-scale gold mining in Ghana: Chinese miners and the state. Colloquium Paper No.48., in: Global Governance/politics, Climate Justice & Agrarian/social Justice: Linkages and Challenges. The Hague, Netherlands.

Cuvelier, J., Vlassenroot, K., Olin, N., 2014. Resources, conflict and governance: A critical review. Extr. Ind. Soc. 1, 340–350. doi:10.1016/j.exis.2014.07.006

Dahlsrud, A., 2008. How Corporate Social Responsibility is De fined: an Analysis of 37 Definitions. Corp. Soc. Responsib. Environ. Manag. 13, 1–13. doi:10.1002/csr

Davis, R., Franks, D., 2014a. "Costs of Company-Community Con ict in the Extractive Sector" Corporate Social Responsibility Initiative Report No. 66. Cambridge MA: Harvard Kennedy School.

Davis, R., Franks, D., 2014b. Costs of Company-Community Con ict in the Extractive Sector 66.

Department for International Development, P. by K.P.C.J.D.W.A., 2000. Design and pilot implementation of a model scheme of assistance to small scale miners. Starffordshire UK.

Departement for International Development (DFID), 1999. Sustainable Livelihoods Guidance Sheets Framework Introduction Vulnerability Transforming. Context 26. doi:10.1002/smj

Dixit, A., 2003. On Modes of Economic Governance. Econometrica 71, 449–481. doi:10.1111/1468-0262.00415

Dominic P. Parker, B.V., 2015. Resource Cursed or Policy Cursed? U.S. Regulation of Conflict Minerals and the Rise of Violence in the Congo* 1. doi:10.1017/CBO9781107415324.004

Drimmer, J.C., Phillips, N.J., Llp, J., 2010. Sunlight for the Heart of Darkness: Conflict Minerals and the First Wave of SEC Regulation of Social Issues 86, 1–23.

Dubiński, J., 2013. Sustainable Development of Mining Mineral Resources. J. Sustain. Min. 12, 1–6. doi:10.7424/jsm130102

Eli B., Felter J., E.K. and E.T., 2014. Predation , Taxation , Investment , and Violence : Evidence from the Philippines.

E. A.Ofosu-Mensah., 2015. Mining and conflict in the Akyem Abuakwa Kingdom in the Eastern Region of Ghana , 1919 – 1938 2, 480–490. doi:10.1016/j.exis.2015.04.002

Epstein-Reeves, J., Weinreb, E., 2013. Pioneers of Sustainability - Lessons from the trailblazers, WeinrebGroup.com. Chicago.

FAO - ISEAL Alliance Discussion Paper, 2010. A Conceptual Framework for Progressing Towards Sustainability in the Agriculture and Food Sector.

Frankel J., 2010. The Natural Resource Curse: a Survey (No. 15836), NBER Working Paper Series.

Franks, D.M., McNab, K, Brereton, D, Cohen, T, Weldegiorgis, F, Horberry, T, Lynas, D, Garcia- Vasquez, M, Oñate Santibáñez, B, Barnes, R and McLellan, B., 2016. Designing Mining Technology for Social Outcomes: Final Report of the Technology Futures Project. Brisbane.

Franks, D.M., Davis, R., Bebbington, A.J., Ali, S.H., Kemp, D., Scurrah, M., 2014. Conflict translates environmental and social risk into business costs. Proc. Natl. Acad. Sci. U. S. A. 111, 7576–81. doi:10.1073/pnas.1405135111

Geenen, S., 2014. Dispossession, displacement and resistance: Artisanal miners in a gold concession in South-Kivu, Democratic Republic of Congo. Resour. Policy 41, 90–99. doi:10.1016/j.resourpol.2013.03.004

Ghana Chamber of Mines, 2015. Mining in Ghana – What future can we expect ? Mining : Partnerships for Development 13–39.

Ghana Chamber of Mines, 2014. Report on the Performance of the Mining Industry. Accra.

Ghana Statistical Service, 2014a. 2010 Population and Housing Census; Profiel on Amansie west district. Accra.

Ghana Statistical Service, 2014b. Ghana Living Standards Survey Round 6; Labour Force Report.

Goel, M., Ramanathan, M.P.E., 2014. Business Ethics and Corporate Social Responsibility – Is there a Dividing Line? Procedia Econ. Financ. 11, 49–59. doi:10.1016/S2212-5671(14)00175-0

Government of Ghana, 2009. Government of Ghana's Response to United States Department of Labour's Report on Child /Forced Labour in Foreign Countries. Accra.

Greene, W., Hensher, D., 2009. Modeling ordered choices. Unpubl. Manuscr. 1–278.

doi:10.1037/0021-9010.91.1.97

Hailu, D., Rendtorff-Smith, S., Gankhuyag, U., Ochieng, C., 2012. Toolkit and Guidance for Preventing and Managing Land and Natural Resources Conflict. United Nations Interag. Framew. Team Prev. Action 51. doi:10.1038/206985b0

Hentschel, T., Hruschka, F., Gmbh, P., 2003. Artisanal and Mining Challenges and Opportunities.

HIIK, H., 2015. Conflict Barometer 2015. No. 24. Heidelberg Institute for International Conflict Research. Heidelberg.

Hilson, G., 2010. Child labor in African artisanal mining communities: Experiences from Northern Ghana. Dev. Change 41, 445–473. doi:10.1111/j.1467-7660.2010.01646.x

Hilson, G., 2009. Challenges with Eradicating Child labor in the Artisanal Mining Sector : A case study of the Talensi-Nabdam District , Upper East Region of Ghana. Pap. Deliv. to Rethink. Extr. Ind. Conf. York Univ. Toronto, 5-7 March 2009 1–25.

Hilson, G., 2002. An overview of land use conflicts in mining communities. Land use policy 19, 65–73.

Hilson, G., Hilson, A., 2015. poverty and sustainability Critical reflections on the formalisation of small-scale mining in Ghana.

Hilson, G., Yakovleva, N., 2007. Strained relations: A critical analysis of the mining conflict in Prestea, Ghana. Polit. Geogr. 26, 98–119. doi:10.1016/j.polgeo.2006.09.001

Hoedo, A., 2014. Th he Effe ects of Small Scale Gold G M ining o on Livin ng Con nditions s : A Ca se Stud dy of th he West t Gonja a Distric ct of Ghana a 151–164.

Hoeffler, P.C. and A., 2004. Greed and grievance in civil war. Int. Aff. 56, 563–595. doi:10.1093/oep/gpf064

ICMM, International Council on Mining & Metals, 2007. Ghana Country Case Study The challenge of mineral wealth : using resource endowments to foster.

International Council on Mining & Metals, 2015. Mining in Ghana – What future can we expect ? Mining : Partnerships for Development 13–39.

International Labour Organization, 2003. Report for discussion at the Tripartite Meeting on Social and Labour Issues in Small-scale Mines. Geneva.

IIED,International Institute for Environment and Development, 2001. A contextual review of the Ghanaian small-scale mining industry, Mining, Minerals and Sustainable Development. London UK.

International Labour Organizations, 2007. G irls in M ining: Research findings from Ghana, Niger, Peru and the United Republic of Tanzania. Switzerland.

Jenkins, H., Yakovleva, N., 2006. Corporate social responsibility in the mining industry: Exploring trends in social and environmental disclosure. J. Clean. Prod. 14, 271–284. doi:10.1016/j.jclepro.2004.10.004

Jennifer.J., H., 2005. Communities and Small-Scale Mining: an Integrated Review for Development Planning. Washington DC. NY.

Jonathan, O., Isaac, A., 2014. Environmental and rural livelihoods implications of small-scale gold mining in Talensi-Nabdam Districts in Northern Ghana. J. Geogr. Reg. Plan. 7, 150–159. doi:10.5897/JGRP2014.0447

Kemp, D., Worden, S., Owen, J.R., 2016. Differentiated social risk: Rebound dynamics and sustainability performance in mining. Resour. Policy 50, 19–26. doi:10.1016/j.resourpol.2016.08.004

Kessey, K.D., Arko, B., 2013. Small Scale Gold Mining and Environmental Degradation , in Ghana : Issues of Mining Policy Implementation and Challenges Introduction Ghana has a long history of small scale gold mining , but at the peak of colonial exploration ; Europeans introduced larg 5, 12–30.

Kirsten, J.F., Dorward, A.R., Poulton, C., Vink, N., 2009. Institutional Economics Perspectives on African Agricultural Development. doi:10.2499/9780896297814BK

Koubi, V., Spilker, G., Böhmelt, T., Bernauer, T., 2014. Do natural resources matter for interstate and intrastate armed conflict? J. Peace Res. 51, 1–17. doi:10.1177/0022343313493455

Kurlander, L.T., 2001. Newmont Mining : The social license to operate Newmont Mining : The social license to operate 1–4.

Kusi A. M., Feike, T., Wiredu, A.N., Mamitimin, Y., 2014. Cotton Production, Land Use Change and Resource Competition in the Aksu-Tarim River Basin, Xinjiang, China. Q. J. Int. Agric. 53, 243–261.

Kusi A. M., and W.J., 2016. Is Eradicating Child labor by the Year 2025 Feasible? Insights from Small-Scale Mining Operators in the Amansie West District of Ghana. Br. J. Econ. Financ. Manag. Sci. 11, 91–106.

Langer, A., Stewart, F., 2013. Horizontal Inequalities and Violent Conflict: Conceptual and Empirical Linkages. Cent. Res. Peace Dev. - Work. Pap. doi:10.4324/9780203105962.ch9

Lynch-Wood, G., Williamson, D., 2007. The social licence as a form of regulation for small and medium enterprises. J. Law Soc. 34, 321–341. doi:10.1111/j.1467-6478.2007.00395.x

Macartan Humphreys, Weinstein, J.M., 2008. Who Fights? The Determinants of Participation in CivilWar. Am. J. Pol. Sci. 52, 436–455.

Maconachie, R., 2016. The extractive industries , mineral sector reform and post-con flict reconstruction in developing countries. Extr. Ind. Soc. 3, 313–315. doi:10.1016/j.exis.2016.03.004

Majoch, A.A.A., Hoepner, A.G.F., Hebb, T., 2016. Sources of Stakeholder Salience in the Responsible Investment Movement: Why Do Investors Sign the Principles for Responsible Investment? J. Bus. Ethics 140, 1–52. doi:10.1007/s10551-016-3057-2

Maystadt, J.-F., Luca, G. De, G.Sekeris, P., John Ulimwengu, 2014. Mineral resources and conflicts in DRC: A case of ecological fallacy? Oxf. Econ. Pap. 66, 721–749. doi:10.1093/oep/gpt037

Mcquilken, J., Hilson, G., 2016. 16618IIED - Artisanal and small-scale gold mining in Ghana. Evidence to inform an Action Dialogue - pubs.iied.org.

Michael E. Porter and Mark R. Kramer Big, 2011. Capitalism is under siege. Creating Shared Value. Harvard Bus. Rev. 89 63, 62–78.

Minerals Commission of Ghana, 2015. Artisanal & Small Scale Mining (ASM) Framework.
Minerals Commission of Ghana, 2006. Minerals and Mining Act , 2006 1–59.

Moffat, K., Zhang, A., 2014. The paths to social licence to operate: An integrative model explaining community acceptance of mining. Resour. Policy 39, 61–70. doi:10.1016/j.resourpol.2013.11.003

N.Ghauri, B.I.P. and P., 2015. Determinants influencing CSR practices in small and medium sized MNE subsidiaries : A stakeholder perspective. J. World Bus. 50, 1–33.

O'Brien, R.M., 2007. A caution regarding rules of thumb for variance inflation factors. Qual. Quant. 41, 673–690. doi:10.1007/s11135-006-9018-6

OECD, 2013. Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, OECD. doi:10.1787/9789264185050-en

OECD - Development Assistance Committee, 2005. Valuable Minerals and Violent Conflict 1–10.

Ohmura, H., 2012. Natural Resources and the Dynamics of Civil War Duration and Outcomes 1–29.

Owen, J.R., Kemp, D., 2014. "Free prior and informed consent", social complexity and the mining industry: Establishing a knowledge base. Resour. Policy 41, 91–100. doi:10.1016/j.resourpol.2014.03.006

Owen, J.R., Kemp, D., 2012. Social licence and mining : A critical perspective. Resour. Policy 1–7. doi:10.1016/j.resourpol.2012.06.016

Owusu, O., Wireko, I., Mensah, A.K., 2016. The performance of the mining sector in Ghana: A decomposition analysis of the relative contribution of price and output to revenue

growth. Resour. Policy 50, 214–223. doi:10.1016/j.resourpol.2016.10.006

Patel, K., Rogan, J., Bebbington, A., 2016. Evaluating conflict surrounding mineral extraction in Ghana : Assessing the spatial interactions of large and small-scale mining. Extr. Ind. Soc. 3, 450–463. doi:10.1016/j.exis.2016.01.006

Paul Co, Anke Hoeffl, P.L.B., 2003. Confl ict Minerals by Cold War, United Nations, Development Program 216, 82–88.

Pies, I., Hielscher, S., Beckmann, M., 2009. Moral Commitments and the Societal Role of Business : An Ordonomic Approach to Corporate Citizenship. Bus. Ethics Q. 3, 375–401.

Popa, M. and Salanță, I., 2014. Corporate social responsibility versus corporate social iresponsibility M & M. Manag. Mark. Challenges Knowl. Soc. 9, 135–144.

Porter, M.E., Kramer, M.R., 2011. Creating sh 62. Harv. Bus. Rev. 63–77. doi:10.1108/09600039410055963

Prno, J., 2013. An analysis of factors leading to the establishment of a social licence to operate in the mining industry. Resour. Policy 38, 577–590. doi:10.1016/j.resourpol.2013.09.010

Prno, J., Scott Slocombe, D., 2012. Exploring the origins of "social license to operate" in the mining sector: Perspectives from governance and sustainability theories. Resour. Policy 37, 346–357. doi:10.1016/j.resourpol.2012.04.002

Rees, C., Kemp, D., Davis, R., 2012. Conflict Management and Corporate Culture in the Extractive Industries: A Study in Peru 1–38.

Ross, M., 2013. The Politics of the Resource Curse: A Review. SSRN [online] http//ssrn. com/abstract 1–29.

Ross, M., 2008. But seriously: does oil really hinder democracy?

Ross, M.L., 2014. What have we learned about the resource curse ? 1–28.

Ross, M.L., 2008. Does Oil Hinder Democracy? World Polit. 53, 325–361. doi:10.1353/wp.2001.0011

Ross, M.L., 1999. The Political Economy of the Resource Curse. World Polit. 51, 297–322. doi:10.2307/25054077

Royal Swidish Academy of Sciences, 2009. Economic governance: Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2009. [WWW Document].

Rustad, S.A., Østby, G., Nordås, R., 2016. Artisanal mining , con fl ict , and sexual violence in Eastern DRC. Extr. Ind. Soc. 3, 475–484. doi:10.1016/j.exis.2016.01.010

Salzmann, O., Ionescu-somers, A.; U.S., 2005. Corporate license to operate ( BCS ) - review of the literature and research options. Forum for CSM. Lausanne, Switzerland.

Stoop, N., Buraye, J.K., Verpoorten, M., 2016. Relocation, reorientation, or confrontation? Insights from a representative survey among artisanal miners in Kamituga, South-Kivu (No. IOB 2016-09. ISBN 2294-8643).

Tschakert, P., Singha, K., 2007. Contaminated identities: Mercury and marginalization in Ghana's artisanal mining sector. Geoforum 38, 1304–1321. doi:10.1016/j.geoforum.2007.05.002

United Nations, 2015. Transforming Our World: the 2030 Agenda for Sustainable Development 1. New York.

United Nations Human Rights, 2011. Guiding Principles on Business and Human Rights Guiding Principles on Business and Human Rights 1–35.

United States Deapartment of Labour's Bureau of International Labour Affairs, 2013. Ghana Ghana.

United States Institute of peace, 2007. Natural Resources , Conflict , and Conflict Resolution. Washington DC. NY.

USAID, 2005. MINERALS & CONFLICT. A Toolkit For Intervention.

van Duuren, E., Plantinga, A., Scholtens, B., 2016. ESG Integration and the Investment Management Process: Fundamental Investing Reinvented. J. Bus. Ethics 138, 525–533. doi:10.1007/s10551-015-2610-8

Wieland, J., 2014. Governance Ethics: Global value creation, economic organization and normativity. Berlin et al.: Springer., Berlin.

Wolff, S., 2004. Economics of Conflict and Peace.

World Bank, 2011. Political economy of the mining sector in Ghana. The World Bank Africa Region, Public Sector Reform and Capacity Building Unit (No. 5730). Accra.

Interview sources and documents

Minerals Commission Ghana, Division for Small-Scale Mining, Accra.

Republic of Ghana Parliament Act 652, PMMC certification in view of Kimberly protocols.

Republic of Ghana Parliament Act 179 of 1963 State own company, limited liability act.

Republic of Ghana Parliament diamond export

## 3. Analyzing the determinants of conflict in SSM in Ghana


### Abstract

Recent renewed interest in investment in the mining sector in developing countries holds the promise of spurring development in Africa. In many African countries, however, the rising hope of profits from gold mining is leading to gold rush phenomena and the associated violence. In Ghana, this raises public concerns about mining investments and security threats in host communities. This chapter empirically examines the nature and determinants of SSM conflicts at the community level, focusing on two districts in the Ashanti region where there are high rates of conflict. Drawing on field-based research, our findings suggest that artisanal gold mining in these communities is coupled with violence. The adverse outcomes of mining produce certain experiential conditions for violence. The situations worsen when the socio-economic inequalities connected with land rights issues and mining failures are unresolved. Exacerbated differences underpin group formation along prevailing ethnic affiliations and household size, increasing the risk of conflict. The prevailing weak enforcement of land rights is a key predictor of both conflict and the incidence of higher categories of certain types of violence. However, the provision of alternative employment opportunities, including farming and relative equality in asset ownership, should reduce the frequency of encountering specific conflict. A better comprehension of the nature of mining-related conflict is indispensable for attracting and sustaining the flow of investment to the mining sector and contributes to the mitigation of conflict in affected communities.

## 3.1. Introduction

In recent years, many middle-income and developing countries with natural resources available for potential extraction have reshaped their minerals policies to attract investment from wealthy nations. Mining policy reforms have increased mineral production tremendously, providing an alternative source of employment in many sub-Saharan African countries, including Ghana (Hilson and Yakovleva 2007; Rodriguez et al., 2004). However, the growth of this sector has also crowded out local labor from the agricultural sector. Thus, small-scale gold mining communities in Ghana are afflicted by the continuous occurrence of numerous types of conflict. This has led to a public outcry against the security threat stemming from mining communities. Maintaining peace has become a crucial concern for stakeholders in the artisanal mining sector. The multinational companies, the hosting society or communities, research practitioners and policymakers, among others, are all interested in accomplishing this objective. An ongoing debate on natural resources and conflict is thus receiving full attention in the academic literature on developing countries.

The Ghanaian case is not qualitatively different from the overall recent global trend of natural resource extraction leading to conflict. Nonetheless, Ghana's conflict situation has not reached the worst conflict-massacre levels as measured by the Heidelberg conflict classifications (HIIK, 2015). The HIIK approach classifies conflict as low intensity when it involves a dispute, it defines non-violent crisis or medium intensity conflict as crisis and limited war, and high-intensity strife is marked by warfare.

Most developing countries that enjoy natural resources in abundance have the potential to use these resources to fuel economic development, which would lessen their over-dependence on aid from developed countries (Maconachie, 2016; Maconachie and Binns, 2007), for example. In Ghana, natural resources such as gold and diamonds, among other extractive minerals, have been the most significant contributor of foreign exchange earnings

to general economic development (Owusu et al., 2016). As in many African countries, revenue from natural resources serves as a significant source of income supporting the livelihoods of many rural households (Armah et al., 2016; Banchirigah and Hilson, 2010; Hilson and Garforth, 2013; Nick and Janvier, 2016). The role of mineral resources in economic and conflict development has received extensive attention in the political economy literature (Armah et al., 2016; Bush, 2009; Collier et al., 2004; Collier and Hoeffler 1998; Geenen, 2013; Geenen and Claessen 2014; Hilson, 2001, 2013; Hilson and Garforth, 2013) and in policy groups (International Labour Organizations, 2007).

Although the mining sector in Ghana on aggregate, at the national level, provides less employment than agriculture, it offers a higher number of work hours (48.1:35.6) per week with an hourly income of GH₵ 3.7 (US$ 0.96 at 2016 rate) compared to 0.85 (US$ 0.22 at 2016 rate) Ghanaian cedis, respectively (Ghana Statistical Service, 2014a). The country's global gold output is about 108.2 tons per year, making Ghana the tenth largest producer, representing 3.4% of world mining production in the year 2014 (Ghana Chamber of Mines, 2014). Although gold production from SSM makes up 34% of the country's total output (ibid.), it comes at the cost of human rights abuses (World Bank, 2011) that result from mining-related violent conflict. Can investors and policy actors continue to invest in the SSM sector in the face of growing violence? This concern broadly calls for in-depth discussions on the determinants of the developing violence in artisanal gold mining.

There is no doubt that Ghana has observed the relatively diminishing incidence of long-standing tensions between organized artisanal miners and major LSM companies such as AngloGold Ashanti, for example, in the Obuasi Municipal. Unfortunately, this situation is changing for the worse. Some scholars attribute the positive peace development to the forged agreement of allowing ASM workers to encroach on AngloGold's concessions (Hilson and Garforth, 2013).

Even as practitioners, researchers, and policy-makers observe emerging mining-related violence in Ghana (Armah et al., 2016; Bush, 2009; Carson et al., 2005; Hilson and Garforth, 2013; Hilson and Potter, 2005; Hilson and Yakvleva, 2007; Patel et al., 2016; Tschakert and Singha, 2007), empirical analysis of the nature of the conflict and its determinants at the household level in the pre-civil-war setting is, nonetheless, limited. Some observers attribute Ghana's mining conflict to a lack of political communication, while some national representative survey reports site land disputes and chieftaincy issues as the primary source of conflict (GLSS 6, 2014a, pp. 183–184). Not much is known about the nature of the disputes that households experience in Ghana's artisanal mining communities, what determines individual household exposure to these conflict, or the frequency of such disputes.

The past challenges suggest that individual households might face similar challenges in these communities considering the number of mineral discoveries (such as gold) has increased nationwide and therefore requires attention. With this current situation, for instance, it would be interesting to know what happens to households in mining communities as unfair competition for mining concessions rises. Research in this area is justified for several reasons. First, violence in SSM poses a renewed and continuous security threat, and it constitutes a primary source of income for rural inhabitants (Kayla et al., 2016; Hilson and Potter, 2003; Hilson and Garforth, 2012). Second, the fact that SSM makes a significant contribution to Ghana's total gold production coupled with the recent nationwide gold rush and accompanying violence warrants this timely research on the nature and determinants of violent conflict in the sector in hopes of guiding violence abatement policies.

This chapter aims to address the following empirical problems: What is the nature of violence involving households in artisanal mining communities? What factors determine a household's chances of encountering violence and how frequently do the various categories of violence occur? To investigate these issues, the chapter offers a more coherent empirical

evaluation of the nature and determinants of conflict associated with artisanal mining by discussing how horizontal inequalities and the greed versus grievance hypothesis influence how households encounter conflict. It then identifies the possible pathways of the households' encounters with conflict in the Ghanaian mining context. It further attempts to quantify the factors that influence the households' encounters with conflict statistically and estimate the frequency of such encounters using evidence from a selection of mining communities in the Ashanti region of Ghana.

Therefore, this thesis offers a better understanding of the nature of conflict to guide effective mitigation strategies for existing and emerging conflicts in the sector. Its findings should also contribute to the development of early warnings for violent conflict and possible mining-related civil war as widely argued in the "conflict-minerals" literature (Bush, 2009; Collier and Hoeffler 1998; Ross 2013). Better still, this focus should inevitably enhance and sustain renewed incentives for financial investment and promote a good business environment that creates societal and business shared value through social development and the prevention of human rights violations (Owusu et al., 2016; Porter and Kramer, 2011).

To tackle the research problem posed above, first, we present the general application and a review of the literature on the determinants of mining-related conflict followed by the materials and methods. In the penultimate section of the chapter, we describe the data collection strategy and outline its empirical estimations in identifying the factors that affect households' encounters with violent conflict and the frequency of those encounters by category. In the last section of the chapter, we present the discussion of the empirical results and the conclusion.

## 3.2. Determinants of mining conflicts: Theories and the related literature

This section provides a brief overview of the theoretical attempts to explain the pathways of artisanal mining and conflict and identify the determining factors of conflict at the micro level. Drawing on these existing theories, this section categorizes the plausible pathways and mechanisms through which violence can occur in artisanal mining communities. From the burgeoning literature, we find the following theories useful in explaining drivers of conflict in mining: the horizontal inequality hypothesis, the greed hypothesis, and the grievance hypothesis.

According to the horizontal inequality hypothesis, economic, social, political, and cultural inequalities among groups of people (such as households in this case) are more likely to stimulate the development of conflict (Langer and Stewart, 2013). Inequalities in such areas as asset ownership, resource ownership, and educational opportunities, for instance, which disadvantage many of the population in the society, induce violence. Disadvantaged individuals, in this situation, are motivated to seek justice through violence (Gurr, 1970; Stewart, 2000). Therefore, households might be more prone to provoke conflict in mining communities where issues of land resource inequalities exist, primarily when the resource or asset serves as a competing resource for both mining and farming.

The grievance theory perspective surmises that individuals turn their grievances into a violent quest for justice when they get frustrated with deprivation, mainly from natural resource rents. It further posits that the horizontal facets might constitute grievances that in turn create incentives for political mobilization or rebellion due to political inequalities. Inequalities in employment, resource acquisition, access to use of resources (e.g., land, water resources, and forests) or non-benefit from rents, may lead to grievances and rebellious conflict in resource-abundant communities (Hinton, 2005). It is noteworthy to mention that the intensity of violence induced by socioeconomic inequality may depend on whether the

community or household is resource-dependent or not. Researchers argue that grievance and rebellion are encouraged by factors such as wealth, education, and material offers, which are highly likely to motivate combatants to take part in conflict (Humphreys et al., 2008). This suggests that a multifaceted group of inequalities relating to cultural identity and socioeconomic and political conditions jointly increase the probability of violent conflict. Economically, resource and income inequalities are the major causes of civil wars (Collier and Hoeffler, 1998), while rebellions might be enhanced through ethnic or religious affiliation (Collier et al., 2004). To a more considerable extent, the horizontal inequality hypothesis buttresses grievance (Langer and Stewart, 2013; Stewart, 2000).

Proponents of the greed theory, on the other hand, support the assessment that the presence of natural resources is the most critical determinant of civil wars as opposed to political factors (Collier, 1998). The interest and pursuit of control over natural resources is the root source of civil conflict in countries with abundant natural resources. In brief, the primary tenet of greed theory is that greed over resources, production, ownership, and control of resources including its rent, is likely to stimulate the onset of civil war.

These theories have been indirectly used and argued in many ways to explain the relations between natural resources and conflict with exciting conclusions, especially in the post-civil-war setting (Cuvelier et al., 2014). This study makes noteworthy references to earlier literature that provide a useful context for analyzing the determinants of violence in a non-post-civil war setting. Some earlier work has centered discussions on the link between resource rents and armed conflict (Collier, Hoeffler and Söderbom, 2004; Meger, 2010; Rustad et al., 2016); others argue for the importance of resources and economic development (Aryee, 2001), while some explore the abundance and physiognomies of certain natural resources and their potential to pose governance challenges (Ross, 2008, 2011). Oil, in particular, has been found to be a catalyst for conflict, favoring the development of rebellion

(Foreign Affairs, 2008). It has also been found to be a potential instrument for weakening governance in democratic states, although some researchers argue against a positive correlation between oil discoveries and conflict (Cotet and Tsui 2010: 2013).

The work of Humphreys and Weinstein (2008) is of high relevance to this discussion. These authors document the influence of poverty, material wellbeing (assets ownership), lack of access to education and political alienation on individuals' choices to engage in armed conflict in mining regions. Their findings suggest that the opportunistic behavior of resource actors is a problem peculiar to natural resource exploitation, especially with the inequalities of artisanal mining in employment opportunities, access to resources, resource usage and ownership, and resource management.

In the case of Ghana's SSM, empirical estimations of the nature and determinants of violent conflict among households in mining communities are less known, although many studies have found a relationship between natural resources competition and disputes (Kusi Appiah et al., 2014; Collier and Hoeffler, 2014; Ross 2004). Researchers have attempted to explain conflict on a spatial dynamic (Patel et al., 2016), as a gender disparity among miners (Armah et al., 2014), or by using a case study of the conflict between illegal SSM and Bogoso Gold Limited (Hilson and Yakovleva, 2007). Both studies by Hilson et al. (2007) and Bush (2005) found that poor SSM policy among other factors was the leading cause of conflict, while Patel et al. (2016) identified the Ashanti region as hosting the highest number of mining companies and a significant conflict zone where encroachment on LSM concessions by small-scale miners were common. On the other hand, Armah et al. (2014) identified trust and world market prices for gold as the main factors determining artisanal mining conflict.

In Ghana, artisanal miners are known occasionally to encroach on LSM concessions (Armah et al., 2016; Bush, 2009; Carson, Cottrell, Dickman, Lee, and Miao, 2005; Hilson,

2001; Hilson and Garforth, 2013; Hilson and Potter, 2005; Hilson and Yakvleva, 2007; Patel et al., 2016; Tschakert and Singha, 2007). In addition, artisanal gold mining activities are branded as entangled with inevitable conflict. The conflict inflicts social disturbances due to the mobility nature of the work and its associated social vices from activities like drug and alcohol abuse, child labor, school dropouts, militarization of some artisanal groups and environmental degradation (Armah et al., 2014; Carson et al., 2005; Kusi et al., 2016).

Grounded in existing theories, the academic literature on violence and artisanal mining, and developing evidence from policymakers, the current thesis identifies land rights challenges, economic inequalities, and the adverse effects of mining as the potential paths through which artisanal gold mining heightens the possibility of a household encountering violence in a non-post-civil-war conflict setting.

### 3.3. Mining conflict pathways in Ghana

In this subsection, we apply the lessons from resource conflict literature to the narrow case of Ghanaian artisanal mining. Households from Ghanaian mining communities are likely to experience violence through any of the three primary mechanisms identified, which are briefly explained here.

First, gross socioeconomic inequalities among rural households based on access to resources and the distribution of resource rents may undoubtedly be a source of violence in mining communities. Suspiciously, mining is perceived in Ghana, as in many other developing countries, as enabling a quantum jump in job creation to solve the unemployment problems that bedevil these nations. As a result, households may have false hopes and expectations of windfall gains from mining income (Stoop et al., 2016). Families in mining communities thus become more exposed to land rights disputes due to the high rates of gold discovery as their expectations from mining increase.

It is widely believed that artisanal mining offers a reliable new source of direct and indirect employment and rent due to land resource ownership and transfer. However, the expected gainful jobs and related benefits are mostly unrealistic for rural households. Consequently, increased mining activities in mining communities result in land use conflict, instead of employment. Generally, mining is more likely to create conditions that worsen inequalities among groups in rural communities because of the highly contested livelihood opportunities it brings, contrary to expectations (Owusu et al., 2016). The lack of alternative employment opportunities and land tenure security may be an even higher source of mining conflict in Ghana. Indeed, the failure of the state to allocate land appropriately to small-scale miners is usually believed to be one of the major causes of conflict in Ghana (Hilson and Yakovleva, 2007).

Second, the adverse consequences of mining and the illegal conversion of farming lands to mining land are also likely sources of violence in mining communities. Uncontrolled adverse outcomes, such as the open pits that represent direct safety hazards for humans and breeding sites for mosquitoes, along with massive pollution of major rivers and water bodies (Ramah et al., 2013), are likely to spur local mining community households, the direct victims of these negative consequences, to seek justice through violence. Some observers attribute violent conflict in Ghana to a lack of community engagement and consultation between stakeholders and because of the differing expectations of the impact of mining on socioeconomic conditions (Armah et al., 2016). Hilson and Potter (2005) report mixed findings and argue against government capacity limitations as the critical trigger rather than the lack of government interest in establishing artisanal mining on a solid footing. In addition to adverse environmental effects, some have pointed to the lack of knowledge about community dynamics as the major indirect contributor to the ecological consequences of artisanal mining (Tschakert and Singha, 2007). More importantly, this may provide possible

evidence that mineral discovery and exploitation and their undesirable adverse effects in or to the society are the main issues that induce violence (Davis and Franks, 2014).

Natural resource management, including the improper management of land rights, could be a third source of conflict in Ghanaian mining communities. As stated above, fierce competition over resource use makes land rights disputes a significant path for the development of mining-related violence in Ghana. Lax monitoring and enforcement of land issues, including mining concessions, in predominantly farming communities may be a significant catalyst for violence. Most mining communities in Ghana are now spatially characterized as zones with heightened competition over mineral-rich lands (Kayla et al., 2016). The discovery of minerals such as gold and diamonds including their rent has been identified as the primary cause of conflict in some regions of Ghana (Ababio, 2015). Others have argued that the provision of certain kinds of government services, such as effective institutions for management purposes and the rule of infrastructure, reduces violence (Berman and Felter, 2014). This suggests that the effective institutional management of land rights is essential to violence mitigation because land resources serve as a primary but competitive resource for farming and mining in Ghana. Poor management of land disputes arising from weak institutional capacity is thus probably a catalyst for violence.

The literature reviewed in this thesis indicates that natural resources such as oil and gas; land; water; forests; and other extractive minerals like gold, tin, and diamonds are the most critical resources of interest for the outbreak, duration, and reoccurrence of conflict. We, therefore, argue that unresolved land rights disputes and worsening mining conditions and the adverse effects of mining may be important variables to look at when examining mining community households' encounters with conflict, including the frequency of occurrence. Moreover, horizontal inequalities in asset ownership especially land resource ownership,

socioeconomic disparities between minority and majority ethnic groups classified by land resource access, and discrimination concerning rights to mine can be sources of conflict.

Despite methodological disagreements on establishing the relationship between natural resources and conflict, specifically in finding appropriate and correct ways to measure these relationships (Ross, 2006), limited evidence also exists to support this relationship in post-war-conflict settings (Cuvelier et al., 2014). There is, therefore, a need for more insight from non-post-war conflict settings. By addressing that need, this thesis hopes to contribute to the more profound understanding of the nature of the conflict and its determinants.

## 3.4. Materials and methods

### 3.4.1. Data description

Several data collection strategies were used concurrently to try to achieve a broader comprehension of the specific social reality of conflict situations in mining communities. Credibility, internal and external validity, and objectivity were ensured by sourcing data from a wide range of respondents through household surveys, expert interviews, and focus group discussions (Bitsch, 2005; Shenton, 2004; Guba, 1989). The data were collected between July and October 2015. First, we conducted expert and key informant interviews with representatives of various institutions to obtain the district and community level sample frame. The focused institutions were the Minerals Commission (the national and Ashanti region district offices), the Ghana Cocoa Board Research Centre (Amansie West), and the Ministry of Lands and Natural Resource Division (national and Ashanti region district offices). We focused on the Ashanti region, where ASM activity and conflict are intense. Two districts (Amansie West and Bosomtwe) were selected strategically and purposefully, followed by a selection of ten communities from the sample due to research interest, resource

availability, and for economic reasons. Out of this sample, 250 household (HH) heads from both mining and non-mining households were randomly selected for the HH survey as a means of gaining useful information about what is happening in the communities. Second, eight focus group discussions (FGDs) were held in select communities with 3 to 4 (a total of 37) participants to obtain community-level information on the diverse aspects of ASM and conflict, before community household-level interviews were conducted. The representatives of FGDs included the affected farmer's groups, traditional leaders (a community chief or queen mother when present), artisanal miners, community youth who were non-farmers, assembly-women, district stool lands administration, and palace elders. Via semi-structured questionnaires, focus group participants deliberated on the relationship between ASM activities and conflict, the types of conflict and their causes, and the effect of conflict over the last 12 months. The group employed a simple majority rule on some decisions on differing views, but the researcher captured all of the different observations and outcomes for a holistic view.

A relatively large sample size of 291 participants was used in this study, although it was challenging to select respondents due to the dangerous nature of the ASM business (Geenen and Claessen, 2013; Nik et al., 2016). The HH questionnaires gathered detailed information on households' experience of violence, the number of times violence occurred per year, whether AS mining has happened on their land before, or whether their property had been offered for gold mining, in addition to the general socioeconomic characteristics of each household.

### 3.4.2. Empirical estimations

### 3.4.3. Determinants of conflict

To examine the nature and types of factors that affect households' encounters with conflict in the SSM communities, we specified and estimated the probability of household conflict experience in general (Models 1 through 4). This was followed by the estimation of the number of times household experienced conflict that had occurred in the districts of Ashanti in Ghana that were studied (Models 5 through 7). Probit and ordered probit models were used in the respective estimations. We conducted a diagnostic test to detect the presence of collinearity by computing variance inflation factor (VIF) and Pearson's correlation estimates for all variables of interest in the models. STATA 14 was used for all the estimations.

### 3.4.4. Estimation of the factors that influence households encountering conflict

The household survey element determined the exposure to or experience of conflict variable: "Have you encountered violent conflicts in this neighborhood or community in the last 12 months?" The dependent variable, "encounters with conflict in general (Yi)," assumes only two values: "1" if a household experienced any conflict in the community and "0" if a household did not experience any conflict.

Following the literature, probit models were employed in the measurement of the determinants of conflict related to extractive minerals (Maystadt et al., 2014; Berman et al., 2014; Besley and Persson, 2011; Humphreys 2008). We further employed probit models to measure the factors that influence the probability that a sampled household encounters conflict and the number of times they encountered conflict. The estimates from the probit

model extend the likelihood of the probability density function in predicting the factors that influence households encountering conflict. The empirical model is then expressed as:

Equation 1: Probit model for estimating conflict encounters

$$Yi = Xi\beta i + \mu i \quad (1)$$

where Xi is the vector of explanatory variables that influence conflict, βi is the coefficients of the explanatory variables, and μi is the error term capturing all the unmeasurable factors that affect a household's encounter with conflict.

Equation (1) is estimated using probit models for determining the factors that affect households encountering conflict in general (see the results in Table 3, Model 1). As the factors might differ for various conflict types, the estimation procedure is then repeated separately for each important conflict type as the dependent variables in determining the factors that influence encounters with the respective conflict types. The reported cases of major types of conflict, such as physical violence, threats, and security guard[13] attacks, are relatively less skewed toward very low conflict or otherwise (see Table A. 2). Other minor conflict types, such as tribal conflict, community versus artisanal miners' conflict, targeted robbery, and "other conflicts" were excluded from the model due to their high distribution toward minimal conflict. The dependent variables for the second level are also the dummy: Each takes a value of "1" if the household encountered any of the respective conflict types and "0" if not. The descriptions of the predictor variables are presented in the following section.

[13] Security guard threats and attacks are from a mob or armed group (usually illegal) that guards land property. These are typical in Ghana, and the guards threaten, physically assault and in some cases, kill individuals in affected communities over land ownership disputes.

### 3.4.5. Description of explanatory variables

In general, as guided by discussed theories (see section 3.2), the determinants of conflict can be observed at the individual level (Macartan, Humphreys, and Weinstein 2008), community level, and group level (Collier et al., 2004; Newman and DeRouen, 2014), and at economic status level implicit in horizontal inequality (Langer and Steward, 2013). The discussed literature guided the choice of the explanatory variables. Table 2 summarizes the explanatory variables used, their definitions, and their expected relations with conflict. In this thesis, we do not claim a causal relationship between artisanal mining and violent conflict based on the estimations because the dataset is a cross-section. Nonetheless, the analysis yields expedient and insightful inferences from the supporting empirical evidence and the theories discussed. Farming is used as a proxy for capturing the main employment type of the communities where the primary employer is farming.

Table 2: Explanatory variables used, their definitions, and their relations with conflict

| **Variables** | **Description and measurement** | **Expectations/working hypothesis** | **Literature** |
|---|---|---|---|
| *Socioeconomics* | | | |
| Household size | A continuous variable measuring the total number of household members | HHs with a higher family size are more likely to encounter conflict if they depend heavily on farming that competes with mining for same land | Langer and Stewart, 2013 |
| Gender of head-of-household | The gender of HH main decision maker. Male=1, female=0 | Females are less likely to become involved in violence than males since they are the most victims | Newman et al., 2014:23 |

| | | | |
|---|---|---|---|
| Major employment type | Farming as head's major employment. If HH head is a farmer=1, 0=non-farmer | HHs with a head who is a farmer are more likely to encounter conflict involving miners as they compete for same land resources | Stewart, 2000; Langer and Stewart, 2013 |
| Marital status | Marital status of a HH head is Married=1, unmarried=0 | Married HH head is more risk-averse to conflict due to family keeping than unmarried | Langer and Stewart, 2013 |
| Ethnicity | Major ethnic affiliation of head-of-household. 1 if belongs to a major ethnic group, 0 otherwise | HHs with a head belonging to a major ethnic group is expected to influence conflict if mining significantly affect their livelihood | Humphreys, 2008; Collier et al., 1998 |
| Occurrence of AS mining | Whether small-scale mining occurred on household's land. 1=yes, 0=no | HH head who witnessed mining on their land are more likely to encounter conflict | Berman et al., 2014; USAID, 2005 |
| Land Assert | Measure HH's ownership of Land Assert. Yes=1 if own a land, 0=no | HHs with a large land asset holdings are less poor and less likely to encounter poverty-driven conflict | Humphreys, 2008 |
| *Perception* | | | |
| Poverty | HH's perception of the relation between poverty and conflict. Yes=1, if HHs perceive poverty as the primary cause of conflict, no=0 | HHs that are relatively less poor would be less likely to support conflict, and less likely to ascribe poverty as a driver of conflict in a mining community or vice versa | |

| | | | |
|---|---|---|---|
| Land right issues | HH's perception of land rights issues as a major cause of violent conflict. Yes=1, 0=no | HHs who perceive that land rights enforcement is weak and issues unresolved are more motivated to encounter conflict to protect their land, or otherwise | |
| Mining negative effects | HH's perception of mining-related negative effects as causes of violent conflict in the community. Yes=1, no=0 | HHs in a mining community are more likely to encounter a conflict when negative effects from mining are not addressed | Armah et al., 2016 |

Source: Table generated by author

### 3.4.6. Estimating factors that influence the frequency of conflict encounters

To capture the number of times specific conflict types were experienced by households, the frequency of conflict occurrence measured the number of times families experienced an unavoidable conflict in the community in the past twelve months. An ordered probit model was used in this estimation as it yields consistent and best estimates to overcome weaknesses faced by generalized and hierarchical ordered probit models (Greene and Hensher, 2009). Besides, knowing that the kinds of conflict occurring or encountered by households per given period differs, an ordered probit model is appropriate to explain separately the factors that influence the number of times such disputes arose.

Furthermore, we expect that knowledge of the frequency of conflict has a significant influence on conflict development. An understanding of the number of times specific types of conflict have been encountered will guide conflict intensity classifications by conflict actors

as being low, medium, or high (HIIK, 2015). Therefore, knowing the number of times, major conflict types have occurred is crucial for future conflict mitigation strategies. In predicting the probability of the number of times a head of household encountered a given kind of conflict, we compute the marginal possibilities for each conflict type. The ordered probit model is presented by

Equation 2: Ordered probit model for estimating frequency of conflict encounters

$$y^* = X'\beta + \mu \quad (2)$$

where the dependent variable (y*) is the unobserved latent and an ordered categorical variable containing the number of times households encountered a particular conflict category over twelve months. The categorization is as follows: "0" represents a very low number of conflict encounters (zero or no conflict), which is a dummy when the variable does not fall under any of the given categories. "1" represents a low number of conflict encounters, experiencing a particular conflict at least once but less than three times (1 to 2). A high number of conflict encounters takes a value of "2" if the number of times of experiencing the conflict is between 3 and 4, and a value of "3" for a very high number of conflict encounters (6 to 8) [Table 6].

$X'$ is the vector of the coefficients of the explanatory variables and $\mu$ is the error term capturing all the unmeasurable factors that influence the number of times a household experiences a given conflict, and it is assumed to be normally distributed. The independent variables are household size, employment, artisanal mining, gender, marital status, poverty, ethnicity, land rights issues, mining-related negative effects, and asset ownership.

The dependent variables are the categorical variables containing the frequency of the threat of conflict, the rate of physical violence, and the frequency of security guard attacks.

The frequency of violent fights measures any form of conflict that involves a physical attack that leaves the targets injured or dead. The frequency of the threat measures the number of reported forms of verbal threats including the threat of assault, the risk of legal summons, the danger of vandalism, and the threat of arson, ambush, and curses. The frequency of security guard attacks measures the number of attacks specifically from a gang of people using various dangerous tools or weapons (e.g., machete, guns, or bow and arrow), to prevent other parties from using a particular piece of land.

The independent variables hold their usual meaning (as discussed in section 3.4.5, Table 2). The choice of variables does not derive from an earlier model, but primarily on the theories reviewed and partly on research interest (see 1.2). An index model (Equation 2) for a single latent variable y* is only observable when it crosses the threshold or cut points y (Equations 3 through 4). The probability of observing outcome 1 corresponds to the probability that the estimated function, in addition to the random error, falls within the range of cut points (categories) estimated for the outcome:

Equation 3: Estimating the marginal probabilities of frequency of conflict encounters

$$\Pr(\text{outcome } j = i) = p(y = j) = \Pr(\alpha j\text{-}1 < y^* \leq \alpha j) \quad (3)$$

The model estimates $X'\beta$ together with the cut points $\alpha 1, \alpha 2, \ldots, \alpha j\text{-}1$, where j is the number of possible outcomes. The $\alpha 0$ assumes a negative infinity, and $\alpha j$ also implies a positive infinity. The F-statistic of the ordered probit model assumes the conventional Cumulative Distribution Function (CDF) of the standard normal distribution.

Equation 4: The CDF of the standard normal distribution

$$y = j \text{ if } \alpha j-1 < y^* \leq \alpha j \quad (4)$$

Due to the highly skewed nature of some conflict group variables toward very low or no conflict (having a higher percentage of zeros), these are not included in the ordered probit models in the determination of factors that influence the frequency of specific conflict occurrence (Table 7). They were excluded to improve the robustness of the models for more meaningful results and discussions. The omitted variables include theft, family, or tribal disputes; conflict between community and illegal miners; and those categorized as "other" conflict types.

### 3.5. Results and discussions

This section presents a discussion of the results from the analysis of the nature of the conflict, and the determinants of household encounters with conflict. It begins briefly with the summary of the general characteristics of the 250 households' respondents.

Characteristically, half (50%) of the households sampled are employed in the agricultural sector as farmers (28% were employed in mining). About 37 % of the sample had witnessed AS mining on their land or had converted farming land to mining. The socio-economic history of the respondents includes an average household size of 3, 78% of respondents owned land assets, 40% of households were female-headed, over 50% were married, and a majority (90%) belong to the dominant ethnic group: the Akan. Regarding the causes of conflict, few households believe that poverty is the leading cause of disputes (11%), 24% mentioned land rights disputes as the cause of conflict, and 30% attributed the violence exclusively to mining and related adverse factors (Table 3).

Table 3: Descriptive statistics

| Variables | Observations = 250 Standard deviation | Mean | Min. | Max. |
|---|---|---|---|---|
| ***Conflict encounter*** | | | | |
| Experience of conflicts since the last 12 months | 0.31 | 0.89 | 0 | 1 |
| Violent fight | 0.50 | 0.56 | 0 | 1 |
| Verbal threat of assault | 0.45 | 0.72 | 0 | 1 |
| Land guard attacks | 0.36 | 0.16 | 0 | 1 |
| Family or tribal disputes as a conflict type | 0.13 | 0.02 | 0 | 1 |
| Other conflicts | 0.13 | 0.02 | 0 | 1 |
| Community vs. Miners violence | 0.26 | 0.07 | 0 | 1 |
| ***Socioeconomics*** | | | | |
| House hold size | 2.24 | 3.23 | 1 | 9 |
| Gender of household head | 0.49 | 0.61 | 0 | 1 |
| Major employment type | 0.50 | 0.51 | 0 | 1 |
| Marital status of household head | 0.50 | 0.54 | 0 | 1 |
| Major ethnic affiliation of household head | 0.30 | 0.90 | 0 | 1 |
| House hold ownership of Land Asset | 0.42 | 0.78 | 0 | 1 |
| Whether small scale mining occurred on head's land | 0.49 | 0.38 | 0 | 1 |
| ***Perceptions on causes of conflict*** | | | | |
| Poverty as the major cause of conflict | 0.32 | 0.11 | 0 | 1 |
| Land right issues as a major cause of violence | 0.43 | 0.24 | 0 | 1 |
| Mining related negative effects as cause | 0.46 | 0.30 | 0 | 1 |

### 3.5.1. Types of conflict

This sub-section describes the conflict classifications based on the conflict types reported during the focus group discussions and the household interviews in the community, as well as the frequency of the encounters with conflict. Nearly all of the families (89%) in the sample indicated that they had been exposed to conflict (Table 3), which supports the

findings from post-civil-war settings that artisan mining is associated with violence (Berman et al., 2014). Exposure to certain types of conflict in the community in each period differs across households. Hence, we report that families encountered different conflict at least once within twelve months.

Figure 16 illustrates the results about the nature of the conflict experienced in the artisanal mining communities as experienced by households. Based on the outcomes of the focus group discussions, the conflict situations of the two districts are characterized broadly by theft, threat, and physical assault. We classified the level of this dispute as a low-intensity conflict, following the Heidelberg Methodological Approach (HMA) (HIIK, 2015). According to the qualitative characteristics classification of the HMA approach, the results from Ghana's mining conflict demonstrate a mixture of disputes and violence.

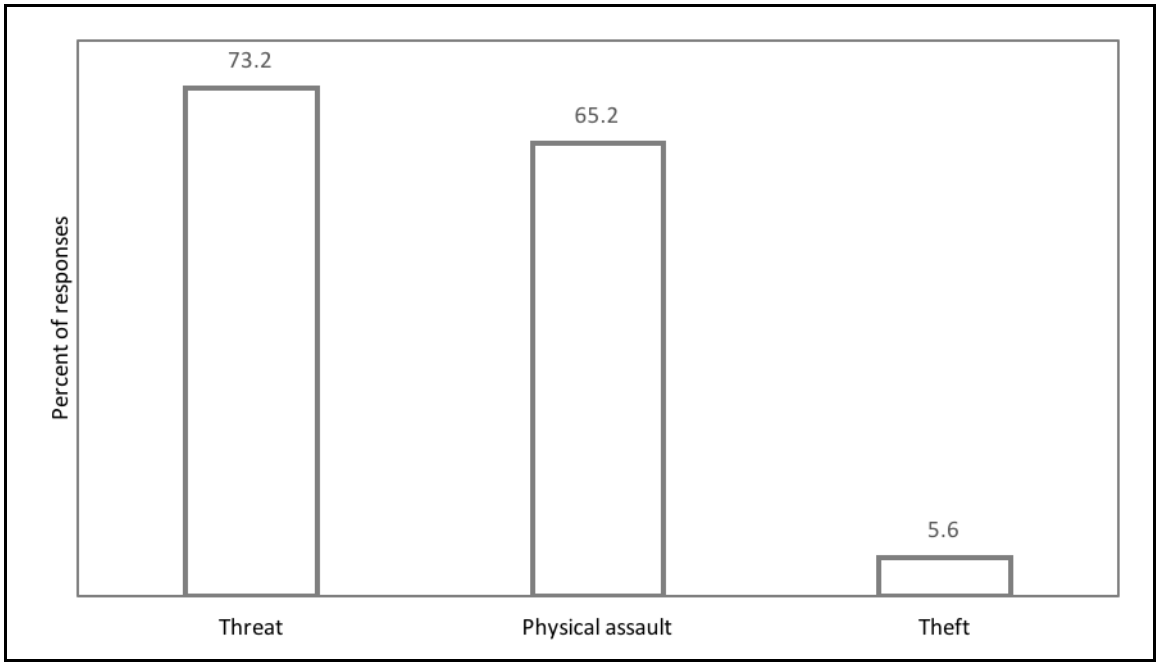



Figure 16: Characterisation of conflict types in the mining communities
Source: Generated from field data

Most of the households reported threats as the most common type of conflict in their communities (73%). Reported risks of assault also include verbal assaults and security guard threats. Per the households' account, security guard threats come in multiple forms, such as threatening to confiscate a piece of land or threatening to prevent a party or group of parties (the community) from accessing the disputed land, death threats, and threats of ambush. In addition, some focus group participants mentioned isolated cases of individual-level threats of curses when the traditional chief's palace summons fails. It is important to note that although the traditional chief's palace summons (locally known in the Akan language as "ahenfie-nsaman") may seem trivial, the consequences of a failure to obtain an amicable settlement for such a threat would be non-trivial in these communities. As one of the functional mechanisms for preventing further conflict, when this medium fails, it further threatens social cohesion and security. Most local people appeal to this as an oath to suspend a threat from materializing or de-escalating the threat of conflict. The majority of the respondents raised concerns about frequent threats of assault, ambush, security guard attacks, and curses. Importantly, some respondents hinted that most individuals in the community who invoke curses usually try to mobilize support for a group attack if the condition does not improve.

The second major identifiable conflict in the study communities is physical assault. About 65% of the experiences of conflict fell under this category. This type of conflict usually originates from groups such groups of mining workers with individuals from families taking opposing sides, between communities and a given mining group, among mining groups, and in some cases between community youth and community leaders.

Theft and robbery, on the other hand, is the third most noted type of violence experienced by households. This comprises both domestic and industrial theft, as well as robbery. Approximately 6% of the respondents indicated that they had experienced theft

activities frequently. Some attributed the theft to mining activities, which had brought "bad people" to the neighborhood. Others reasoned that robberies against non-local citizens were related to mining activities. Some were of the view that with the inception of mining, mass theft of dried cocoa beans and domestic animals occurred whenever the police halted mining activities.

Further inquiry into specific conflict encountered by households demonstrated that over 72% of households reported having experienced verbal threats, and 16% said the attacks came from security guards preventing their families from accessing their property (Figure 17). The security guard attacks usually follow previous threats or actual instances of conflict. According to the respondents, assaults from armed security guards were very high during the periods of gold prospecting, discovery, and mining. As these processes arise, cases of security guard attacks also increase.

Approximately 56% of respondents also listed violent brawls as the second most common type of conflict they encountered. The respondents indicated that this type of physical violence is exclusively mining-activity-related assaults such as open fights among groups of artisanal miners or attacks on other SSM groups that led to injuries and in some cases fatalities. This type of conflict hurts social cohesion and public order.

Some respondents (7%) encountered attacks and counterattacks between sections of the community and AS miners (both legal and illegal). We established that negligence of mining safety practices, leading to the deaths of children and adults alike from accidental falls into open pits, as the leading cause. In addition to this, others hinted that the community protested against the destruction, pollution, and extinction of major rivers that serve both domestic and agricultural purposes (for drinking water and irrigation). Examples of essential water resources that have been affected include Lake Bosomtwe and the Oda River in the Bosomtwe and Amansie West districts, respectively.

About 6% of respondents reported targeted theft as the current conflict. Another important revelation from the interviews was the high number of targeted robberies and robberies, especially against non-native miners in the communities during intense mining activities. Most of the victims of robbery attacks were foreign nationals such as Chinese workers, who formed the majority of foreign nationals actively engaging in artisanal mining in Ghana and Ghanaians from communities other than the mining communities in question. However, about 2% of respondents listed violence resulting from family or tribal disputes over land, as well as "other" unclassified violence, as the type of conflict they encountered the most. Tribal disputes often emerged from prolonged tensions built up due to the exclusion of either a household member or the entire household of a particular tribe from the mining land. The exclusion order may come from the family, a traditional authority, or a politician and lead to violent confrontations among families or fierce opposition against the miners or whoever buys or works on the disputed land.

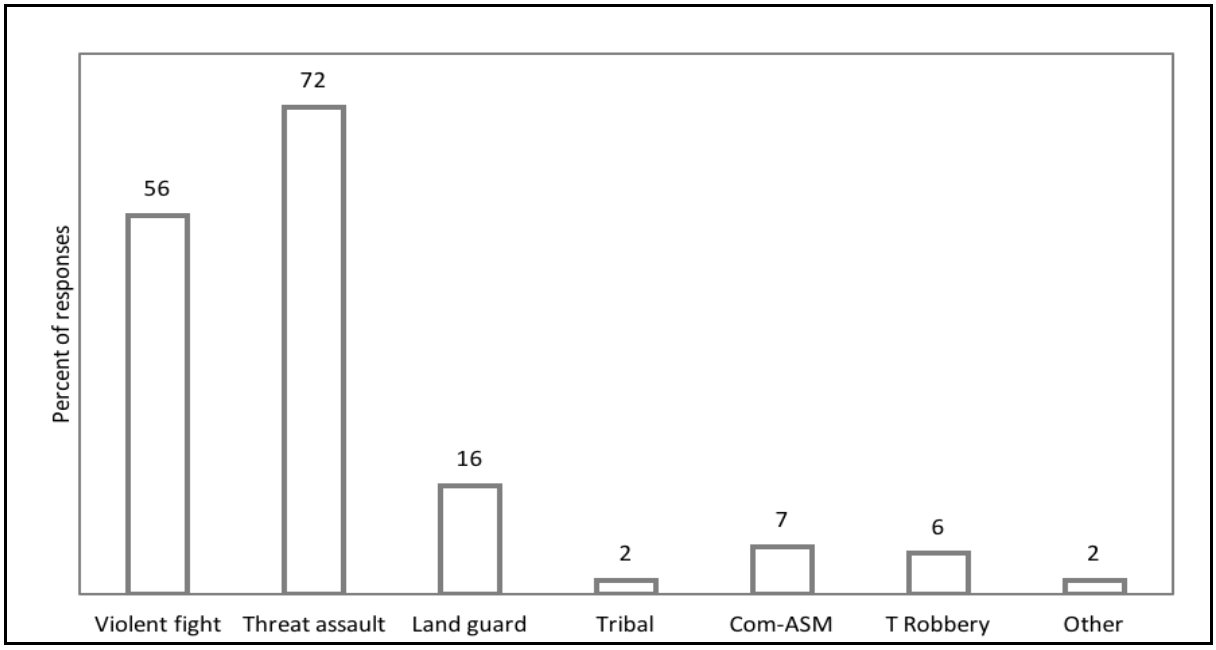



Figure 17: Conflict types reported in the mining communities
Source: Generated from field data

Figure 18 illustrates the recorded conflict categories (for very low conflict or dummies to the categories, see Table 7). On average, the results for the number of times households experienced specific conflict categories demonstrated that particular conflicts were encountered in the community at least once during the twelve-month period. Most homes on average met a low amount of friction for all the conflict types recorded, followed by high and very high categories, respectively. A significant number of households (39%) encountered high numbers of threats; 24% experienced physical violence; 5% experienced security guard attacks; and less than 4% encountered incidents such as theft, conflict between communities and artisanal miners, and other conflicts. Approximately 29% of households faced a low number of physical violence and threat conflict encounters; 9% faced security guard attacks; while less than 5% encountered theft, tribal disputes, disputes between communities and artisanal miners, and other conflicts.

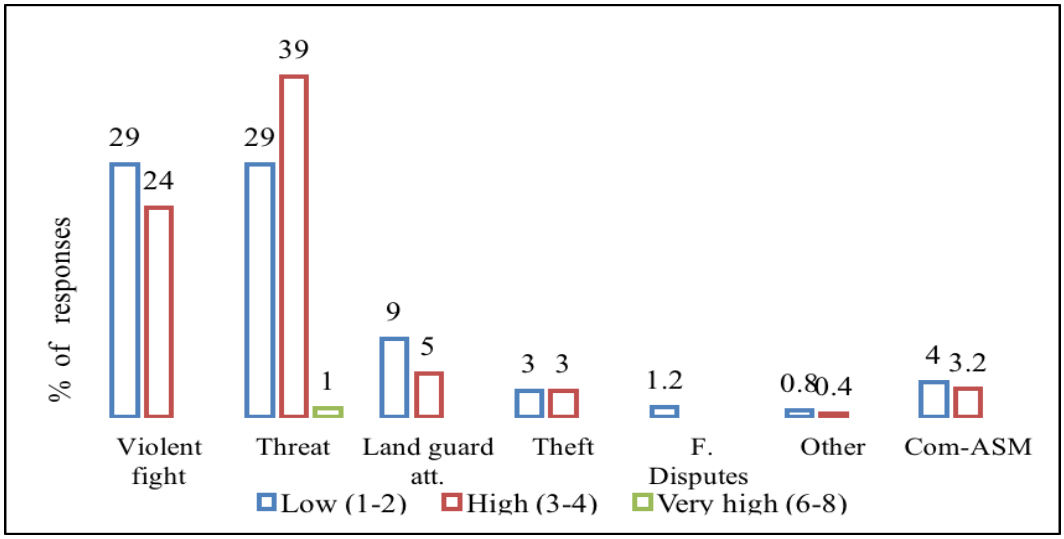



Figure 18: Distribution of conflict categories recorded
Source: Generated from field data

### 3.5.2. Empirical results and findings

We discovered that apart from factors such as employment, ethnicity, and artisan mining occurring, the rest of the variables were significant determinants of household encounters with conflict (Model 1). The results demonstrate that the influence of artisan gold mining on the land and ethnic affiliation of families is significant and more likely to influence the experience of conflict in general, while farmers are less likely to encounter conflict in general, holding other variables constant at their mean values. Consistent with the findings of other studies, the presence of minerals itself and its exploration is found to influence violence, particularly conflict instigated by greed and grievances (Berman et al., 2014; USAID, 2005).

Table 4 reports the results of the probit models that were estimated independently for each critical conflict type. The results demonstrate that the overall model is generally significant for each model. More so, results from the Variance Inflation Factor (VIF) and correlation checks indicated that the models do not suffer from multicollinearity, which is a common challenge of cross-sectional data. The average VIF values for each probit model were below 3.0, thus indicating no sign of a multicollinearity problem (Midi et al., 2010). The Pearson's correlation estimates (see Tables 8 and 9) demonstrated that no autocorrelation exists among the variables for the models. However, due to high individual VIF values (of about 6), we dropped both the land asset variable from Model 1 (average VIF value of about 3.4) and the primary ethnicity variable (average VIF value of about 3.05) from Models 2 through 4. Excluding these variables from the models when necessary does not influence the stability of the estimates in the respective models (O'Brien, 2007).

### 3.5.3. Household encounters with general conflict (Model 1)

We discovered that except for factors such as employment, ethnicity, and artisan mining, the rest of the variables were insignificant determinants of household encounters with conflict (Model 1). The results demonstrated that the influence of artisan gold mining on the land and ethnic affiliation of families is significant and more likely to influence the experience of conflict, while farmers are less likely to encounter conflict, holding other variables constant at their mean values. As with the findings of other studies, the presence of minerals itself and its exploration is found to induce violence and tends to influence greed and grievances (Berman et al., 2014; USAID, 2005).

Table 4: Factors that influence households' encounters with conflict

| | Probit Models | | | |
|---|---|---|---|---|
| Observations = 250 | Dependent variables | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 |
| | **General Conflict** | **Violent fight** | **Threat Assault** | **Land Guard Ass.** |
| ***Independent variables*** | | | | |
| House hold size | -0.0528 | -0.0254 | 0.1031** | -0.0712 |
| | [0.0541] | [0.0431] | [0.0493] | [0.0549] |
| Gender | -0.1319 | 0.3650** | -0.1115 | -0.0315 |
| | [0.2462] | [0.1762] | [0.1925] | [0.2229] |
| Main employment | -0.5835** | -0.1499 | -0.3011 | -0.2017 |
| | [0.2682] | [0.1756] | [0.1962] | [0.2208] |
| Marital status | -0.3175 | -0.5536*** | 0.2350 | 0.1766 |
| | [0.2667] | [0.1839] | [0.1997] | [0.2276] |
| Major ethnic group | 0.9128*** | | | |
| | [0.3342] | | | |
| Land Assert ownership | | -0.0974 | -0.6009** | 0.1202 |
| | | [0.2309] | [0.2525] | [0.3181] |
| Poverty | | -0.0976 | -0.9008*** | 0.1779 |
| | | [0.2697] | [0.2815] | [0.3226] |
| AS mining occurring | 0.7237** | -0.3273 | 0.4434** | -0.0116 |
| | [0.2838] | [0.1823] | [0.2023] | [0.2256] |
| Land right issues | | 0.5745*** | 0.7217*** | 1.0225*** |
| | | [0.2115] | [0.2524] | [0.2274] |
| Mining related causes of violent conflict | | 0.5464*** | 0.2760 | 0.6097*** |
| | | [0.1913] | [0.2109] | [0.2234] |
| *** P< 0.001; **P < 0.03. Robust standard errors are in squared brackets [ ] | | | | |
| RL chi2 | 17.460*** | 31.890*** | 32.140*** | 31.450*** |

In other words, mining communities where the heads of households engage in farming as their principal occupation and significant numbers belong to the dominant ethnic group and offer land for ASM are less likely to encounter mining-related conflict (Models 1 through 4) than their peers who are farmers in similar conditions but deprived of farming. We explain this by the fact that agriculture and mining compete for the same scarce land resources. As expected, the easy and illegitimate conversion of farmlands into land for

mining unquestionably sparked conflict (occurrence and encounter) between miners and farmers in communities where most households are farmers.

As expected, households who belong to the dominant ethnic group in this situation will resort to violence to prevent the loss of their livelihood. We discovered that this was consistent with the inequality thesis and partly consistent with Gurr's (1970) hypothesis that meeting job security aspirations will prevent individuals from redirecting their grievances into violence.

Generally, households are more likely to encounter physical violence when the rapid and indiscriminate sale or conversion of farmland for mining persists. An additional contributing factor to this effect is the weak enforcement of land rights, especially when land rights disputes go unresolved. Hence, as people offer less farmland for mining, this decreases the likelihood of conflict occurring and being encountered by households in communities where mining and farming compete. Comparatively similar outcomes are also achievable when either land transfers or receipt of land rent is completed satisfactorily between given parties. Moreover, if the heads of the household also support the public perception that mining itself brings violent conflict due to its negative consequences, this is more likely to influence conflict encounters positively. Consistently, ethnicity is found to be fundamental as it instigates most conflicts, except for those spurred by the growth of inequality (be it social, political, or economic) across ethnic lines (Steward and Brown, 2007). It is therefore discernible that depriving groups of people of their significant livelihood sources, which contribute to inequality, might encourage dominant ethnic groups to increase their participation in conflict and the sustenance of conflict once it begins (Hoeffler et al., 2004).

### 3.5.4. Encounters with specific types of conflict (Table 4, Models 2 through 4)

A further analysis of the determinants of household encounters with significant disputes (such as physical violence, verbal threats, and security guard attacks) found that household size, gender, marital status, land asset ownership, mining-related adverse effects, poverty, land rights issues, and offers of land for mining determine household encounters with certain types of violence. The main occupation types demonstrated a negative relationship but were not a significant predictor of contact with the primary conflict types. Generally, the findings here agree with the inequalities hypothesis (Langer and Stewart, 2013) that argues that when inequality of resource distribution and access exists, this provides a foundation for group mobilization, which thereby influences conflict through socioeconomic factors such as gender, marital status, and household size.

### 3.5.5. Perceptual determinants

The findings regarding perceptual factors demonstrated that the negative consequences of mining-related activities are more likely to induce encounters with physical violence and security guard attacks, while poverty is less likely to influence threats. During field observations, it was evident that the harmful effects of mining activities (e.g., destruction of farmland, pollution, contamination, damage of primary water sources, and abandoned and unprotected mining pits) were common causes of violence in the communities.

We discovered that most households were ready to use violence to protect their lives, natural resources, and livelihood properties including their farmland. The rural people who suffer most from those effects perceive mining as a threat to their livelihood. Hence, they are more likely to pursue violence, including engaging in physical abuse or securing the services of security guards. In addition, other significant adverse effects reported include the deaths of

innocent people who fall into uncovered pits, the destruction and obstruction of nearby farms because of mining, and the high rate of concessional mining disputes among artisanal miners, both legal and illegal.

Noticeably, aside from the harmful effects to society, households face two common experiential outcomes from mining that support Davis and Frank (2014) who demonstrated that two specific negative consequences of mining generate violence; unforeseen tension build-up and the labor surplus effect. The first effect is mounting tension build-up, which exists in most mining communities that suffer from the adverse mining effects. That was evident during focus group discussions in which people mentioned that the neglect of post-mining responsibilities was responsible for many deaths. Participants, whose family members were victims of abandoned pits, spoke vehemently against the abandonment of post-mining land that has caused the deaths of innocent people. Deductively, we established that unresolved tension build-up is likely to result in violence.

Some affected families also indicated that in many instances the police failed to assist them in achieving justice. Therefore, they contemplated whether to resort to violence by taking the law into their own hands to demand justice for the loss of their loved ones. As some affected participants recounted, "… we [the affected] know the families of the mining contractors who led the Chinese to excavate the pit that is killing our children, we [the affected] can retaliate if the police are not doing anything about this! There are death traps everywhere, and we [the community] have no strength to cover the pits ourselves alone" (male participant, focus group discussion, a community in Amansie West District, 2015).

Second, we found that the increased discovery and exploration of gold was the primary cause of the common experiential outcome of mining, which results in social insecurity including the illegal trading of arms. This finding supports the findings of Davis and Frank (2014) that a high rate of gold mineral resource discovery leads to increased activities of

unlawful armed activities. Surprisingly, field observations demonstrated that the crowding of mining activities reinforces security guard attacks on farm laborers. Some respondents revealed that mine labor pays higher wages than farming and therefore, mining can outcompete and draw work away from agriculture. Thus, a surplus active labor force might exist because mining operators usually arrive with their employees, who mostly do not come from the local community.

The surplus labor population who remain unemployed do not find employment in farming either (likely due to their high cost to farmers) and usually end up taking security guard jobs, which in turn contributes to security guard violence. The conditions created are also seen as an adverse outcome of mining, which supports the argument that the adverse consequences of mining are likely to reinforce the grievances that lead to encounters with conflict among farming households in mining communities. This indicates that increasing unresolved tension will probably lead to future violence in mining communities. These results further support the contention that the negative consequences of mining do indeed induce violence.

For the perception of poverty as a cause of conflict, the results was expected, although it is equally possible that conflict can affect the occurrence of poverty. The reason could be that as households who depend mainly on natural resources such as land become poor and more impoverished, holding all other factors at their means would result in violence to resist deprivation from land access. We provide evidence from the results, which demonstrate that most respondents believed that poverty was not a significant cause of violent conflict in their communities (89% see Table 3).

Land rights disputes, on the other hand, are more associated with the three main violence types. Significantly, the existence of unsolved land disputes in the communities over a long time explains the positive influence of land rights disputes on conflict. This increases

the likelihood that households in such locales encounter physical violence, threats, and security guard attacks as the number of artisan gold mining activities rise. Moreover, confounding problems such as the improper enforcement of land titles, the number of families that refuse to convert their land from significant cash crop farming to mining, and the poor quality of transfer negotiations, the sale of the same area to more than one person, and the excavation of soil before agreements are made with the owners, might be the catalyzing factors. Respondents mentioned that many land right disputes persist in the communities, leaving the affected with no way to address their grievances and thus resulting to conflict. It is worth noting that the affected local people in most rural communities are generally weak and usually not able to pay for the legitimate services of police intervention. They would mainly use other, relatively costless, means at their disposal to seek justice. Conflict resulting from unresolved land rights disputes is likely to escalate as more gold discoveries are made (Ababa, 2015). The above revelation meets research expectations as millions of Ghanaians join the nationwide gold rush currently underway.

### 3.5.6. Socioeconomic determinants

The results of this research demonstrated that household size is a better predictor of the threats encountered and gender and marital status can predict physical violence. The confident prediction of household size could be because as the family size of a household increases it is more likely to be involved in threats, which are the most common type of conflict (see Table 3, Model 5), in communities in which most people are farmers who compete with miners for scarce land resources. In contrast, married heads of households are less associated with using physical violence to address their grievances and might be interested in using other means of registering their protest, probably due to family ties. Gender also plays a vital role in the determination of conflict. Men in comparison to women

were more at risk of physically engaging in a dispute. Therefore, this means that mining communities with most households headed by men (66% in the sample) are more likely to encounter physical violence.

Moreover, artisan mining and land asset ownership predict household encounters with threats of violence respectively. As explained (in section 3.6.3), when households offer land for artisanal gold mining, it is expected to increase their likelihood of encountering threats. We attribute this observation to the development of land disputes or land adjudication challenges. Households in these circumstances are more likely to confront threats of violence compared to their peers in similar situations who offer less or do not offer land for artisan mining, holding other variables at their means.

An analysis of land asset ownership demonstrated contra-effects. Landownership also displays one's level of economic status in developing countries, as well as social class (Humphreys et al., 2008). When households possess land, they are economically better off and are less likely to become involved in threat conflict (especially in the high threat category; see Table 5, Model 5), all things being equal. This outcome also meets a priori expectations in a setting in which the resource involved serves as the competing core function for mining and farming, and thus has a high monetary value. It is worth noting that owning a land asset in Ghana, as in many developing countries, demonstrates that the household is relatively less poor because it has a convertible property. It is able, for instance, to use land as collateral for loans or to secure financial credit in both the formal and non-formal sectors. Hence, reducing the occurrence of land asset deprivation will decrease violence, as proposed by the grievance and horizontal inequality hypotheses. Thus, reduction of this conflict type is more achievable when resources at stake generate relatively equitable benefits through ownership, distribution, and usability for many households in the community (Langer and Stewart, 2013). Marital status demonstrates a negative and significant association with the

physical violence conflict type. We explain this phenomenon by the fact that as heads of households get married, they become less prone to violence, probably because of family ties.

### 3.5.7. Factors influencing the frequency of specific conflict encounters

Table 5 illustrates the estimates of the marginal effects from the ordered probity models explaining the factors that affect the number of times households experienced at least one of the significant reported conflict. For simplicity, marginal probability estimates were for very low conflict categories (for details on the alternative to the itemized types, see Appendix, Table 6). We established that only threats had all the three groups of conflict among the most crucial conflict types reported. Nonetheless, none of the variables was statistically significant in predicting the number of times households encountered very high cases of threats. Gender was inconsequential to the number of times families faced specific conflict categories.

Table 5: Estimates of factors influencing the number of times conflict was encountered

**Marginal effects from ordered probit models**

| Dependent variables: | | **Model 5** | | **Model 6** | | **Model 7** | |
|---|---|---|---|---|---|---|---|
| | | **Threat** | | **Violent Fight** | | **Land Guard attack** | |
| Occurrence Categories | Very high | High | Low | High | Low | High | Low |
| **Independent Variables** | | | | | | | |
| House Hold Size | 0.0013 | 0.0327** | -0.0027 | 0.0133 | 0.0046 | -0.0070 | -0.0105 |
| | [0.0010] | [0.0139] | [0.0022] | [0.0117] | [0.0042] | [0.0043] | [0.0065] |
| Gender | -0.0006 | -0.0155 | 0.0013 | 0.0586 | 0.0218 | 0.0021 | 0.0032 |
| | [0.0023] | [0.0571] | [0.0052] | [0.0454] | [0.0187] | [0.0161] | [0.0246] |
| Marital Status | 0.0007 | 0.0189 | -0.0016 | -0.1465*** | -0.0465** | 0.0097 | 0.0148 |
| | [0.0023] | [0.0573] | [0.0047] | [0.0491] | [0.0180] | [0.0163] | [0.0248] |
| Ethnicity | 0.0028 | 0.0898 | -0.0003 | 0.1304** | 0.0774 | | |
| | [0.0030] | [0.0896] | [0.0092] | [0.0540] | [0.0496] | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| AS. Mining Occurring | 0.0029 | 0.0686 | -0.007 | -0.1072** | -0.0425 | 0.0010 | 0.0007 |
| | [0.0033] | [0.0571] | [0.0078] | [0.0450] | [0.0212] | [0.0164] | [0.0248] |
| Employment | -0.0049 | -0.1192** | 0.0101 | -0.0790 | -0.0272 | -0.0157 | -0.0237 |
| | [0.0040] | [0.0565] | [0.0085] | [0.0472] | [0.0170] | [0.0164] | [0.0245] |
| Poverty | -0.0053 | -0.2116*** | -0.026 | -0.0457 | -0.0193 | 0.0058 | 0.0086 |
| | [0.0040] | [0.0705] | [0.0297] | [0.0640] | [0.0322] | [0.0270] | [0.0385] |
| Land Rights Is. | 0.0091 | 0.1667** | -0.0281 | 0.1474** | 0.0321*** | 0.0927** | 0.1041*** |
| | [0.0075] | [0.0655] | [0.0190] | [0.0628] | [0.0122] | [0.0360] | [0.0387] |
| Mining-Related Is. | 0.0020 | 0.0476 | -0.0049 | 0.1208* | 0.0315** | 0.0305 | 0.0424 |
| | [0.0030] | [0.0602] | [0.0079] | [0.0538] | [0.0132] | [0.0218] | [0.0276] |
| Asset Ownership | -0.0144 | -0.2224*** | 0.0456 | -0.6448 | -0.1826 | 0.0121 | 0.0192 |
| | [0.0113] | [0.0751] | [0.0267] | [0.0692] | [0.0161] | [0.0193] | [0.0320] |

***: p < 0.001; **: p< 0.01; *: p< 0.02. Observations = 250. Standard errors in squared brackets []

### 3.5.8. Perceptual determinants of the frequency of conflict encounters

The findings demonstrate that land rights disputes are 16%, 14%, and 9% more likely to predict encounters with high levels of threats, physical violence, and security guard violence, respectively. Land rights dispute were expected to be common in the country since all three violence types in mining communities mostly arise over land disputes. Threats usually precede the other two kinds of conflict such as security guard attacks or physical violence. The outcome of the threat variable equally confirms a priori predictions that increased gold discovery leads to the emergence of more land acquisitions and transfer issues, which tends to heighten the probability of households encountering land disputes. Additional explanations could be the existence of unattractive alternative employment, including farming, as compared to mining, and the lack of institutional capacity for supervising mining standards and enforcing landownership rights.

Opinions on poverty as a cause of violence were 21% less likely to induce encounters in the higher threat conflict category. As argued earlier (in sections 2.5 and 3.2.1), if individual farmers have access to land resources for farming and are less miserable because of this, they are less likely to perceive poverty as a cause of violence occurring over land disputes. This supports the idea that when households enjoy relative equality (less horizontal inequality) in resource ownership, resource access, and equal employment opportunities, they are less likely to encounter violent conflict.

In addition, the adverse effect of mining on households was 3% and 12% more likely to affect households' encounters with the low and high categories of violent conflict, respectively. This demonstrates that the more a society experiences the worsened conditions from mining outcomes and land disputes, the more frequently its members encounter threats of violence, at least three times in twelve months. If the adverse effects of mining are neglected, and land disputes cases go unsettled, as we have found, then we expect that households will repeatedly encounter common conflict types. This finding is also consistent with the conclusion that unresolved land dispute cases increase the tendency of appeals of landownership legitimacy, which is found to impede mining concession negotiations (Geenen, 2014; Geenen and Claessens, 2013). The possibility of conflict breaking out is more specific when talks fail and slow down the commencement of businesses activities in the extractive sector. This, therefore, will thwart the effort of securing capital investment in the industry.

### 3.5.9. Socioeconomic determinants of the frequency of conflict encounters

Whereas the addition of one member to the family is more likely to induce conflict with a high threat category by 3%, the availability of farm employment and ownership of land assets are 11% and 22% less likely to cause the higher types of threat encounters,

respectively (see section 3.5.1 for an explanation), holding all other factors at their mean values. Noticeably on the low ranking of the frequency of the conflicts that households experienced, it was found that none of the elements were significantly consequential to threat encounters.

Analogously, the primary ethnic affiliation of a household was 13% more likely to predict encounters with the high category of physical violence, while offers of land for mining and married heads of households were 10% and 14% less prone to encounter high levels of physical violence conflict, respectively. This also demonstrates that the presence of artisanal gold mining itself might not be the only problem, but rather that other factors, like land and gold resource management processes, are also at work. When these processes are malfunctioning, households from major ethnic groups with large families will capitalize on their numbers to influence conflict to their favor and hence engage in violence with higher frequency. Married heads of households in mining communities are usually risk-averse and are mostly predicted to be reluctant to encounter the high category of physical abuse, even though they seem to demonstrate a positive but insignificant association with encounters with the other two conflict types.

The findings suggest that the presence of artisanal gold mining itself predicts more household encounters with conflict in general and the threat of conflict but anticipates fewer encounters with high levels of physical violence. A reasonable inference from the findings is therefore that not only does mining per se contribute to conflict in mining communities, but so do other factors, including the mismanagement of affairs in the mining sector by existing institutions. It is worth noting that the mismanagement of the negative consequences of mining and their experiential outcomes on society also influences the number of conflict encounters (see section 3.2). This is consistent with the findings from resource policy and political and conflict studies (Maconachie, 2007; Ross, 2002, 2004, 2008: Collier et al. 2004).

Pollution of vital natural resources might be one of the rationalizations behind the argument that mining and artisanal farming cannot coexist (Davis and Frank, 2014; Hilson, 2002). Currently, the two may coexist, at the expense of peace, if the situation does not improve. This finding is moreover consistent with the results of Maystadt et al. (2012) that mineral activities such as mining concessions increase the frequency of conflict.

## 3.6. Conclusion and the policy recommendations from key findings

The heightened media reports and public outcry against mining and its negative consequences in Ghana, including the increasing cases of violence in some communities, provides clues that support the leading account of linkages between natural resource exploitation and conflict among academics, policy experts, and practitioners. To contribute to the greater comprehension of the problem, in the interest of sustaining monetary investment in the ASM sector, we have analyzed and described the nature of conflict among households of artisanal gold mining communities. In this chapter, we have empirically estimated the factors that predict household encounters with conflict, and the frequency of these conflicts. We have also identified land rights challenges, socioeconomic inequalities, and the adverse effects of mining as the three main ways in which households in mining communities encounter violence in this non-post-civil-war conflict setting.

While affirming the importance of these separate factors, the analysis nonetheless also finds evidence to support the possibility that artisanal gold mining and its related activities are concomitant with certain types of violence in the Amansie and Bosomtwe districts of Ashanti. It further reveals that household encounters with conflict are more prevalent when socioeconomic inequalities including land rights and mining-related problems go unresolved. As a result, as household size increases, the concomitant enlargement of tribal networks enforces conflict encounters. Interestingly, the availability and type of employment

opportunities for households correctly predict fewer conflict encounters. Relatedly, marital status, the perception of poverty, and land asset ownership on the causes of violence make similar predictions for encounters with certain conflict types. Ethnicity and conversion of farmlands to mining predict household encounters with conflict positively, while gender, adverse effects from mining, and land rights inequalities make parallel predictions for specific types of violence. Regarding the frequency with which conflict types are encountered, persisting land rights disputes, adverse mining effects, and household size are found to predict the development of conflict encounters positively. However, variables such as the availability of employment alternatives, the perception of poverty, asset ownership, marital status of the heads of households, and providing land for artisanal mining are less likely to predict the frequency of certain types of conflict.

The findings in this chapter suggest that households in Ghanaian mining communities are at risk of encountering violence. Sources such as the management of natural resources (e.g., land and gold) and its extraction, distribution of resource rents, as well as negative externalities from resource extraction in the hosting society induce violence in artisanal gold mining areas. SSM itself should not be seen in isolation as the only primal catalyst of conflict. Instead, we found mining to have properties capable of reducing the frequency of certain disputes, if the activities are managed well. Given the insightful statistical evidence on the determinants of household encounters with conflict in artisan mining communities in a non-post-civil war context, there is a need to develop comprehensive countermeasures to mitigate the heightened risk of group-based violence in mining areas. However, management policies during the awarding of mining licenses and the conclusion of concessional contracting should be conscious of the tendency of socioeconomic inequalities, land rights challenges, and environmental consequences to foster violence.

On the above basis, we make the strong inference that active monitoring and enforcement of land rights and SSM activities might be able to minimize or curtail violent conflicts in mining communities. A desirable preventive measure toward developing holistically sustainable mining and conflict management should involve the local institutions, the artisanal miners, and the LSM companies as partners in mitigation. We recommend that other vital stakeholders including the local citizens (not only local leaders), government, and non-governmental organizations must be on board for the targeting and mitigation of the factors that encourage the development of conflict.

**Reference**:


Affairs, F., 2008. Blood Barrels Why Oil Wealth Fuels Conflict By Michael L. Ross. (May/June). Retrieved from https://www.sscnet.ucla.edu/polisci/faculty/ross/papers/other/BloodBarrelsFA.pdf

Anca M. Cote and Kevin K. Tsui, 2010. Oil and Conflict: What Does the Cross-Country Evidence Really Show? * Anca M. Cotet † and Kevin K. Tsui ‡ Ball State University and Clemson University February 2010. Business 1–39.

Appiah, M.K., Feike, T., Wiredu, A.N., Mamitimin, Y., 2014. Appiah, M. K., Feike, T., Wiredu, A. N., & Mamitimin, Y. Cotton Production, Land Use Change and Resource Competition in the Aksu-Tarim River Basin, Xinjiang, China. Q. J. Int. Agric. 53, 243–261.

Armah, F.A., Boamah, S.A., Quansah, R., Obiri, S., Luginaah, I., 2016. Working conditions of male and female artisanal and small-scale goldminers in Ghana: Examining existing disparities. Extr. Ind. Soc. 3, 464–474. doi:10.1016/j.exis.2015.12.010

Armah, F.A., Luginaah, I., Yengoh, G.T., Taabazuing, J., Yawson, D.O., 2014. Management of natural resources in a conflicting environment in Ghana: unmasking a messy policy problem. J. Environ. Plan. Manag. 57, 1724–1745. doi:10.1080/09640568.2013.834247

Armah, F.A., Luginaah, I.N., Taabazuing, J., Odoi, J.O., 2013. Artisanal and small-scale gold mining and surface water pollution in Ghana: have the foreign invaders come to stay? Environ. Justice 6 (3), 94–102.

Aryee, B.N.A., 2001. Ghana ' s mining sector : its contribution to the national economy. Resour. Policy 27, 61–75.

Banchirigah, S.M., Hilson, G., 2010. De-agrarianization, re-agrarianization and local economic development: re-orientating livelihoods in African artisanal mining communities. Policy Sci 43(2), 157-180. doi:10.1007/s11077-009-9091-5

Berman, N., Couttenier, M., Rohner, D., Thoenig, M., 2014. This Mine is Mine! How minerals fuel conflicts in Africa. Discuss. Pap. No. 10089 44. Retrieved from http://repository.graduateinstitute.ch/record/286975/files/CEPR-Berman2014.pdf

Bitsch, V., 2005. Qualitative Research: A Grounded Theory Example and Evaluation Criteria. J. Agribus. 231, 75–91.

Bush, R., 2009. " Soon there will be no-one left to take the corpses to the morgue ": Accumulation and abjection in Ghana ' s mining communities 34, 57–63. doi:10.1016/j.resourpol.2008.02.002

Collier, P., Hoeffler, A., & Söderbom, M., 2004. On the Duration of Civil War. Journal of Peace Research, 41(3), 253–273. http://doi.org/10.1177/0022343304043769

Collier, P., Hoeffler, A., 1998. On economic causes of civil war. Oxf. Econ. Pap. 50, 563–573.

Cotet, A. and Tsui, K. (2013). Oil and conflict: What does the cross country evidence really show? American Economic Journal: Macroeconomics, 5 (1):49–80.

Cuvelier, J., Vlassenroot, K., Olin, N., 2014. Resources, conflict and governance: A critical review. Extr. Ind. Soc. 1, 340–350. doi:10.1016/j.exis.2014.07.006

Davis, R., Franks, D., 2014. "Costs of Company-Community Con ict in the Extractive Sector" Corporate Social Responsibility Initiative Report No. 66. Cambridge MA: Harvard Kennedy School.

Edward Newman & Karl DeRouen, J., 2014. Routledge Handbook of Civil Wars. Routledge Taylo & Francis Group, London UK.

Eli Berman, Joseph Felter, E.K. and E.T., 2014. Predation , Taxation , Investment , and Violence : Evidence from the Philippines.

Emmanuel, A.O., 2015. Mining and conflict in the Akyem Abuakwa Kingdom in the Eastern Region of Ghana , 1919 – 1938 2, 480–490. doi:10.1016/j.exis.2015.04.002

Geenen, S., 2014. Dispossession, displacement and resistance: Artisanal miners in a gold concession in South-Kivu, Democratic Republic of Congo. Resour. Policy 41, 90–99. doi:10.1016/j.resourpol.2013.03.004

Geenen, S., & Claessens, K., 2013. African Studies : Disputed access to the gold sites in Luhwindja , eastern Democratic Republic of Congo *. The Journal of Modern African Studies, (March), 85–108. http://doi.org/10.1017/S0022278X12000559

Ghana Chamber of Mines, 2014. Report on the Performance of the Mining Industry ( 2014 ). Accra. Retrieved from http://ghanachamberofmines.org/en/our-publications.php

Ghana Statistical Service, 2014a. Ghana Living Standards Survey Round 6; Main Force Report.

Ghana Statistical Service, 2014b. Ghana Linving Standards Survey Round 6 (GLSS 6). Labour Report.

Guba, E. G. (1981). "Criteria for assessing the trustworthiness of naturalistic inquiries." Educational Communication and Technology Journal 26, 75S91.

Guba, E. G., and Y. S. Lincoln. (1989). Fourth Generation Evaluation. Newbury Park, CA: Sage Publications.

Ted Gurr. Why Men Rebel. Princeton, NJ: Princeton University Press. 1970

HIIK, H., 2015. Conflict Barometer 2015. No. 24. By Heidelberg Institute for International Conflict Research. Heidelberg. Retrieved from http://www.hiik.de/en/konfliktbarometer/pdf/ConflictBarometer_2015.pdf

Hilson, G., 2002. An overview of land use conflicts in mining communities. Land use policy 19, 65–73.

Hilson, G., Potter, C., 2003. Why is illegal gold mining activity so ubiquitous in rural Ghana? Afr. Dev. Rev. 15, 237–270.

Hilson, G., Potter, C., 2005. Structural adjustment and subsistence industry: artisanal gold mining in Ghana. Dev. Change 36, 103–131.

Hilson, G., Yakovleva, N., 2007. Strained relations: A critical analysis of the mining conflict in Prestea, Ghana. Polit. Geogr. 26, 98–119. doi:10.1016/j.polgeo.2006.09.001

Hilson, G., Garforth, C., 2012. 'Agricultural Poverty'and the expansion of Artisanal mining in Sub-Saharan Africa: experiences from Southwest Mali and Southeast Ghana. Popul. Res. Policy Rev. 31, 435–464. http://doi.org/10.1016/j.polgeo.2006.09.001

Hoeffler, P.C. and A., 2004. Greed and grievance in civil war. Int. Aff. 56, 563–595. doi:10.1093/oep/gpf064

International Institute for Environment and Development (IIED), 2001. A contextual review of the Ghanaian small-scale mining industry, Mining, Minerals and Sustainable Development. London UK.

International Labour Organizations, 2007. G irls in M ining: Research findings from Ghana, Niger, Peru and the United Republic of Tanzania. Switzerland. Retrieved from http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1028&context=intl

Jennifer.J., H., 2005. Communities and Small-Scale Mining: an Integrated Review for Development Planning. Washington DC. NY.

Kusi Appiah. M., and W.J., 2016. Is Eradicating Child labor by the Year 2025 Feasible?

Insights from Small-Scale Mining Operators in the Amansie West District of Ghana. Br. J. Econ. Financ. Manag. Sci. 11, 91–106.

Langer, A., Stewart, F., 2013. Horizontal Inequalities and Violent Conflict: Conceptual and Empirical Linkages. Cent. Res. Peace Dev. - Work. Pap. doi:10.4324/9780203105962.ch9

Luca, G. De, Maystadt, J., Sekeris, P.G., Ulimwengu, J., Folledo, R., 2012. Mineral Resources and Conflicts in the Democratic Republic of the Congo: A Case of Ecological Fallacy. doi:10.1093/oep/gpt037

Macartan H., Weinstein, J.M., 2008. Who Fights? The Determinants of Participation in CivilWar. Am. J. Pol. Sci. 52, 436–455.

Maconachie, R., 2016. The extractive industries , mineral sector reform and post-con flict reconstruction in developing countries. Extr. Ind. Soc. 3, 313–315. doi:10.1016/j.exis.2016.03.004

Midi, H, Bagheri, A., Imon A.,(2010), The Application of Robust Multicollinearity Diagnostics Method Based on Robust Coefficient Determination to a Non-collinear Data Set. J. A. Sci. 10(8), 611-619

Michael E. P., Mark R. Kramer Big, 2011. Capitalism is under siege. Creating Shared Value. Harvard Bus. Rev. 89 63, 62–78.

O'Brien, R.M., 2007. A caution regarding rules of thumb for variance inflation factors. Qual. Quant. 41, 673–690. doi:10.1007/s11135-006-9018-6

Owusu, O., Wireko, I., Mensah, A.K., 2016. The performance of the mining sector in Ghana: A decomposition analysis of the relative contribution of price and output to revenue growth. Resour. Policy 50, 214–223. doi:10.1016/j.resourpol.2016.10.006

Patel, K., Rogan, J., Bebbington, A., 2016. Evaluating conflict surrounding mineral extraction in Ghana : Assessing the spatial interactions of large and small-scale mining. Extr. Ind. Soc. 3, 450–463. doi:10.1016/j.exis.2016.01.006

Ross, M., 2006. A Closer Look at Oil, Diamonds, and Civil War. A. Rev. Pol. Sci. 9: 265-300.

Ross, M., 2008. But seriously: does oil really hinder democracy?

Ross, M. L. (2011). Does Oil Hinder Democracy? W. Pol. 53(3), 325–361. http://doi.org/10.1353/wp.2001.0011

Ross, M., (2004) How Dose Natural Resource Wealth Influence Civil War? Evidence from Thirteen Cases. International Organization 58(1): 35-67.

Rustad, S. A., Østby, G., & Nordås, R. (2016). Artisanal mining , con fl ict , and sexual violence in Eastern DRC. The Extr. Ind. and Soc. 3(2), 475–484. http://doi.org/10.1016/j.exis.2016.01.010

Shenton, A.K., 2004. Strategies for ensuring trustworthiness in qualitative research projects. Educ. Inf. 22, 63–75. doi:10.3233/EFI-2004-22201

Stoop, N., Buraye, J.K., Verpoorten, M., 2016. Relocation, reorientation, or confrontation? Insights from a representative survey among artisanal miners in Kamituga, South-Kivu (No. IOB 2016-09. ISBN 2294-8643).

Stewart, F. 2000. The root causes of humanitarian emergencies. In Nafziger, W.E., Stewart, F., and Väyrynen, R., eds, War, Hunger and Displacement: The Origins of Humanitarian Emergencies, Vol. 1. Oxford: Oxford University Press.

Stewart, F., & Brown, G. (2007). Policies towards Horizontal Inequalities (No. 42). Mansfield RD.

Tschakert, P., Singha, K., 2007. Contaminated identities: Mercury and marginalization in Ghana's artisanal mining sector. Geoforum 38, 1304–1321. doi:10.1016/j.geoforum.2007.05.002

USAID, 2005. MINERALS & CONFLICT. A Toolkit For Intervention.

World Bank, 2011. Political economy of the mining sector in Ghana. The World Bank Africa

Region, Public Sector Reform and Capacity Building Unit (No. 5730), Accra.

William H. Green and David A. Hensher. (2010). Modeling Ordered Choices.Cambridge University

Appendix

Table 6: Distributions of conflict levels or categories (for table A.2)

| Observations | 250. | Per cent of the frequency of conflict occurrence | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Conflict Classification* | Categories | Violent fight | Threat | Land guard att. | Theft | F. Disputes | Other | Com-ASM |
| Very low (0) | 0 | 47 | 31 | 86 | 94 | 98.8 | 98.8 | 92.8 |
| Low (1-2) | 1 | 29 | 29 | 9 | 3 | 1.2 | 0.8 | 4 |
| High (3-4) | 2 | 24 | 39 | 5 | 3 | | 0.4 | 3.2 |
| Very high (6-8) | 3 | | 1 | | | | | |

Source: Computed from field data

Table 7: Results from the Variance Inflation Factor for the models 1 through 4

| | Average VIF values | With Asset | With Ethnicity |
|---|---|---|---|
| Model 1 | 2.78 | 3.41 | |
| Model 2 | 2.4 | | 3.05 |
| Model 3 | 2.4 | | 3.05 |
| Model 4 | 2.4 | | 3.05 |

Source: Computed from field data

Table 8: Marginal effects estimates for very low conflict category (for table A1)

| *Dependent variables*: | Threat | Violent fight | *Land guard* |
|---|---|---|---|
| Categories | Very low | Very low | Very low |
| *Independent Variables* | | | |
| House Hold Size | -0.0312** | -0.018 | 0.0174 |
| | [0.0132] | [0.0157] | [0.0103] |
| Employment | 0.1139 | 0.1062 | 0.0394 |
| | [0.0539] | [0.0628] | [0.040] |
| AS. Mining Occurring | -0.0646 | 0.1497* | -0.0012 |
| | [0.0530] | [0.0644] | [0.041] |
| Gender | 0.01474 | -0.0804 | -0.0052 |
| | [0.0533] | [0.0634] | [0.040] |
| Marital Status | -0.018 | 0.1930*** | -0.0244 |
| | [0.0550] | [0.0627] | [0.041] |
| Poverty | 0.2429** | 0.0650 | -0.0144 |
| | [0.0976] | [0.0960] | [0.0654] |
| Ethnicity | -0.092 | (-0.2078) * | |
| | [0.0991] | [0.1014] | |
| Land Rights Is. | -0.1478*** | -0.1795*** | -0.1968*** |
| | [0.0573] | [0.0690] | [0.0614] |
| Mining-Related Is. | -0.0447 | (-0.1523) ** | -0.0729 |

| | | | |
|---|---|---|---|
| | [0.0555] | [0.0635] | [0.0478] |
| Asset Ownership | 0.1912*** | 0.0827 | -0.0313 |
| | [0.0584] | [0.0845] | [0.0510] |

***: p < 0.001; **: p< 0.01; *: p< 0.02. Observations = 250. Standard errors in squared brackets []

Table 9: Pearson's correlation coefficients (Table A.3)

| | **Household size** | **Employment** | **ASM Occ.** | **Gender** | **Marital St.** | **Poverty** | **Land Rights Is.** |
|---|---|---|---|---|---|---|---|
| Household size | 1 | | | | | | |
| Employment | 0.1452 | 1 | | | | | |
| ASM Occ. | 0.1301 | -0.0289 | 1 | | | | |
| Gender | -0.078 | -0.1347 | -0.0533 | 1 | | | |
| Marital Status | 0.3073 | 0.2235 | 0.0806 | 0.1038 | 1 | | |
| Poverty | -0.0939 | 0.0331 | 0.0226 | -0.0902 | -0.0437 | 1 | |
| Land Rights Is. | -0.0423 | -0.1674 | 0.232 | -0.0017 | 0.034 | -0.0476 | 1 |
| Mining-Related Is. | 0.018 | -0.0017 | 0.0685 | 0.0787 | 0.0736 | 0.0534 | 0.0752 |
| Asset ownership | 0.3925 | 0.0182 | 0.2328 | -0.0704 | 0.1148 | 0.0604 | 0.1668 |
| Ethnicity | 0.0943 | 0.2054 | 0.0936 | -0.1038 | 0.0696 | 0.0301 | 0.0652 |

| | Mining-Related Is. | Asset ownership | Ethnicity |
|---|---|---|---|
| Mining-Related Is. | 1 | | |
| Asset ownership | 0.2212 | 1 | |
| Ethnicity | 0.1018 | 0.3058 | 1 |

## Abstract

Sustainability practices play an essential role in allowing companies to manage reputation and competitiveness and contribute to obtaining SOLs. Most SSM companies in developed economies pursue similar objectives. However, weak governance makes them difficult to achieve in less developed economies. This chapter employs qualitative and quantitative approaches to assess the empirical conditions of Ghana's SSM and their influence on SOLs. From the findings, we predict that societies will reject SOLs under the circumstances of the unmitigated adverse effects of mining. As a countermeasure, we recommend pursuing responsible mining management, focusing on clean mining, under effective institutions.

## 4.1. Introduction

Ghana like most Sub-Saharan African countries faces the challenges of raising economic growth and reducing poverty (UN, 2016, pp. 1-8; Ndambiri et al., 2012, pp. 1-2). These are mostly driven by governance and leadership challenges (Ramburuth, 2016, pp. 1-4), particularly in the sustainable management of natural resources. In this state, the ideal case for addressing the challenges would involve corporations and businesses providing sustainable development, that is, providing goods and services through the responsible management of natural resources (UN SDGs, 2016: #2-5). Notwithstanding, this is not the case for some small- and medium-sized corporations in Ghana. In most parts of Ghana and other developing countries, the corporate social responsibility (CSR) activities of corporates are limited to building schools and boreholes (Andrews, 2016).

However, CSR can be more appropriate in meeting the essential social needs than merely building infrastructures when it comes to mining: "Corporate Social Responsibilities – CSR, in mining, has generally meant building roads and schools and addressing the needs of indigenous populations as best as possible after the fact. To begin with, what if the mine was not polluting the water? Investment in new technology, to do things right with as little impact as possible, is arguably the most meaningful CSR initiative a company can take on" (Vivien Diniz: Kachan & Co. on RIN, 2013). It is inherent that the right technological investment in mining could significantly improve the lives of individuals in mining host communities by preventing or reducing the adverse effects of mining. The right investments in technology could lead to a dynamic pattern of economic systems and managers understand that pre-emptive management strategies, which at least foster sustainability, are vital for winner-oriented enterprises (Schmidpeter, 2012).

The extractive industries and businesses are not exempt from the new wave of social development transitions where enterprises must meet the ethical, social, and environmental

demands of local stakeholders (Park and Ghauri, 2015). Although the direction of flow of events between CSR and financial performance is uncertain, scientific studies support such a connection (Wieland, personal communications; Wieland and Heck, 2013). Globally, partly for legitimacy and social fitness purposes and resources regularization, mining industries are concerned and confronted with the issue of the environmental consequences of their activities (Park and Ghauri, 2015; Reed, 2002). Therefore, many concepts relating to the efficient use of resources and the management of unwanted outcomes have emerged. Research suggests that the idea of sustainability in the area of CSR, SOL, and corporate social irresponsibility (CSI) for example, has dominated academic research over the past two decades (Allen et al., 2017; Majoch et al., 2016; van Duuren et al., 2016; Popa, and Salanță, 2014; Davis and Franks, 2014; Franks et al., 2014; Owen and Kemp, 2014; Prno, 2013; Prno and Slocombe, 2012; Carroll and Shabana, 2010; Jenkins and Yakovleva, 2006), yet the changing social demands make the research in the area far from over.

A careful consideration of the two definitions below reveals the fact that both CSR and SOLs share the same goal, although disagreement in the working definitions exists (Dahlsrud, 2008): A social license to operate is "… an effort of companies in reaching out to stakeholders to articulate how companies respond to societal and community expectations" (Owen and Kemp, 2012), while "…CSR best describes the many ways in which companies choose to manage their business and conduct their efforts to create a positive and desirable impact on society in general" (Popa and Salanță, 2014). The two concepts primarily aim to achieve what exactly sustainability is seeking. That is, managing the environment as well as its benefits in a way that the negative impacts on society are minimized as organizations conduct their business. Many global initiatives also strive toward achieving similar goals. For instance, The United Nations Global Compact, the Sustainable Development Goals (SDGs), and the Extractive Industries Transparency Initiatives (EITI) seek to ensure transparent

resource accounting. While the Global Mining Initiative (GMI) focuses on industrial sustainability, a typical example of the SDGs is the emphasis on achieving universal food security, sustainable food production, and natural resources conservation by the year 2030 (UN SDGs, 2016, #: 2 and 15). Unfortunately, the SSM sector industries from developing countries including Ghana miss most of the goals pursued within the SDGs (Buxton, 2012).

Research demonstrates that in certain conditions, mining operations that do not meet the expectations of the local communities and the civil society, can engender anti-business development activities such as protest, the intermittent closure of mining operations, and sometimes violence (Armah et al., 2016; Rogan et al., 2016; Cuvelia, and Vlassenroot, 2014; Davis and Franks, 2014; Prno and Slocombe, 2012; Ross, 2006). The situation is not different with the case of Ghana (Armah et al., 2016; Patel et al., 2016; Hilson and Garforth, 2013; Bush, 2009; Hilson and Yakvleva, 2007). Thus, it is complicated for SMEs to obtain SOLs in the SSM sector and this calls for the examination of the factors that affect the distribution of SOLs. Due to the increasing global demand for natural resources in this century (Dubiński, 2013) and the deficiency of environmental regulatory regimes to meet the social expectations of the mining sector, there is a call for mining companies to step beyond their legal titles to circumvent the probable expensive social costs (Prno et al., 2012; Bridge, 2004; Hilson and Murck, 2000). Pursuing the above goals as well as preventing human rights violation risks is necessary for the SSM sector as these problems have the potential of making both medium and LSM companies unpopular. More so, the dynamics of mining operations and social expectations toward clean mining in Ghana, for example, is changing. Due to this, effective coordination of functional economic governance among the major stakeholders to promote competitive and responsible oriented businesses in the SSM sector is required.

Although the resource sector is a key player in the global economy, the application of SOLs to mining has not received the necessary research foci, especially vis-à-vis small size

(scale) companies. A study by Davis and Frank (2014, p. 10) suggests that small and medium scale mining companies are at difficulty when it comes to the remediation of the impact of mining rather than the prevention of adverse effects. Whereas large-scale companies comparatively find it easier to meet the financial requirements of the negative impact of mining. Studies that focus on mining exceedingly devote attention to industrial mining (Prno and Slocombe, 2012; Jenkins and Yakovleva, 2006), with a few exceptions that have discussed the safety standards and working conditions of Ghanaian underground SSM (Bansah et al., 2016). In the latter research, four licensed medium-sized underground mines in Tarkwa in the Western region of Ghana were visited, and the working safety of miners and environmental effects of underground mining were analyzed. They identified the odd choice of working tools, lack of personal protective equipment, poor engineering, and absence of operational monitoring as the significant problems associated with the sector operations.

However, discussions on first-hand conditions of mining and their effect on SOLs are lacking. Positive advocacy for large firms to undertake SOLs with local communities in the areas of communication, decision-making, conflict resolution, and information on social performance disclosure exists (Goldstuck and Hughes, 2010; Business for Social Responsibility, 2003; Social License Task Group, 2009). When searching for sustainable development, other scholars argue for regulations that would improve governance by reporting sustainable standards (Jenkins and Yakovleva, 2006). The aim of this chapter, therefore, is to contribute a detailed examination of the realistic conditions of artisan mining and its impact on obtaining SOLs using household surveys and in-depth interviews with mining institutions and small-scale miners in two districts of Ashanti region.

The findings demonstrate that the experiential conditions of ASM make it difficult for society to offer SOLs and the deficiency of mining policies toward clean mining promotion. However, we argue that companies can reduce these impediments by realigning their

business models and practices that synchronize the expectations of the society. More so, to promote responsible and sustainable ASM, organizational mining governance is recommended. The section begins with the application of the theory to explain the importance of regulatory management in the establishment of ASM and SOLs, followed by the clean mining concept and examination of data, results, and findings.

### 4.1.1. Application of organizational governance theories in sustainability

### 4.1.2. Institutions

Institutions are seen as an element of the social order of society that, through a set of rules and regulations, govern the behavior and expectations of individuals. They are also considered to perform vital functions by regulating the responses of economic agents to produce socially desirable products and services (Heemskerk and Heemskerk, 2017; Prno and Slocombe, 2012; Young et al., 2008). Governance perspectives provide recognition to institutions as crucial agents because governance systems require the synergy of several institutions (Paavola, 2007; Kooiman, 2003). The institutions being formal (law-based) or informal (custom-based) can function either as proximate forces or drivers of fundamental forces or both. They can create restricting (regulation-based) or supporting (incentives-oriented) environments for business operations (Sven-Olorf et al., 2016). In the area of resource sustainability, traditional institutions, for example, play a vital role in resource conflict management and resource exploitation (Cortex, 2014; 2011; Berman et al., 2012; Royal Academy of Sciences, 2009).

Institutional effectiveness can have a large impact on business performance, for example, the reduction of the public-institutional trust problem. Thus, the public can be trusted to contribute to the provision of an enabling environment for businesses to operate. However, if

governing institutions are perceived merely as bystanders, this creates a challenging context for companies to manage (Prno, 2013, p. 584). The type of institutions and governance mode matters and may yield competitive and responsible business performance concerning sustainability or otherwise. Mining has undergone significant shifts in governance by emphatically improving the social and environmental performance sectors (Prno and Slocombe, 2012, p. 346). With this, governance tasks are broadening, with civil society and market actors taking center stage in contributing to the conditions of creating shared value.

### 4.1.3. Governance

Generally, research defines governance as the theoretical conception of the process of governing (Prno and Slocombe, 2012; Kooiman, 2003), and it can indirectly dictate the operation of the rules of the game. In this regard, it refers to the decision-making on environmental and other sustainability processes using government regulations. We learn here that the viewpoint on sustainability from fields such as environment, socioeconomics, and ethics, builds on this conceptualization. Hence, we imply that with many types and mixtures, a governance system can help find solutions to some of the contemporary issues concerning sustainability. In some countries, governance dynamics is found to be useful in shaping the development of the mining sector for establishing and obtaining SOLs. In Canada for instance, it is found to be a helpful instrument in creating SOLs in the areas of mining land allocation, permitting formalization, the right of exploration, and mining (Prno, 2013; Prno and Slocombe, 2012).

Furthermore, due to the changing social expectations and growing societal demand for responsible and sustainable development, it is complicated for a single governance model to provide efficient outcomes. Therefore, alternative modes of governance arrangements may lead to a better result for the development of SOLs (Prno and Slocombe, 2012; Schiavi and

Soloman, 2007; Lemos and Agrawal, 2006; Dashwood, 2005; Kemp et al., 2005; Eisner, 2004; Campbell, 2003). Hence, it is appropriate to apply institution and organizational governance in conceptualizing how the adverse effects from small-sized mining companies can affect the process of obtaining an SOL in a developing country context like Ghana, where institutions are found to underperform (Appiah and Wieland, 2016; Prno, 2013). Moreover, much of the economic theory assumptions portray the traditional regulatory system as offering an impartial and perfect service in sustainable resource management (Royal Swedish Academy of Sciences, 2009; Dixit, 2003), but in reality, the advantages are only estimated to be useful in a few developed markets (Dixit, 2003). Economic governance as an aspect of governance theory primarily seeks to examine the better modes of organizing governance order in the management of profitable transactions.

The preceding discussion suggests that proactive institutions and organizational governance are necessary for such settings to coordinate economic transactions to incentivize businesses to alter their behavior. Thus, this would initiate incentives for medium-sized enterprises (MSEs) to significantly pursue sustainable or clean mining (Lynch-wood and Williamson, 2007). It is worth knowing that the coordination of a complex network of stakeholders is the role of governance (Kooiman, 2003; Saunier and Meganck, 2009; Paavola, 200; Rhodes, 1997). However, the coordination system that recognizes the indispensable role of institutions should be guided by the governance of specific economic businesses. Accordingly, the analysis of empirical economic realities of SSM companies in a governance framework from a developing country is vital. In the Ghanaian ASM context, good governance and proactive institutions can be achieved through the formulation of workable and functional arrangements between significant stakeholders including the state mining regulators, the local community and local traditional leaders (traditional and religious), small-scale miners, and the media, with each contributing their natural capital.

Although some researchers argue for free prior and informed consent (Owen and Kemp, 2014), others warn against a cautious effort to replace the legitimate legal permit to operate with SOLs (Lincoln et al., 2015). The authors Lincoln et al. (2015) are cautious against bestowing significant effort on SOLs as a social veto to environmental issues and argue in favor of implementing schemes of approved legal and political arena as remedies. What happens when such institutions are weak? Alternative governance arrangements are necessary. Other researchers also argue for stakeholder theories rather than observing CSR alone as it is limited in scope with regards to ensuring effective order and responsibilities of businesses (Park and Ghauri, 2015; Goel and Ramanathan, 2014). However, without clear organization and coordination of economic governance structures to manage the complex mining sector setting in the presence of weak regulatory regime states responsibly, like in the case of Ghana, the stakeholder argument alone would be less efficient. Workable arrangements for desirable outcomes that entrust the ownership of clean mining to traditional and non-traditional institutions including society is highly commendable as a good governance order. The economic governance in this direction would ensure both spontaneous order in the market and the global rule of alternative modes of governance (Sven-Olof et al., 2016; Wieland, 2014).

The continual management of cooperative relationships on good governance orders and workable arrangements establishes the source of economic value creation. Each stakeholder has a responsibility to contribute to the nature of universal values such as responsible mining management toward clean mining. That is, a stakeholder value that ensures human rights protection such as child labor and violence prevention, environmental safety, social stability, and economic sustainability (Dubiński, 2013). However, the organization of these values is deemed necessary and forms a specific segment of doing business (Freeman et al., 2014), and this is the sole responsibility and objective of economic governance. Justifiably, the persistent

lack of public trust in SSC to ensure clean mining in developing countries such as Ghana, calls for research on the effect of the experimental conditions of companies that obtain an SOL. In addition, in the literature, there has been less of a focus on the empirical conditions of mining companies and the impact of the social judgment of offering an operating license. Hence, the area needs more examination, and this is what this chapter aims to achieve. A study involving how to obtain and sustain SOLs in a developing country context is crucial for the development of the SSM sector. It would contribute to the development of status indicators toward global sustainable development (FAO, 2010) and in addition provide a better understanding of some of the context of operations from the SSM perspective and formal mining regulatory systems in Ghana.

In the following section, we introduce the conceptual framework of clean mining with the aid of existing literature and its conditions as a guide for a social verdict on SOLs. After describing the data and methods, the chapter builds on household and expert observations in discussing the practical conditions of mining on host communities and their influence on attaining clean mining, a catalyst for obtaining an SOL. It then briefly examines the challenges of governance policy instruments and their effect on obtaining SOLs. We believe that this section contributes immensely by devising suggestions toward attaining a collective appreciation of SSM in less developed economies.

### 4.1.4. The clean mining conceptual framework

In everyday terms, clean mining is described as less pollution from mining as reflected in the following quotation on how mining can be clean and innovative: “I think we’re at a rare point in history where mining companies, policymakers, and elected officials are somewhat in sync now. The average voter wants to see clean water and green trees, and your average mining company wants to be as efficient and economical as it can be, and that in

many cases involves adopting cleaner green technologies. I think it's an interesting time in which policymakers and mining companies have more in common than they think they might" (Vivien Diniz: Kachan & Co. on RIN, 2013). Due to the possible effect that social responsibilities can have on a their development, companies are usually recommended to invest in clean mining not only to be competitive but also to undertake meaningful CSR. An important lesson from such position [Kachan & Co. on RIN, 2013] and its usefulness for gold mining in developing country contexts is a holistic solution to prevent water wastage. A typical area is the adoption of water recycling zero discharge technology, which can be a viable solution for some companies and society. For instance, an investment in water treatment processes, which ensure that a higher percentage of wastewater used in mining is purified and recycled, leaving zero liquid discharge at the end of the treatment cycle, would serve such a purpose. Sustainable innovations in mining practices are highly recommended and can be useful in developing countries where change is lacking and the negative impacts of mining are neglected concurrently. A known case is gross environmental pollution including dust fumes in the Ghanaian SSM (Bansah et al., 2016). Mining practices that reduce water wastage, for instance, would be much appreciated in developing countries.

The aspects of clean mining usually referred to as green mining consider only the environmental concerns about emissions and these generally demand innovative solutions. Moreover, clean drilling discussed in this chapter would include the mitigation of human rights violations to the existing sustainability efforts. It adapts the FAO-ISEAL (2010) definition of sustainability and moves beyond human rights protection to the alleviation of unwanted human rights infringements. The same document summarizes the sustainability dimensions to cover good governance, social development, economic resilience, and environmental integrity (FAO - ISEAL, 2010), which suggest that good governance matters in sustainable mining. The concept of clean mining, as discussed here, advocates for

sustainable practices in the field of mining that requires both public and legitimate license and at the same time supports intergenerational needs. Clean mining operations would ensure meaningful social desirable outcomes over adverse outcomes, a result that leads to less human rights violations and mitigates adverse environmental effects. This result must be achieved in such a way that the natural environment benefits and the needs of current and future generations are met. Put differently by the normative assumption backed by stakeholder theories, the codes and the norms of sustainability should be the primal design of institutions (Singer, 2013). However, the organization of these values is deemed necessary and is a specific segment of doing business (Freeman et al., 2007).

Prominently, in providing a common output at a sustainable rate, the proposed immaculate mining conception would encourage the long-term balance of human rights and socioeconomic and environmental issues (Figure 19 below). For instance, practicing social responsibility would include all activities that would add more social benefits than costs to society. Management decisions that contribute to the provision of essential livelihood services such as safe drinking water and health support for communities that badly need these services due to mining activities is a good example of practicing clean mining by achieving social responsibilities. In this case, SSM could contribute to poverty reduction. More so, in the area of environmental safety, clean mining or sustainable mining would suppose that corporations are either motivated or convinced on ethical grounds to seek innovative and efficient methods of extraction that would reduce the harmful effects emitted on the society. For instance, adopting technology such as zero water wastage would lessen the burden on community dwellers on water usage and reduce health-related problems. Likewise, exploring alternative but safe chemicals such as iodine for gold processing instead of mercury would improve the society's livelihoods. Furthermore, on economic sustainability, faultless mining strategies would suppose that mining operations would contribute to a search for an

alternative livelihood that could co-exist with mining to reduce the tensions that might be caused by labor layoffs from the agricultural sector. If companies achieve that, then the continuation of mining activities might not face harsh opposition.

A balance of such values is necessary to achieve clean mining by revitalizing existing organizational policies and the prudent management of existing complex systems (Buxton, 2012). However, the accepted balance would be provided by efficient institutional and regulatory governance systems (Singer, 2013), which economic management seeks to examine and promote.

Observing clean mining would also enable companies to respond to ethical challenges. Goel and Ramanathan (2014), argue that firms do not only seek profit when they pursue sustainability but also perform an action that fulfills moral norms. This profit, according to Wieland and Heck (2013: cp. 1), is not always the difference between revenue and cost but rather a social optimum between the positive outcome of the differences between income and expense and the achievement of cooperation rents. In the context of this study, the profit is a social profit that would be conflict-free, is not involved in child exploitation, contains environmental conservation, and has more socioeconomic support, and this would constitute clean mining as depicted in Figure 19.

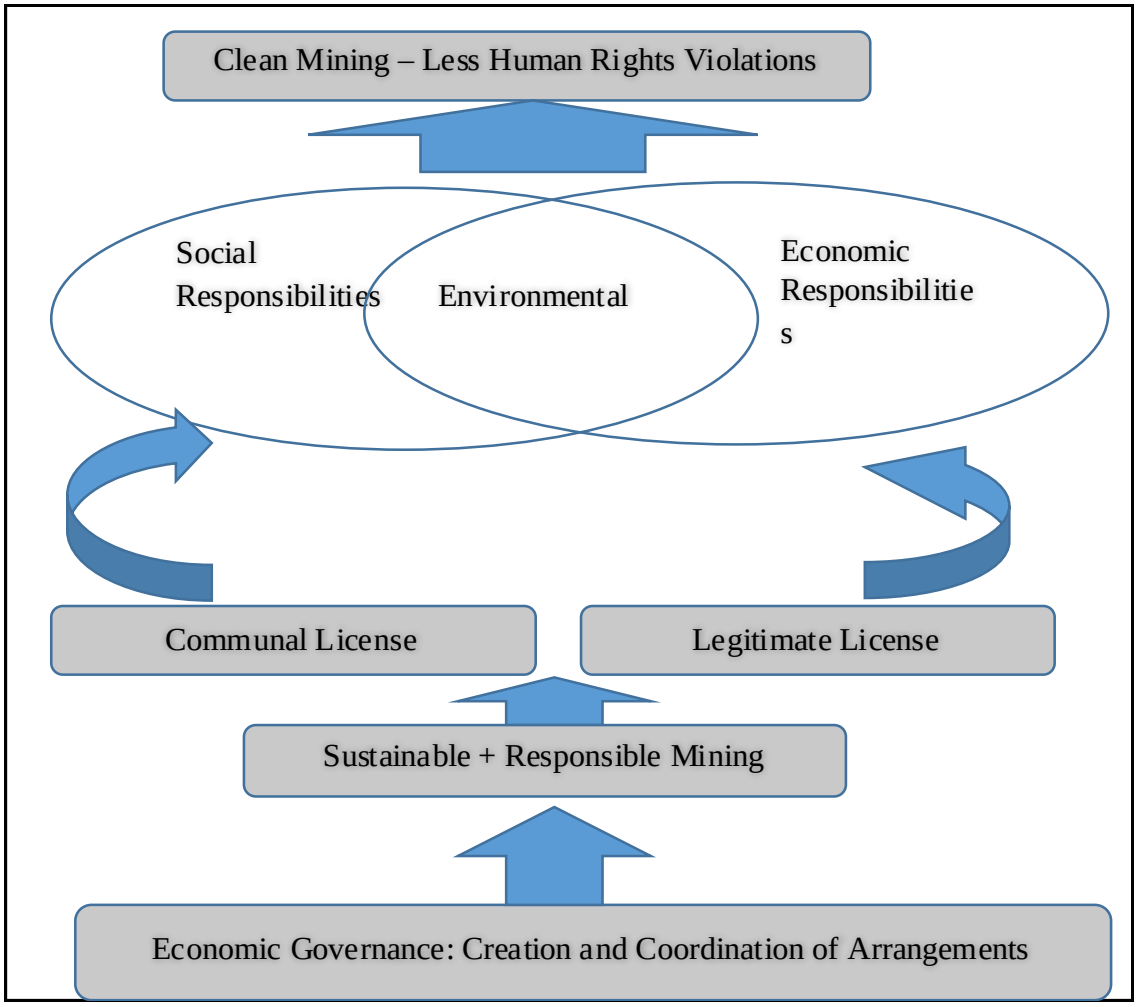



Figure 19: Overview of clean mining concept
Source: Some thoughts adapted from FAO, 2010, p.9.

Figure 19 above depicts the conceptual overview of the concept of clean mining. The conception is founded on economic governance that coordinates and enforces responsibilities among stakeholders constituting the working arrangements. When businesses meet the clean mining conditions, they can be assured of a social offer of a common license that suffixes the legitimate state license to mine in a less costly or costless operation than when a collective permit is withheld (Prno, 2013). More importantly, if companies use SOLs as a component of their due diligence process, then there is a high probability that the shared value among the key stakeholders (including the community who is adversely affected in the absence of SOLs) can be created. A further important lesson worth noting is that for companies to

achieve clean mining, their empirical conditions should support at least three critical aspects of responsible management: (1) sustainability that looks at the areas of environment, economics, and some perspective of social structures; (2) responsibilities that cover areas of social structures (economic and environmental); and (3) ethics that examine the consideration of monetary gains over other areas such as human rights and environmental safety in mining governance. These conditions, although not sufficient,[14] are necessary for responsible and sustainable mining and for achieving social and competitive outputs and services. Unlike the earlier definitions of sustainability in relation to mining, which place greater focus on the environment (Valente, 2010; Margolis et al., 2003) and socioeconomic aspects (Jenkins and Yakovleva, 2006), this discussion moves further and includes responsible and sustainable mining as the base for achieving clean methods of extraction and how it influences SOLs.

The recent management practices demonstrate that the readjustment of business models in the pursuit of sustainability can be more efficacious provided they partly comprehend the balance between the dichotomous expectations between the economy and the society (Schmidpeter, 2014; Schneider and Schmidpeter, 2012; Laszlo and Zhexembayeva, 2011; Porter and Kramer, 2011; Senge, 2008). This requires functional economic governance that seeks to implement the proper order, workable arrangements, and sustenance of cooperative relationships (Wieland, 2014). Studies have demonstrated that even in developed markets where the traditional official systems are approximated to be efficient, alternative arrangements exist to ensure social outcomes (Dixit, 2003). Accordingly, for the business processes and expectations to conform to the changing social expectations of clean mining, an alternative arrangement is necessary to overcome persisting governance challenges. The realignment of business models toward social output is anticipated to restore the trust of a

[14] This might require other conditions such as good economic governance in organizing and supervising the economic activities of all critical stakeholders in the SSM sector. This might include both the legal traditional and non-traditional (other workable arrangements) institutions in the management of prioritized issues in the industry.

company to higher levels of growth. For instance, as indicated by Paul Polman, the CEO of Unilever Group, "…When we experience the impact of recurring storms and severe droughts, damaging floods, and obvious water shortages, spiraling food prices and widespread food shortages, we are forced to take notice. CEOs and businesses that understand this and develop business models that are in sync with the needs of society and the environment will not only restore trust in business but also drive their companies to higher levels of growth" (in Reeves and Weinreb, 2013).

Hence, alternative economic governance modes are needed to foster the creation and coordination of working arrangements in synchronizing or supplementing the regulations. We propose alternative economic governance as a viable means for small- and medium-scale mining enterprises to promote clean mining in a developing country like Ghana. The responsible management of mining transactions can enhance the maximization of shareholders' value. Interestingly, the maximization of shareholders' value is also partly tied to SOLs; the "permit" is only granted by society when companies behave responsibly for ensuring clean mining. Therefore, the management of collaboration between the main stakeholders is essential due to the goal of clean mining, which is a shared value to be created by all stakeholders. The creation of this cooperation rent would be more feasible if it is based on trust relationships among each stakeholder. For instance, the trust in the company's competency in ensuring responsible mining might reciprocate assurances on society to grant SOLs to companies. Interdependently, the success of a company's competency is partly shaped by an active civil society demanding accountability on regulations.

### 4.1.5. Empirical conditions of Ghanaian mining companies

This research enquires into the impact of mining on host communities to learn the nature of mining governance and how management influences the conditions of SSM

companies. It argues that good mining governance promotes sustainable mining. The realistic conditions of existing mining companies describe how the mining operations affect the host communities. How does the mining operation affect social structures such as health, public or community security, and food security? What is the effect on the economic structure for example, on employment and the environmental architecture? The observational conditions should at least support the minimization of the adverse effects on society in the areas of socioeconomics and ecology when exceptional economic governance is in place. The study further proposes that sustainable and responsible mining should be a subset of clean mining from the viewpoint of social capital formation for both legal and communal licenses. For this to happen, we need not only good governance (FAO, 2010), but sound economic governance to coordinate working arrangements in the sector. Since confrontation between communities and companies after issuing formal permits exist (Rees et al., 2012), good economic governance is necessary to reduce or prevent this development.

Moreover, evidence from LSM industries suggests that during mining operations, the benefits communities receive from mining and the stakeholder management both influence the establishment of SOLs (Prno, 2013). Hence, collaboration for working arrangements is necessary among all major stakeholders to supplement the effort of the legal mining instruments. We expect this might minimize the probability of the social rejection of mining operations after the acquisition of legitimate permits to mine. Mining companies should be able to meet the responsibilities of managing most of the unintended adverse outcomes of mining on the society. Activities of focus should include conflict prevention and its consequential management, contributions to child labor prevention, environmental rehabilitation, and supporting local employment.

More so, the organization of economic activities in the SSM sector should coordinate both the proper and social appreciation of mining operations. The first aspect, which is legal

acceptance, falls under the legitimate acquisition of a permit to mine, which is backed by the law. This aspect of the rights of doing business should ideally spell out the minimum requirements and a means of monitoring and evaluating the activities of permit holders. In contrast to most developed economies, Ghana's legal permit is alleged to place significant emphasis on monetary benefit. The second aspect is obtaining the collective rights to embark on mining operations, which is inevitable. As defined by some authors, this type of power cannot be acquired or applied for and issued by the state (Franks, et al., 2016; Kemp et al., 2016; Moffat and Zhang, 2014; Reeves and Weinreb, 2013; Salzmann et al., 2006). Communal licenses instead include the management of public expectations on host communities toward their acceptance of mining operations. Although indirectly the SOLs primarily seek to achieve clean mining, there is also a social output of encouraging undertakings for social, human rights, and environmental safety. These two combined, the social and ecological responsibilities, if managed well, can partially have a positive impact on the economic burdens. The thesis argues that societies might prioritize social and environmental duties over economic obligations in deciding on accepting or rejecting mining operations.

A balance between the legal and communal license with an intersecting focus on environmental mitigation that would support the current generation without disadvantaging future generations is crucial. This balance might be achieved through good economic governance in organizing and coordinating cost-effective transactions of the possible arrangements as indicated by Wieland (2014. Ch. 2. p. 17). The mitigation (and minimization) of adverse environmental impacts have an inherent feature in effecting the other two elements of attaining clean mining. Therefore, ensuring efficient economic governance for the responsible management of mining might have a significant influence on informing the social perception of accepting mining operations. To obtain and sustain SOLs,

the experimental conditions of companies should point toward clean mining and therefore, fewer incidences of the unwanted and neglected adverse effects of mining.

## 4.2. Materials and method

### 4.2.1. Data and sampling strategy

We employ descriptive statistics in analyzing the practical conditions of small-size mining companies and their influence on obtaining SOLs. Institutional and governance theories such as economic governance, for example, are employed to identify some of the impediments of obtaining SOLs to mine as the current mining governance and activities of companies generate unwanted adverse effects in the SSM sector. This chapter employed a cross-sectional data of 250 respondents from 10 communities from two districts namely Amansie West and Bosomtwe for the mining impact assessment. In addition to this, expert interviews and focus group discussions were conducted from various institutions concerned with the SSM organizations, making a total sample of 293 (Table 10). The qualitative section was sourced to buttress the findings from the households and to ensure the reliability of the information (Bitsch, 2005). The data captured the impact of SSM on the host communities and their appreciation or otherwise of the mining operation. The data was processed and analyzed, both qualitatively and descriptively, for the discussion.

First, we strategically selected districts from the national Mineral Commission's list of the most affected areas of mining activities in the Ashanti region. Both study areas are strategic for cocoa, agriculture, fish production, and host significant water resources including the Bosomtwe, Pra, Offin, and Oda lakes (Ghana Statistical Service, 2014a: Ghana Statistical Service, 2014b). We further sampled ten communities purposefully from the pooled list of towns where the incidence of mining is high in the two districts. The register

was made available after two key informants' discussions with the cocoa board research division in the Amansie West district and the mineral's commission representative in the Ashanti region. The households were randomly selected to take part in the survey. The data collection period was between July and October 2015; follow up meetings and in-depth interviews with some key resource persons were completed between December 2015 and January 2016.

Table 10: Data sources and sample details

| Respondents affiliation | Description of respondents | Number |
|---|---|---|
| Institutions | Stool lands, Minerals Commission, Ghana Cocoa Board, Ministry of Lands & Natural Resources, and Ghana Extractive Industry Transparency Initiatives | 5 |
| Local Administration | Assemblymen: Amansie West District, Bosomtwe District Assembly | 2 |
| Local NGO | Gender Center for Empowering Development (GenCED) | 1 |
| On site observations | Small-scale mining sites | 4 |
| Mining operators | Mangers of small-scale mining | 8 |
| Opinion leaders | Chiefs, queen mothers and elders | 5 |
| Exporters/buyers | Precious Minerals Marketing Corporation (PMMC) | 3 |
| Focus Group discussions | 3 focus group meetings | 15 |
| Individual households survey | Small-scale mining workers, Managers of small-scale mining, food crop farmers, cash crop farmers, other regular pad jobs | 250 |
| Over all sample size | | 293 |

Source: Computed from field data

## 4.3. Results and discussions

The analysis and results of the field survey and interviews on the impact of mining on the communities identified three critical areas of value creation that are normatively deduced from the applied theories: sustainability, responsibility, and ethics. Findings on these key areas report the practical challenges of obtaining an SOL. Following the lessons learned from LSM sustainability, inquiries into the negative impact of SSM on host communities is

discussed. We argue that the experiential differences between the two effects (positive and negative) are expected to play a significant role in support of SOL development and sustenance. Based on the current results, the nature and extent of adverse effects in the mining communities are more likely to influence the society in denying the SOLs compared to the positive impact. The results demonstrated the social, environmental, economic, and governance impact of mining on the research communities. We, therefore, concluded that using moral persuasion and demands from clients, companies would have more incentive to pursue sustainable or clean mining. Hence, this will ensure that outputs produced at the social level will yield a significant social benefit other than cost. In effect, it would warrant social approval for the sustenance of mining businesses. This is required as current state regulations are limited in their ability to correct most of the identified challenges that impede the sector.

### 4.3.1. Social structures

For the negative impact of small-scale gold mining on the community's social structures, the focus emphasizes three key areas: health, security, and food security for the past twelve months. According to the communities' account, effects from mining, including losses and gains, serve as a critical determining factor for establishing SOLs, which is consistent with the findings of Prno (2013: 576 -584). Therefore, the adverse impact on health, food security, and human (civil) protection, for example, would serve as an impediment while monetary gain through mining employment to the households would serve as a facilitating factor for companies to obtain SOLs in mining.

### 4.3.2. Impact on health

The number of people ill at the time of the interviews was computed as the number of times an individual was sick per 12 months.

The analysis demonstrated that SSM has had a devastating impact on the health status of the rural mining inhabitants. Although the monetary gains from mining are substantial in supporting household incomes, mining was an inflator of health bills. As described by some experts, "SSM activity is a threat to the national health security and state finances on health" (Interview with the Ministry of Lands and Natural Resources Directorate, Accra, 2015). Artisanal mining is increasing the demand on the national health care, and new responsibilities on local dwellers who incur the adverse effects of mining have arisen. Although the government might endorse a license to operate, the effort would be opposed by the hosting communities due to the neglected health impact and its associated costs borne solely by the victims. For instance, out of the 250 households interviewed, 48% were ill at the time of the interview. The common illnesses diagnosed in the mining hosting communities include malaria, skin diseases, water-borne diseases, and non-diagnosed illnesses or diseases not diagnosed by orthodox medicine (Figure 20). Most of the known infections recorded were an outcome of water pollution, which was also confirmed by the expert interviews on the negative impacts of SSM on host communities.

Visiting the mining sites confirmed the revelations from the focus group discussions and interviews that the contamination of rivers and open pits from abandoned mining still exist, which is dangerous and pose a health threat. The open pit serves as a breeding ground for mosquitoes, and this could be the principal cause of many illnesses in the mining communities. Likewise, the contaminated water sources in the districts are the primary cause of most skin and other water-related diseases that increase the health burden on the society. Explicitly, some respondents from the Minerals Commission and the Ministry of Lands, for

instance, linked the cause of skin diseases to the contamination of water with mercury from mining. Some opinion leaders opined that only a few communities in the Amansie Central (very close to Bosomtwe district) received mosquito-spraying services from AngloGold Ashanti. However, none of the households interviewed in the Amansie West and Bosomtwe districts received any assistance.

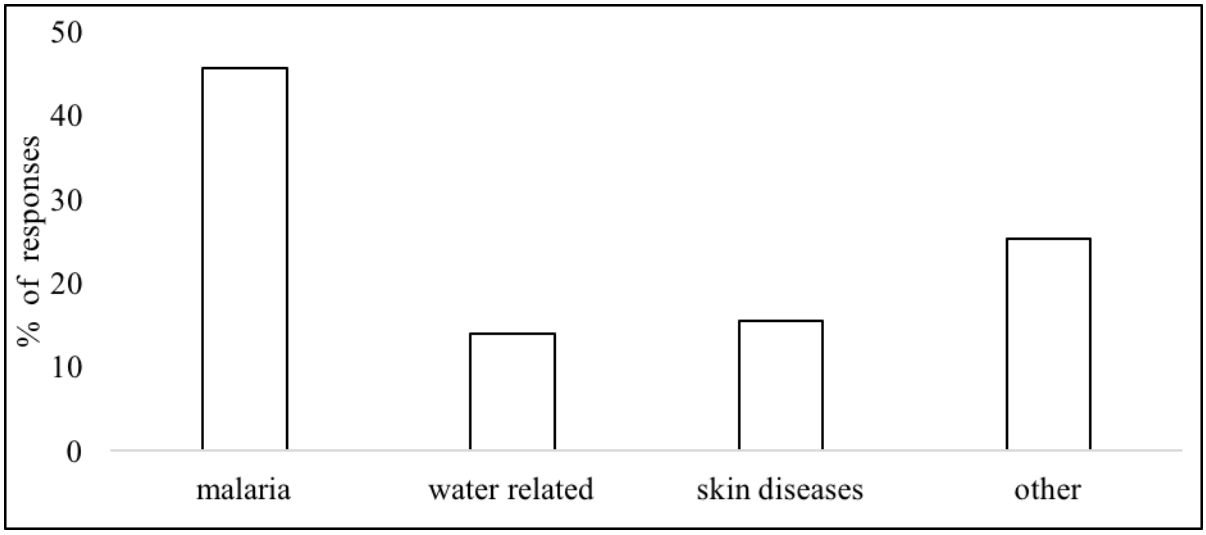



Figure 20: Common illness in mining communities
Source: Author's estimations from household data (N = 250)

### 4.3.3. Impact on food security

For the food security impact on the hosting communities, three significant issues were assessed from the household survey vis-à-vis access to land resources, access to food, and the exchange of food or cash crops to give way for mining. Findings from the three were then related to the experts' responses for an accurate picture of the empirical conditions in SSM. Most of the households, less than 40% at the time of the interview, had traded cash crops such as cocoa, oil palm plantations, or food crops for mining. Approximately 65% had access to land, and about 74% had access to enough food (Figure 21). Access to enough food, according to the respondents, was possible as they buy food from nearby cities based on sufficient demand.

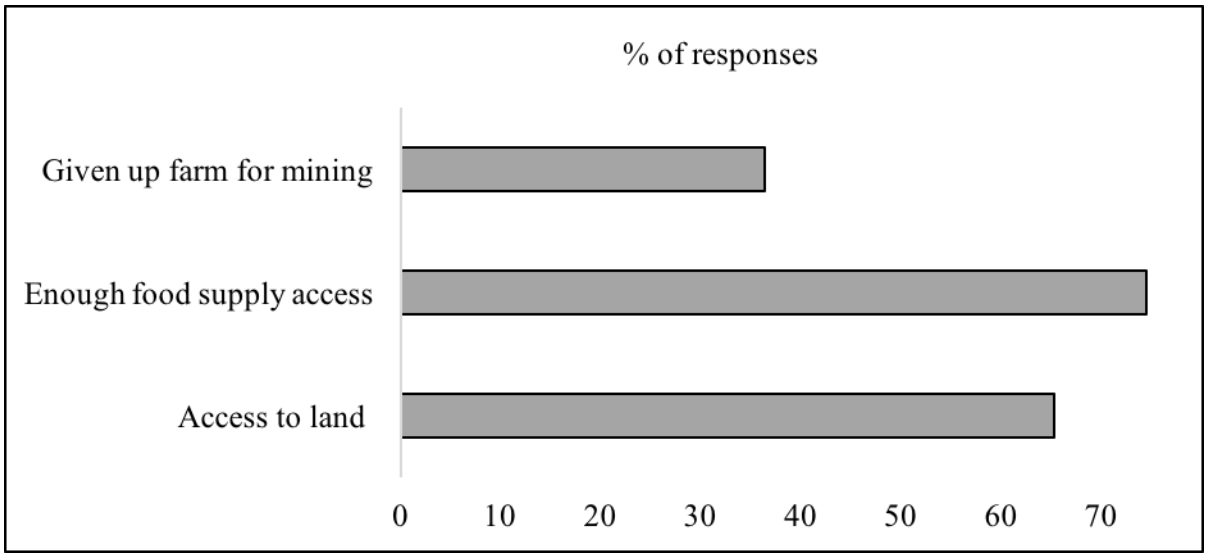



Figure 21: Indicators for food security
Source: Estimated from the household survey data (N=250)

Most respondents, approximately 90%, indicated that it was very challenging to access resources; very few, less than 2%, reported the opposing view. The results on the challenges of access to most of the essential resources for food production demonstrated that land (41%), financial credit for farming (31%), farm labor (17%), and extension services (10%) were arduous to access (Table 11). From the community accounts and focus group discussions, we found that mining discourages the use of both human and natural resources for farming. Hence, accepting ASM is against the wishes of the society because mining can detract the most vital productive resources such as farm labor and financial credit, among others, away from farming, which was the preferred employment in the communities.

An additional reason might be the increase in mining activities and the ability of mining jobs to offer faster access to cash than agriculture. Food security is threatened by the lack of access to resources for food production. This confirms the position of the focus group participants and the experts interviewed that uncontrolled or poorly managed SSM threatens future food security.

Table 11: Resources that are difficult to access

| Resources access challenges | Frequency | Percent |
|---|---|---|
| Land | 101 | 40.56 |
| Farm laborers | 42 | 16.87 |
| Financial credit | 79 | 31.73 |
| Extension services | 24 | 9.64 |
| none | 4 | 1.2 |
| Total | 250 | |

However, some private individuals such as landowners and farmers who were frustrated by the unattractiveness of farming sold their cash crops to pave the way for mining. Other reasons for sacrificing farming for mining include the mobilization of capital for funerals, to start new businesses, and finance school fees. Others who refuse to sell their farms hinted that they did so only to prevent food-scarcity for future generations. These findings are also consistent with the view from the focus group participants and expert interviews that absolute poverty and lack of access to financial credit for farming forced most people to sell their farms to miners.

### 4.3.4. Community (civil) security: violence

We established that violent disputes are inevitable and increase in mining communities as soon as gold discoveries are made and SSM begins. This finding is in line with the results from other authors (Armah et al., 2016; Davis and Franks, 2014; Ross, 2006) that the rate of natural resource discovery and exploitation influence conflict in these communities. This

result could be because of the lack of good mining governance to coordinate working arrangements for services such as land use conversion and compensation, for example. Another reason for the violence is the perception of the anticipated but unwanted adverse effects of mining on the community. These disputes undermine the security of the companies and the communities. Nearly all the community respondents (90%) indicated that they had witnessed mining-related violence in host communities, which deters them from coping with or accepting the mining activities. Instances of disputes that are perceived as the major contributing factors include daily attacks and counterattacks by miners among the mining groups, especially within the illegal mining circles, assaults among the state security and mining workers, land conflict due to concessional mining awards, and cheating and non-payment of compensation to affected households are perceived. Various levels of threats and violent attacks exist in SSM hosting communities (for details see forthcoming "Determinants of conflicts in ASM communities – evidence from the Ashanti region" by the author.) These were peculiar to the governance challenges in the coordination and management of mining activities to reduce corruption, and the lack of monitoring of mining standards, for example. These developments increase the likelihood of violence and cause objections to SOLs in mining.

### 4.4. Environmental effects

This study established that most water bodies and river sources are significantly affected by the activities of SSM in the districts. This result is consistent with the findings that artisanal mining has significant adverse effects on the environment and usually leads to environmental degradation (Armah et al., 2014; Carson et al. 2005). On-site field observations confirm another essential revelation from the interviews and focus group discussions that minor and major rivers including the Pra, Offin, and Oda in the two districts

are polluted with liquid and solid substances. In addition to this, the natural courses of most rivers are diverted, causing a flood, and consequently suffer extinction (Figure 22). The Oda River, for instance, runs through the two districts to join other major rivers, and their tributaries exit into the largest natural lake Bosomtwe, in the Bosomtwe district; this demonstrates how crucial water sources are to the areas. As sustainability is found to be one of the dominant concerns for communities in deciding whether to issue SOLs (Prno, 2012:586), any evidence suggesting the neglect of environmental sustainability as illustrated in Figure 22 implies an impediment to obtaining an SOL.

Noticeably, some expressions from the interviews signify a rejection of SSM, and hence a refusal to encourage the offering of SOLs to companies under such settings. The following are examples of expressions of shock, disappointment, and sadness indicating the lack of community-company trust in ensuring clean mining (sections 4.5.1 through 4.5.2).

Figure 22: Pollution of major rivers (Left) Amansie West district, (Right) Bosomtwe
Sources: Field photos by the author during field observation, 2015.

### 4.4.1. Dismay at the social and food security and health situation

"Illegal mining is a national security threat!"

"It increases health expenditure, more patients visit hospitals, there is more demand for healthcare facilities, and more healthcare practitioners."

"Area of agriculture: SSM threatens food security, there is less food production and a high demand for food consumption. Government expenditure on the importation of food increases."

(Lands Directorate, Accra, 2016).

### 4.4.2. Dismay at the degradation of land and destruction of water bodies

"Land degradation is common, especially the alluvial mining in the Ashanti region.

"Devastation is huge; the environmental destruction is very pathetic! You have to go there and be the right judge."

"Rivers and streams sedimentation and pollution of water bodies; Rivers like Pra, Offin, and Oda."

(Minerals Commission, Accra, 2015).

"Miners have destroyed all the rivers! The mighty Oda River is gone. You saw it, or not?"

(A traditional local chief, Amansie West district, 2015).

Contrary to expectations, the study cannot deny that the environmental footprints of SSM are the same for license holders (legal) and non-license holders (illegal). It is loosely perceived that only illegal mining degrades the environment. This was revealed during onsite visits, household survey, and interviews with mining operators and a local NGO operating in the region. Evidence of abandoned mining pits, land degradation, and non-closure of non-functional mining sites exist. This means that the SSM activities, irrespective of their legitimacy, as currently seen in the region, are not appreciated by the society since the positive impacts are overlooked, as suggested by the findings.

The research demonstrated that the supply chain for SSM is short of buyers and this enforces a monopoly, which is not suitable for the market development of the sector. This was revealed during field observations, where only a few gold buyers (gold mined from SSM) operate in the market, especially in the rural areas. This discourages competition toward clean mining as the buyers do not care about clean mining practices and face no competition. In addition, existing gold buying companies such as the Precious Minerals Marketing Company (PMMC) and the individual authorized buyers linked to the SSM sector are doing very little to ensure clean mining. This might be due to the lack of competition among gold registered buyers. For instance, a response to a question about the buying company's knowledge of the social responsibilities of clean mining yielded the following answer: "We have little or no knowledge in this respect ... we only buy and export gold… buyers don't care about neither the environment nor what goes into the mining, only the gold matters" [a respondent from PMMC, Accra, and a local gold buyer, Amansie West district, 2016].

The adverse effects such as the destruction of the environmental support systems have intergenerational consequences. It can be deduced that the society would neither approve mining operation nor be willing to change their decision if the current conditions on the

impact of SSM persist. That is, as long as the unethical and irresponsible behavior of suppliers within the supply chain remains, the society will refuse to issue mining SOLs. Consequently, as deduced from the expressions, these findings indicate the indirect impediments to mining operations because of existing negative consequences of mining. In other words, these signs portray the unwillingness of the society to offer SOLs to small sized mining companies. However, ASM companies can prevent or improve the situation and win the trust of society by changing their operating models to meet the social and economic expectations in this respect.

### 4.5. Economic impact

To assess the conditions of companies contributing to economic development, we asked questions about the employment history of the capable labor force in the communities. Figure 23 illustrates that out of the valid respondents who were employed at the time of interviews (132 out of 250), the agricultural sector offers the highest employment levels, followed by mining, self-employment, and paid jobs (in the right half of Figure 23). Whereas stone washing, digging "miners," water fetching, excavator drivers, and sand transporting, illustrates the task distribution within mining employment from left to right respectively in Figure 23. From the interviews, we found that mining supported household incomes and improved their financial development even though it was not able to offer the promised or the anticipated level of employment. Employment in the small-sized mining companies provided alternative and reliable sources for cash availability and collateral in securing financial credit to the communities. This finding is consistent with results by other authors (Kayla et al. 2016; Hilson and Potter, 2003; Hilson and Garforth, 2012) that the mining sector serves as an alternative source of rural household income. Despite the promising financial support, the thesis also found that mining is not able to employ the entire agricultural labor force as

wrongly perceived in Ghanaian society and this has negative consequences for the social acceptance of mining.

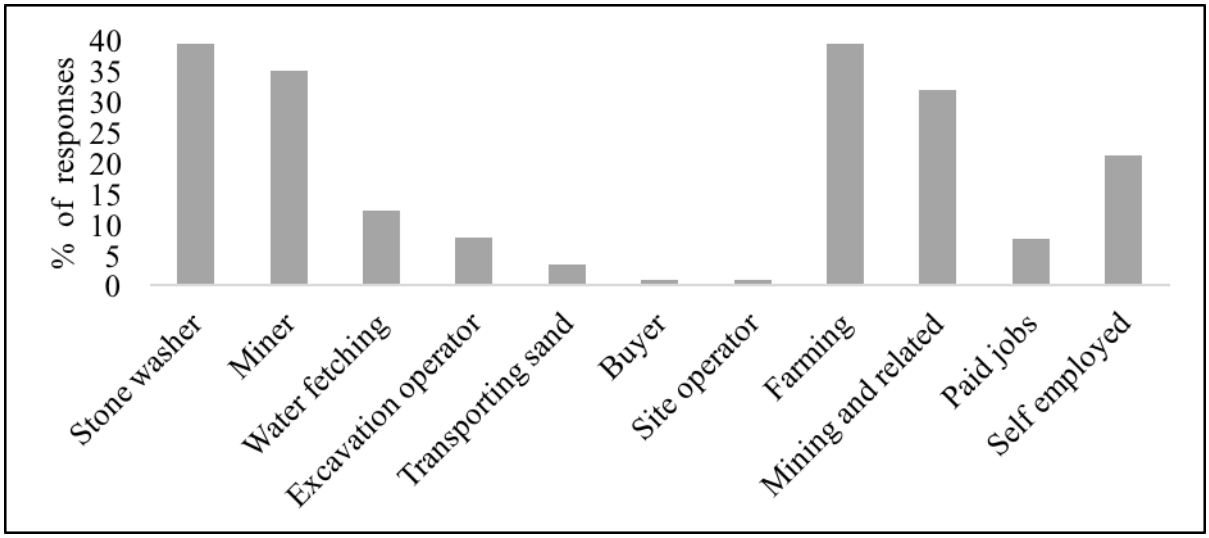



Figure 23: Impact on employment
Source Estimated from the household survey data (N = 132/250)

Employment and income gains from mining are only short-term benefits to the present generations, and this is not sustainable. Currently, there is no substantial alternative use of the profits from mining to bequest future generations, as narrated by some opinion leaders. Meanwhile, the significant impacts of SSM on society have intergenerational effects regarding the negative implications. The current evidence here suggests that the positive outcomes benefit mostly the current generation while negative mining impacts affect generations to come. Consequently, it is expected that a forward-looking society will withhold SOLs from companies. In addition to the reliable source of income from mining, households who engage in mining and related activities earn a higher salary than all the alternative employment activities. Farming contributed less (about 13 %) to the total household income, while approximately 18% came from paid job workers, 23% from self-employment, and 46% from mining and related jobs in increasing order of magnitude (Table 12). These results suggest that mining is becoming an essential factor in rural household

income and livelihoods, and therefore its exploitation needs to be carefully looked in relation to clean mining.

Table 12: Distribution of household income by employment type

| Job type | Mean | Maximum | Minimum | % of income contribution |
|---|---|---|---|---|
| Farming | 762.5 | 14500 | 100 | 12.6 |
| Mining and related jobs | 2799.8 | 14500 | 100 | 46.4 |
| Self-employed | 1392.0 | 13100 | 100 | 23.1 |
| Paid jobs | 1083.0 | 4050 | 125 | 17.9 |

Source: From the field data. Income in Ghana cedis

## 4.6. Mining policy and clean mining

The existing mining policy in Ghana was analyzed, with a significant focusing on the aspects capable of promoting clean mining. The analysis of mining policy and governance provides information on the context in which mining operation occurs. The circumstances of the mining businesses were found to influence the establishment of SOLs (Prno, 2013, pp. 586 - 587), and this context is significantly determined or shaped by the governance model. The assessment of the 112 sections of mining policy (Minerals Commission of Ghana, 2006), demonstrate that few sections are dedicated to clean mining. Hence, the thesis focused attention on identifying the areas that have the most conflicting agendas that need to be considered for business development in the ASM sector. Consistent with the findings by Andrews (2016), most of the sections of the Mining Act 703 (2006) are devoted to obtaining a permit and very little is codified on clean mining that supports the social approval of

mining operations. For instance, on the license of water rights, it can be found that holders of mining rights can "… obtain the right to divert, impound, and use water from a river, stream, underground reservoir, or watercourse within the land of the subject of the mineral right" (ACT 703. Sec. 17.), but it lacks corrections for the ramification and innovation after the use of such vital resources.

More so, the Act makes only little reference to good mining practices and fails to spell out on what constitutes "good mining practices." On SSM, section 93 of the same act, mentions an effective and efficient observance of good mining practices, health and safety rules, and pays due regard to the protection of the environment during mining. Although this is meant to support a shared appreciation of mining, it lacks motivation and direction. The additional danger stems from the fact that small-scale miners can use mercury and cyanide to facilitate their production process but the act barely controls the application of these deleterious substances in the areas of clean mining. The monitoring of mining standards is lacking, and this is consequential for companies in obtaining an SOL. The non-monitoring of mining standards and operations of companies provides room for irresponsible practices that force host societies to reject mining operations.

Moreover, we discovered further that monetary interest purely motivates the current mining policy and governance over the social structure and environmental importance, that is, the government is prioritizing state revenue and discouraging sustainability that leads to clean mining. In this sense, the existing conditions of mining operations and the mining policy are discouraging the society from trusting the companies to ensure clean mining practices. The trust issues, which serve as a primary challenge for the mining companies, need to be corrected to achieve sustainable ASM industries. From the policy discourse, we infer further that an improvement in the economic orientation of mining governance would have a tremendous mutual effect on three primary stakeholders: government, society, and the

companies. For instance, reductions in state health budgets, food security budgets, political security, minimized the social costs of mining to the community and overcoming the impediments of obtaining mining approval for companies. As an immediate response, the government of Ghana in July 2017 has embarked on an aggressive operation dubbed "operation VANGUARD" or the use of armed security to halt all SSM activities nationwide. The procedure has resulted in saving some mining communities from river and water pollution, while others complain that they have been cut off from a significant source of income, and some SSM companies are crying foul and preparing to meet the state security squarely by any means including legal action and violence. During the field interviews in 2015, we predicted that SSM might come to a halt if the then mining decisions and strategies continue. This policy response would not be sustainable in the long term (for a detailed analysis see section 6.3.1) even though the media reports[15] demonstrated the realization of this goal. Some media reports indicated that some communities already witnessed clean rivers free from solid debris, which for them was a positive sign of the VANGUARD operation.

## 4.7. Implications of the findings

This thesis affects the three critical actors in the SSM sector namely business organizations, policy actors, and the society in many ways. First, it provides information on how companies can win social trust for obtaining mining approval, which improves their reputation and competitiveness locally and globally. Company's reputation building and competitiveness provide evidence for a business case for pursuing SOLs (Demuijnck and Fasterling, 2016, p. 675). Second, it contributes to the development of tools for monitoring

[15] Improving conditions of water and river bodies since operation VANGUARD begun: http://citifmonline.com/2017/07/12/birim-river-taking-shape-after-galamsey-fight-photos/

sustainability (FAO-SEAL, 2010; WCGE, 2016), which improves the government's financial structure by reducing state budgets for health, food, and political security. Finally, it has implications for social costs by minimizing the costs of mining to the society through achieving clean mining objectives. Thus, households can improve their income by investing rather than incurring high health costs due to an unsafe environment.

## 4.8. Conclusion

The study has explored the practical conditions of Ghanaian SSM and the impacts of the social appreciation of ASM. The findings demonstrate that the working conditions of mining create effects ranging from positive economic benefits such as employment and considerable contributions to household incomes to some adverse effects including environmental pollution, violent conflict, poor health, and food security threats. Coupled with weak governance and institutional capacity toward clean mining, these serve as an impediment for society to perceive mining as an alternative income activity that is environmentally friendly. We found that pursuing good economic governance that ensures clean mining by way of creation and coordination of working arrangements is envisaged as a way to promote responsible behavior on the part of mining corporations. Thus, the empirical impact from their activities would lead to a social outcome, which produces less adverse effects including effects on the environment, conflict, and child labor and can help to regain the trust of the society. The discussions suggested four key factors capable of impeding the effort of obtaining an SOL in the SSM sector. These include the neglect of environmental sustainability, lack of responsible management of human right challenges, weak mining governance and its effect, and the unmitigated adverse effects from mining. These findings, in general, are in line with Lynch’s social license-five factor model (2007), which demonstrates that a combination of environmental impact and social pressure, among others,

determines whether maximum social license pressure will occur in demanding firms to go beyond regulations. For the case of Ghana, as the findings suggest, the environmental impact and other empirical conditions from gold mining companies, and intense community pressure together are very substantial and capable of affecting the image of SSM negatively. That phenomenon is likely as the demand for maximum social license pressure toward clean mining is underway.

Consequently, the state in 2017 put a moratorium on all activities of SSM in Ghana intending to conserve and protect the environment from complete extinction. This move was known as operation "VANGUARD," and was not welcomed by the business community. However, the society, some sections of the scientific community of Ghana, the media, and other international anti-dirty gold mining movements see this as a viable way to restore trust in mining when the companies have acted irresponsibly. A similar repeated movement against dirty gold mining, as its extraction requires mercury or cyanide, which is deleterious to the environment, was implemented internationally by groups such as Oxfam-America in February 2004 in the US.

As public trust in the mining economy, especially the SSM is declining, it is imperative for small-sized enterprises to embark on clean gold mining. Instead of rhetoric, companies must demonstrate this in reality. The findings have suggested that the current operational conditions of small-scale gold mining in the Amansie West and Bosomtwe districts of Ashanti region suppress community effort to offer SOLs to companies. We attribute this effect partly to the malfunctioned economic governance that governs the clean mining efforts of the SSM sector. There is much to be learned about managing this sector, especially about the role of institutional and organizational governance. More effort is needed from managers of SSM companies to accomplish this goal to meet the regulatory and social expectations. Clean mining activities must always go beyond the rules, not as a replacement, preferably as

a compliment. With this, we can be sure that the society accepts mining operations alongside state permission, as participation in conditions for mutual advantage.

More importantly, not all hope is lost! Companies can avert the anticipated rejection of SOLs by readjusting their business models and practices to meet the expectations of society. Obtaining an SOL is possible only when companies improve on their current mining operational practices. Hence, communities might not withhold an SOL from the companies, as the current evidence seems to suggest. Managers can achieve this by bestowing attention on the pursuit of clean mining that can balance the socioeconomics, environmental, and human rights improvements to promote the acceptance of ASM, a first step in obtaining an SOL for competitive business operations. That is, responsible mining management that generates desirable experiential outcomes for society. More so, to stimulate the interest of SSM enterprises to embark on clean mining practices, functional economic governance including effective regulation and useful institutional monitoring is necessary to coordinate and realign the diverse interests of key stakeholders toward competitive and social outcomes. The rules should channel more significant attention to the protection of human rights in the supply chain, environmental standards monitoring, and society-centered job creation rather than a mere offering of permits. Enforcement of good governance can be improved through citizen ownership of policies on good mining. More especially involving communities in ethical mining principles including monitoring would go a long way to enhance company-community relationships for efficient outcomes. Good governance would reinforce the traditional institutional functions of altering the behaviors of small and medium mining enterprises toward social desirable output and service provision in the industry in the study districts and among other similar areas in Ghana. Achieving these goals requires an investment into the conditions necessary for current and future communal benefits.

Reference


Allen, S., Cunliffe, A.L., Easterby-Smith, M., 2017. Understanding Sustainability Through the Lens of Ecocentric Radical-Reflexivity: Implications for Management Education. J. Bus. Ethics. doi:10.1007/s10551-016-3420-3.

Andrews, N., 2016. Challenges of corporate social responsibility (CSR) in domestic settings: An exploration of mining regulation vis-??-vis CSR in Ghana. Resour. Policy 47, 9–17. doi:10.1016/j.resourpol.2015.11.001.

Armah, F.A., Boamah, S.A., Quansah, R., Obiri, S., Luginaah, I., 2016. Working conditions of male and female artisanal and small-scale goldminers in Ghana: Examining existing disparities. Extr. Ind. Soc. 3, 464–474. doi: 10.1016/j.exis.2015.12.010.

Armah, F.A., Luginaah, I., Yengoh, G.T., Taabazuing, J., Yawson, D.O., 2014. Management of natural resources in a conflicting environment in Ghana: unmasking a messy policy problem. J. Environ. Plan. Manag. 57, 1724–1745. doi:10.1080/09640568.2013.834247.

Bansah, K. J., Yalley, A. B., & Dumakor-dupey, N., 2016. ScienceDirect The hazardous nature of small-scale underground mining in Ghana. Journal of Sustainable Mining, 15(1), 8–25. http://doi.org/10.1016/j.jsm.2016.04.004

Berman, E., Felter, J., Kapstein, E., Troland, E., 2012. Predation, Economic Activity and Violence: Evidence from the Philippines. NBER Work. Pap. 18375.

Bridge, G., 2004. Contested terrain: mining and the environment. Annual Review of Environment and Resources 29, 205–259.

Business for Social Responsbility., (2003). The Social Licence to Operate. Business for Social Responsibility, San Francisco, CA.

Bush, R., 2009. " Soon there will be no-one left to take the corpses to the morgue ": Accumulation and abjection in Ghana ' s mining communities 34, 57–63. doi:10.1016/j.resourpol.2008.02.002.

Buxton, A., 2012. MMSD + 10 : reflecting on a decade of mining and sustainable development. In: Proceedings of the IIED Sustainable Markets Discussion Paper. London UK.

Carroll, A.B., Shabana, K.M., 2010. The Business Case for Corporate Social Responsibility : A Review of Concepts , Research and Practice. Int. J. Manag. Rev. doi:10.1111/j.1468-2370.2009.00275.x

Campbell, B., 2003. Factoring in governance is not enough: mining codes in Africa, policy reform and corporate responsibility. Minerals and Energy Raw Materials Report 18, 2–13.

Carson, M. et al., 2005. 'Managing mineral resources through public-private partnerships: Mitigating conflict in Ghanaian gold mining', Working paper WWS591c, Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, NJ Council.

Cuvelier, J., Vlassenroot, K., Olin, N., 2014. Resources, conflict and governance: A critical review. Extr. Ind. Soc. 1, 340–350. doi:10.1016/j.exis.2014.07.006.

Dashwood, H.S., 2005. Canadian mining companies and the shaping of global norms of corporate social responsibility. International Journal 60, 977–998.

de la Vergne, J., (2003). The Hard Rock Miner's Handbook. McIntosh Engineering Limited, North Bay, Ontario.

Dahlsrud, A., 2008. How Corporate Social Responsibility is De fined: an Analysis of 37 Definitions. Corp. Soc. Responsib. Environ. Manag. 13, 1–13. doi:10.1002/csr.

Davis, R., Franks, D., 2014. Costs of Company-Community Con ict in the Extractive Sector 66.

Dixit, A., 2003. On Modes of Economic Governance. Econometrica 71, 449–481. doi:10.1111/1468-0262.00415.

Dubiński, J., 2013. Sustainable Development of Mining Mineral Resources. J. Sustain. Min. 12, 1–6. doi:10.7424/jsm130102

Eisner, M., (2004). Corporate environmentalism, regulatory reform, and industry self regulation: toward genuine regulatory reinvention in the United States. Governance 17, 145–167.

Epstein-Reeves, J., Weinreb, E., 2013. Pioneers of Sustainability - Lessons from the trailblazers, WeinrebGroup.com. Chicago.

FAO – ISEAL, 2010. A Conceptual Framework for Progressing Towards Sustainability in the Agriculture and Food Sector. Alliance Discussion Paper.

Franks, D.M., McNab, K., Brereton, D., Cohen, T., Weldegiorgis, F., Horberry, T., Lynas, D., Garcia- Vasquez, M, Oñate S, B., Barnes, R., & McLellan, B., 2016. Designing Mining Technology for Social Outcomes: Final Report of the Technology Futures Project. Brisbane.

Freeman, R.E., Harrison, J.S., Wicks, A.C., 2007. Managing for Stakeholders: Survival, Reputation, and Success. Yale University Press, New Haven, CT.

Ghana Statistical Service, 2014. 2010 Population and Housing Census; Profiel on Amansie west district. Accra.

Ghana Statistical Service, 2014. 2010 Population and Housing Census; Profiel on Bosomtwe district. Accra.

Goel, M., Ramanathan, M.P.E., 2014. Business Ethics and Corporate Social Responsibility – Is there a Dividing Line? Procedia Econ. Financ. 11, 49–59. doi:10.1016/S2212-5671(14)00175-0.

Goldstuck, A., Hughes, T., 2010. Securing a Social Licence to Operate? From Stone Age to New Age Mining in Tanzania. Research Report 7: Governance of Africa's Resources Programme. South African Institute of International Affairs, Johannesburg, South Africa.

Heemskerk, E.M., Heemskerk, K., 2017. Conflict in the boardroom : a participant observation study of supervisory board dynamics. J. Manag. Gov. 21, 233–263. doi:10.1007/s10997-015-9339-8

Hilson, G., Garforth, C., 2012. 'Agricultural Poverty'and the expansion of Artisanal mining in Sub-Saharan Africa: experiences from Southwest Mali and Southeast Ghana. Popul. Res. Policy Rev. 31, 435–464. http://doi.org/10.1016/j.polgeo.2006.09.001.

Hilson, G., Yakovleva, N., 2007. Strained relations: A critical analysis of the mining conflict in Prestea, Ghana. Polit. Geogr. 26, 98–119. doi:10.1016/j.polgeo.2006.09.001.

Hilson, G., Potter, C., 2003. Why is illegal gold mining activity so ubiquitous in rural Ghana? Afr. Dev.Rev. 15, 237–270.

Hilson G, Murck B., (2000). Sustainable development in the mining industry: clarifying the corporate perspective. Resources Policy 2000;26:227e38.

Jenkins, H., Yakovleva, N., 2006. Corporate social responsibility in the mining industry: Exploring trends in social and environmental disclosure. J. Clean. Prod. 14, 271–284. doi:10.1016/j.jclepro.2004.10.004.

Kemp, D., Worden, S., Owen, J.R., 2016. Differentiated social risk: Rebound dynamics and sustainability performance in mining. Resour. Policy 50, 19–26. doi:10.1016/j.resourpol.2016.08.004.

Kemp, D., 2010. Community relations in the global mining industry: exploring the internal dimensions of externally oriented work. Corporate Social Responsibility and Environmental Management 17, 1–14.

Kooiman, J., 2003. Governing as Governance. SAGE, London, UK.

Kusi Appiah Michael, and W.J., 2016. Is Eradicating Child labor by the Year 2025 Feasible? Insights from Small-Scale Mining Operators in the Amansie West District of Ghana. Br. J. Econ. Financ. Manag. Sci. 11, 91–106.

Laszlo, C., & Zhexembayeva, N. 2011. Embedded sustainability. Standford: Standford University Press.

Lemos, M.C., Agrawal, A., 2006. Environmental governance. Annual Review of Environment and Resources 31, 297–325.

Lyncoln A., David B., Venetia,W., 2015. Rethinking Social Licence to Operate: A Concept in Search of Definition and Boundaries., BCBC: Environment and Energy Bulletin, 7(2), 1-10.

Lynch-Wood, G., Williamson, D., 2007. The social licence as a form of regulation for small and medium enterprises. Journal of Law and Society 34, 321–341. OI: 10.1111/j.1467-6478.2007.00395.x

Margolis, J.D. and Walsh, J.P., 2003. „Misery loves companies: Rethinking social initiatives by business", Administrative Science Quarterly, Vol. 48, pp.268- 305.

Majoch, A.A.A., Hoepner, A.G.F., Hebb, T., 2016. Sources of Stakeholder Salience in the Responsible Investment Movement: Why Do Investors Sign the Principles for Responsible Investment? J. Bus. Ethics 140, 1–52. doi:10.1007/s10551-016-3057-2.

Minerals Commission of Ghana, 2006. Minerals and Mining Act , 2006 1–59.

Moffat, K., Zhang, A., (2014). The paths to social licence to operate: An integrative model explaining community acceptance of mining. Resour. Policy 39, 61–70. doi:10.1016/j.resourpol.2013.11.003

Ndambiri H.K., Ritho C., Ng'ang'a S.I., Kubowon P.C., Nyangweso P.M., Muiruri, E,M., & Cherotwo, F.H., 2012. Determinants of Economic Growth in Sub-Saharan Africa: A Panel Data Approach. Int. J. Econ. Manag. Sci. 2, 18–24.

Nelsen, J., Scoble, M., 2006. Social Licence to Operate Mines: Issues of Situational Analysis and Process, Department of Mining Engineering. University of British Columbia,Vancouver,B.C./http://www.mining.ubc.ca/files/SocialLicense/Final%20MPES%20Paper.pdfS. Accessed 15 March 2013.

N.Ghauri, B.I.P. and P., 2015. Determinants influencing CSR practices in small and medium sized MNE subsidiaries : A stakeholder perspective. J. World Bus. 50, 1–33.

No Dirty Gold campaign (Oxfam America and Earthworks),! https://www.oxfamamerica.org/press/oxfam-america-statement-on-the-no-dirty-gold-campaign/ [accessed on 01.02.2017]

Owen, J.R., Kemp, D., 2014. "Free prior and informed consent", social complexity and the mining industry: Establishing a knowledge base. Resour. Policy 41, 91–100. doi:10.1016/j.resourpol.2014.03.006

Owen, J.R., Kemp, D., 2012. Social licence and mining : A critical perspective. Resour. Policy 1–7. doi:10.1016/j.resourpol.2012.06.016.

Paavola, J., 2007. Institutions and environmental governance: a reconceptualiza- tion. Ecological Economics 63, 93–103.

Patel, K., Rogan, J., & Bebbington, A., 2016. Evaluating conflict surrounding mineral extraction in Ghana : Assessing the spatial interactions of large and small-scale

mining. The Extractive Industries and Society, 3(2), 450–463. http://doi.org/10.1016/j.exis.2016.01.006

Popa, M. and Salanță, I., 2014. Corporate social responsibility versus corporate social iresponsibility M & M. Manag. Mark. Challenges Knowl. Soc. 9, 135–144.

Porter, M., & Kramer, M. 2011. Creating shared value. Harvard Business Review, 61, january – February, 3-17.

Prno, J., 2013. An analysis of factors leading to the establishment of a social licence to operate in the mining industry. Resour. Policy 38, 577–590. doi:10.1016/j.resourpol.2013.09.010.

Prno, J., Scott Slocombe, D., 2012. Exploring the origins of "social license to operate" in the mining sector: Perspectives from governance and sustainability theories. Resour. Policy 37, 346–357. doi:10.1016/j.resourpol.2012.04.002.

Ramburuth, R.F.L. and P., 2006. Leadership & Management Studies in Sub-Sahara Africa Volume 1., in: Ramburuth, R.F.L. and P. (Ed.), Leadership & Management Studies in Sub-Sahara Africa Volume 1. Stone Town, Zanzibar. University Readers, USA, San Diego - Canada, pp. 1–21.

Reed D., 2002. Resource extraction industries in developing countries. Journal of Business Ethics. 39(3):199e226.

Rhodes, R.A.W., 1997. Understanding Governance: Policy Networks, Governance, Reflexivity and Accountability. Open University Press, Buckingham, UK.

Rees, C., Kemp, D., Davis, R., 2012. Conflict Management and Corporate Culture in the Extractive Industries: A Study in Peru 1–38.

Ross, Michael., 2006. A Closer Look at Oil, Diamonds, and Civil War. Annual Review of Political Science 9: 265-300.

Royal Swidish Academy of Sciences, 2009. Economic governance: Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2009. [WWW Document].

Salzmann, O., Ionescu-somers, A.; U.S., 2005. Corporate license to operate ( BCS ) - review of the literature and research options. Forum for CSM. Lausanne, Switzerland.

Saunier, R.E., Meganck, R.A., 2009. Dictionary and Introduction to Global Environ- mental Governance. Earthscan, Sterling, Virginia.

Senge, P. 2008. The necessary revolution: How individuals and organisations work together to create a sistainable world. New york: Doubleday.

Social License Task Group, 2009. Earning a Social License to Operate: Lessons from Selected Industry Sectors. Final Report of the Social License Task Group. Submitted to the Energy and Mines Ministers Conference. September 2009.

Schiavi, P., Soloman, F., 2007. Voluntary initiatives in the mining industry: do they work? Greener Management International 53, 27–41.

Schmidpetr, R. 2012. Unternehmerische Verantwortung – Hinfuhrung und Uberblick. In A. Schmidpeter & R. Schmidpeter (ED), Corporate social responsibility. Berlin/Heidelberg: Springer Gabler Verlag.

Schmidpeter, R., 2014 "The evolution of CSR from compliance to sustainable entrepreneurship." Sustainable Entrepreneurship. Springer Berlin Heidelberg, 127-134.

Sven-Olof Y. C., Yuliya P., Sara O., Nina,S., 2016. Governance strategy and costs : board compensation. doi:10.1007/s10997-016-9359-z.

Singer, A. E. 2013. Corporate political activity, Social responsibility, and competitive strategy: an integrative model. Business Ethics: A European Review Volume 22 Number 3, 308-324.

United Nations 2015. The Road to Dignity by 2030: Ending Poverty, Transforming All Lives and Protecting the Planet. Synthesis Report of the Secretary-General On the Post-2015 Agenda;
http://www.un.org/disabilities/documents/reports/SG_Synthesis_Report_Road_to_Dignity_by_2030.pdf, 06 Jul 2015.

United Nations 2016. Transforming our World: The 2030 Agenda for Sustainable Development;
http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E, 18 Feb 2016.

van Duuren, E., Plantinga, A., Scholtens, B., 2016. ESG Integration and the Investment Management Process: Fundamental Investing Reinvented. J. Bus. Ethics 138, 525–533. doi:10.1007/s10551-015-2610-8.

United Nations - Conference on Trade and Development, 2016. Report 2016: Economic Development in Africa. Debt Dynamics and Development Finance in Africa. New York & Geneva.

Valente, M., & Crane, A., 2010. Public Responsibility and Private Enterprise in Developing Countries. [Article]. California Management Review, 52(3), 52-78.

Wieland, J., 2014. Governance Ethics: Global value creation, economic Organisation and normativity. Berlin et al.: Springer., Berlin.

Young, O.R., 2008. Institutions and environmental change: the scientific legacy of a decade of IDGEC research. In: Young, O., Schroeder, H., King, L. (Eds.), Institutions and Environmental Change: Principal Findings, Applications and Research Frontiers. MIT Press, Cambridge, Massachusetts, pp. 3–45.

Wielan*, J., 2014. Stakeholder Dialogue; Interviews granted to the Bosch Worldwide and the

Leadership Management International. March, 2014. Accessed on 19.03.17.

http://m.bosch.com/en/com/sustainability/stakeholder_in_dialog/prof_dr_josef_wieland/prof_dr_josef_wieland.html

Wieland, J., & Heck, A. E., 2013. Shared Value durch Stakeholder Governance. Marburg: Metropolis.

Zeppelin university and Wittenberg Center for Global Ethics, 2016. The Sustainable Development Goals, Evidence from a Firm's Perspective. Project report.

https://www.zu.de/lehrstuehle/inst-economics/forschungsprojekte.php?mode=detail&id=508
http://www.wcge.org/images/wissenschaft/doktorandenkolleg/Reports_from_the_Field_03_-_The_Sustainable_Development_Goals_from_a_Firms_Perspective.pdf
http://eiti.or

## 5. Discussions and conclusions

Using evidence from the Amansie West and Bosomtwe Districts of Ghana's Ashanti Region, this thesis offers insights into the role of institutions in promoting SSM businesses in the form of a conflict prevention and resolution study. We pondered the following three principal research questions:

- What are the empirical realities of child labor in SSM?
- What causes violence in communities involved with SSM?
- What role do the empirical conditions of mining companies and associated institutions play in the process of obtaining SOLs?

As discussed, an improved understanding of the empirical realities concerning human rights and sustainability (social and environmental) relating to SSM can help in formulating effective mitigation and policies for stimulating economic development in the SSM sector.

We have discussed how the close association of SSM with human rights and environmental sustainability challenges makes the sector unattractive. Thus, child labor is motivated by the greed of managers and by the abject poverty of rural households, which further encounter violence in the context of land rights conflict, economic inequality, and through other adverse effects of mining. Appropriate mitigation is necessary to prevent severe damage to the long-term interests of mining businesses, rural standards of living, and social cohesion. Various unresolved problems plague the mining sector directly by turning public opinion against mining enterprises, leading to the possible public rejection of SOLs for mining in Ghana. From the perspective of government, SSM can place indirect demands on budgets for health, security, and food when poorly managed and the reverse is true. The net impact of SSM on rural standards of living in the areas studied has been negative under the current management practices and governance structures. Hence, the monetary and social

benefits that accrue from mining are inadequate compensation for the losses (social costs) associated with the unmitigated adverse effects.

In summary, Ghana's small-scale gold mining has a significant positive effect on family income but adverse effects on other areas. These areas include social cohesion, food security, child labor, health, environment, and the growth of companies. The following discussion summarizes the key findings and the limitations of the research and offers conclusions and policy recommendations.

## 5.1. Summary of key findings

The findings presented here demonstrate that mining has the potential to stimulate economic development and to bring about environmental and social change in the areas of health, pollution, employment, land use, social cohesion, and the economy. There are both business risks for corporations, and social risks for communities in the exploitation of minerals, specifically with the gold mining analyzed in this research that demand attention.

The significant empirical findings were presented sequentially in the preceding chapters, and they are well summarized by their titles. Chapter 2 addressed *analysis of child labor issues in the Ghanaian SSM*. Chapter 3 explored the question, *analyzing the determinants of conflict in SSM in Ghana*, and Chapter 4 analyzed *the impacts of mining on the social appreciation of mining*. We suggested mitigation strategies for the issues raised in each chapter. Consistent with the findings by Hailu et al. (2012), ASM was found to be associated with child labor, violence, and environmental degradation. This association is perhaps explicable using the specific economics of the exploitation of widely dispersed mineral deposits. Scattered small mines are more frequently in competition with farms for land and water resources than the large-scale mines that cluster around concentrated deposits.

The discussion will now synthesize the empirical findings and their relationship to the primary research questions.

## 5.2. Challenges of eradicating child labor in the SSM

The thesis contributes to the understanding of insights into child labor in mining. This thesis has offered an analysis of the current trends and challenges facing SSM, based on the experiences of a cross-section of mining operators in the Ashanti Region of Ghana. The aim was to answer the following questions.

1. What are the empirical realities of child labor concerning the realization of the SDGs agenda 2025? In other words, what are the key impediments to eradicating child labor in the SSM sector? The significant findings are indicative of the achievement of the United Nation's sustainable development goals agenda 2025, specifically number 8.8. The realization of this goal requires a more considerable focus on the SSM sector in developing countries to realize progress toward the eradication of child labor.

### a. Effective institutions are crucial

The case study demonstrated that child labor in the mining sector remains a problem in the Amansie West and Bosomtwe Districts owing to the weak functioning of institutions. Good governance is a significant factor in forming global partnerships for ending child labor and monitoring and ensuring the adequate protection of land and other resources (Hinton, 2005). Therefore, communities that have forged working arrangements among landowners, miners, and traditional leaders have been able to control child labor. In some instances, children under 18 years of age were allowed to work at mining sites but only on weekends and holidays so that the work would not interfere with their education. From the perspective of the managers, these children were employed to support their development.

**b. It is crucial to consider local ideas and knowledge**

Local input is necessary to control child labor. As we used cross-sectional data from this case study to arrive at the findings, we do not generalize the results. However, the findings support the notion that local knowledge is consistent with at least some research suggesting that under safe working conditions children can benefit from work. We established that with adequate self-confidence and responsibility, for example, children above 15 years of age could be encouraged by undertaking non-hazardous work. This finding is consistent with the literature on human rights and child rights suggesting that children in developing countries generally work to support their development (Anker, 2000). Therefore, leverage through good governance and respect for local ideas and knowledge are crucial for effective mitigation policies.

**c. Political and elite capture is a key challenge**

The lack of effective governance has negatively affected attempts to curb child labor in Ghana's ASM sector. The results of this study demonstrated that adequate monitoring is expected to have a positive effect, but it requires fairness in the award of concessions. As permits are granted irregularly through intermediaries such as political party members, "middlemen," traditional leaders, and state officials, the exploitation of children under the age of 17 was encouraged. The widespread corruption of politicians and other elites in the sector hampers efforts to alleviate poverty and child labor.

**d. The mode of governance matters**

The lack of workable governance arrangements is a key challenge. Interestingly, child labor was less common among mining operators who received their concessions from the

heads of individual households due to private agreements between landowners and miners. This outcome suggests that the mode of governance is a significant factor in controlling child labor and that a blend of state and private institutions is crucial.

**e. A free market and technical competence are necessary**

The unavailability of adequate buyers in rural mining communities and the lack of technical expertise necessary to create safe working conditions combine to pose a significant impediment to child safety and the eradication of child labor. The findings demonstrated that the lack of competition among gold buyers was a considerable problem. Most of the gold produced by SSM operations was sold to private buyers who were foreigners and perhaps for that reason they were little concerned with the working conditions and health of workers and local communities.

Another crucial factor is technical expertise. Some license holders were found to have received some form of professional training relating to environmental and human safety, particularly for children, unlike the unlicensed operators. However, training was woefully inadequate to safeguard the safe working environment for economically active children. This training should be augmented and advocated for on a wide array of platforms owing to the widespread nature of SSM.

**f. Appropriate alternative social programs, such as free secondary school, are crucial**

There is a lack of complementary social programs for the affected communities. Mine operators were found to employ children on their concessions for four main reasons: because parents wanted their children to work to cover school fees, to reduce operational mining costs (as children are paid less than adults are), to provide a livelihood to homeless children, and the desire of children to work at mining sites. Thus, poverty and lack of an alternative source

of income can induce parents to put their children to work in the ASM sector despite the drawbacks. This finding is consistent with Hilson et al. (2009) who demonstrated that artisanal mining is poverty-driven. It is worth noting that the new policy intervention of free senior high school introduced on September 15, 2017, represents a step in the right direction given that most of the children who work in the mines do so to finance their education. If implemented efficiently, the free senior high school program represents a commendable effort to reduce child labor by relieving the financial burden of education on the poorest households.

## 5.3. Causes of conflict associated with SSM

In Chapter 3, we demonstrated that although the violence in Ghana has not reached the "violent conflict-massacre" level as measured by the Heidelberg barometer, ASM activity in Ghana was demonstrated to be associated with violent conflict, a finding consistent with the research of other post-conflict countries (European Commission, 2014). SSM related conflict in Ghana's mining communities has tended to involve threats, physical assault, robbery, and attacks by security guards. The contributing factors have included the weak management of natural resources (e.g., land ownership rights and gold mining), extraction (employment), distribution of resource rents, and various other harmful effects of mining. In general, weak governance has been the critical determiner of conflict in mining communities.

### a. Socio-economic factors matter in mining conflict (horizontal inequalities)

The results revealed that the field of employment for the heads of households, ethnic affiliation, and mining on household land were the significant determinants of whether a family would encounter conflict in general, whereas poor management of land ownership rights was the critical determinant of the frequency of the specific types of conflict. These

findings are consistent with the work of Maystadt et al. (2012) demonstrating that mining activities increase the occurrence of conflict. We found this to be more significant, particularly when mining is mismanaged.

**b. Effective resource management is crucial**

Also consistent with the findings of previous research, this study identified landownership rights as the primary source of mining-related conflict in Ghana (Mcquilken and Hilson, 2016) and elsewhere (USAID, 2005). A vigorous effort is necessary to improve the management of resources, in particular, by enforcing the ownership of land property rights to reduce conflict.

**c. Unresolved land issues and the negative effects of mining**

Additionally, the frequency of conflict was found to correlate with unresolved landownership rights problems, the adverse impacts from mining, and large family size. Although most research into the disputes associated with mining have demonstrated that mining itself causes conflict (Collier et al., 2004) and indeed, some of the findings presented here also suggest that mining predicts the incidence of conflict in general, while further results indicated that the problem is more managing mining institutions than mining itself (USAID, 2005). Thus, mining can reduce the frequency of conflict when governance or management provides the channels for cooperation and confidence building and involves rural households.

In general, the findings suggest that the causes of the conflict go beyond mining itself, and the contributing factors include the lack of capacity to manage the adverse effects of mining and improper environmental monitoring standards on the part of governments. The results moreover indicate that conflict prevention methods and resolution efforts by

traditional local leaders have been the first line of defense, followed by mediation involving ASM corporations and the state, although conciliation has not heretofore proved to be useful for mining communities. Organizational governance is then a crucial part of the kind of resource management that can reduce conflict in the ASM sector.

## 5.4. Challenges faced by SSM companies

As a contribution to the development of ASM-sector businesses, Chapter 5 focused on the "impediments to obtaining SOLs in SSM," and demonstrated that at times, SSM operations face stiff opposition from the surrounding community when seeking approval for mines. This finding is consistent with Prno's (2013) argument that the environment in which mining takes place determines whether the society will reward a company with an SOL or not. It also demonstrates that the adverse effects of mining impose significant costs on companies when they face strong social opposition (Davis and Franks, 2014), as is currently the case in Ghana. The costly rejection of mining is explicable through the weak governance on the part of regulators and the unintended adverse effects of mining on the social, environmental, and economic status of households. Thus, as has been seen, mining has provided a significant income to families and inversely caused the considerable destruction of land and water resources through the neglect of sustainable practices. We have identified earlier that the absence of sustainable practices was a cause of violence and had significant adverse effects on human health. Consequently, food insecurity, civil unrests, and adverse health outcomes are on the rise in Ghana's mining regions.

Current mining policy is weak and lacks up-to-date guidance for environmental and human rights sustainability. Some scholars have attributed the governance challenges within the SSM sector to the complexity of the system and its lack of representativeness (Ayee et al., 2011), but the findings presented here point to the absence of guidance for industrial policies

detailing sustainability practices and monitoring as the primary source of the problem. At the same time, active and adaptive governance that incentivizes the behavior of artisanal mining companies and promotes clean mining practices appears to foster an appreciation for mining within a society. Based on these considerations, sustainability, responsibility, and ethical behavior are the three critical components of a mining sector that is profitable and promotes the interests of the mining communities.

## 6. Practical implications

One of the expected outcomes after the implementation of the ERP in 1983, but before the mineral policy reforms, was for the SSM sector to improve the standard of living for the poor, to develop local businesses, and to stimulate the Ghanaian economy. Unfortunately, the sector has yet to succeed in translating the country's mineral wealth into poverty reduction, even though the mining industry has experienced significant and widespread growth in the wake of the ERP (Ayee, 2001). To realize such benefits, stakeholders must move beyond shortsighted self-interest and insist upon responsible mining and the prudent management of resources.

Through this research of the small-scale gold[16] mining sector, we determined that good governance is a crucial part of economic development and engaged in the debate over the performance and governance of resources and conflict over them in a non-civil-war setting. The aim was to identify policy and management strategies that have the potential to resolve the problematic issues described in the previous chapters. Grounded in and guided by the

[16] Ghana's astonishing mineral endowment includes diamonds, manganese, salt, and bauxite—resources that led to the inclusion of the country in the "Gold Coast" during the pre-independence era. Gold, as noted in the introduction, is the predominant mineral, having accounted for 90% of total mineral revenues annually over the past three decades (Minerals Commission of Ghana, 2015).

study's overall conceptual framework, the following discussion of the main findings explores the major contested issues in SSM policy and their relationship to governance structures.

## 6.1. Beyond self-interest: Toward responsible management of mining resources

The potential of natural raw materials to reduce inequality and their relationship to governance and conflict are the main topics discussed in the literature on developmental economics and resource management that is relevant to the present study. This previous research has demonstrated that institutions involved in natural resource management are as important as the resources themselves in developing national economies (Chang, 2011; Kirsten, Dorward, Poulton, and Vink, 2009). Others have argued that institutions are the ultimate determinants of economic performance, for better and worse (El Anshasy and Katsaiti, 2013) or have seen causal relations between the two (Chang, 2011). Similarly, it is noteworthy that resource performance may have a causal relationship with the governance structure. On a global scale, environmental governance has proved to be a vital part of the exploitation of natural resources (Duffy, 2005), although considerable resistance is predicted in Sub-Saharan Africa (SSA) owing to the internal dynamics of African societies (Bayart, 1993). The natural resource and developmental economics literature has devoted a great deal of attention to state institutions as a source of conflict over resources, but less is known about the combined effects of state and non-state institutions, particularly corporations, on resource exploitation. Most of the literature on governance and the extraction of natural resources is concerned with establishing the relationships between resources and conflict, mainly in the context of LSM in post-conflict (i.e., civil war) countries. On the contrary, there has been relatively little work, by contrast, on the promotion of SSM sector businesses, which is a gap that this thesis was designed to fill.

Recent quantitative analysis has revealed that governance structures are fundamental in the SSM context. Crucial factors include the nature and composition of state and non-governmental institutions, including corporations and citizens (i.e., those who will be affected by the policies) and the prudent management of the adverse effects of SSM. The analysis in this thesis complements the explanations in the literature for the economic performance of natural resources with governance structures using evidence of SSM in a non-civil war setting. The following discussion highlights the practical implications of this thesis.

Chapters 2 through 4 identified child labor and violent conflict (i.e., human rights challenges) and sustainability (economic and environmental problems) as the most contested and pressing issues in Ghana's SSM sector. These findings are consistent with research that has demonstrated that sustainability mainly relating to the environment is a widely debated topic in general but is less discussed in the specific context of mining (Murguía and Böhling, 2013). The analysis from the first case study on child labor, for example, demonstrated that this issue is a crucial one in Ghana. The problem is not peculiar to non-licensed miners only as alluded to by the policy activists discussed in Chapters 2 through 4. The question of environmental destruction, on the other hand, follows similar patterns for both licensed and non-licensed miners and it contradicts the perceptions of policy actors. These results are consistent with the findings that countries with a large SSM sector are also the largest employers of child labor, with some 72.1 million working in mines according to a recent estimate,[17] and that SSM in Sub-Saharan Africa has been characterized by the endemic use of unfree labor, mainly child labor, and child abuse (Lebaron and Ayers, 2013). On the other hand, the problem is widespread among non-licensed small-scale miners in the Ghanaian districts studied here.

[17] The current ILO report ranks the Sub-Sahara Africa sector first and holds it responsible for about half of the world's child labor; see http://www.ilo.org/global/topics/child-labor/lang--en/index.htm#a2 ILO, accessed 24.09.2017

The specific motivations for mining managers to violate child labor laws included governance failure (e.g., lack of social support, conflict between the state and the traditional leaders' administration of mining concessions, and inadequate enforcement of mining standards), greed (i.e., exploitation of cheap labor), and horizontal inequality (i.e., abject poverty, as discussed in Chapter 2). These findings are consistent with those of Lynas et al. (2014) in selected SSA countries where poverty coupled with high unemployment compelled poor households, mainly women and children, to engage in SSM. The persistent failure of traditional governance to enforce mining standards points to the necessity of alternative arrangements that incorporate non-traditional institutions. Hence, the way forward is building a comprehensive governance approach encompassing the state, corporations, and "third" institutions (i.e., the local citizens together with their traditional leaders) in developing appropriate mitigating policies.

The literature demonstrates that the performance of resources in alleviating poverty is likely to be tied to institutional governance structures (Rodrik, 1999) at both the state and non-state levels. The fundamental nature of these structures is peculiar to extractive resource exploitation, such as small-scale gold mining, that has broader effects, both direct and indirect, on standards of living. Thus, some households depend directly on mining and its chain of activities, while others rely indirectly on support services involved in water, forest, land, and similar natural resources. Chapter 3 revealed several interesting findings that in general support the argument that the performance of the resource sector is dependent on effective institutions, meaning that Ghana is not immune to the "resources curse syndrome" because governance failure is the leading cause of mining-related violence in small-scale gold mining communities. This finding contradicts the argument that neither governance nor the resource itself explicitly predicts conflict (Voors et al., 2017) and supports instead the

notion that the exploitation of extractive resources is indeed linked with conflict, which in turn further marginalizes the roles of women in governance (Ross, 2008).

The failure of governance is a consequence of the inability of state regulatory institutions to provide the necessary services to prevent violence or to identify alternative management in the form of workable arrangements with non-state institutions, such as corporations and local citizens who rely both directly and indirectly on the resource and non-owners who are affected by the economic outcome. In addition, the corporations or corporate bodies must also be seen as part of the solution, rather than merely the source of the problem, in the management of SSM enterprises.

This finding is in part consistent with research demonstrating that the provision of public goods, such as education (which is also a means to reduce inequality among groups) can help minimize conflict (Cortés and Montolio, 2013). The implication is that by adjusting the mode of governance concerning structure and efficiency, problems such as conflict, which impede the performance of resources, can be either enhanced or exacerbated. This finding is also in line with a recent study by Paudel et al. (2017) that demonstrated that well-educated individuals could quickly turn to alternative income-generating activities and so are not compelled to work in the SSM sector and avoid exposure to mining-related conflicts. The results of the present study are likewise consistent with Cramer (2003) who demonstrated that economic inequality is an essential variable for explaining the dispute. The findings of the present study thus complement the horizontal and grievance hypotheses, which hold that group inequality can be overcome by, for example, funding education, which could, in turn, reduce conflict linked to grievances and group inequalities, although in a later study, Cramer (2013) did not find a direct link. The analysis presented in Chapter 4 demonstrated that the lack of environmentally sustainable "clean mining" was the primary cause of the current SSM ban in Ghana. The ban was motivated by gross evidence of environmental destruction,

particularly the adverse effects on rivers and other water bodies and lands, including national protected forests. The analysis is also consistent with the finding of previous studies that proved that the unresolved adverse effects of mining could lead to public rejection, which is naturally detrimental to companies, and that medium and small mining companies are poor mitigators of environmental consequences owing to the individual unit cost of operations compared with large-scale operations (Davis and Franks, 2014a).

In Chapter 4, we discussed the weakness in both governance and the current SSM policy when it comes to preventing the development of conditions for future violence. This finding is consistent with the argument that extractive minerals are inherently prone to becoming a source of conflict (Ross, 2013). The current policy intervention, known as "Operation VANGUARD," was designed to prevent the further destruction of natural resources in Ghana and it is mono-directional, considering its focus on one hostile option. Owing to the enormous costs involved, such an approach seems sustainable in the short term but not in the long term. This operation, which the new government implemented as part of a good governance effort, includes a ban on all SSM activities and went into effect in July 2017. Not surprisingly, this policy has encountered resistance from the SSM sector.[18] Anshasy et al. (2013) argued that mismanagement of natural resources could lead to economic stagnation in resource-abundant countries. If governance challenges hamper companies, the productivity and financial performance of natural resources stand to suffer.

Good economic governance of natural resources holds prospects for improvements in the standards of living and overall economic development and for avoiding the "resource curse syndrome." Mining and forest management in Canada, for instance, are considered in the

[18] This is based on media eyewitness reports and archives from the Ghanaian web. Some groups organize and arm themselves against the state armed task force; others plan public riots. One example is the report of a public demonstration prevented by the Ashanti regional Security Council in Kumasi; another is a report of armed counter-resistance in the Ashanti Region in which a miner was killed. See https://www.myjoyonline.com/news/2017/August-7th/operation-vanguard-in-first-major-clash-with-illegal-miners-one-dead.php

literature as an exemplary strategy of good resource governance and economic development (Prno, 2013; Prno and Scott Slocombe, 2012). Angola, Sierra Leone, and the Democratic Republic of Congo, on the other hand, are cited as examples of resource-related conflict (OECD, 2013). As part of an effort to minimize the adverse outcomes of mining and to promote ASM-related businesses, we found it essential to assess the current governance challenges facing the sector. This thesis contributed to this assessment by exploring the role of institutions in preventing and resolving conflict related to mining and in enforcing mining standards. It also assessed the adverse effects of ASM and the challenges that companies face as a method of guiding policy design and mitigations that would encourage the development of the sector. In this respect, this thesis challenges the current consensus perspective, according to which the government constitutes the sole solution to the persistent challenges facing the SSM sector, and advocates for the inclusion of corporate bodies and local communities in policy discourse.

## 6.2. Limitations of the study and suggestions for future research

The empirical results presented in Chapters 2 through 4 made use of a variety of qualitative and quantitative analytical techniques, including econometric estimations. This section offers a discussion of the limitations and challenges of the approach taken here (in each case) and some suggestions for future replication and improvement.

To ensure the internal validity and general reliability of the responses and collected information (Bitsch, 2000, p. 2005), various data-gathering techniques were employed, including key informants, in-depth and semi-structured interviews, field trips and observations, focus group discussions, and accessing secondary country data. These approaches represent an essential analytical contribution to the analysis of the relationship between governance structures and the performance of resources (i.e., the role of institutions

in promoting SSM that does not infringe on human rights or exacerbates the sustainability challenges along the supply chain). Despite the range of techniques used in the study, the data collection design and the analytical approaches used here do have some limitations.

Specifically, the primary data for the analysis was obtained using structured instruments comprising a mixture of qualitative in-depth and quasi-structured interviews and a quantitative household and community survey. The selection of respondents was guided by a mixed-methods sampling technique that included random purposeful, snowballing, judgment, simple random (for the household survey), and research resources convenience sampling as the means to identify policy experts and other interviewees (cf. Onwuegbuzie et al., 2007; Collins et al., 2006). Aside from the advantages of the purposive sampling method employed here, the results could have been affected by selection bias. Although measures were taken to minimize this risk, the process in question was only used to select the essential policy experts and informants. Furthermore, we applied a triangulation technique to ensure the validity of the sampling procedure (Carter et al., 2014) and the internal validity (Bitsch, 2000) of quantitative information through the inclusion of a wide range of experts from various fields of expertise in the SSM sector. These include representatives from the private sector, NGOs, government, and academia as well as farmers and other members of the affected communities.

This research is further limited to observations from households in small-scale gold mining communities in the Amansie and Bosomtwe Districts; the recommendations are therefore not necessarily relevant to all mining communities in Ghana. This lack of representativeness is due to the fundamental structure of mining companies (legal or illegal), the distribution of adequate occupations, and the types of assets and resources available in mining communities. Nevertheless, the methodologies and recommendations in this study

may prove useful for the analysis of the impact of gold and other extractive minerals in other parts of Ghana and neighboring African countries.

We believe that the results would have been more robust and stimulating had regional comparative studies been included. However, doing so would have strained the resources available for this study. It is acknowledged that the estimations and hence conclusions would be more enhanced if information from the police record on violence were available and included in the models to supplement and deepen the depth of the empirical estimations. Furthermore, the current study made a minimal contribution to the theoretical development and instead focused significantly on empirical analysis. For instance, the clean mining concept as employed here is only an abstract state, which requires further theoretical development in its suitability for mitigating the identified problems. Although it seems plausible in solving the identified challenges, however, its theoretical verifiability is beyond the scope of the current study, and therefore further research is necessary for pursuing this objective, which we recommend for future research.

## 6.3. Key recommendations

To answer the research questions, this thesis evaluated the human rights and sustainability challenges (environmental and economic) facing the SSM sector. The findings of the empirical case studies presented in Chapters 2 to 4 offer a range of insights into and remedial measures for the identified challenges. The following discussion explores the broad implications of this research for policy, business, and research.

### 6.3.1. For policy makers

**Good governance (operational) is required:**

**a. Child labor**

**i. Challenging the status quo**

The current policy regime for combatting child labor is inadequate. The policies must change to differentiate work that enhances a child's development under safe conditions from work that exploits children and threatens their safety.

**ii. Collaboration with local people is important**

A comprehensive partnership involving "workable arrangements" among the various institutions, miners (and mining companies), and local citizens (e.g., owners of resources, traditional local leaders, NGOs, and religious groups) in the form of ad hoc committees that are adapted to the conditions in individual communities is necessary for controlling child labor. Such collaboration has proved feasible in a few neighborhoods in which, as discussed above, children were allowed to work only on weekends and during their holidays so that their weekdays could be devoted to their education and development outside the workplace. Such shared value creation is commendable and capable of replication in other communities facing similar problems, providing that safe working environments can be ensured.

**iii. Effective enforcement of mining standards is a key**

The adequate and appropriate awarding of mining rights should be implemented and adequately monitored. Doing so would reduce child labor, as the findings demonstrated a correlation between illegal concession awards and child labor.

### iv. Provide an enabling environment for all

The governance structure should provide the same operating environment for all investors in the SSM sector as a means to incentivize a reduction in the exploitation of children. As the findings demonstrate, the political elite created unfair and uncompetitive markets for managers, particularly in the area of concessions and licensing. Bribery and corruption inflated the operating costs for mining managers and therefore influenced the likelihood of child employment. Moreover, providing alternative income-generating activities for unemployed members of households will decrease the willingness of parents to persuade their children to work in harsh conditions at mining sites.

## b. Conflict associated with mining

### i. Key roles of building and multi-purpose policy

Currently (2017) in Ghana, the government that recently came to power, led by President Nana Addo Dankwah Akufo-Addo and the New Patriotic Party, is championing an absolute nationwide ban[19] on SSM. The reasons put forward to support the ban included the deterioration of water and land resources, in particular, the shortage of safe drinking water, because of SSM activities in the country. Beginning in 2017, the ban has been enforced through the deployment of armed national security forces to all the targeted regions. There is support for the ban by the public, environmental activists and movements, and the media as part of a determined effort to safeguard the country's major water bodies from further pollution so that they may serve domestic and industrial purposes. At the same time, this policy by itself seems unsustainable economically, owing both to the enormous transaction costs involved and to the determined effort by some miners to continue their work and to take

[19] This outcome was predicted in the preliminary findings of this thesis in 2015; the relevant data were collected in June 2015 and some follow-up interviews in early January 2016.

up arms[20] to counter the VANGUARD forces. Under these circumstances, the absolute ban on SSM stands to plunge mining communities further into abject poverty (Bush, 2009). Resources would be better used if they were channeled into the realization of social and ecological goals that involve minimal economic trade-offs.

### ii. Good governance remains crucial

Proper management is necessary to ensure the adequate monitoring of SSM operations and to implement income-earning programs to complement the VANGUARD effort. Without such complementary integrative livelihood programs, the likelihood of failure is high. To provide an example, the monitoring team should include the local community to ensure coverage that is more comprehensive and increased cost-effectiveness. Based on the research presented here, community involvement in the mining processes, in particular in the search for innovative solutions to the environmental challenges and a clear policy direction for critical mining concerns (e.g., responsible and creative mining), is a prerequisite for reducing conflict in the SSM sector.

## c. Social acceptance of mining demands responsible and sustainable mining practices

To implement clear and comprehensive policies that promote clean mining, we recommend that the state should create an enabling environment by supporting innovative research and the adoption of environmentally safe and economically feasible practices. Such an effort in combination with other policies could curb the tendency of companies to act

[20] Account based on media reports and archives from 2017: Graphic.com.gh dailyguideafrica.com; gbcghana.com https://www.ghanaweb.com/GhanaHomePage/business/Ban-on-galamsey-slows-economic-activities-in-Amansie-West-572456

irresponsibly, thereby decreasing the negative environmental effects and increasing the public acceptance of SSM activities.

### 6.3.2. The mining business: The community or practitioners?

**a. Mining conflict and child labor: Support initiatives in conflict prevention programs**

SSM companies can enhance community conflict prevention and resolution programs through their trade associations. They can improve communication between companies and communities through dialogues and programs. These would serve to identify the sources of impending conflict that call for immediate action, thus minimizing violence in mining communities. Forging agreements to control child labor that are based on shared principles could improve relations, paving the way for trust and peacebuilding.

**b. Public support for mining**

**i. Invest in innovative mining to promote public appreciation of SSM**

The adverse effects of mining on the environment directly influence human health, food security, and social cohesion, making them a concern for all stakeholders (i.e., mining industries, households, and government), and these are the significant contributing factors to the current SSM ban. Therefore, it is necessary to link improved integrated programs such as water recycling or water saving innovation, site reclamation, and land enrichment programs to mining. This link should be the focus of SSM companies in partnership with the government. Collaboration in problem-solving can improve public opinion regarding mining. For instance, to build a reputation and stay in business, companies must seek innovative

mining practices, such as drilling their well water, which would reduce the adverse effects and undue pressure on water, land, and forest resources.

**ii. Involve local communities and improve social responsibility**

Accordingly, companies are encouraged to communicate with local communities to find possible ways of reclaiming used land, improve communication, and provide for local social necessities. Taking these steps would build trust and contribute to community development through problem-solving. The findings presented here are consistent with the earlier literature demonstrating that supporting good management practices for natural resources is a path to economic growth, particularly in the context of post-conflict reconstruction (Maconachie, 2016).

### 6.3.3. Recommendations for researchers

**Collaborative research is needed**

In light of the above discussion, we recommend that future research be collaborative and explore conflict mitigation and sustainable mining innovations to both reduce environmental pollution and improve resource extraction. Further research is required to identify ways to support effective livelihood programs for mining communities and to explore how institutions can create an enabling environment for the benefit of all. Although SSM organizations are building stable membership levels, it remains essential for researchers to investigate how small-scale gold miners can pool their resources to invest in innovations that can improve the public acceptance of mining.

### a. Research into child labor mitigation

Research should focus on distinguishing between beneficial child employment from child exploitation as a first step in designing the appropriate policy responses. A fair-minded assessment of the role of children in mining holds the key to competitive and responsible mining that the public could support.

### b. Research into preventing conflict associated with mining

A study focused on conflict would be very useful given the findings presented here on the determinants and frequency of conflict in mining communities. These findings demonstrated that under the right circumstances, mining could reduce the incidence of particular types of conflict, thus making a case for exploring the fundamental factors behind conflict as part of an effort to avoid the "resources curse syndrome."

### c. Social acceptance of mining: Innovative mining solutions

Collaborative research that considers the communities, government agencies, and the companies involved in mining can provide innovative solutions to long-standing problems in the sector. This research could help confront and counter the socio-economic and governance challenges associated with the extraction of resources by small- and mid-sized companies. The focus should be on innovative, clean mining as a means to reduce the negative impacts of mining on societies. Previous studies have suggested that new mining technologies have the potential to improve standards of living and social and environmental outcomes such as public health and safety, land use, air, water, and soil contamination, social violence, and economic disparities (Franks et al., 2016).

## General Appendices

Appendix 1A: Questionnaire for key institutions, NGOs, and civil society actors

*This study is for academic purpose only, and we treat any information given confidential. You are free to participate, not to participate or end discussions in this survey. Thank you for your permission.*

**KI: Key informants structured interview @ Institutional/company/District level**

Institutions/z name, please select **Code** 1 [ ] District code **[** ]

Location id [ ] KID [ ]

**Code suggested/expected,** 1= Environmental Protection Agency, 2= Lands /Minerals Commission, 3= Traditional Institutions/National House of Chiefs, 4= WANEP, 5= Ghana Extractive Industries Transparency Initiatives-GHEITI, 6= Ghana Chamber of Mines, 7= Precious Minerals Marketing Company, 8= Other, specify

1. Please, what is the main protocol for mining land acquisition/registration process in Ghana?

2. Please name four districts in Ashanti region where small-scale mining is predominant since the last 12 months. 1. ……... 2. ……. 3. ……. 4. …….

3. Select land-planning classification that exists in the Ashanti region. **Code:** 1= Demarcated for forest reserve, 2= Estate development, 3= Nature preservation, 4= Farming, 5= Other, specify, 6= None [ ]
4. Whose concern does one obtain before the commencement of mining in the community? [ ] **Code:** 1= The landowner, 2= Chief/queen, 3= Assembly, 4= Do not know, 5= Other
5. Do you see the increasing small-scale mining as a conflict-risked element in this district? 1= Yes, 0= No [ ]
6. Are there any reported cases? 1= Yes, 0= No [ ] Please give examples

| **Conflicts type** | Give estimated cases recorded in number since the last 24 months. **code** 1=1 to 3 2=4 to 6 3= 7 and above | What was the main cause of the conflict? **code** 1=mining-related 2=land disputes 3=politics 4=religion 5=historical conflict | What is the frequency of conflict occurrence in the community per year (month) in a ratio of 1 out of 5? 1=1, 2=2, 3=3, 4=1 5=5 |
|---|---|---|---|
| People fought violently | | | |
| Bloody, and casualties | | | |
| Verbal assault | | | |

| | | | |
|---|---|---|---|
| /demonstrations | | | |
| Restriction of movement/Curfew in the community | | | |
| Stool/Chieftaincy faction | | | |
| illegal land guards threat | | | |
| Other (specify) | | | |

**IMC: Violent conflict cases reported, select all (**Answer by all**)**

**IMCR:** Any mitigating measures/resolution approaches taken for reported conflicts in the last 12 months.

| | Please select 1 if you offered the listed service or 0 if not<br>1=Yes, 0=No | The frequency of provision in a month<br>1=1, 2=2, 3=3, 4=1 5=5 | Did the approach meet expectation (efficient)? 1=Yes, 0=No |
|---|---|---|---|
| Peace campaign or education | | | |
| Youth programs | | | |
| Community sensitization | | | |
| School campaign | | | |
| Religious crusade | | | |
| Media campaign | | | |
| Other (specify) | | | |

1. What is the success rate in % in all, the cases intervened? [ ]

   **Code:** 1= 5%, 2= 10%, 3= 30%, 4= 50%, 5= Over 60%

2. What major gains do your z intend to achieve by help solving these issues?

   **Code:** 1= Environmental protection or improvement, safety, 2= Community peace, life, security, 3= Legal compliance, 4= Economic gains, 5= Reputation, 6= Other.

**Monitoring standards: Child employment, environment and land rights**

3. What is the estimated incidence of child labor in the small-scale mining sector in percentage?
4. What are the major causes?
5. Does the small-scale mining pose environmental problems in those districts? 1= Yes, 0= No [ ]
6. What are the major areas of environmental concerns and why is it a problem?

**SP: Institutional Service Provision (**only for regulatory/state institutions**).** select all that apply

| Monitoring Services provision in general | Is this institution mandated to offer any of the below services? 1=Yes, 0=No | Service to be provided 1=Yes, 0=No | Service that was provided 1=Yes, 0=No | What is the frequency of provision per year, ratio out of 5? 1=1, 2=2, 3=3, 4=1 5=5 |
|---|---|---|---|---|
| Land acquisition /transfer | | | | |
| Enforcement of land rights | | | | |
| Child labor | | | | |
| Environmental standards; e.g. | | | | |

| | | | | |
|---|---|---|---|---|
| post-mining land restoration | | | | |
| Royalty payments by the miners to affected households | | | | |
| Compensation payments by a chief / queen | | | | |
| Health conditions in the community | | | | |
| Issues concerning mining licensing | | | | |

7. What is the significant functional responsibility or contribution of this institution towards mining conflict resolution in this regard?

   [ ]

8. What do you think is the best thing to do as a company/institution to reduce/prevent child labor in the artisanal mining?
9. What do you expect minerals buying companies to do to curb the child labor in the artisanal mining?
10. Does your institution collaborate or work together with others on conflict resolution programs in the last 12 months? 1=Yes, 0=No
11. Mention 1 case worked on together with other institutions [ ]

**Code:** 1= Peace campaign. 2= Youth outreach program. 3= Community sensitization. 4= School visits. 5= Religious crusade. 6= Media campaign. 7= Other.

## Appendix 1B: Questionnaire for small-scale miners

*This study is for academic purpose only, and we treat any information given confidential. You are free to participate, not to participate or end discussions in this survey. Thank you for your permission.*

**KI: Key informants, Small-scale miners SSMid: [ ]** District **id [ ]** Gender **[ ]** Village **id [ ]** Ethnicity [ ] 1= Nanumba. 2= Dagomba. 3= Mamprusi. 4= Wala. 5= Builsa. 6= Frafra. 7= Talensi. 8= Kusase. 9= Gonja. 10= Chokosi. 11= Busanga. 12= Gurma. 13= Komkomba. 14= Akan. 15= Ewe. 16= Ga. 14= Other.

Religion [ ] 1= Christian. 2= Traditionalist. 3= Muslim. 3= Animist. 4= Non-religious. 5= other

1. Do you get help from pupils at your mining site? 1= Yes, 0= No **[ ]**
2. What major work do they do? Work as **Code:** 1= Miner, 2= Stone washer, 3= Water fetching or drainer, 4= Carrying or transporting sand, 5= Other **[ ]**
3. If yes, do you employ ages between 17 years and below? 1= Yes, 0= No **[ ]**
4. What is the main reason for employing children at the mining site? **Code:** 1= To reduce cost, 2= Easy to control, 3 = Their parents brought them, 4= Homeless, 5= Don't want to answer, 6= Other specify **[ ]**
5. Do you have any knowledge or idea that children should not engage in this type of hard work? 1= Yes, 0= No **[ ]**
6. What type of knowledge if yes? **Code:** 1= National law, 2= Community law, 3= Other [ ]

7. Who do you sell your minerals to? 1=Major company run by foreigner, 2= Major company run by Ghanaian, 3= Private individual foreigners, 3= Private individuals, Ghanaians, 4= Other, specify [ ]
8. Where is the main office location of outlet buyer? **Code:** 1=In this community, 2= Nearby big community, 3= District capital, 4= City, 5= Other, specify **[ ]**
9. Which of the following do your network of buyers' care about as responsible buyers of extractive minerals? Multiple **selec**t: 1= Child labor, 2= Environment, 3= Community health, 4= Miners/workers' health, 5= Community voluntary development services, 6= Do not know, 7= Other **[ ]**
10. Mention one activity support by your network of buyers in the community that you are aware of **[ ]**
11. Did you receive any training concerning mining standards, best practices, and Environmental Conservation? 1= Yes, 0= No [ ]
12. Are you working with own mining licence? **Code:** 1= Own licence, 2=Working with someone's certificate, 3= Do not have license [ ]. **Skip 13 if don't have license**
13. Which institution issued you the mining permit? **Code:** 1=Minerals Commission, 2= Ghana Chamber of mines, 3= Political affiliation, 4= Traditional leaders [ ]
14. Who granted this land for mining? [ ] **Codes** 1= Household head, 2= State official, 3= Traditional leader, 4= NGO, 5= Private investor or estate developer, 6= Intermediary 'Middle woman or man", 7= Party official.
15. What are the major challenges you face that you think contribute to this problem?
16. What can be done to improve situation or solve the problem?

## Appendix 1C: Questionnaire for focus group discussions

*This study is for academic purpose only, and we treat any information given confidential. You are free to participate, not to participate, or end discussions in this survey. Thank you for your permission.*

**FGD.** District **id** [ ] Village **id** [ ] Focus group **fqid [ ]**

[**Mark groups that were represented**: 1= Affected (farmer) groups, 2= Small-scale Miners, 3= Local/active NGO. 4= Assembly man/woman, 5= Chief/queen, 6= Other ( )].

**FPIC: Free, prior, and informed consent from the affected groups.**

1. Are small-scale mining activities going on in this district since the last past 12 months? 1= Yes, 0= No [ ]
2. Do you have any knowledge or consent of affected household respected before mining? 1= Yes, 0= No [ ]
3. Whose concern was obtained before the mining begun in the community? 1= The landowner, 2= Chief/queen, 3= Assembly, 4= I do not know

**EME 1: Effects of mining activities on girl's development in the community.**

4. Has mining activities (galamsey) increased girl child prostitution and sex abuse in this community? 1= Yes, 0= No [ ]
5. Are there victims in this community? 1= Yes, 0= No [ ]
6. Please estimate, how many girls have been victims of teenage pregnancy since the last 12 months in this community. [ ] **Code 1**: 1= Below 10, 2= Above 10, 3= Do not know, 4= Other (specify)

7. Estimate how many pregnant girls have been drop out of school in this community [ ] **See Code 1**: 1= Below 10, 2= Above 10, 3= Do not know, 4= Other (specify)

**EME 2: Effects of mining activities on education, community perspective**

1. Does mining activities itself (galamsey) disrupt school activities; learning and teaching in this community? 1= Yes, 0= No [ ]
2. How does a small-scale mining activity affect school activities? [ ]

Code: 1= Child absenteeism, 2= Taken over of classrooms for drugs smoking and littering school environment, 3= Attacks on teachers for preventing pupils from working at mines, 5= Constant noise from mining activities during teaching and learning, 6= Other.

3. How often does a small-scale mining activity affect school activities per week? Code 2: 1= Not frequent (less than 2 times), 2= Frequent (3 times), 3= More frequent (At least 4 times) [ ]
4. Do any of the activities such as selling water, telephone credit, food, assisting at mining site, babysitting, etc. at the mining site prevent children in this community from going to school? 1= Yes, 0= No [ ]
5. Please estimate the number of school dropout regarding gender for mining jobs in percentage. Code 1= 30-50 boys. 2= 30-50 girls. 3= Equal. 4= Don't know [ ]

**MC: Conflict, community experience**

| Type of violent conflicts recorded/reported | Recorded cases in number since the last 24 months **Code:** 1=1-2, 2=3-4, 3=5-6, 4=7-8, 5=over 8 | What was the main cause of the conflict? **code** 1=mining-related 2=land disputes 3=politics 4=religion 5=historical conflict | The frequency of occurrence in the month **Code:** 1=1, 2=2, 3=3, 4=4, 5=5 | The nationality of people involved. **Code:** 1=Ghanaian 2=foreign, specify |
|---|---|---|---|---|
| People fought violently | | | | |
| Bloody, and casualties | | | | |
| Verbal assault/threat | | | | |
| Curfew in the community | | | | |
| Chieftaincy faction | | | | |
| The mass threat from illegal land guards | | | | |

| | | | | |
|---|---|---|---|---|
| Other (specify) | | | | |

Conflict reported in the last 12 months.

6. Are any of the listed violent conflicts capable of causing future civil war in the community? [ ] 1= Yes, 0= Nos

**CM:** Community measures for mitigating mining conflicts

| Conflicts resolution approaches used in the last 12 months | Did the community use this approach in solving the conflict? 1=Yes, 0=No | The frequency of provision per year 1=1, 2=2, 3=3, 4=4, 5=5 | Was the approach efficient? 1=Yes, 0=No |
|---|---|---|---|
| Peace campaign or education | | | |
| Youth programs | | | |
| Community sensitisation | | | |
| School campaign | | | |
| Religious crusade | | | |
| Media campaign | | | |
| Other (specify) | | | |

7. What is the success rate in % in all the cases intervened? 1= 10%, 2= 20%, 3= 30%, 4= 50%, 5= Above 60% [ ]

**EI**: **Environmental impact of mining in communities under violent disputes**

Adverse effects of mining activities on the environment; Water bodies, the natural forest, and land; cash crops.

| | Select all that applies.<br>1=Yes, 0=No | Estimated damage size in ha or %<br>**Code**<br>1=15, 2=25, 3=35, 4=45, 5=50 | Any Attempt made to restore the damage.<br>1=Yes, 0=No | % restored<br>**Code 1**<br>1=15, 2=25, 3=35, 4=45, 5=50 6=none |
|---|---|---|---|---|
| Are you aware of any evidence of unregulated post-mining activity leading to gross land degradation? | | | | |
| An open trenched or uncovered excavated Land | | | | |
| Cash crop destruction; cocoa or orange farm | | | | |
| Destruction of main water sources | | | | |
| Destruction of forest reserve | | | | |

8. How many people or children have drowned (casualties) due to improper management of post-mining land restoration such as open trench? [ ] Code: 1=1-4, 2=5, 3=6-7, 4= Over 8, 5= None
9. What do you think can be done to restore the degraded environment? [ ] multiple selection. Code: 1= Effective monitoring of mining standards and by state, 2= Community monitoring and sanctions, 3= Employ community in land restoration programs, 4= Other

**OBEI**: Researcher observations and general remarks from the discussion.

## Appendix 1D: Household questionnaire for small-scale mining survey

*This study is for academic purpose only, and we treat any information given confidential. You are free to participate, not to participate or end discussions in this survey. Thank you for your permission.*

**District** [ ]

Questionnaire number /__ /__/__/ __/

District code [ ] Village [……]

House number / Popular Street ……

Household code: _H_/ __/__/__/__/ Date of contact date. month. Year.:

Ethnicity of HHH [ ]

**Code:** 1= Nanumba, 2= Dagomba, 3= Mamprusi, 4= Wala, 5= Builsa, 6= Frafra, 7= Talensi, 8= Kusase, 9= Gonja, 10= Chokosi, 11= Busanga, 12= Gurma,13= Komkomba, 14= Akan, 15= Ewe, 16= Ga, 14= Other.

Religious background HHH [ ]

**Code:** 1= Christian, 2= Traditionalist, 3= Muslim, 4= Animism, 5= Other.

**HD1: Household structure (all members).** Socio-economic characteristics

| HHM **ID** | 01 | 02 | 03 |
|---|---|---|---|
| Name and family name | | | |
| Gender. **Code**: **1= Male, 0= Female** | | | |
| Age in years. 1 if less than 1 year | | | |
| Job/ main activity of member at least 8 years old since last 12 months. **Code 1** | | | |
| Marital status. **Code:** 1=Married, 2=Single, 3= Co-habitation, 4= Divorced, 5= Minor | | | |
| Child 14 years and less, and working at mining site. **Code**: 1= Yes, 0= No Fill EMC if yes | | | |
| Family bond or relation. **Code 2** | | | |
| Is anyone currently ill? Code. 1= Yes, 0= No. **Fill HS if yes** | | | |
| Last level of education. **Code:** 1= Primary, 2= JHS, 3= SSS, 4= Higher education, 5= Tertiary (Master/PhD) | | | |
| How long has the family lived here? **Code:***1*= less than 5, 2= 5-10, 3=11-15, 4= above 20 | | | |

**Code 1: Main activities: 1**= Farming, 2 = Rearing of animals, 3 = Mining/digger, 4= Retailing-extractive minerals, 5 = Mining equipment supplier, 6 = Mining field engineer, 7 = Security at mines, 8 = General security, 9 = Mining site petty trading; water, snacks, etc., 10 = Health worker, 11 = Sales/shop attendant, 12 = Teaching, 13 = Politician, 14 = Media worker, 15 = Clerk, 16 = Fishing/hunting, 17 = Driver/motor taxi, 18 = Handicraft, 19 = Translator, 20 = Casual labour, 21= Pupil/student, 22 = Unemployed, 23= Other.

**Code 3. Relationship:** 1= Household head /Spouse of the, 2= Son/daughter, 3= Nephew/niece, 4= Father/mother in law, 5= Siblings, 6= Grandson/granddaughter, 7= Other (specify).

1. Do you come from this village? 1=Yes, 0=No
2. Has mining occurred on your land? 1=Yes, 0= No
3. What percentage of the total land area is used for mining? 1= 30, 2= 40, 3= 50, 4= 60, 5= 90

**HS1: Health issues, skip if no one is (was) ill during since 12 months**

| Refer from the HD**1** | 01 | 02 | 03 |
|---|---|---|---|
| Sickness cases in the last 12 months. **Code**: 1=1, 2=2, 3=3, 4=over 4 | | | |
| What was the type of sickness?<br>**Code 1:** 1= Malaria, 2= Cough, 3= Water born disease, 4= Diarrhea, 5= Skin diseases, 6= Other, specify | | | |
| Amount paid for medicine and doctor's appointment on average in GHc | | | |

**EMC: Specific mining task for someone working at a small-scale mining site.**

Direct involvement of major mining activity as: **Code 1,** 1= Miner, 2= Stone washer, 3= Water fetching or drainer, 4= Carrying or transporting sand, 5= Other.

| HHM **ID** | 01 | 02 | 03 |
|---|---|---|---|
| Major activity. Select from **Code:1** | | | |
| What is the reason for helping/working at the mine site? **Code:** 1= Self, 2=Family, 3= The person I stay with, 4= Help my brother, 5= Help my sister | | | |
| How many hours of work per day? Code: 1= 4, 2= 5, 3=6, 4= 8 | | | |
| Estimate the amount received in Ghc for working per day | | | |
| Total number of days does of skipping school for mining per week? **Code:**1= 1**,** 2= 2**,** 3= 3**,** 4= 4**,** 5= 5 | | | |

**LS1: Services received from institutions: Land property rights.**

4. Has any member of this household ever involved in, or received any information on land use issues? E.g., land sales, land transfer, farming land property rights disputes, etc., over the past 12 months? **1= Yes, 0= No**

**LS2: Monitoring Services** from institutions

| **Services** | Do you receive this Service? 1=Yes, 0=No | Which z or Institution was a major service provider? Code 1 | How often per year, is the service provided. See code below. Code 2 | Was the service satisfactory or efficient? (Desire aim achieved). 1=Yes, 0=No |
|---|---|---|---|---|
| Monitoring of mining standards | | | | |
| Enforcement of land rights | | | | |
| Monitoring of child employment | | | | |
| Monitoring of post-mining land restoration | | | | |
| Royalty payments by the miners to affected HH | | | | |
| Compensation payments by chief/queen | | | | |
| Health conditions | | | | |

**Code 1:** 1= Environmental Protection Agency, 2= Lands Commission/Minerals Commission, 3= Ghana Chamber of Mines, 4= Geological service, 5= Chief/queen, 6= Council / Religious, 7= NGO**,** 8= Other

**Code 2:** 1= 1, 2= 3,3= 4+, 4= don't know.

**Code 4:** 1= Efficient, 2= Not efficient, 3= Cannot determine

**LO**: **Services on Land use, ownership, transfer, …**

5. Does any member of your household currently work on a piece of land or own this house (apartment land) in this neighborhood? 1= Yes, 0= No

6. If yes, select type of ownership arrangements [ ]

**Code:** 1=Lease, 2= Rent, 3=Inheritance, 4=Customary stool land, 5= family land, 6= Gift, 7=Outright purchase or alienation holdings, 8=Share farming (where property is divided per pre-determined arrangements), 9= other, specify

7. What was the medium of acquisition or purchase? [ ]

**Code:** 1=Customary household landholder, 2= Lands Commission/Minerals Commission, 3=Customary stool or chief/queen, 4=Secondary or derived holder, 5=Community land bank/common pool, 6=other

8. Whom did you consult? [ ]

**Code:** 1= Household head, 2= State official, 3=Traditional leader, 4= NGO, 5= Private investor or estate developer, 6= Middle woman or man, 7=Party official.

**LD1: Individual land disputes**

9. Have you ever received any complaints about your landownership/usage in the last 12 months? **1= Yes, 0= No**

10. If yes from which quarters or individual did you receive complains? [ ]

**Code:** 1= State institutions. Code: 2= Traditional authority, 3= Private individual / NGO, 4= Religious authority, 5= Small-scale miner, 6= Other, specify

11. Type of disputes please selects all that apply. [ ]

**Code:**1= Violent, 2= Verbal threat, 3= Amicable, 4= Law suit, 5= Traditional authority summons, 6= Other (specify)

12. Is the issue resolved? **1=Yes, 0=No. Skip the next question if No**

13. If yes which of the following bodies were involved? Select all that apply. [ ]

**Code:** 1= Environmental Protection Agency, 2= Lands Commission/Minerals Commission, 3= Ghana Police Service, 4= Traditional Institutions/National House of Chiefs, 5= District/Local Assembly, 6= National Peace Council, 7= Ghana Chamber of Mines, 8= Ghana Extractive Industries Transparency Initiatives-GHEITI, 9= the West Africa Network for Peacebuilding (WANEP), 10= Precious Minerals Marketing Company, 11= other (specify)

**14.** You stated that (**If No**) the land dispute you are involved is not resolved, how are you managing the problem to protect your property in future? **Multiple selections** are possible

[ ]

**Code 1:** 1= Still rely on the law enforcement to resolve it, 2= Still rely on Chiefs/queens/ traditional institutions to address it, 3= Will hire private security ‘’land guards’ to protect my asset, 4= NGO, specify, 5= Peace council / religious z to protect it, 6= Own protection, e.g. arm myself to protect my property, 7= Other (specify).

15. What is the reason for that decision? [ ]

**Code**: 1= State cannot ensure effective property rights, 2= Lack of transparency in land sales adjudication, 3= That is the only way available to me, 4= NGO, specify.

**RCL**: **Reported cases of mining land disputes in the neighborhood**

16. Have you ever been involved in cases of mining-related (land) disputes in this neighborhood for the past 24 months? **1=Yes, 0=No**

**Code 2:**1= Eye witness, 2=Mass media, 3=Police report, 4=Family records, 5= Traditional Council/community record, 6= District Assembly, 7= Local Assembly (man/woman), 8= NGO, 9= Religious z, 10= other (specify).

**Code 3:** 1= 1, 2=2 to 3, 3= 4+, 5 = none, 6=other (specify).

**Code 4:** 1= between 5-10 houses, 2= Over 10 houses, 3= between 5-10 hectares of farm burnt, 4= Over 10 hectares of farm burnt, 5= none, 6=other (specify).

| Violent type in the last 12 months | **Select**<br>1=Yes, 0=No | How often does it occur per year?<br>Code 3 | Estimate cost of properties destroyed<br>Code 4 | No. of injuries recorded?<br>Code 3 | Life loss estimated if any.<br>Code 3 | The nationality of people involved.<br>Code 5 | Nativity of major disputants if Ghanaians?<br>1=Belong to this community, 0=don't belong to this community |
|---|---|---|---|---|---|---|---|
| **1**=People fought violently | | | | | | | |
| **2**=Bloody, and some life lost | | | | | | | |
| **3**=Verbal assault | | | skip | Skip | skip | | |
| **4**=Restriction of human movement due to social disorder, e.g. curfew | | | | | | Skip | skip |
| **5**=Stool/Chieftaincy faction | | | | | | | |
| **6**=Land guard threat | | | | | | | |
| **7**=Other (specify) | | | | | | | |

**<u>Code 5</u>:** 1=only nationals, 2=Nationals and foreigners, 3=only foreigners; specify

If yes**,** what was the nature of the conflict? Select all that apply using the above codes

17. In your opinion, are any of the above conflicts capable of leading to future civil or tribal war in this neighbourhood? **1=Yes, 0=No**

18. In your view, would you attribute the above conflicts to a political or a state failure?

    **1=Yes, 0=No**

19. Mention major causes of violent conflicts in this neighbourhood.

    [ ]

**CR:** Which of the recorded violent incident (s) is resolved?

| Type of conflict-description | Select all that apply.<br><br>1=Yes,<br>0=No | Estimated period to solve the conflict in months (How long)<br><br>Select from Code 1 | Which major institution was involved in the conflict resolution?<br><br>Select from Code 2 | The frequency of meetings per month<br><br>Select from Code 3 |
|---|---|---|---|---|
| People fought violently | | | | |
| Bloody, with some casualties | | | | |
| Verbal assault | | | | |
| Police curfew | | | | |
| Stool/Chieftaincy faction | | | | |
| Land guard threat | | | | |
| Other (specify) | | | | |

**Code 1:**1= Over 12 months, 2= 12 months, 3= less than 12 months, 4=other (specify).

**Code 2:**1= Environmental Protection Agency, 2=Lands Commission/Minerals Commission, 3=Law enforcement; Police, 4=Traditional institutions, 5= District Assembly /Local Assembly, 6= Religious z/ Local Assembly, 6= Religious z/peace **GHEITI**, 9= the West Africa Network for Peacebuilding **WANEP**, 10=other, specify.

**Code 3:** 1= 1, 2=2, 3=3, 4= 4 and above.

**CRA: Conflict resolution approaches or programs this neighbourhood witnessed** or participated since the last 12 months.

| Approaches used | Select all that apply<br><br>1=Yes,<br>0=No | Which institution (s) was involved in the program?<br><br>Select from Code 2 | The frequency of visits/meetings per year<br><br>Select from Code 3 |
|---|---|---|---|
| Campaign on small-scale mining-related conflicts | | | |
| Election-related conflict prevention | | | |
| Youth programs | | | |
| Community sensitization | | | |
| School lecture or symposium | | | |
| Community annual meeting | | | |
| Religious crusade (Church/mosque) | | | |
| Other | | | |

**Code 2**: 1= Environmental Protection Agency, **2**= Lands Commission/Minerals Commission, **3**= Law enforcement/Police/legal 4= Traditional institutions, 5= District/Local Assembly

**6**= Religious z/peace council 7= Ghana Chamber of Mines, **8**= Ghana Extractive Industries Transparency Initiatives (GHEITI), **9**= The West Africa Network for Peace building (WANEP), **10**= Other, specify.

**Code 3:** 1= Once per month, 2= 2 times per year, 3= Only when there is a problem, 4= It was only once, 5= Other (specify). **Code 4**: Time 1= 1 day, 2=2 weeks, 3= 1 month, 4= 2 months, 5= Other (specify).

**FS0: Food security**; **means of food production**

20. Are the means of access to land for food production in this neighborhood easily accessible? 1= Yes, 0= No
21. Which resources are difficult to come by for farming? 1=Land, 2=Farm labor, 3= Credit, 4= Extension officers, 5= Other, specify. List all
22. What is the main reason for the above occurrence? 1=Landowners prefer giving land for mining, 2= the employable labor 'youth' have less interest in farming, 3=farming is not attractive compared to mining, 4=other, specify
23. How will you describe the situation? 1= Becoming very difficult, 2= Less difficult, 3= Same, 4= Other, specify
24. Has the household ever exchanged a land or cash crops such as cocoa plantation for mining? 1= Yes, 0= No
25. What is the main reason for giving up cash crops or land resource for mining? [ ]

    1= Capital mobilization, 2= Farming not attractive, 3= Emergency needs, 4= Other

**FA: Availability of food for the household**

26. How many times do you eat in a lean period? **Code:** **1**=1, **2**=2, **3**=3. [ ]

27. How many times do you eat in the average period? **1**=1, **2**=2, **3**=3. [ ]

28. How many times do you eat during sufficient period? **1**=1, **2**=2, **3**=3. [ ]

29. When is food highly available? [ ]

**Code** 1=Mining season when there are intense mining activities, 2=off -mining periods when there are less mining activities, 3= Farming Season-Cultivation period, 4= Period of harvesting farm produce in nearby villages, 5= When there are land conflicts associated with mining, 6= Other (specify).

30. When is food less available? [ ]

**Code** 1=Mining season when there are intense mining activities, 2=off -mining periods when there are less mining activities, 3= Farming Season-cultivation period, 4=Period of harvesting farm produce, 5= Other, specify.

**AF: Household access to food**

31. Do you have access to enough food supply? **1=Yes, 0=No**

32. Reasons for your current food access status. [ ]

**Code**: 1 = Able to buy, 2 = Enough food in the area, 3 = Family farm/garden, 4 = Borrow/credit

**Code**: 5= Expensive, 6= Buy from other communities, 7= Food in this area not enough, 8= Few farmlands, 9= Due to excessive mining, 10= Other (specify).

**HHL: The rural livelihood. The annual income of household head/respondent in Ghana cedis**

33. What is the average annual earning of this household from your main employment under **HD1** (after tax)? [ ]

**Code:** 1=Less than 100, 2 = Between 100-150, 3=200-250, 4 = Above 500, 5 = Above 1000

34. What is your alternative sources of income or remittances? [ ]

**Code:** 1 = Siblings abroad, 2 = Siblings in the city, 3 = Religious z, 4 = NGO, 5 = Sales of land assets, 6 = Pension, 7 = Other (specify).

**IF1: Farm income**

***NB.,*** *produce include crops, animals, and animal products such as eggs, milk, etc. If the harvest is not sold at the market, please use the market price at the time when the* ***produce was used***

35. What is the major agricultural activity? [ ]

**Code**: 1= Cash crop cultivation, 2= Food crop cultivation, 3= Bio-energy/fuel crops cultivation, 4= Animal rearing, 5= Other, specify

| Crop **(code 1)** Primary produce; crop/animal | Production per year in numbers /kg/bags | Production use | | | Sale price (LC per bag /kg) | Market access (code 2) | Alternative sources of income Code 3 |
|---|---|---|---|---|---|---|---|
| | | Consumption (%) Code 5 | Sale (%) Code 5 | Other use (specify) Code 5 | | | |

**Code 1:**1= rice, 2 = maize, 3 = millet, 4=cocoa beans, 5= cassava, 6 = peanut, 7=cowpea/beans, 8 = tomatoes, 9= sweet potatoes, 9 = plantain, 10 = Cotton, 11= eggplant, 12= pepper, 13= okra, 14=banana, 15=mango, 16 = orange, 17=cashew nut, 18=cocoyam, 19 = yam, 20=cattle, 21=poultry, 22=pig, 23=bee, 24= other, specify

**Code 2:** 1= Sell at home, 2= Sell at farm gate/field, **3**= Sell at the village market, 4 = Sell to state buyer, 5=private buyer, 6 = Others.

**Code 3:** 1= Siblings abroad, 2 = Siblings in the city, 3 = Religious z, 4 = NGO, 5 = Sales of land assets, 6 = Pension, 7 = Other, specify

**Code 5:** 1=10, 2=20, 3=40, 4=60, 5=80

36. What is the household's average annual expenditure?
37. What major benefits do you as a household enjoy from the small-scale mining in this community?
38. How does the small-scale mining affect your household negatively in this community?

## Appendix 1E: Other key informant and opinion leaders in-depth interviews

*This study is for academic purpose only, information given is treated confidential.*

*You are free to participate, not to participate or end discussions in this survey. Thank you for your permission.*

Is mining activity common in this community?

Reported cases, causes of ASM conflict and mitigation programs

Knowledge of ASM child labor, causes and mitigation programs

Knowledge of ASM and adverse environmental effects, and mitigation programs

What are some of the community benefit from small-scale mining?

What are some of the negative effects of small-scale mining?

What are your expectations for gold and other precious metals buyers about discussed issues (environment, child labor and violence)?