

Addressing Community Development through Sustainable Mining Practices:

The case of Abooso Goldfields (Damang) in Ghana.

By

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Abstract

The performance of the gold mining industry globally is in no doubt. However, the industry's susceptibility to the frequent rise and fall in the price of gold, coupled with the various negative impacts it generates in mining communities have made its reliability for economic growth and development questionable. These impacts have often been grouped under environmental, social and economic impacts. Using a case study of Goldfields Damang in Ghana, this study examined in detail how stakeholder communities within the catchment areas of Goldfields can be developed through sustainable mining practices. The study used political ecology theory to understand the powers of the various actors (multinational companies and government) and to further investigate how decisions taken by these bodies have led to a devastation of the local environment. The study revealed that while Goldfields Damang has been doing a lot in terms of development in the areas of education, livelihood programs and infrastructure, community members on the other hand are not satisfied because the developmental projects are not sustainable in the long term. To community members, issues such as unemployment, pollution and compensation were key if Goldfields Damang aims to address sustainable development in their operations. The study concluded that what mining companies cite as sustainable practices are the same as their corporate social responsibilities, except the reclamation practices which are geared towards restoring the nutrients of the soil. Also, the study calls for deep attention to be paid to public participation in the Environmental Impact Assessment process if community development is to be effectively addressed by mining companies.

Foreword

This major paper has examined the gold mining practices adopted by Goldfields Damang in Ghana and its impacts on community livelihoods. The paper has argued that in spite of the benefits that Goldfields and Ghana derive from gold mining, their activities leave much to be desired. It is interesting to note that while some countries in the Global North have sought to improve the activities of mining companies towards ensuring sustainable mining practices, those in the Global South are still far from adopting sustainable mining practices. This paper aligns with my components and areas of concentration in which I seek to understand how multinational gold mining companies can promote sustainable development in Ghana and to explore some sustainable mining practices adopted by these companies.

In the course of my program, one of the components was to understand the role Environmental Impact Assessment can play to facilitate sustainable development. In my literature review, I have discussed Environmental Impact Assessment (EIA), how it works and the weaknesses inherent in it. This has broadened my knowledge on EIA as a tool for sustainable development. Again, having discussed how the health of people in mining communities has been affected by the activities of these companies, I have been able to draw a link between capitalist development and environmental health. Also, to understand sustainability and sustainable mining practices, this study examined the activities of Goldfields Damang vis-à-vis the definitions dominant in the literature on incorporating sustainability in the mining industry. This has broadened my understanding of the many issues that are of concern in the extractive sector and how developmental gaps in these communities can be bridged. The learning objectives in my plan of study which are addressed by this Major Paper include the following: to familiarize myself with ways in which capitalist expansion have created uneven development between resource rich

Global North and resource rich Global South countries, to explore the dynamics in the extractive sector, to develop my own understanding of sustainability and sustainable development, to study the literature on environmental externality and how that can be applied in the extractive industry, to appreciate the interrelationship between the economy and environment, growth and resource governance and to also gain a comprehensive view of the link between extractive industries activities and the spread of diseases.

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I dedicate this work to my mother, Mrs. Emelia Essah, my late father, Mr. Joseph Essah and my uncle, Mr. Jerry John Kwaw

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List of Abbreviations

ICMM International Council on Mining and Metals

MMDSP	Mining, Minerals and Sustainable Development Project
GMI	Global Mining Initiative
GRI	Global Reporting Initiative
CSR	Corporate Social Responsibility
NGO	Non-Governmental Agency
GDP	Gross Domestic Product
GFG	Goldfields Ghana
PHD	Prestea Huni-Valley District
SEED	Sustainable Empowerment and Economic Development
EIA	Environmental Impact Assessment
IBA	Impact and Benefit Agreements
IMF	International Monetary Fund
SAP	Structural Adjustment Program
FDI	Foreign Direct Investment
UN	United Nations
OICI	Opportunities Industrialization Care International
IAIA	International Association for Impact Assessment
IEA	Institute of Environmental Assessment
CEAA	Canadian Environmental Agency Act
EPC	Environmental Protection Council
EA	Environmental Assessment
EIS	Environmental Impact Statement
NEAP	National Environmental Action Plan
EPA	Environmental Protection Agency
KVIP	Kumasi Ventilated Improved Pit

CHAPTER ONE

1.1 Introduction and Background to the Study

Despite extensive concerns on sustainability in the mining industry, integrating sustainability in mining continues to pose a big challenge to most mining companies. As Cowell et al (1999) argues, “although varied approaches have been advanced to address sustainability in the global mineral sector, they vary with individual, corporate and societal expectations, interests and values” (cited in Giurco & Cooper, 2012: 4). Many scholars have tried to situate sustainability in mining. For instance, Woodley and Hann Onn (2014) have examined the framing of sustainability in the mining industry under three tiers. The first tier is perpetual sustainability; this is the idea that a process can be sustainable if it can continue forever. This tier considers issues such as the viability of the business, strong sustainability¹, revenue replenishment and technological advancement technologies used to overcome the constraints of mining. The second tier is transferable sustainability; this posits that different types of capital can be traded in order to achieve greater social and environmental benefits. This tier is tilted towards extracting resources for development and examines issues such as environmental sustainability, social sustainability, economic development, sustainable fairness and weak sustainability.² The final tier is transitional sustainability, which describes how the mining industry can contribute towards intergenerational sustainable development. The focus is to assess the life cycle of mines and transitions in development.

¹ Strong sustainability maintains that natural capital cannot be substituted for manufactured capital and that environmental, economic and human capital must be sustained independently of each other across generations (Neumayer, 2003).

² Weak sustainability is inherent in the view that manufactured capital can replace natural capital and that transfers of capital will lead to the maintenance of intergenerational equity (Neumayer, 2003).

In light of this, the Global Mining Institute (GMI) was created in 1992 to formally lay the foundation for sustainable mining and it was widely accepted by mining firms in 1998. The discussions about sustainable mining deepened in the post-Johannesburg plan of action at the World Summit on Sustainable Development in 2002 (Whitmore, 2006). Two major institutions, the International Council on Mining and Metals (ICMM)³ established in 2001 and the Mining, Minerals and Sustainable Development Project (MMSDP)⁴ created in 2002 have been tasked to assess sustainable mining practices by mining companies. Mining companies report their activities to these institutions through the Global Reporting Initiative (GRI)⁵. This is an assessment of mining firms' past performances measured against environmental, social and economic indicators (Fonseca et al., 2013; Esteve, 2008; Woodley & Hann Onn, 2014). As such, this reporting mechanism ensures that mining firms present to their stakeholders evidence of their social and environmental responsibilities such as infrastructure development and ways to curtail water pollution (Pellegrino & Lodhia, 2012; Lodhia, 2007).

Quental et al. (2011: 257) assert that there are many approaches to sustainable development and these are centered on four main principles. They are: “the stressing of biophysical limits that constrain the scale of the human economy; the focus on societal welfare and development; the understanding that each system has its own minimum irreducible needs in order to be viable; acknowledgement of system complexities; that is, certain socioecological systems are stronger while others collapse when they reach their thresholds”

³ The International Council on Mining and Metals acts as a catalyst for performance improvement in the mining and metal industry (Fonseca et al., 2013).

⁴ The Mining, Minerals and Sustainable Development Project examine how the mining sector could contribute to the global transition to sustainable development (Fonseca et al., 2013).

⁵ The Global Reporting Initiative is a document which spells out the guidelines on how to report and what to report from the activities of the metals and mining industry. The responsibility lies on mining companies to publish annually their practices in their areas of operation (GRI, 2010).

In the case of Ghana, although most mining firms have focused on developing their communities through various Corporate Social Responsibility programs, this has not translated completely to sustainable development because community members still complain about environmental and economic issues such as water and air pollution and unemployment (see Aboagye-Amponsah, 2015; Aubynn, 2003).

Interestingly, Whitmore (2006) argues that the declaration on sustainable mining practices in 2001 contains half truth as it does not address important mining issues. The half truths, Whitmore claims, are: “the supposed need for more minerals from every mine, the claim that mining catalyses development, the belief that technical fixes can solve every problem and also that the main opposition to mining comes from community members and NGOs” (cited in Lodhia & Hess, 2014:45). This is because mining activities continue to dispossess people of their lands without consent, and the effects of mining on the lives of people, environment and health keeps worsening (See for instance, Akabzaa, 2009; Gavin et al., 2009; Asamoah et al., 2013). Indeed, many NGOs have suggested that mining cannot be sustained due to the levels of resources that are taken from the earth from time to time by mining firms (Young & Septoff, 2002).

Fonseca et al. (2013) also put forth the argument that debates about mining and sustainability will diminish if a more effective method for assessing the sustainability of mining can be adopted. With the current GRI widely adopted framework, companies report on their organizational performance instead of their activities in the context of environmental, social and economic issues. Also, this framework lacks a geographical or spatial form and it is organizational centered (Milne et al., 2008; McEcroy et al., 2008). Further discussions on the Global Reporting Initiative on sustainability in the mining industry by Fonseca et al. (2013)

suggest that for the Initiative to remain an effective tool, its limitations have to be addressed. Ghana's case does not differ from other developing countries. Importantly, mining generates enough revenue in the form of export earnings and contributes towards the gross domestic product (GDP) of the country. However, pressing issues that need to be addressed are: making the mining firms accountable to their communities either than governments and drawing a line between where mining firms ought to contribute to development and where the state has to be involved.

1.2 Problem Statement

Gold mining is an important economic activity in Ghana. With the continuous expansion of economic globalization through the adoption of structural adjustment policies in the 1980s, the influx of multinational mining companies has been enormous in Ghana. This rise in the mining economy has been possible due to the urge by governments to promote foreign investments, resulting in the concept of "race to the bottom," a phenomenon where governments relax environmental laws to attract multinational resource extraction companies into their economies (Agyemang & Carmin, 2011). Although gold is the leading mineral extracted in Ghana and continues to account for 90% of mineral revenues (Amponsah-Tawiah & Dartey-Baah, 2011), its benefits for local communities are controversial and the question one can ask is: How sustainable are the practices of these multinational companies in the communities in which they operate?

Indeed, most scholars argue that "despite the commendable trends in the transformation of the mining industry, the sector has not resulted in increased development, social well-being and livelihood security, nor has it reduced vulnerability of poor communities"

(Lawson & Bentil, 2014: 218). As such, surface mining continues to displace communities and destroy their farmlands and other sources of livelihood. Since the 1990's, mining companies have remitted over US\$686.6 million in the form of royalties to government, but these have not been adequately utilized to transform rural mining communities in Ghana (Hilson & Banchirigah, 2009).

Recent studies reveal a negative relationship between mining and development (Akabza & Darimani, 2001; Yankson, 2010; Ontoyin & Agyeman, 2014). For instance, mining companies in Ghana continue to pollute water bodies making them unsustainable for domestic purposes. Evidence shows that in 2014, mining companies (Goldfields Ghana Limited, Newmont Mines, AngloGold Ashanti) in mining towns such as Tarkwa, Bogoso, Obuasi and Prestea polluted all the water pumps and groundwater in these areas through the use of dangerous chemicals like cyanide (Modern Ghana, 2015). Similarly, Kortatsi (2004) also observe that cyanide spillage and the production of sulphur dioxide have resulted in widespread pollution of water bodies in mining communities of Tarkwa and Prestea.

Mining in resource endowed communities exerts considerable impacts on the environment as well as social and economic life (Ontoyin & Agyeman, 2014). There have been cases of family disorganization, high cost of living, high school dropouts and social vices associated with mining operations (Akabzaa & Darimani, 2001). Again, Akabzaa (2009) contend that the Tarkwa Nsuaem Municipality, which hosts most mining firms in Ghana, continues to bear the brunt of negative mining-related activities, which have resulted in social, environmental and economic problems. Residents of mining communities continue to wallow in abject poverty because of their lack of employment.

In rural Ghana where mining operations occur, most of the inhabitants are either farmers or small scale miners with few requisite skills. This is a problem for such residents, in areas where “few opportunities exist for unskilled labour and most job openings favour skilled workers such as drillers, excavators, heavy-duty operators and artisans generally” (Yankson, 2010: 356). Indeed, most research on mining which addresses development issues has focused on corporate social responsibility, but as Boon and Ababio (2009) argue, Corporate Social Responsibility (CSR) may create dependency and not necessarily develop communities in a sustainable way. The challenge for most mining companies has to do with how to contribute to the long term development goals of communities in a way that is sustainable and not just dependable (ibid). Thus, development should not be focused on providing pipe-borne water to community members but must address issues such as community members’ ability to continually farm on their lands for years without being displaced. Issues of community development have been addressed through CSR with less emphasis on achieving sustainable gold mining practices. Aubynn (2003) is of the firm belief that sustainable development can only be attained in resource rich communities if the differing interests of stakeholders in the use of the resource are bridged such that a better working relationship between companies, communities and government is achieved. An example is the practices adopted by Rio Algom to address sustainable development in their communities (see Hilson & Murck, 2000).

1.3 Research Questions and Objectives

My personal experience of observing the lives of people in mining communities was of paramount importance in framing my research questions. Getting complaints from residents in these communities got me thinking about various questions suitable for this research. Some of the issues raised by community members were unemployment, land degradation and various

forms of pollution. Most often, I tried to find answers to the complaints through the lens of CSR but the more I thought about these, the more I felt there was something lacking. Having had the opportunity to pursue my Masters in Environmental Studies, I decided to address this concern in a different way, hence my interest in sustainability.

My research addresses two main questions: 1) how is sustainability understood and explained by mining firms in the global mining industry? 2) To what extent are large-scale mining companies in Ghana operating sustainably? However, these questions could not be answered without some broader objectives underlying this research. While thinking about the broader objective of this research, my long term goal is to explore the economic, social and environmental impacts of mining in Ghana; I narrowed this focus to identify four main objectives embedded in this broader issue. They are:

- 1) To identify ways in which the livelihood of community members particularly women and youth have been affected by the activities of Goldfields Ghana Limited in Damang?
- 2) To assess how Goldfields Ghana (Damang) Limited addresses community concerns related to their operations?
- 3) To examine the views of Goldfields Ghana (Damang) Limited and Ghana Chamber of Mines on sustainable mining practices?
- 4) To explore how Goldfields Ghana (Damang) Limited reconciles corporate social responsibility with sustainable mining practices?

The decision to focus on Goldfields Damang for this study is based on the following reasons:

First of all, the presence of the Damang mines has gained notoriety for constant land use conflicts between small scale and large scale mining companies in the area with specific reference to the Rex pit (see Aubynn, 2006, 2009; Teschner, 2013). However, in recent times,

this conflict has subsided and it is important to understand and assess the measures that were put in place to arrest this conflict.

One of the significant impacts of large-scale mining on the local community is a rapid change in the economic and social fabric of society. Indeed, large-scale mining comes with corporate social responsibilities and many of these large-scale mining companies have been helping the communities they operate (Pegg, 2006). Since Goldfields implemented a Sustainable Empowerment and Economic Development (SEED) program in 2005, it makes it an interesting case to investigate whether or not the program has served its purpose of empowering community members.

Also, the vision of Goldfields Ghana Limited which seeks to be a “global leader in sustainable mining practices,” (Goldfields, 2015) drew my attention to use this company as my case study. It is interesting to investigate what the company deems as sustainable mining practices and whether or not indeed community members also view those practices as sustainable.

Lastly, recent news about the Damang operation not producing enough gold and the need to inject \$100 million dollars in order to extract the ore or put the company under care and maintenance (Peacefmonline, 2015) makes it a unique case to study. This is unique because the aftermath of mine operations is key to community survival and this is where the company’s sustainable development policies may become effective.

1.4 Justification of the Study

Although mining companies allegedly adopt corporate social responsibility to address development in their communities, it is interesting to note that CSR have not been able to bridge

the developmental gaps in these communities. For example, Goldfields Ghana 2012 report on their operations outlined some achievements of the company in terms of providing jobs, building schools and clinics, providing water and many more but the quality of life of these communities has not improved (Goldfields Ghana, 2012). While community members widely attribute developments, social wellbeing and livelihood security to mining companies, the companies think otherwise by arguing that development in these communities are the sole responsibilities of the government (See Akabzaa & Darimani, 2001; Akabzaa, 2009).

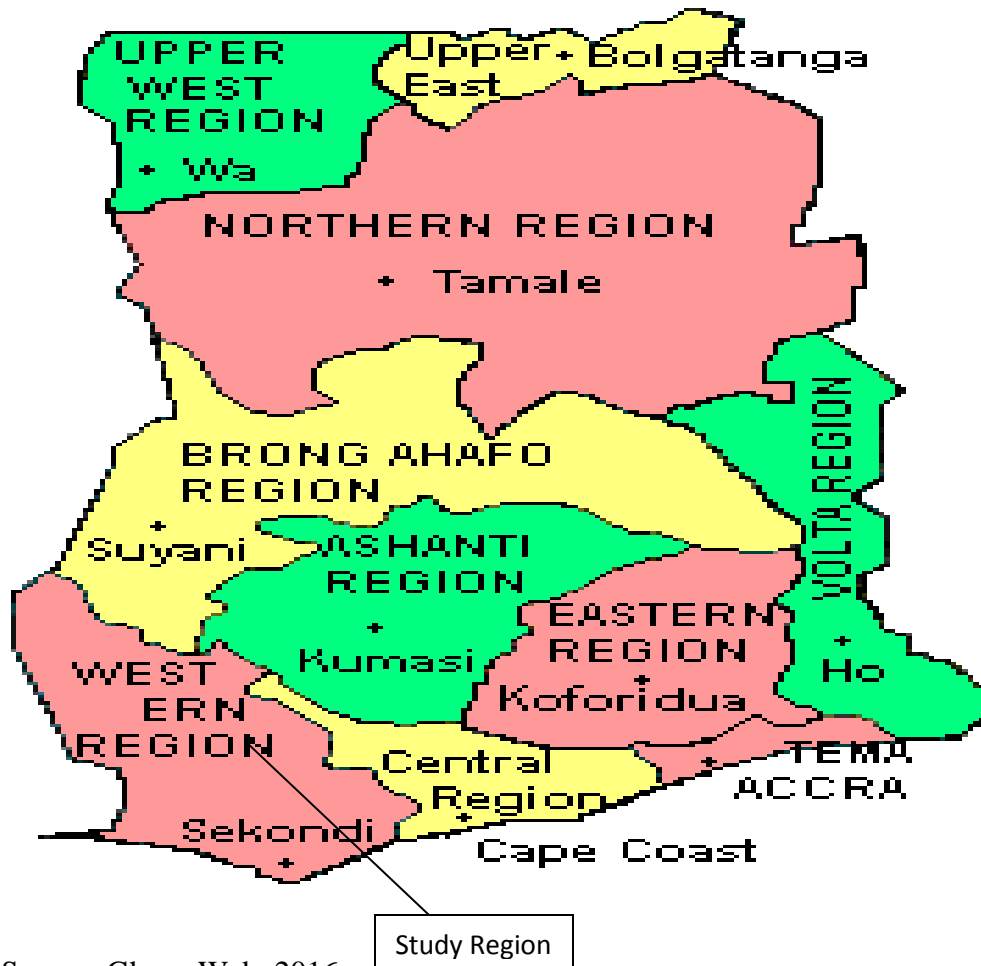
This research may serve as a policy guide to inform mining companies on best mining practices such that both the company and community members will appreciate their roles in the development discourse. This is particularly important at a time when the Government of Ghana has set up a committee to investigate all natural resource extraction contracts within the country. The aftermath of the life of a mine is very crucial if communities are to realize the positive impacts of the mine in their area. In this sense, this study will contribute to the literature on sustainable mining practices in the global south with special reference to Ghana.

1.5 The study area

The Western region is located in the southern part of Ghana with a land size of about 23, 921 square kilometers. It is bordered to the east by the Central region, to the west by La Cote D'Ivoire, to the north by Ashanti and Brong Ahafo regions, and to the south by the Gulf of Guinea. The region has a population of about 1, 924,577 and lies in the rainforest zones of Ghana containing about 75% of the vegetation within the forest zones of Ghana. The region is dominated by two major economic activities namely agriculture and mining. Minerals found in the region are gold, bauxite, diamond, manganese and oil, whose exploitation began in 2010 (Ghana Statistical Service, 2014, Boahene & Pepprah, 2011). Extraction is dominated by large

scale multinational companies and small scale mining companies. Prominent among the mining companies in the region are Goldfields Ghana Limited (Tarkwa and Damang), Golden Star Resources, Kinross, AngloGold Ashanti, Ghana Manganese Company, Awaso Bauxite Company and others. The region is dominated by cocoa production and it comes as no surprise that it produces the highest amount of cocoa in Ghana (Ghana Cocoa Board, 2010). However large scale mining activities in recent times have continued to disturb agriculture lands in the region, affecting lives and property of the people (Akabzaa, 2009). Below is a map of Ghana showing the study region.

Fig 1. Map of Ghana showing the study region



Source: Ghana Web, 2016

Having described the region in which Abosso Goldfields (Damang) is situated, I now shift my attention to the district where the mining company operates. The Prestea Huni-Valley district (PHD) shares boundaries with Wassa Amenfi East and Wassa Amenfi central districts in the north, Wassa Amenfi west district to the west, Elembelle district to the south west, Tarkwa Nsuaem municipality to the south, Mpohor Wassa east district to the east and Twifo-Ati Mokwa district to the north east (Ghana districts, 2015)

Prestea Huni-Valley District has a land area of approximately 1,809 square kilometers constituting about 7% of the total land area of the Western region. The population according to the 2010 Ghana census is 159, 304 representing about 6.7% of the population of Western region. Males constitute about 50.5% and females 49.5%. The population living in urban areas in the district are about 59, 093 and rural areas add up to 100,211 indicating that majority of people in this district reside in rural areas. The economy of PHD is mostly agrarian which engages about half of the population (45.2%). Agriculture is therefore the backbone of the economy in the district. Aside from agriculture, mining is the next most important activity that sustains the economy in the district. Examples of major mining companies in the district are Abosso Goldfields (Damang), Golden Star resources, Bogoso/Prestea Limited, Prestea Sankofa Gold limited,, New century mines, Tarkwa Goldfields and AngloGold Ashanti Limited. Mining and quarrying employs about 12, 156 people (Ghana Statistical Service, 2014).

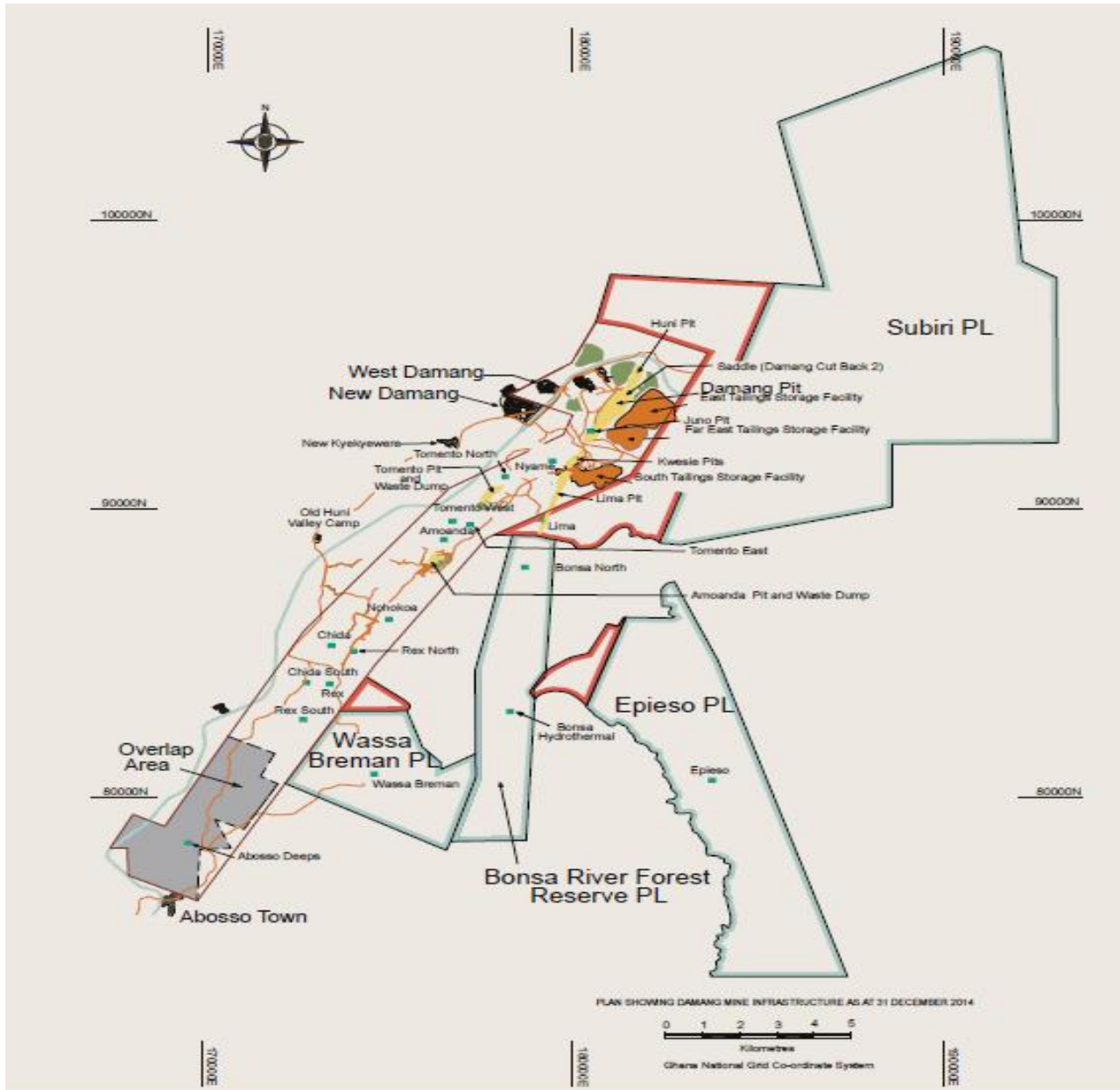
1.6 A description of the Mining Company for the study

Abosso Goldfields limited is the legal name for the Damang mine. Goldfields Ghana Limited took over from Abosso Mining Company Limited but decided to maintain the name. It is one of two mining companies owned by Goldfields Ghana Limited, a Ghanaian registered

company (Community Affairs Manager, 2015). In June 2011, Goldfields Ghana acquired IAMGolds' indirect 18.9% stake in the Damang Gold mine.

As a result, Goldfields owns 90% of the shares in the Damang mine with the remaining 10% owned by government as stipulated by the laws of Ghana. Two main leases make up the Damang mine, the Lima South lease and the Damang mining lease with additional four prospecting licenses of a total area of 25, 454 hectares (Goldfields, 2016). Currently, Goldfields Ghana Limited is the number one gold mining company and largest gold producer in Ghana. The company's annual production is in excess of 935,000 ounces from its two operating mines at Damang and Tarkwa. Goldfields Damang alone produces about 177,741 ounces yearly. The figure below shows a map of the Damang mine. On the next page, I present a map of the Damang mines (Goldfields, 2016).

Fig 2. Map of the Damang Mine



Reference
 Roads
 National Railway
 Mining Lease
 Mining Lease Lima South
 Prospecting Licences (PL)

	Tailings Storage Facility	
	Open-pit	
	Waste Dumps	
	Exploration Sites/Projects	
	Damang claims the area from surface to 30m below	
	Tarkwa claims the area from below 30m from surface	

Source: Goldfields, 2016

1.7 Organization of the study

This Major Paper is organized into six chapters. Following this introduction, I provide a detailed review of the literature about the extractive sector in Ghana and more generally. The first part of the review focuses on the theoretical framework for the study. The second part dwells on debates around the development discourse with emphasis on neoliberalism and the structural adjustment programs, sustainability and sustainable development, large scale mining and community development. Chapter Three examines pertinent issues related to mining activities, issues such as environmental impact assessment (EIA), community impact and benefit agreements, and social network analysis as tools for ensuring sustainability to make a case for continued effort on these principles in Ghana. Chapter Four discusses the qualitative methods used in approaching this study namely in-depth interviews, documentary analysis, fieldwork and reflexivity. The process of data analysis is also considered in this chapter and it ends with limitations of the study. In Chapter Five, findings of the research are analyzed and discussed around various themes related to the research objectives. And finally in Chapter Six, the research concludes with practical recommendations for various stakeholders in the mining industry of Ghana.

CHAPTER TWO

The relationship between development, mining, sustainability and sustainable development.

Introduction

This chapter presents a broad literature review on various issues pertinent in the global mining industry. I begin by focusing on political ecology as the theoretical framework for the study, I argue that political ecology brings out issues of power with regards to environmental governance and natural resources, and therefore is very appropriate for this study. Next, discourses around development including neoliberalism and structural adjustment programs are discussed in the way they have been incorporated in mining activities. A discussion of mining's contributions to Ghana is also presented. This chapter ends with an exploration of sustainability and sustainable development in the mining industry with examples from the global north and south also explained in details.

2.1 Political Ecology: Conceptual Framing

As a conceptual approach, political ecology addresses issues of environmental change in the context of differential powers of actors with conflicting agendas (Bryant & Bailey, 1997). As such, it dwells on examining the power relationships between various state actors and the effect that they have on the socio-economic and bio-physical environment (Hitch, 2006). Similarly, Blaike and Brookfield (1987) define political ecology as that which combines the concerns of ecology and a broadly defined political economy. Two major theoretical perspectives, political economy and the ecosystem thinking have influenced political ecology. Political economy is based on the interplay between the economy and politics whilst ecosystem

thinking examines the complex interactions within the biophysical and socio-economic relationships (Hitch, 2006).

According to Robbins (2012) political ecology thrives on the notion that environmental change and ecological conditions are the product of political processes (19-20). Since its inception in the 1970's, political ecology has undergone different paradigm shift by several scholars who study it from different perspectives. Stott and Sullivan (2000) explain political ecology as the political circumstances that causes people (mostly local) to engage in activities that results in environmental degradation without any alternative form of survival as well as rejecting the environmental narratives that emerges from international environment and development organizations. Therefore Robbins (2012), states that political ecology has two main characteristics. First, explanations that have been given for degradation of the environment are insufficient or inadequate. Second, solutions that have been provided to these environmental challenges in and of themselves exacerbate the problem or lead to further degradation. For Robbins, such explanations and recommendations hinges on the eco-scarcity and modernization debates. The eco-scarcity debate is rooted in the Malthusian argument that environmental change is as a result of increase in human population. It posits that once the human population exceeds the carrying capacity of the environment there will be challenges for humans. This argument also rests on the assumption that the environment is a static entity which places limits on human actions (Robbins, 2012). In order to find a solution to the issues of environmental degradation, capitalist ecologists subscribe to the modernization debate. This debate sees "ecological problems and crises throughout the world are the result of inadequate adoption and implementation of 'modern' economic techniques of management, exploitation, and

conservation” (Robbins, 2012: 18). From this assumption, they assert that failure to embrace some of these modern measures is to blame for environmental degradation.

As a field of inquiry, Robbins (2012) posits that are several critical tools that help to understand the work done by political ecologists. Two of these include the common property theory and feminist development studies. The common property theory is based on the assumption that resources such as “land, forests, fisheries, rangeland, genes and other resources, like many of the environmental systems over which struggles occur, are traditionally managed as collective or common property” (Robbins 2012: 51). These resources are managed primarily by local management structures with some laid down rules and regulations that members of the community are familiar with. However, in the 1970s and 1980s ‘the tragedy of the commons’ theory was propounded by Hardin in 1974. Its underlying assumption was that since resources are in the open for all to access, it will be subject to the abuse of individuals who are mostly selfish and as such will inevitably result in the resource been depleted. In order to avoid this situation, the best solution possible is to hand over such resource to private individuals who aim at making profit and as a result will manage the resources in a more profitable manner for everyone. To some extent, this argument made economic sense but empirical evidence over the past decades suggest otherwise. This discrepancy prompted political ecologists to question this argument and to seek for explanations. Accordingly, in dealing with environmental degradation issues there is the need to take into account the knowledge of the indigenous people who may have sustained the resource base for decades. Thus, they propose a better alternative to understanding environmental degradation by insisting that the motivations of groups and individuals be questioned when it comes to the management of resources because, for the most

part, these management systems hinge on economic motives and are supported by powerful groups in the community.

Feminist development studies' contribution to political ecology is based on the notion that human-environment interaction and its antecedent processes are gendered, implying that men, women and children experience the environment differently. Therefore, their access to land and control over ecological systems is shaped by their different social and cultural roles (Rocheleau et al., 1996). This theory comes against the backdrop of post-World War 2 where development assistance swept the globe with international organizations providing assistance in order to improve the livelihood of people after the destruction of the war. However, in the process it became visible that the livelihoods of the people they claimed to improve were actually decreasing and becoming more impoverished especially women. As such, critical feminist theorists therefore argue that since men and women's access to ecological systems are different, there is the need to assess the impacts of ecological change through a gendered approach. Political ecologists consider this assumption worthwhile and have inculcated it into their work in order to better understand environmental degradation and conflict issues (Robbins, 2012).

In order to espouse understanding of political ecological issues, Robbins (2012) identifies five theses which are helpful to this discussion. They include: degradation and marginalization; conservation and control; environmental conflict and exclusion; environmental subjects and identities; and political objects and actors. For the purpose of this study, the degradation and marginalization thesis and conservation and control thesis will be discussed.

According to Robbins (2012: 159), the degradation and marginalization thesis states that “otherwise environmentally innocuous production systems undergo transition to over exploitation of natural resources on which they depend in response to state development intervention and/or increasing integration into regional and global markets” (Robbins 2012: p. 159). This situation arises from capitalist producers who seek to reduce production costs and in the process shift these costs onto local producers who have no other option than to exploit the land in order to meet global or national demands. Similarly, the thesis is based on the fact that sustainable community management is made unsustainable due to strategies by state authorities or outside firms who want to impose new/foreign ideas on local production systems. The underlying assumption is that these new ideas or institutions will result in improved local production and in the long run bring about the development of the local economies. However, the results of such interventions in most cases have resulted in poor people becoming more impoverished, resources becoming over-exploited, local practice becoming less sustainable than it used to be, and an unequal distribution of environmental resources (Robbins, 2012).

The second thesis within which this study is positioned is the conservation and control thesis. It states that “control of resources and landscapes has been wrestled from local producers or producer groups (by class, gender or ethnicity) through the implementation of efforts to preserve ‘sustainability,’ ‘community’, or ‘nature’. In the process, officials and global interests seeking to preserve the ‘environment’ have disabled local systems of livelihood, production and socio-political organization” (Robbins, 2012: 178). This argument lays claim to the degree to which reasons which have been given for the conservation of lands have failed because traditional land managers no longer have access to their lands and lands have been given to elites and foreign companies who do not have any title to the land and or ecosystem management

practices (Robbins, 2012). Multinational mining companies had access to Ghana through the implementation of the structural adjustment policies advanced by bigger political actors such as the World Bank and International Monetary Fund. This led to changes in the laws governing mining in Ghana. This law permitted foreign multinational companies to wrestle lands from local producers in a bid to generate more revenue from the state. Their practices on the other hand have not been sustainable. This framework will help the study investigate the impact of this imbalance of power on lands and resource management in mining communities. In view of this, it is important to discuss development to understand the rise of private interest in lands and resource management.

2.2 Development Discourse- A Clearer or blurred vision

Development is a concept that has been used to mean a transition or transformation from one state of growth to an improved one (Konadu-Agyemang & Takyi, 1983). Historically, development has operated as a mechanism for socio-economic control, and politically, it has emerged as an elitist project with practices of control and domination (Wai, 2007). Thus, development was introduced as a political project in the post Second World War era, its historical roots organized in earlier European thought: “the enlightenment conception of progress and the promethean self-conception of European civilization” (McMichael, 2004: 286). Development experts after the Second World War associated development with modernization or westernization and these interpretations have become subjects of criticisms (Toyes, 1987; Goulet, 1997). To this end, development has evolved around debates on modernization and dependency theories (see Rostow, 1990; Cardoso, 1979; Gunder Frank et al., 1966). Indeed, most countries have prioritized development by focusing on socio-economic and political

initiatives that will lead to improvement in living conditions. Yet, these developmental goals have not fully been met (Konadu-Agyemang, 2000).

Crush (1995) asserts that development is a language which has functioned historically as a drive to re-order spaces, imagine and transform spaces, political landscape and replaces one reality with the other. Crush (1995) goes on further to argue that development serves as a medium through which people have been constructed as projects to be acted upon, and placed in categories of people who need the power of modernity. On the other hand, Debal (2009) posits that western countries institutionalize development in the global south through political projects such as neoliberalism and industrialization (Harvey, 2005; Larner, 2003; Tickell & Peck, 2003).

Espousing development means that certain practices deemed drawbacks are eroded in favour of practice that engages a lot of technology (Neumann, 2005). In developing countries, development is associated with progress, rationality and a linear process that rely on human agency. It is carried out by different actors with the aim of attaining specific goals, with the state providing welfare and security functions (Willis & Kumor, 2009; Korf, 2009). Accordingly, the spatial inequality that arises as a result of development creates uneven development. In this vein, the development discourse is used as a tool in creating subjectivities and binaries in various parts of the world. Thus, countries are divided into developed and underdeveloped which further enhances inequalities and exclusion. When countries are divided into binaries, there is always the tendency for the developed country to suppress the under-developed country. It most often leads to developed countries seeing under-developed countries as the 'other' further enhancing the distinction between 'us' and 'them'. These issues determine how resources are distributed and power exercised across the globe.

Chilcote (1984) argues that the discourse around development and under-development has been promoted by capitalism to create an avenue for the promulgation of neoliberalism that allows states to retreat and market forces take over development. As a product of globalization, development has been a project promoted by international actors who shape the practice, and funding behind development. As such, resource rich developing countries have been immersed in the extractive model of development perpetuated by international institutions such as the World Bank and IMF. Foster and Clark (2004: 187) define imperialism as “the pillage of the resources of some countries by others and the transformation of whole ecosystems upon which states and nations depend, labour exploitation of ecological vulnerabilities of societies to promote imperialist control.” Imperialism makes it difficult for local groups to resist the activities of multinational companies. Thus, such resistances are seen as fighting the global extractive model of development (Gaynor, 2011; Guttal, 2010; Brush, 2009 cited in Anyidoho & Crawford, 2014). The next section on neoliberalism, a concept embedded in the capitalist discourse. This is relevant due to the current rate at which development informed by the developed West is built around neoliberal policies.

2.3 Neoliberalism-All that glitters is not gold

Neoliberalism focuses on three main areas: free trade in goods and service; the free circulation of capital; and freedom of investment. It serves to clearly define economic winners as opposed to losers (George, 2001). As such, neoliberalism envisages the market as the ultimate tool for achieving optimum use and allocation of resources (Mansfield, 2004). Governance according to free market criteria appears to undermine culture and institutions of democracy and marginalize the poor. Brown (2006) states that neoliberal policies that undermine political liberty, equality, rule of law, substantive citizenship and social justice in favor of governance

along market strategies weakens democratic practices. This is because neoliberal policies erodes the contextually sensitive approaches to local policy formulations and implementation and the creation of diffused, generic, ideal approaches to modernizing reforms among policy makers in search for quick fixes of local social problems (Brenner & Theodore, 2002). Commenting on the internal diversity of neoliberalism, Blomgren (1997) notes that most often than not, neoliberalism is commonly thought of as a political philosophy that places premium on individual freedom and the right to private property. As such, government support systems that are related with the Keynesian welfare state program have been withdrawn through neoliberalism. That notwithstanding, the state still provides important legal and institutional frameworks within which development and neoliberal policies operate.

Larner (2000) explains neoliberalism as an ideology, policy and governmentality. As a policy, neoliberalism favors a policy that puts market-oriented development strategies ahead of states' welfare role as did exist in the Keynesian era. This erosion of state role has resulted in a sudden shift from the public sector of most states as the engineer of growth and development to concentrations on the private sector as the engine of economic growth. Ideologically, neoliberalism has focused on the shifts in institutional and structural changes that centralize markets, deregulation and privatization agenda as the focus of development. Also, as governmentality, neoliberalism draws on systems and practices that make people govern themselves. Neoliberalism as governmentality is a shift from ideology to discourse (Larner, 2000) which involves practices, experiences, and performances.

As noted by the World Bank document (1992: 10) *Strategy for Mining in Africa*, “the future development of the mining industry would therefore largely depend on attracting new high risk capital from foreign mining companies” (cited in Campbell 2010: 200). This strategy was

defined as the best way to ensure the development of African potential and to improve the economic situation providing taxing revenues in the long-term. From this perspective, the objective of African countries should be to avoid state ownership and attract private investors (ibid). In the mining industry, multinational companies embedded within the global capitalist system have widened their activities to developing countries to extract natural resources however, there is less global governance in regards to the activities of these companies except to argue that the industry is at the mercy of the market and trade agreements between countries (Carbonnier cited in Anyidoho & Crawford, 2014).

Nature in one way or the other provides all the resources for humankind. However, in the midst of neoliberalism, natural resources are no longer seen as resources for the commons but have continually been constituted, reconstituted and privatized. With respect to how neoliberalism has affected nature, Smith (2006: 17) argues that “we are currently living through a period in which the core socio-economic relationship with nature is dramatically transformed”. Thus, “the social reproduction of nature is being dramatically intensified and its dimensions multiplied as neoliberalism has increasingly led to its commodification, marketization and financialization” (Smith, 2006: 20). On the other hand, Smith (2006: 21) admits that human societies have always been implicated in the social production of nature, “social reproduction under capitalism depends largely on the dictates of the market, nature increasingly becomes an appendage of the production process and its value comes to be expressed primarily in terms of exchange value rather than use value” (Smith, 2006: 21).

With the roll-out of neoliberal policies, nature has become a commodity that can be colonized, privatized and monetized (Harvey, 2005; Larner, 2003). The neoliberal discourse is profit-driven, with little concern for nature (Sandberg & Wekerle 2010) and human welfare. As

such, neoliberal strategies have encouraged the exploitation of natural resources for economic gains without exploring the gendered and racial dimensions of nature in relation to human needs (Sandberg & Wekerle 2010). Ghana's form of neoliberal policies has been the implementation of structural adjustment programs. The next section dwells on structural adjustment and how it shaped the mining industry in Ghana.

2.4 Structural Adjustment Programs - Experience is the best teacher

Structural adjustment is the “process whereby economic policies and institutions are reformed with a view to enhancing financial growth, improving resource allocation and economic efficiency and increasing economies resilience to changes in domestic or global markets” (Hilson, 2004 p. 58). The rise in foreign debt and declining traditional exports associated with the collapse of the socialist states in the 1980s led many governments to pursue neoliberal policies to salvage their economies. For many countries in Africa, food and fuel shortages, increasing unemployment and falling standards of living led to economic crisis (Hilson & Potter, 2005). The IMF and World Bank through the Structural Adjustment Programs (SAP) succeeded in reducing the role of the state in the mineral sector through many reforms. The first phase of the SAP under the economic recovery program was geared towards stabilizing the economy of most of these states. This phase involved governments not spending beyond their budget and the non-interference in resource allocation. In view of this, the government of Ghana adjusted the exchange rate, controlled inflation, decreased imports and mobilized government revenue through taxation (Hilson, 2004). The second phase led to long term major policy changes targeted at macroeconomic imbalances. These were the liberalization of exchange rate and trade system, privatizing state enterprises, reforming and reducing the size of public services,

rehabilitation of economic infrastructure, control of public expenditure and poverty alleviation programs (Hilson, 2004; Konadu-Agyemang, 2000).

The large scale mining sector benefited from these reforms because it was during this period that the first mining codes were formalized. However, prior to these reforms, the government had set up a committee to address the reasons behind the decrease in national production from the late 1970s to early 1980s (Hilson, 2004). The committee according to Hilson (2004: 64) made the following recommendations: “To establish an investment code and create a favorable investment climate in the country; to review existing mineral laws to make it easier for potential investors to acquire mineral concessions to explore and mine gold for up to 30 years; review taxation laws to make the taxes payable by companies comparable to those in other gold-producing countries; review the remittance quota for expatriates in the industry to allow them at least 40 percent of net salary after tax; and to legalize small-scale mining”. The motives behind structural adjustment have been captured in Guilliamsht & Jeannency 1994, cited in Hilson, 2004: 55, as:

The rationale for structural adjustment in a market economy is to increase the competitiveness of the export sector as well as of import substitutes; in other words, to increase the profitability of these sectors so as to allocate resources to them. Their profitability can be increased only through two channels; by increasing the relative price of internally tradable goods, which is commonly known as real exchange rate, and by increasing productivity.

The Ghanaian government changed policies to support privatization, deregulation, and taxation all in attempt to salvage the declining economy (Hilson & Potter, 2005). As stated by Tsuma (2010), privatization in the mining industry occurred when government sold its gold mines to private mining companies. Privatization lies within the broader political debates on

economic development, inequality and social justice. As such, the IMF believed the only way for the Ghanaian economy to recover was to increase the country's involvement within the international market. These reforms were important because they specifically targeted the gold mining sector. A plausible explanation for making the gold sector a prime target had to do with the fact that Ghana owned 70% of the gold reserves in West Africa and it was thus a favourable option for international market expansion (Hilson & Potter, 2005). In thinking about exports, I dwell deeply on the staples theory which fits well in the case of Ghana because of the urge towards export under the structural adjustment program. In the view of McNally (1981) and Watkins (2007), staples are the means through which some countries have developed, as illustrated by the cases of Canada and Ghana. The reliance on staple export has generated a lot of revenue for these countries and, hence the impacts on the economy. Girvan (1978) reiterates that in mineral export economies, economic life is structured around the production and export of mineral exports. He argues that in spite of favorable conditions for economic development by virtue of resource flows, these mineral exporting economies remain structurally underdeveloped and externally dependent, with endemic conflicts occurring between the government and transnational companies.

Ghana's goal of market expansion was reinforced through the creation of the *Minerals Commission* in 1986, which intended to regulate and control the mining sector within the country (Hilson, 2002). Specifically, Ghana introduced the *Minerals and Mining Law (1989)* as a catalyst for the growth of foreign investment in the mineral industry. The law acts to reduce government entitlement to minerals, eliminates many duties foreign companies may have to pay, as well as giving additional allowances and privileges to foreign investors (Hilson & Potter, 2005). However, as Campbell (2010) clearly explains, the strong retrenchment of the State through

these reforms from the mining sector has seriously compromised the implementation of developmental goals.

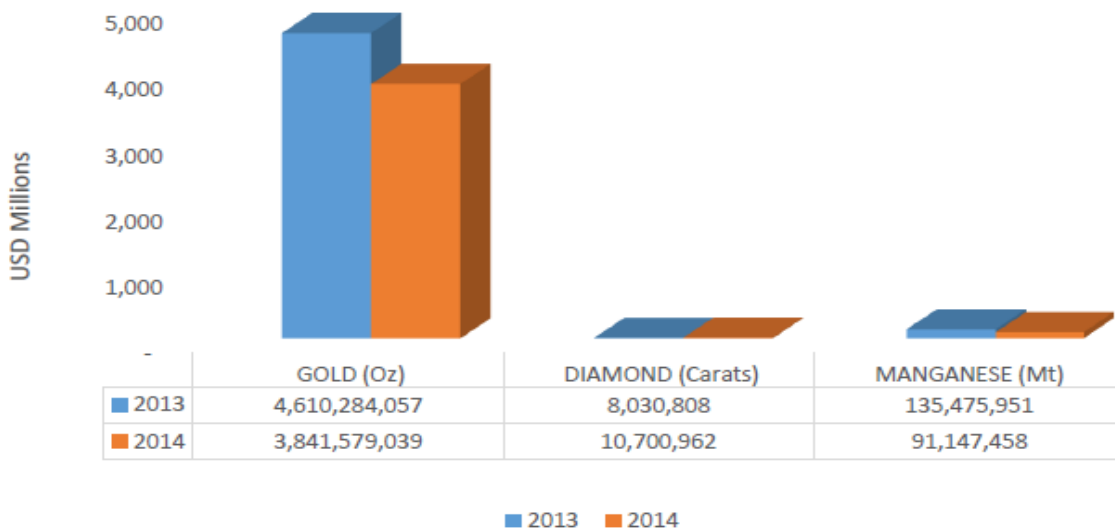
2.4.1 Contributions of mining to the economy of Ghana

Ghana is the second largest gold producer in Africa after South Africa. The total output of gold in 2013 was 97.3 tonnes and the country ranks as the 10th gold producing country worldwide with the largest gold deposits found in Ashanti, Western, Central and Brong-Ahafo regions. There are currently 23 large-scale mining companies producing gold, diamonds, bauxite and manganese, with over 300 registered small scale mining groups and 90 mine support service companies. Among the firms that are actively involved in large scale mining of gold, manganese, bauxite and diamonds are Adamus Resources limited, AngloGold Ashanti Limited, Chirano Gold Mines (now Kinross), Goldfields Limited, Ghana Bauxite Company Limited, Perseus Mining Limited, Golden Star Resources, and Newmont Ghana Limited (Ghana Chamber of Mines, 2015).

Ghana has witnessed a rise in mineral production, foreign exchange and revenue in the mining sector. Ghana witnessed a tremendous inflow of foreign direct investment (FDI) in late 1980s with about 95% of all FDI going into gold mining. For instance, FDI inflow in the mining sector has risen from US\$231.78 million in 2000 to US\$762.26 million in 2009 (Twerefour et al., 2009). According to Aryee (2010), from 1983-2009, the mining industry saw investments of about US\$10 billion, with the resultant impact on gross foreign exchange from 15% in the mid-1980s to 45% in 2008. Revenue from the mineral sector in Ghana dropped from US\$ 4,753million in 2013 to US\$ 3, 943million in 2014, and a percentage fall of 17%. This drop was mainly due to the declining gold price and the inability to ship manganese. Gold revenue

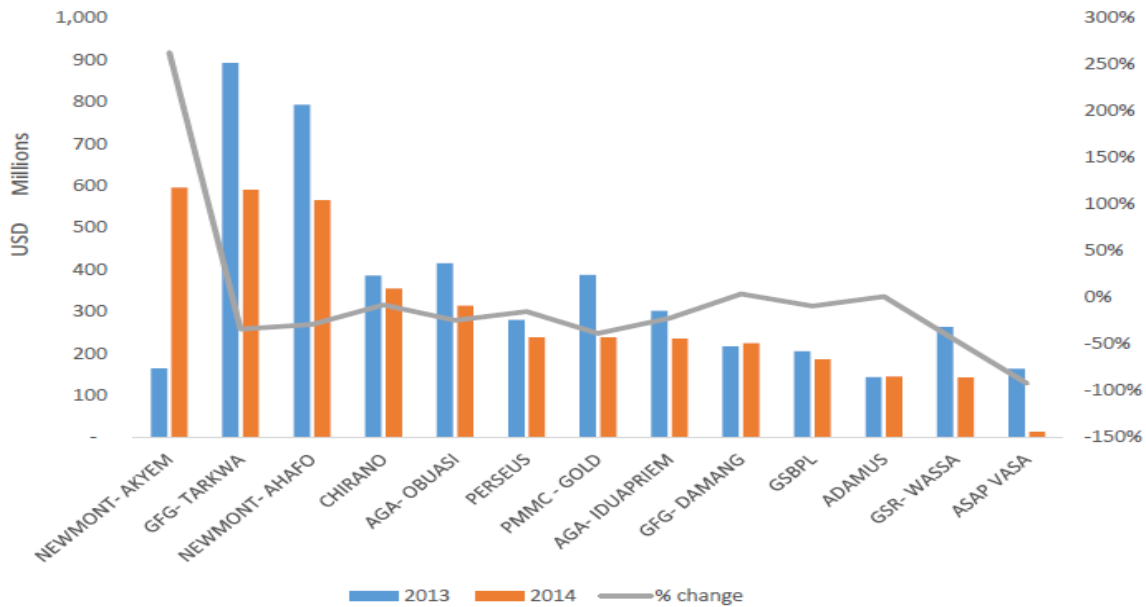
accounted for about 98% of revenue generated from the mining industry but even that, there was a decline from US\$ 4,610million in 2013 to US\$ 3,842 million in 2014. Gold output from the members of the Ghana Chamber of Mines also declined from 3,192,648 ounces to 3,167,755 ounces. The output of Goldfields Tarkwa also declined from 632, 244 ounces in 2013 to 558, 222 ounces in 2014. On the other hand, the output of Goldfields Damang increased from 153,117 ounces to 177,741 ounces in 2014 (Ghana Chamber of Mines, 2015). The figures below indicate the production and revenue generated from the mining industry and in specifics, the gold mining industry of Ghana.

Fig 3: Comparison of mineral revenue for 2013 and 2014



Source: Ghana Chamber of Mines, 2015

Fig 4: Share of mineral revenue by members of the chamber of mines (2013 & 2014)



Source: Ghana Chamber of Mines, 2015

Even though gold continues to generate a lot of revenue for the state, it is important to examine how mining activities are perceived in the context of sustainable development.

2.5 Sustainability and Sustainable development- Reality or Fiction

Sustainability comes from the Latin word “sustinere” which means to defend, maintain, assure, and bear (Castiglioni & Mariotti, 1981, cited in Bolis et al., 2014). This term was widely adopted by the environmental movement in defense and preservation of life and the environment. However, the term sustainability gained more grounds when the relationship between humans and the environment took a new twist with problems arising from the nexus between global ecology and economic development (Gallino, 2005; Edwards, 2005). Munro (1995: 28) defines sustainable development as “any and all kinds of activities or processes that increase the capacity

of people or the environment to meet human needs or improve the quality of human life...for development to be sustainable, it must continue or its benefits must be maintained indefinitely”.

The 1972 UN conference on *Human Environment* in Stockholm, which led to the release of the report *Our Common Future* in 1987, has been credited with the idea of sustainability. Some scholars such as Edwards (2005) assert that sustainability became more prominent after this conference. As such, Debal (2009) contends that the major goal behind the sustainability movement was to push for a society in which economics and ecological systems can be integrated across space and time such that society benefits from both. In the view of Burger and Christen (2010) sustainability has been built around the equality principle which argues that future generations must be considered if development is to be sustainable.

Also, Elliot (2009) argues that beyond the triple bottom line, that is environmental, economic and social issues, espoused by advocates of sustainability, environmental policy must be incorporated to address issues related to sustainability. To this end, Elliot (2009) suggests that sustainability should emphasis genetic diversity, resilience, productivity, growth, equity, efficiency, empowerment, social cohesion and cultural diversity (cited in Siakwah, 2014). Bell and Morse (2008) explain that in spite of the many definitions assigned to sustainability, practices and performances have been very minimal. They call for more pragmatic ways of practicing sustainability such that it will not only be seen as an ideology. Again, it is their view that human needs have been known to differ across different spaces and time and so it is difficult to measure the quality of people’s life which makes delineating sustainability very problematic but the management of a resource is defined as sustainable if its use does not exceed its productive capacity, in other words, placing a limit on the use of a resource (Rees, 1998).

As well, issues related to sustainability have been focused on how to manage non-renewable resources such as gold. Cowell et al. (1999) offer some reasons for the integrating of sustainability in the mining industry. The reasons include; the debate around the finite nature of the resources with a focus on inter and intra generational access to the resource and environmental and social impacts of these resources on local communities and the primary importance of these resources to these countries. But as Holmberg (1998) posits, society can only be sustainable if nature's future and diversity are not subjected to an increasing concentration of substances extracted from the earth crust; an increasing concentrations of substances produced by society; societies are not impoverished by other forms of ecosystem manipulations; and using resources fairly and efficiently in order to meet basic human needs worldwide (cited in Cowell et al., 1999). Dwelling on different approaches to sustainability, Cowell et al. (1999), advocate for four major approaches. These are the relative weighting of ecological, economic and social aspects; treatment of uncertainty in interpreting sustainability, sustainability at different conceptual scales and the time horizon for sustainability. They noticed that self perception plays a role in defining sustainability. For this reason, they argued that organizations that focus on providing physical output and operate mine sites define sustainability to meet the demand of other products by providing socially desirable employment. On the other hand, organizations that identify their operations to be serving community needs are more tilted towards sustainable development that meets human needs in a larger scope.

Similarly, Auty and Mikesell (1998) provide two approaches to maintaining sustainability in non-renewable resources. The first approach they espouse is a call to conserve mineral assets with the intention of keeping the resources for future generations. This is based on the idea that these resources are finite and that they require better policies to govern their

exploration and access. The second approach stresses allowing mineral development based on the conditions of the mineral market while ensuring that national capital accumulation does not result from depletion of natural resources.

Hopwood et al. (2005) are of the view that leaving sustainable development to many interpretations can be very detrimental. They contend that the concept of sustainable development proposes a shift in the understanding of humanity's place on the planet, but it is open to the interpretations of being anything from almost meaningless to being of extreme importance to humanity (Hopwood et al., 2005: 40). To this end, Bolis et al. (2014) propose five models through which companies and communities can assess sustainable development in their operations. The first dwells on capitalism with an emphasis on material and quantifiable growth of a country or region's economy; the second model examines the environmental constraints on development and roll that in a purely economic assessment; the third also dwells on humanity's negative impacts on the environment, with a call for love for the natural environment; the fourth envisages how growth can be in harmony with nature; and the fifth advocates for development based on societal wellbeing. Different perspectives continue to be espoused on sustainable development in the extractive industry. The fixed stock⁶ and the opportunity cost⁷ paradigm have also been used to explain the need to integrate sustainable development in the extractive industry. A sustainable mine must be safe, demonstrate leading practices in environmental management and community agreement, be economically robust and use mineral resources as efficiently as possible (Laurence, 2011, cited in Pimentel et al., 2016). Realities of mining

⁶ The Fixed stock paradigm sees resources such as oil, coal and copper deposits as non-renewable because they require longer time to form. This means that supply at any time is a fixed stock that can only diminish with use (Tilton,1996)

⁷ The Opportunity cost paradigm places premium on alternatives to natural resources because these resources are heterogeneous. Thus, before other exhaustible resources could be extracted from the earth's crust, production costs would rise to a higher cost that demand would cease to exist (Tilton, 1996)

development are that communities and non-governmental organizations (NGOs) address mining and the environment as a political process that involves negotiation and contestation, decision making in regards to the exercise of rights and ownership, thresholds and methods for land valuing, and legal rights of states vis-a-vis the moral rights of local people (Bridge, 2004).

According to Bridge (2004), two theoretical propositions underneath the argument that mining can lead to sustainable development. First, resource extraction and processing converts stocks of natural capital to human capital or built capital and secondly, wealth creation is at the forefront of the agenda that sees sustainable development as an antidote to poverty reduction (Bridge, 2004). Much effort has been placed on finding a middle ground for mining and sustainable development. An example is the sustainability reporting which spells out a firm's environmental performance towards sustainability. This idea has not worked because firms report technical, managerial and economic questions whereas the problems community members face are varied and concrete such as the ownership of land, right to water, indigenous control of resource decisions and the right of host communities to have a free prior informed consent to mining (ibid). In recent times, the attention on sustainability has been crafted around partnership and shared goals without focusing on local people's rights. Conney investigated the challenges that impede negotiations between mining firms and local communities and observed that one needs to consider whether the rights of the community to maintain its integrity may be supreme to the rights of an investing corporation (Conney, 2001, cited in Bridge, 2004).

Hilson (2001) surveyed 20 gold mining companies in various parts of the world on sustainable practices. The focus of most companies was on the environmental impacts of their activities with less attention paid to the socio-economic concerns of community members. Mining companies adopted various social and environmental initiatives such as: drafting key

environmental policies; designing and implementing environmental management tools and practices (Environmental Management Reviews); installation of pollution abatement technology and environmental management programs (e.g. training and education); impact assessment and appraisals; financing and construction of community infrastructure; development of important community programs; contribution to local universities and research units and the creation of relationships built on respect and trust.

Furthermore, Kumah (2006) in discussing sustainability and gold mining in developing countries observed that most gold mining companies in the developing world perpetuate environmental and socio-economic problems such as deforestation, acid mine drainage, noise, dust, air and water pollution from arsenic, cyanide and mercury, social disorganization, a loss of livelihoods and mass displacement. Arguing further, Kumah (2006) proposed that gold mining companies in the developing world must move beyond requirements of legislations as most legislation governing gold mining activities in the developing world does not incorporate sustainability. It is only when companies adhere to these practices (internalizing cost of biophysical, economic and social effects on communities) that the needs of present and future generations can be met.

Hilson (2000) explains that corporate mining must commit to environmental and socio-economic improvement throughout the life of a mine so as to ensure sustainable development. Effective environmental management must start at the exploratory stage to avoid impact on biodiversity and water bodies and cleaner technologies must be used to emit less waste, and extractive reclamation measures must be put in place to ensure air quality and groundwater resources are protected. Extended socioeconomic responsibility is one theme that Hilson and Murck (2000) advocate corporate mines must consider in addressing sustainability in their

operations. Extended socio-economic responsibility is defined as “ the internalization of social and environmental effects of operations through proactive pollution prevention and social impacts assessments so that harm is anticipated and avoided and benefits are optimized” (Warhurst & Mitchell 2000, cited in Hilson & Murck, 2000: 229). Socially, economically and ethically, mines have the greatest responsibility to ensure that they identify parties impacted by their operations and address their concerns. Some of the measures they can put in place are the training of community members for jobs, the employment of residents and the undertaking of major community developments (Hilson & Murck, 2000).

For mining operations to contribute to sustainable development, certain commitments have to be made. Hilson (2000) outlines some of these commitments as those that reside in better environmental management, that is, reshaping and improving environmental management technologies which include training, planning and auditing. However, corporate mines must also been seen to be progressive in areas such as the control, mitigation, monitoring and resource consumption which can benefit communities in the long run. Fleury and Davies (2012) argue that sustainable development does not only have to deal with environmental, social and economic concerns but also the necessary governance structure in place to address community concerns. It is only when this is done that mines will serve the purpose of maximizing the wellbeing of local community members by distributing costs and benefits equitably without compromising the potential for future generations to satisfy their multiple needs.

Although the concept of sustainable development was espoused by the Brundtland Commission to address sustainable development to a larger extent, it fails to give directions on how sustainable development should be implemented. In view of this, most countries of the world have adopted different policies to address sustainable development (see for example,

Hilson, 2000; Hilson & Murck, 2000). More recently, the International Council on Mining and Metals (ICMM) which seeks to ensure sustainability in the global mining industry has outlined ten Sustainable Development Principles for mining and metals companies to address sustainability in their operations. This is presented in the table below:

Table 1: Principles of sustainable development

1	Implement and maintain ethical business practices and sound systems of corporate governance.
2	Integrate sustainable development considerations within the corporate decision making Process
3	Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities
4	Implement risk management strategies based on valid data and sound science.
5	Seek continual improvement of our health and safety performance
6	Seek continual improvement of our environmental performance
7	Contribute to conservation of biodiversity and integrated approaches to land use planning
8	Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products.
9	Contribute to the social, economic and institutional development of the communities in which we operate
10	Implement effective and transparent engagement, communication and independently verified reporting arrangements with our stakeholders.

Source: Adapted from —Sustainable Development Framework: 10 Principles by International Council on Mining and Metals, 2013b.

Some mining companies have devised their own form of sustainable development practices and the next section discusses the sustainable livelihood initiative launched by Goldfields Ghana to address sustainable development.

2.6 Goldfields Sustainability Practice (SEED Programme)

Many companies in Ghana have in one way or the other promoted programs geared towards the sustainability of the communities in which they operate. To this end, several sustainable livelihood projects have been initiated by three major mining companies in Ghana: AngloGold Ashanti Ghana Limited (Indoor Residual Spraying and Hand-in-Hand projects); Golden Star Resources (Golden Star Oil Palm Plantation and Golden Star Skills Training and Employability Initiatives); and Goldfield Ghana Limited (Sustainable Community Empowerment and Economic Development Programme). For the purpose of this study, the sustainable livelihood project of Goldfields Ghana Limited will be examined.

In 2005, Goldfields Ghana Foundation initiated and launched a five year community development program worth US\$5 million known as the Sustainable Community Empowerment and Economic Development Programme (SEED). Authorities charged to implement this program were an international NGO known as Opportunities Industrialization Care International (OICI) working with government agencies at the local and regional level and community members. The vision of the program is to be “a high impact, result focused, sustainable and integrated community development program that focuses on economic growth, wealth creation, improvement in quality of life and empowerment through education, capacity building and infrastructural development which can be replicated in mine affected communities all over the world” (Goldfields, 2005). This programme aimed at improving the livelihoods and quality of

life of 30,000 poor and vulnerable men, women and children in 16 Goldfields Ghana (GFG) primary stakeholder communities by 2010 (Goldfields, 2005). The programme was to be achieved under four main objectives, namely: increased income and economic opportunities; improved health; improved education and livelihood skills; and sustainable interventions and increased social license.

In regards to the first objective of increasing income and economic opportunities, 4000 people were targeted in the 16 stakeholder communities. This objective began with vegetable cultivation in groups of twenty-five households. In places such as Subri, cultivators of these vegetables made incomes of between 11 and 14 million cedi (US\$ 1146-1458) in three months (Yankson, 2010). On the other hand, livestock rearing such as sheep, goats and pigs were initiated but this initiative faced many challenges such as drugs and feed, and lack of marketing arrangement. Others were also involved in cassava, maize, oil palm business, batik production, bakeries, soap production and food processing. Out of the 4000 people anticipated to benefit from this project, 3005 from 16 stakeholder communities, 52% men and 48% women benefited with 2453 in agriculture and 552 in micro enterprises with (Yankson, 2010).

The second objective which focused on improvement in health of stakeholder communities, the initiative targeted the health and nutrition practices of men, women and children. There was advocacy in areas relating to right behavioural change, education, growth monitoring, water and sanitation infrastructure and access to basic medical services (Yankson, 2010). The program also trained community members (8,904 in 2006, 20,607 in 2007 and 19,126 in 2008) as volunteers to complement the efforts of public health personnel in the communities. The Vulnerable Nutrition Enhancement Program was introduced into the SEED program to

provide food for orphans, vulnerable children and people living with HIV/AIDS (Yankson, 2010).

The third objective which sought to improve educational and livelihood skills achieved some targets of about 5,000 youth and adults in various stakeholder communities but this initiative was short lived and was taken out of the program in 2007 (GFG/OICI, 2009). On the last objective, SEED was to be an initiative for the longer term results and impacts while increasingly granting GFG the social license to operate in the various communities. Reviews were undertaken and implemented to ensure the program was effective and on the appropriate track (Yankson, 2010). It is against this backdrop that this paper is dedicated to investigating the effectiveness of the SEED program in the stakeholder communities of Goldfields Damang. This paper will help address the company's view on sustainable mining practices vis-à-vis that of community members.

2.7 Conclusion

This chapter has detailed political ecology as a framework that can help understand the various issues faced by community members in mining communities. Development has been seen as an imperialist agenda promoted along the discourse of modernization. However, developmental policies that led to the adoption of neoliberal policies such as structural adjustment policies have had a massive impact in the mineral sector of Ghana. Some of the consequences of the SAP discussed in this chapter are the privatization of mining operations, changes in the laws regulating mining activities in Ghana and the influx of multinational mining companies which led to the displacement of local people engaged in mining activities. Also, sustainability and sustainable development as presented in this chapter focuses on the triple

bottom line-economic, environmental and social sustainability geared towards present and future generations. The next chapter will focus on discussing some mechanisms that have been adopted by mining companies and states to address sustainable development in resource development. As such, Impact and benefit agreements, EIA and social network analysis are presented.

CHAPTER THREE

Sustainable Development Frameworks

Introduction

This chapter presents literature on several sustainability frameworks and tools that have been designed to promote sustainable development in the mining industry. The focus is on discussing impact and benefit agreements, environmental impact assessment and social network analysis and how effective they have been as tools in addressing sustainable development.

3.1 Impact and Benefit Agreement (IBA)

Impact and Benefit Agreement (IBA) is a tool which seeks to promote resource development by specifically assisting the local environment, economy, culture and social life of communities (O'Reilly, 1999; Keith, 1995). As a regulatory mechanism, IBAs are tools that address huge impacts from mine developments by providing benefits to local communities impacted by mining activities. The primary goal of IBAs is to address the negative effects of mining activities on local communities and their environment while ensuring that local people derive direct benefits from the development of mineral resources. Examples are jobs, local purchases of goods and services, etc (Hitch, 2006). In light of this, IBAs open up opportunities for mining communities to benefit economically from natural resource development projects and to actively participate in the management, monitoring and mitigation of social, cultural, economic and environmental impacts (Hitch, 2006).

IBAs can also involve negotiations between extractive industries and community organizations without government interference. In the negotiation process for example aboriginal

groups may agree to limit the extent of their traditional rights and land titles by opening up lands for resource development. The extractive industry is responsible for ensuring fairness in terms of economic benefits and reducing negative effects on the environment (Hitch, 2006). In Canada, two issues of concerns are often addressed in the negotiations. The first is that aboriginals seek to overcome marginalization, strengthen regular economic and political sovereignty, and maintain control over resources such that benefits flow to mining communities affected by resource development. The mining companies on the other hand employ local labour and create a good working relationship with the communities throughout the resource development (Matthews, 2005; 2008). Among the benefits aboriginals stand to accrue from being signatories to IBAs are; recognition of aboriginal rights to resources, royalty type payment; employment and training opportunities; and community economic development with extra environmental and cultural preservation initiatives in place to mitigate the negatives effects of the resource development (Public Policy Forum, 2005; O’Faircheallaigh, 2006). Much of the connections in IBAs are established with aboriginal people based on consultations and support of both parties involved in the resource development scenario and this is clearly stated by Fidler and Hitch (2007:50) as:

Ideally, IBAs are instruments that can contribute to achieving a more sustainable mining development by ensuring proponents minimally infringe on aboriginal rights by engaging in the appropriate level of consultation and providing adequate benefits and compensation.

In cases where corporate social responsibilities, environmental assessment and crown consultations have been inefficient, IBAs have been used as a measure to make up for this through community benefits. For the most part, IBAs have been effective when there have been contentions over mineralized lands. Fidler and Mitch (2007: 59) state that “IBAs help identify and highlight contentious elements that may prove critical to planning a mine and offer guidance

to navigate an often politically-charged and financially-driven extractive climate”. Mining companies that have failed to offer improved economic benefits and a willingness to adhere to environmental and community concerns have not received the needed support from aboriginal communities (Hitch, 2006). Common provisions that are made in IBAs are presented in the table below:

Table 2. Provision in IBAs

Provision	Objective	Exemplary Clauses
Employment	Increase employment opportunities	Preferential hiring for local people Recruit and retain employees for long term work Flexible schedule to accommodate traditional activities such as hunters
Education and Training	Increase opportunities through education and training	Cross cultural training for both local and other employees Apprenticeship and scholarship programs Partnership with local schools and community colleges
Economic Development	Preferential contracting to aboriginal businesses to increase business development opportunities	Direct tendering to local communities Unbundling contracts into simpler smaller components
Socio-cultural support and communication structures	Support societal challenges, recognize and reaffirm aboriginal rights and historical background	Monitor social impacts with developed indicators Fund community projects and physical infrastructure Committee meeting to liaise and facilitate on-going communication
Environmental monitoring and protection	Ensure corporations comply with existing laws, regulations and incorporate additional environmental protection	Emphasis to give certain EA clauses particular attention Obligations regarding abandonment and reclamation Minimize activity in spiritually and culturally sacred areas such as archaeologically significant sites

Finance	Monetary settlements to compensate for surface/sub-surface development	Fixed cash payouts, variable cash payments and suspension payments Joint venture and development funds Payout structuring to meet community needs, i.e. not a lump sum
Commercial Terms	Ensure contract has terms to reflect long-term planning and enforcement	Dispute resolution Force majeure-to cater for emergencies Confidentiality

Source: Adapted from Hitch and Fidler (2007: 61)

Examples of IBAs that have been negotiated between mining companies and aboriginal communities in Canada include Tahera Diamond Corporations Jericho (2004), Diank (2000) and BHP diamonds Ekati (1998). It must be mentioned that IBAs are not all rosy as we expect and that they have strengths and weaknesses that have been discussed by (Ker, 2000, cited in Hitch, 2006: 66 and are presented in the table below:

Table 3. Strengths and weaknesses of IBAs

IBA Feature	Strengths	Weaknesses
Economic Vitality	Ability to deliver economic benefits to aboriginal communities	May contribute to heightened tensions between different community groups
Environmental Integrity	Provides basis for aboriginal community participation in environmental impacts review, monitoring and assessment (Environmental Stewardship)	Do not provide specific mechanisms/procedures for ensuring successful integration of traditional knowledge
Social and Cultural Wellbeing	IBAs raise important issues concerning appropriate roles and responsibilities for all actors for the monitoring and mitigation of social and cultural impacts	As currently structured, IBAs do not provide a strong basis for social and cultural impacts of resource development

Capacity building	To contribute to diversification in local economy (traditional basis). Local and regional committees provide for public, aboriginal and other stakeholder participation	Primarily concerned with providing opportunities for participation rather than positioning aboriginal people to maximize these opportunities
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Source: Adapted from Hitch (2006).

With respect to Ghana, IBAs have not been implemented by any mining company in Ghana. However, most of the features embedded in IBAs are addressed in companies' corporate social responsibilities. Examples are employment and education.

3.2 Environmental Impact Assessment (EIA)

Recognizing the impacts mining projects have had on communities, there was the need to address these concerns. In the United States, the National Environmental Policy Act was passed to serve as a guide for federal agencies whose actions had the potential to affect people, communities and the natural environment (Morgan, 2002). To ameliorate these impacts, agencies were required to submit statements of impacts to the public to show how impacts would be recognized and addressed (Noble, 2015). Environmental impact assessment as defined by the International Association for Impact Assessment and the UK institute of Environmental Assessment is “ the process of identifying, predicting, evaluating, and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made” (IAIA and IEA, cited in Noble, 2015: 2-3). Sheate (2009) contends that all environmental assessment tools, including environmental impact assessment, have sustainability as an underlying purpose.

As argued by Noble (2015), one of the key purposes of federal EIA in Canada as outlined in Canada Environmental Assessment Act (CEAA) 2012 is encouraging authorities to engage in activities that promote sustainable development. However, Gibson (2012) is of the view that sustainability principles have not been met in most traditional approaches to impact assessment systems including EIA. As such Gibson (2012) suggests eight core principles of sustainability focused assessments. These are long-term socio-ecological system integrity; livelihood sufficiency and opportunity for everyone; intra-generational equity; intergenerational equity; resource maintenance and efficiency; socio-ecological civility and democratic governance; precaution and adaptation; and immediate and long-term integration (cited in Noble, 2015: 13-14).

Environmental assessment (EA) in Ghana was preceded by the establishment of the Environmental Protection Council (EPC) in 1974, right after the UN Conference on human environment held in Stockholm, Sweden in 1972 (Appiah & Osman, 2014). The mandate of the EPC was in advising, coordinating, investigating and educating the public and companies on issues affecting the environment (Appiah & Osman, 2014). In March, 1998, the Government of Ghana decided to give more attention to environmental issues by incorporating them into the development agenda of the country and this led to the adoption of the National Environmental Action Plan (NEAP), implemented from 1991-2000. This plan was geared towards making Ghana's development more environmentally friendly and sustainable. Included in this plan was a framework to prioritize EIA and to further implement quality control through environmental assessments of all developmental investments likely to have an impact on the environment (Appiah & Osman, 2014).

Government effort in strengthening its position on environmental protection led to the passing of the Environmental Protection Act (Act, 490) in December 1994 to replace the EPC. This act made it obligatory for project proponents who are likely to generate environmental concerns to provide environmental impact statement and the Environmental Protection Agency (EPA) has the mandate to deny or permit a proponent EIS based on the its grading system (EPA-Ghana, 1996). To ensure that mining companies comply with environmental standards in their operations, a number of agencies have been established to regulate the activities of mining companies. These are: the Forestry Commission; Mineral Commission; Lands Commission; Water Resource Commission Inspectorate Commission and the Ghana Chamber of Mines. However, most of these agencies have failed to live up to expectations due to the inadequate institutional capacity, inefficient coordination and some weaknesses inherent in the EIA process such as the lack of transparency (Akabzaa & Darmani, 2001; Darko, 2012).

Most scholars (Noble, 2015; Ajaja, 2013; Tang et al., 2005) have dwelt on the need for greater public participation in the EIA process. For instance, Ajaja (2013) argues that for EIA to serve its purpose of delivering environmental and social benefits, a wider range of stakeholders particularly community members must be involved in the EIA process. Similarly, Tang et al., (2015) in their study on public participation in EIA in China and Taiwan concluded that better participation in EIA by local communities stands to improve project design, environmental adherence and social acceptability.

In Ghana, several questions have been raised with regards to public participation in EIA processes. The methods in particular have been questioned (Antwi-Bosiako, 2003). The EIA proposals are notified and advertised in the national press and district assembly offices for the public to show interest and comment on the project. Interestingly, these medium are only

accessible to a few community members who have the privilege and the means to bear the cost of travelling to these places or buying newspapers to read (Antwi-Bosiako, 2003). Also reports from the environmental auditing committee are treated confidential documents which make it difficult for community members to have access to information to promote and ensure environmental compliance, while mining companies on the other hand get to have access to this information (Ogola, 2007). It is therefore imperative that various stakeholders are involved in the EIA processes to bring about trust between mining companies, governments and community members. Due to the neglect of socio-economic impacts on community members by large scale mining companies, public involvement and participation is a key requirement at all stages of EIA to ensure society's needs are factored into the environmental impact statement (Oxfam, 2008; Nadeem & Fischer, 2011).

In recent times, the Ghana Environmental Protection Agency initiated the 'Akoben' program in 2010. 'Akoben' means vigilance and wariness. This program is based on environmental performance rating and disclosure for mining and manufacturing companies in Ghana. The environmental performance of companies are assessed on a five colour rating scheme from gold, blue, green, orange and red. Ratings are disclosed to the public and media to strengthen public awareness and participation. This rating serves as a monitoring program to make companies follow environmental regulation (Sekyi, 2011; Environmental protection agency, 2016). The table below is a sample of the 'Akoben' program rating system.

Table 4. Akoben rating system

Rating Level	Performance	Implications
Gold	Excellent	Committed to social performance
Green	Very good	Applies best practices

Blue	Good	In compliance
Orange	Unsatisfactory	Not in compliance
Red	Poor	Serious risks

Source: Sekyi, 2011

With the institutionalization of this program, reports have been released according to the rating system. In 2012, about sixteen companies including Abosso Goldfields Limited-Damang, Adamus Resources Limited-Teleku Bokazo, AngloGold Ashanti Limited-Iduapriem, Chirano Gold Mines Limited-Chirano, Ghana Bauxite Company Limited-Awaso, Ghana Manganese Limited-Nsuta, Newmont Ghana Gold Limited-Kenyasi and Golden Star (Wassa) Limited-Akyempim were assessed based on the Akoben rating scheme. Most companies were rated excellent in terms of corporate social responsibilities but performed satisfactory in their environmental practices (Sekyi, 2011; Environmental protection agency, 2016).

3.3 Social Network Analysis

Social networks have been regarded by most scholars as an efficient resource governance tool that has helped in dealing with natural resource problems and dilemmas. Studies have shown that where formal institutions responsible for managing natural resources have failed, social networks have worked efficiently to enforce environmental regulations (see for instance, Scholz & Wang, 2006). To address problems of natural resource management, social network analysis moves beyond a makeup of actors to delve into relations between actors, and where they emerge and are positioned within the network to form the overall network pattern (Scott, 2000).

Organ and Crona (2009) understand that social networks promote collaboration between various actors to coordinate management efforts. Tompkins and Adger (2004) contend that

when stakeholders and actors create social networks between them, communication develop the capacity to withstand environmental change. Most social networks are made up of different actors who collaborate in a defined management area to address the management of common pool resources (Bodin et al., 2006). Assessing how networks can be strengthened, Bodin et al. (2006) dwell on density as a structure for natural resource management. They argue that high density may have an impact on trust between individuals and groups which serves to increase social control. Thus, the higher the network density (thus number of existing ties divided by the number of possible ties), the more helpful it is for collective action. High density in a more productive sense helps to reduce the risk and costs that are associated with collaboration. This also means designing and fostering compliance with mutual norms in regards to what can be accepted in matters arising out of natural resource use and extraction (Coleman, 1990; Cohen et al., 2001).

In order for management of resources to benefit from its usage, the various actors involved must be willing to agree on certain modalities. Such modalities could be common rules and practices, coordinating usage, engaging in conflict resolution, negotiating various tradeoffs, sharing information and building common knowledge (Folke et al., 2005 cited in Orjan & Crona, 2009). Various scholars have argued that social networks built on strong ties between actors tend to offer emotional support when emergency arise; guarantees a high level of influence between actors; views of actors tend to be related; communication of difficult task is made easier, and there is a high tendency for actors to trust each other (see Crona & Bodin, 2006; Cross & Parker, 2004). On the other hand, actors within a network do not always exhibit stronger ties. Weaker ties can also exist between actors in a network wherein the extent of information flow between actors is weak. But this weaker ties tends to offer actors within the network diverse information

and resources. As such weak ties in resource management strengthen networks and make actors within the network adaptable to change. However, weaker ties may not be beneficial in the long term as the lack of information between networks can break up the network (Newman & Dale, 2004).

Ideally, in network analysis, positions of actors within the network play an important role to making the network survive. A good example is centrality which is widely discussed in network analysis. Prell et al. (2009) in discussing stakeholder and social network analysis in natural resource management argue that centrality may come in different forms but less attention have been paid to their impacts on natural resource management. They draw distinctions between two kinds of centrality that are likely to exist in a network. These are degree centrality and betweenness centrality. Degree centrality is based on the number of actors within a network connected to a stakeholder. Degree centrality does not always work to the benefit of stakeholders in that stakeholders try to connect with a lot of actors within a network which demands lots of energy. Such ties mostly turn out to be weak. Betweenness centrality discusses the frequency of actors leaning towards other actors in a network that are disconnected from each other (Prell et al., 2009). Bodin et al. (2006) contend that when there is a high level of betweenness centrality between stakeholders, the benefit in the long term help in effective long-term resource management decision making. This is because actors within the network play intermediary roles to bring everyone on board, thus, the actors with diverse and new ideas to the network making the network stronger.

Coping strategies put forward for the management of natural resources can be very complex but as Carlsson and Sandstrom (2008) in discussing network governance of the commons observed, effective management of natural resources will require not just institutional

arrangements and its associated management systems but actors from different areas of society must be fused in management systems. This network can be both private and public actors. Good performance according to Sandstrom and Carlson (2008) do not exist in the creation of management networks but how the networks are formed and structured can contribute to enhancing the performance of networks. Applying social network to Ghana, networks exist between community members and the mining companies but the norm has always been that only the chiefs and some unit committee members are involved in this network. However, this network has not been effective due to the unequal power relationship that exists between mining companies and the residents. As observed by Thomson and Joyce (2000), the extreme power imbalance which plays in the favour of companies either than community members impede company-community relationship. This is evident in a study by Aubynn (2003) on community-company relationship in the Wassawest district of Ghana. As expected, one of the conclusions of this study was that power was concentrated in mining companies.

3.4 Conclusion

The central message carried by this chapter is the importance of collaboration. As such, IBAs have been discussed as alternative means to ensure communities and mining companies benefit from resource development. In Canada, IBAs have been adopted mostly in the North Western areas where mining activities are rampant but this is yet to be implemented in Ghana. EIA which has sustainability as its prime focus has been effective to some extent but not all the time. The problems inherent in EIA are inadequate public participation in the process. In Ghana, the EPA which is mandated to carry out EIA lacks the capacity to do that because they are constrained by the small number of staff. Social network analysis was explained to lay emphasis on the need for collaboration between various stakeholders engaged in resource management. It

is when these tools are promoted effectively that mines and communities may be able to create a win-win situation. The next chapter discusses the methodology for this study, the methods used and the data collection tools.

CHAPTER FOUR

Methodology and limitations of the study

Introduction

This chapter presents the methodology for the study. It is divided into four sections. The first section is dedicated to describing methodology and stating my ontological and epistemological positions for this study. The second section explains qualitative methods. The next section focuses on the data collection tools (interviews and documents) for this research and explains them in details. The following section also addresses questions of fieldwork positionality and the last section is focused on the limitation of the study.

4.1 Methodology

Methodology serves as an aid in making decisions on what questions to ask, how to approach them, what data to collect, and how to collect the data, conduct analysis and draw conclusions. Methods are the techniques for gathering evidence and methodology justifies the methods (Harvin 1987, cited in Carter, 2007). In explaining methodology, the researcher tries to describe, explain and justify the methods used and not the methods themselves (Kaplan, 1964 cited in Carter & Little, 2007). More specifically, methodology establishes which kind of relationship exists between the researcher's observation, theory, hypothesis and research methods. As well, all research needs a foundation for its inquiry, which is provided by world views and scientific paradigms. Worldviews imply how we view and, thus, think about research and go about conducting it (Gelo et al., 2008). Establishing my ontological and epistemological position is essential because what a researcher knows and how that knowledge is acquired, influences and is influenced by his or her methodological decisions (Grix, 2002; Carter, 2007). If ontology can be

said to mean “what the world out there is like or must be like in order for us to know it” (Woodward et al, 2009: 396) then epistemology can also be understood as the study of the nature of knowledge and justification (Schmidt, 2001 cited in Carter 2007; Carter & Axtell, 2008). For the purpose of this study, I dwell on qualitative research methods to explore sustainability in the mining industry. The research method I employed in this study is grounded within the interpretivist constructivist perspective. The study employed this perspective because human beings construct reality due to their ability to make sense of their own world (Mutch, 2005).

4.2 Qualitative Research Methods

The assumption underlying qualitative research is that to understand the experience of people in the world or their communities, the researcher should seek the viewpoints of those involved in the situation of interest. Qualitative researchers continue to espouse the importance of using qualitative research in understanding the complex phenomena of the world. This is inherent in the idea that there is no single reality out there and that qualitative researchers ought to examine issues with different lenses (Krauss, 2005). In like manner, Patton (2002) argues that dynamics in the world require researchers to immerse themselves in research during or after changes in phenomena occur. In this regard, I focused on the case study research method for this study.

A case study method is a “research approach that is used to generate an in-depth, multi-faceted understanding of a complex issue in its real-life context” (Crowe et al., 2011: 1). This case study allowed me to make use of two data collection tools for the study; capture and analyze the lived experiences of people; and it helped narrow down specific research topics (Hardwick,

2009). I complemented this method with various data collection tools such as interviews and documents analysis.

4.3 Data Collection

I employed in-depth interviews as the primary source of data collection and documentary evidence as the secondary source of data collection. In the section that follows, I will discuss the choice of interviews, why and how I selected the study participants and the process of data collection. I will also discuss the rationale behind employing documents as the secondary method to complement the interviews.

4.3.1 Interviews

Interviews are ways of generating information from participants which researchers might not be able to find from documents as they reveal peoples perspectives in a detailed fashion (Dunn, 2000). Interviews provide insights into events and people's experiences, and opinions, which are influenced not only by structural factors but also by their class, ethnicity, age and sexuality (Dunn, 2000 cited in Aubynn, 2003). Again, interviews provide a platform for researchers to learn more about people's experiences, feelings and hopes through interaction (Dunn, 2000). For instance, my interviews with community members in my study area gave me an insight of their experiences with the mining company and their expectations regarding the mining company's future operations. I must acknowledge that much of the information I was interested in was only available at the community level by interviewing local residents. Furthermore, interviews are helpful in that they are useful for investigating personal, sensitive and confidential issues which informants might find it difficult to disclose in a group (Longhurst, 2009).

Having discussed the advantages of interviewing, it is important to stress that it has some disadvantages as well. Some of the disadvantages are that interviews can be time consuming especially during the transcription and analysis stage (Longhurst, 2009).

4.3.2 Documentary Evidence

The secondary method that was employed in this study was document analysis. The use of documents in this study is important because it provides a useful way to gain background understanding and insight into a researcher's particular area of enquiry (Mogalakwe, 2006). This study employed both public and private documents. Private documents may be institutional or personal, public documents on the other hand are usually documents which are meant for public consumption (*ibid*). These documents may include government publications such as Acts of Parliament, policy statements, statistical bulletin, government and mining company's websites, census reports and ministerial or departmental reports. However, not all public documents are meant for public consumption. In considering private documents for my research, I included documents from reputable organizations and individuals such as civil society organizations, mining companies, and peer reviewed articles and books on mining and sustainability

4.3.4 Participant Selection and Rationale

To satisfy the goal of this study as noted above, Goldfields Ghana Limited (Damang) was selected as a case study. This is due to the mining company's vision of being the global leader among gold mining companies in sustainable mining practices (Goldfields, 2016). Twenty-two (22) interviews with participants were selected for this study out of which 20 were drawn mainly from four catchment communities in the mining area. These catchment communities are: Damang, Koduakrom, Subri, and Huni-Valley. I selected these communities due to their

closeness to the mining company's operations, the large size of the communities as compared to other satellite communities in the district and the benefits residents have derived from the mining company. For instance, clinics, pipe-borne water, school blocks and seedlings have been provided to most people in these communities (Goldfields Ghana, 2012). I interviewed six people from Damang and Koduakrom, three from Subri, and five from Huni-Valley. The differing share of the interviews in these communities was purposely based on the size of the community. Thus, larger communities stand to have more benefits and impacts of the mine operations. For instance, Damang is a resettled community and it was important to speak to more people to address the issues in pre-mining times and current times. Also, Huni-Valley is one of the earlier communities where the mines began operation. Two additional interviews were conducted with the Community Affairs Manager of Goldfields Damang and a staff member of the Ghana Chamber of Mines. I selected all interviewees based on the following criteria: I wanted to include resettled community members, opinion leaders, women who have benefited from Goldfields SEED program, beneficiaries of the company's scholarship and bursaries, residents who are unemployed and residents who have lost their lands to mining induced displacements. This range of potential interviewees helped satisfy my research objectives. Interviewing the community affairs manager of the mining company was very necessary because the Community Affairs Department served as the link between the mining company and the community. Also, the interview I conducted at the Chamber of Mines was important because the Chamber oversees all activities of mining companies in Ghana.

Out of these participants, I made sure I had a diverse pool of people who could speak to different issues with regards to the activities of the company. The choice of purposive sampling as a technique enabled me to choose my participants based on the relevance of the

issues under study (Silverman, 2005). I also made use of snowballing⁸. For instance, in the Huni-Valley and Koduakrom communities, the opinion leaders I interviewed led me to other participants who could speak to the issues I was investigating. I interviewed 8 women in all, two from every community I chose for the study. The rationale was to understand women experiences with the mining activities in their communities and to bring a gendered aspect to this research. Furthermore, I paid attention to farmers in these communities because most of them have had their farms affected by the activities of the mining company and then been resettled.

I interviewed opinion leaders such as Assembly members, unit committee members and chiefs in these communities. Three main reasons underlie the choice of opinion leaders for the interviews. Opinion leaders are the first point of call before mining companies begin to operate. These people are involved in the negotiation and resettlement of land owners. Secondly, opinion leaders also serve as links between the communities and mining companies and are responsible for ensuring that the community benefit from the mining company. Thirdly, during my fieldwork, I realized that all benefits such as scholarships and jobs were made to the communities through opinion leaders and therefore, they serve to carry concerns from community members to the mining company and vice-versa. In addition, I interviewed people in high schools to ascertain their views on activities of the mining company. This strategy was in line with my research focus of examining sustainable mining practices. The future of these young men and women will be dependent on whether or not activities of the mining company were sustainable. Lastly, I interviewed local people who are employed by the mining company. This group was necessary because research has shown that employment is one of the main issues

⁸ Snowballing is a method of expanding the sample of research participants by asking one informant or participant to recommend others for interviewing (Crabtree & Miller, 1992).

which destroy the relationship between mining companies and their communities (Downing et al., 2002).

4.4 Data Analysis

Fieldwork interviews were transcribed from my recording devices. I translated this information from the local language (Twi) since most of my participants had little or no education and did not speak English well. In transcribing the interviews, I read over my interview questions for clearer and better transcription. I also paid attention to my research questions and objectives to figure out which of the participant's responses were consistent with the questions asked. After this process, I drew themes from the interviews which formed the basis of my analysis. These themes were based on my research objectives and my discussions evolved around these themes.

4.5 Fieldwork and Reflexivity

The ability of a researcher to be very reflexive during fieldwork is an issue that cannot be glossed over. Reflexivity is commonly viewed as the process of continual dialogue and critical re-evaluation of the researcher's positionality. It involves active acknowledgement and a direct recognition that one's own positions may affect the research process and outcome (Stronach et al., 2007). Some scholars have outlined some of the positionality of researchers which may affect their work. These are age, gender, affiliation, immigration status, personal experiences, linguistics tradition, beliefs, biases, preferences, theoretical and ideological stance and emotional responses from participants (Hamzer & Oliver, 2010; Padgett, 2008).

My positionality in the field in some instances played to my benefit and in other instances, it did not have any impact on my fieldwork. The first thing I address is the status I

occupied during the fieldwork. My Ghanaian background helped in gaining much information from participants because they recognized me as one of them. Language also played to my favour as I was able to interact with my participants in their local language. My status as a graduate student in a Canadian University really helped me to gather a lot of information and gain access to participants. Most of my participants saw me in part as an outsider they could trust to help address some of the concerns they had with the activities of the company. The challenge with my status was that most of the youth who had a degree and worked in the mining company constantly kept asking me how I could help them gain admission to do a masters degree in Canada. Other participants also sometimes challenged my status as a student and my stance as a researcher because they felt I was working for the company. On these occasions, I showed them my student identity card and my consent form worked to allay the mistrust of people.

Also, my personal experience of living in a mining community full of small scale miners in 2007 and having observed the impacts of their activities on community members constantly came to mind during my interviews. I had to remind myself over and over that the views of my participants were the most important and not how I viewed the activities of the mining company. My position as an insider due to my fluency in the local language played a huge role in the field. This position helped me interpret the interview questions to the research participants very well and I understood them in every sense. The problem I had was the fact that, I was sometimes emotional upon hearing some of the concerns of my participants. Instances like this affected me in so many different ways but I devised a strategy of excusing myself from the participants and asking to use the washroom when I was affected by their accounts.

My age played a role in the fieldwork. Most of my participants saw me as a young man who had good intentions for them. My participants were willing to help me get all the

information I needed. On one occasion, I had a participant who prayed for me asking God to guide me to pursue the course I have chosen. With regards to gaining access to the mining company, my status played a huge role. Having had my introduction letter endorsed from the head of the Ghana Chamber of Mines, the mining company saw me as a person with good networks and network prompted them to treat me nicely when I arrived.

4.6 Limitations of the study

As with every study, this study also has limitations. The first limitation of this study was access to government officials for interviews. I tried to interview officials from the Mineral Commission and the EPA but all efforts proved unfruitful. But this limitation did not affect the study significantly because I was able to speak to officials at the Ghana Chamber of Mines and I complemented the interview with the environmental office of the mining company, and EPA regulations for mining companies.

Secondly, the scope of the study was limited due to time constraints and budget. I was not able to speak to any NGO in the area and it would have been great if I did. The reason was that most of the NGOs were busy preparing their end of year reports in anticipation for Christmas. Also, I could not interview many people in various communities due to time constraints and budget. I was able to interview residents from four communities out of nine communities but I resolved this by selecting bigger communities that have been impacted by the mining activities and other resettled communities too. I believe 22 interviews are adequate for this exploratory study.

Thirdly, transportation was one of the limitations I encountered in the field. Travelling from Tarkwa to the Damang community was by feeder roads which are very dusty. Few cars ply

this road and sometimes, I had to charter a taxi to take me to the various communities I used for the study. I was fortunate to get the Community Affairs department of the company to drive me around for my interviews but I do not believe it affected the result of the study.

Lastly, the educational background of my respondents meant that I had to translate every question into the local language. With the exception of three community members who could speak English, all the other interviews with community members were in Twi. This language barrier made me spend much time in transcribing the interviews for this study.

CHAPTER FIVE

Analysis and discussion of results

5.1 Introduction

This section is divided into two parts. The first part discusses the positive impacts of the mines in the stakeholder communities with views from the company officials and community members; and the second section examines whether or not community members feel they have benefited from the mines. The study combine texts from the Ghana Chamber of Mines, Goldfields Ghana Limited, other scholarly research, fieldwork interviews, online news and reports as the base for the analysis of the study around the triple-bottom line of sustainable development-economic, ecological and social development.

5.1.1 Employment

Even though Akabza and Darimani (2001) argue that few employment opportunities exist in the mining sector due to the capital intensive technologies employed in surface mining, the industry still makes room for labour requirements. For instance, according to the Ghana Chamber of Mines, the mining industry employed about 20,000 Ghanaians in 2010, and this figure increased to 21,103 workers in 2013. Goldfields Damang speaks of offering employment to most community members (GFG, 2012). Beyond employment, residents who have no job have benefited from the sustainable livelihood project initiated by the company. This situation was cited by the Community Affairs Manager as he states:

We have instituted the youth apprenticeship program in stakeholder communities through the GFG foundation to train youth for both formal and informal employment. At the

Damang mine, we have trained 38 beneficiaries as of 2012 from selected communities to operate heavy duty equipments such as excavators, dump trucks, dozers and graders and we still continue to train more and absorb into the company. With regards to women, since mining is a male dominated activity due to the operation of heavy equipments, we mostly employ women as security, account clerks and community affairs department can boast of having two women (Mining company official, 22nd December, 2015)

However, in speaking to the community members, some agreed to the fact that the mines have helped by offering employment opportunities. A community member in Koduakrom corroborated the story of the community affairs manager as he states;

They are doing their best when it comes to employment. They announce to us when there are vacancies in the company. They send us forms through our chiefs and community leaders to fill for jobs. When you pass an interview, they will pick you and I can speak to one person, who was recently employed in the mines (Resident of Koduakrom, 17th December, 2015)

Another resident supported this view:

With employment, our days were a hectic one because our parents had to take you all the way to Kumasi to learn a trade before you can have any income. Now, this burden has lessened because every year, the company send us our community employment forms for people to fill and this has helped people to gain employment in the mines (Resident of Subri, 18th December, 2015)

5.1.2 Agriculture livelihood empowerment

One of the likely effects of mining induced displacement is the tendency of resettlers to lose their lands for farming activities thereby depriving them of the existence of their livelihood (Terminski, 2012). But in the case of Goldfields Damang, the company boasts of many achievements in their stakeholder communities. Agriculture projects have been instituted through the SEED program for community members. Vegetable producers have been provided

with fertilizers, water cans, herbicides, wellington boots and cutlasses to aid in their farming activities. Cassava growing initiative was underway at Bompieso, another stakeholder community (GFG, 2012). However, speaking to an official at the company, this was what he had to say about the company's role in strengthening agriculture activities in their communities:

There are social interventions to cushion community members whether affected by compensations or not to sustain them, but the practicality of it is that not all of them worked. For example, our agriculture intervention of giving out seedlings, mostly palm nut to resettled members who find alternative lands to farm has been beneficial. Sometimes, we speak to Chiefs who are mostly landowners to give out lands to resettled members if they have alternative lands available. Such people are also supported with seedlings to start agriculture. In the recently held farmer's day celebration, a beneficiary of our livestock program who is physically challenged won the best livestock farmer award in the district. We gave him only four sheep and he has hundreds of them now (Mining company official, 22nd December, 2015)

To ascertain the truth in the view of the company official, I spoke to community members on this issue. A respondent at Koduakrom had this to say:

A lot of jobs has been created, they brought livestock such as pig and goats for us to rear for a living and we still have some available. They also gave us palm nut seeds and I get a lot of profit from that when sold and this gives me money to be able to cater for my wife and kids (Resident of Koduakrom, 17th December, 2015)

Another respondent in Subri had this to say:

The mining company brought us palm nut seeds to grow for a living in order to bring down hardships in the community. They also gave us livestock but that could not be sustained as most of them died from poor feed. They taught our women how to make batik and soap which has given a lot of them the needed skills to do their own business (Opinion leader of Subri, 18th December, 2015).

5.1.3 Education

Goldfields Damang believes one of the ways to help community members is through education. Goldfields Damang have constructed five school blocks, an early childhood development centre at Huni-Valley and a primary and junior high school blocks at Bompieso, Subri and Koduakrom. The Nana Amoakwa Model school has also been constructed in Damang and the laboratory of the school was renovated in 2012 (GFG, 2012). Teacher's motivation has been taken seriously by Goldfields Ghana (GFG) foundation and they continue to add 50% of salary as top up to teachers at Nana Amoakwa model school. The foundation also grants scholarships and bursaries to students in their stakeholder communities. For instance in 2012, thirty four community members at various stages of education benefited from scholarships and thirty more students benefited from bursaries to cater for half of their tuition fees (GFG, 2012).

An official of the company had this to say:

Our company's CSR policies contain most of the benefits for community members. Community members enjoy scholarships and bursaries from us. In terms of being worse off after compensation and your ward is on our scholarship, your ward is secured. We recently met our scholarship beneficiaries and I tell you, some of them are doctors, nurses, military men etc but there are few who are unemployed but this arises out of the general graduate unemployment situation in Ghana. Currently, we have about three hundred and ninety people as beneficiaries of our scholarship. Some have graduated and others are still in school (Mining company official, 23rd, December, 2015).

Community members from Huni-Valley, Subri, Koduakrom and Damang all shared the view of the company official. For instance, the Assembly member at Koduakrom had this to say:

The mine is helping with the future of the youth in this community. I am saying this because of the scholarship they grant to students from high school to the tertiary level. Just last week, a homecoming was organized for the beneficiaries of these scholarships,

some are even doctors...so I see a bright future for our generations and the generations to come if this scholarship continues (Opinion leader of Koduakrom, 21st December, 2015)

5.1.4 Health, water and sanitation

Goldfields Damang argues that through their interventions, the health of their stakeholder communities has been improved. The company in collaboration with the Ghana Health Service has built two 2 semi-detached nurses' quarters at the Bompieso clinic. Clinics have also been built at Damang with the necessary beds. Programs that serve to improve the health of community members are aired on radio educate the general public on diseases such as HIV/AIDS. From time to time, the company offers medical outreach programs in communities such as Koduakrom, Amoanda and Subri to screen members on common health issues like high blood pressure, glucose levels and asthma (GFG, 2012). The company official I interviewed had this to say particularly in regards to women:

The only health program we have for women is fistula awareness which is very common in our stakeholder communities. Many women of about hundred show up for this seminar. In our last seminar program, four women came up to be suffering from this and we assisted them to get treatment. Every year, we talk to the queen mothers to help us identify one reproductive health issue of women in our communities and we fund the training and treatment for them (Mining company official, 23rd December, 2015).

One community member at Huni-Valley attested to this by saying:

They met with us recently on what they can do for our health. They promised to bring us drugs every year and screen people of various diseases. These are free services offered to us (Resident of Huni-Valley, 5th January, 2016)

On water and sanitation, the GFG foundation has delivered a machine operated borehole and pumps to residents of Damang. An additional water pump for residents in Kyekyewere has been provided with another water tank at Bompieso. Another project has been the erection of a

merchandise borehole to residents of the Subri area. In Abosso-Aposso, a ten seater toilet facility has been provided and another Kumasi Ventilated Improved Pit (KVIP) toilet facility was provided for the Abosso Anglican School. Some community members have been trained to manage the water and sanitation services. Community members expressed joy about some of these projects:

They have helped us with water and we no longer drink from the river. Women no longer travel long distances to fetch water anymore. We have KVIP and pipe-borne water but we need more because too much meat does not spoil soup- to wit, too many of these would not be bad (Resident of Subri, 18th December, 2015)

5. 2 Community members assessment of the impacts of mining

Most of the problems community members face related to gold mining result from mining induced displacement and resettlement.

5.2.1 Mining Induced displacement and Resettlement

According to Downing (2002), development-induced displacements and resettlement is regarded as the second largest category of displacement globally after disaster induced displacement. Cernea (2000) notes that about 15 million people have been displaced through large development projects. About 5% of development-induced displacements have been caused through mining activities (Terminski, 2012). A 2011 World Bank document states:

Bank experience indicates that voluntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social and environmental risks: procedure systems are dismantled; people face impoverishment when their productive assets or income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources greater;

community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost (World Bank, 2011, cited in Terminski, 2012).

The territorial expansion of mining areas has also been observed by Terminski as a source of development induced displacement particularly through the growing demand for resources or expansion of existing ones. In support of this, Lawson and Bentil (2014) observed that the first phase of the Newmont Ahafo South mine project led to the physical and economic displacement of 823 household that is the equivalent of 5,185 persons. This appropriation of land reduces the land available for local people to practice farming which threatens their livelihoods.

A study by Aubynn (2003) shows that most residents of resettled communities felt government did not consult community members during the negotiation of leased lands but only listened to concerns from community members after the land has been leased. Local residents through land displacements have lost their physical and non-physical assets, cultural ties with the environment and sometimes, break-up of family ties (Ocran, 2010). Similarly, “where mining induced displacement and resettlement exist, resettlement effects have been recorded in the form of loss of physical and non-physical assets, including homes, communities, productive lands, income earning assets and sources, subsistence, resources, cultural ties, social structures, networks and ties, cultural identity and mutual help mechanisms” (Downing, 2002: 3). This can also lead to marginalization in most circumstances and may lead to self esteem issues when the displaced feels like an outsider in host communities (Downing, 2002). It emerged from my interviews that mining induced displacement has been detrimental in the lives of community members. A woman expressed her sentiments by saying:

My dad used to have a lot of land when we were in our old town. When the mines came to our community, he was the first point of call. You know, when a company like mines comes here, they should meet the farmers and speak to know, ask them what they need before they take their land from them. In our case, nothing of that sort was done. All we saw one day was bulldozers on our lands clearing our crops. This really affected my mum and till date she has not been the same (Resident of Damang, 4th January, 2016).

The refusal of the mines to pay for our lands and failure to do as they promised has really affected us a lot. Everybody in this village still has some hatred for the mines and we live in pain every day. Now for me, I will always tell this history to my children because we have and still faced hardships. It is only now that people are able to go to school unlike first when our properties were destroyed (Resident of Damang, 4th January, 2016).

Terminski (2012) argues that the implications of displacements can be severe especially when it results in landlessness, unemployment, a decrease in surface area of farmlands and community resources such as forests, rivers, and pastures, water, soil and air contamination, hindering and even halting current economic activity, health problems affecting mostly women and children, forced migration of nearby inhabitants and their pauperization in the new place of residence, social disintegration and negative cultural changes. As reported by Wassa Association of Communities Affected by Mining (2016), much discussion on mining in Ghana has been centered on revenues with little mention of environmental pollution, human rights abuses and potential lost of livelihoods (Peacefmonline, 2016)

5.2.3 Land Degradation

Most mineral extraction in Ghana is carried out on a surface level. According to the World Rainforest Movement (2004), surface mining poses lots of threats to Ghana's forest resources as it threatens the biodiversity of the country's tropical rainforest. This degradation of large tracts of lands constitutes a major source of threat to agriculture and livelihoods in

communities affected by mining (Awudi, 2002). Surface mining removes the vegetation and soil and interrupts ecosystem service flows sometimes permanent loss of farmland. Surface mining also forces people to relocate, and farmers to look for other alternative means of survival (Kumah, 2006). Views expressed by community members are presented below:

We have lost our lands to the mines. This community used to be a farming community. Sometimes they will tell you they have identified gold on your land and they will give you money and start working on your land. All our lands have been destroyed so it is very difficult to get foodstuffs here, even cassava because people are no longer farming due to the impact the mines had on them (Resident of Damang, 5th January, 2016).

Another community member supported this view:

The mines have affected us so much. People's cocoa farms have been destroyed and they never received any compensation...some people have even died. Our cassava does not grow any longer because the lands have been destroyed. Even when you manage to get some cassava, it is too bad that you cannot even preserve some (Resident of Damang, 5th January, 2016)

Another community member expressed the same sentiment:

They destroyed my farm to put their waste over there. They only pay for the crop and not the land. My cocoa farm has been destroyed and they only pay some small money for it which cannot do anything. If I still had the cocoa, I would have benefited from it every year (Resident of Damang, 6th January, 2016).

Another resident in support of the above views had this to say:

Formerly, we could grow and eat crops from our farms. These days, when you grow kontomire, it always has some black spot on it and we conclude that it is due to the mining activity in our community which is making our lands go bad (Resident of Subri, 18th December, 2015)

According to the Associate Executive Director of Wassa Association of Communities Affected by Mining, the legal framework of Ghana's mining operation leaves no room for 'no go zones' for mining and this has led to mining companies seeking concessions in forest reserves (Ghana web, 2016).

5.2.4 Compensation

Principles governing land compensation are spelt out in Ghana's Minerals and Mining Act 2006, (Act, 703). The Mineral and Mining Act, 2006 (Act 703), section 74(1) outlines how compensations should be paid. These are: the deprivation of the use or a particular use of the natural surface of the land or part of the land; loss of or damage to immovable properties; in the case of land under cultivation, loss of earnings or sustenance suffered by the owner or lawful occupier, having due regard to the nature of their interest in the land; loss of expected income, depending on the nature of crops on the land and their life expectancy (cited in Kidido et al., 2015). Under such circumstances, the owner or lawful occupier of the land must be compensated by the holder of the mineral right. Section 73(1) of the Mineral and Mining Act, 2006 (Act 703) states that: "the owner or lawful occupier of any land subject to a mineral right is entitled to and may claim from the holder of the mineral right compensation for the disturbance of the rights of the owner". The case of the study area is not unique to issues of compensation. A resident had this to say:

Many people have lost greatly from the mines, when they find gold on your farm, they resettle you by paying compensation. If you compare that to the cocoa farm they destroyed, the compensation is not enough. I know some people whose farm were affected and compensated but are not struggling to make a living these days (Resident of Huni-Valley, 6th January, 2016).

Other sentiments were expressed by community members:

The mines have taken peoples land without any better compensation. Up till now, some farmers have not received their compensation and are still in litigation with the mining company. We expected them to build better houses for us, value your cocoa farm and pay you accordingly. They did not do any of that and now, we do not have any place to farm (Resident of Damang, 23rd, December, 2015)

After the mines took over my dad's land, he was not compensated. My dad had to sell his maize and rice machines to be able to take the company to court for failure to pay him what is due him. Fortunately for us, my dad won the court case and some money was paid to him. Even till date, the mines have not paid for the value of the land. The compensation is not nice at all. The only activity here is farming and this is our future so when you destroy all these properties without giving us anything, it is bad. The response to inadequate compensation was for the youth to engage in galamsey to cater for themselves (Resident of Damang, 4th December, 2015).

A study by Kidido et al. (2015: 19) to assess the rightful recipients of mining compensation for land use deprivation in Ghana revealed that the “major challenge of compensation revolved around which stakeholders were rightfully entitled to receive compensation for the deprivation of the use of land”. This arises because no legislative instrument spells out clearly the recipient of compensation under the various possible heads of claims. Although Larbi et al., (2004) assert that land ownership in Ghana has been classified in three forms: state lands, vested land and customary land-there still remain contestations on ownership. Some scholars (Suglo, 1999; McMahon & Strongman, 1999) note that compensation paid to farmers whose land have been affected by mining companies should be realistic but due to the inexperience and lack of knowledge in negotiations, negotiations have end up favouring mining companies (cited in Aubynn, 2003). Most of the time, community members do complain

about receiving less compensation packages which is lower than the value of their land structures and did not compensate for the loss of livelihood (Ghana Chamber of Mines, 2008). Disputes continue to occur around the ‘deprivation of use’ compensation farmers receive from mature, high yielding trees because this is yet to be defined in the Mineral and Mining Act 2006.

5.2.5 Health, Water Quality, Air Pollution and Noise Pollution

Sediments and suspended solids as a result of tailings have been known to cause lots of disturbances to water bodies in mining communities. Large scale mining companies have through their activities affected water quality and accessibilities in mining communities. For instance, Armah et al. (2010) argues that activities such as rivers divergence, dams building, groundwater lowering, cyanide spillages and mercury pollution have all been observed to affect the quality of water in mining areas. Obiri et al. (2006) also noticed that between 1990 and 2004, about fourteen cyanide spillages occurred in mining areas including Konongo, Bogoso, and Teberebe. Again, Singh et al. (2007) states that there was another cyanide spillage from the tailings dam of Bogoso Golden Star Limited (BGL) into the river ‘Aprepie’ which also flows into rivers such as ‘Egya Nsiah’, ‘Bemanyah’, ‘Manse’ and ‘Ankobra’. Similarly, Kortatsi (2007) also observes that in mining communities such as Odumase and Teberebe, companies have polluted the surface water (rivers and streams) which serves as the main source of water for the community rendering it unsafe for drinking. Ghana’s Commission on Human Rights and Administrative Justice report released in 2008 also revealed that the amount of silica in the Teberebe borehole water was higher than the levels allowed by the World Health Organization (cited in Asamoah et al., 2013). The spillage of silica in water bodies happen because the Mineral and Mining Act, 2006 is silent on provisions that address cyanide spillages and chemical

pollution of water bodies in Ghana (Ghanaweb.com, 2005). Community members commented on water quality:

It is what they tell us. Sometime ago, we challenged the mining company on our water issue and it resulted in so much quarrel. They came around to advise us not to be drinking from our rivers because the cyanide they use pollutes our rivers (Opinion leader of Damang, 24th December, 2015)

The blasting contains some chemicals that we cannot see it and because we are in a dusty environment too. Sometimes if you got to communities where there are no mines, when it rains, you can even use it for cooking and drinking but in our community, the air is well polluted so we cannot use the rain water for anything (Resident of Damang, 24th December, 2015)

The Bonsa River is what has really been affected. The mines had some prospecting over there and it polluted the water and a lot of people have been affected. Even now, when you fetch water, you find some round round white things in it so you have to boil it before you can drink. If anybody will drink from this river, then it means the person does not know it is polluted (Resident of Subri, 17th December, 2015)

Activities such as site clearance, road construction, open-cast drilling, vehicular movements, and ore crushing have been observed to affect the air quality in most mining communities. Also, air emissions from diesel engines for haulage, drilling, heating and cooling, crushing and fragmenting rocks, smelting and refining have been noted to cause aerial emission (Akabzaa & Darimani, 2001). The blasting of ore and dynamite causes a lot of noise, ground vibration and cracks in buildings (Akabzaa & Darimani, 2001). These concerns are expressed by community members in the following ways:

I think the pollution of the air has caused so much sickness in our communities. Now, you cannot preserve water for three days because it will be full of dust. People cough a lot in our communities all resulting from too much dust that we inhale into our bodies. As

I speak to you now, I have asked my workers to go home because they are all coughing. Any money you make in this community, you spend everything on hospital bills. It's not easy my brother, we are suffering (Resident of Damang, 5th January, 2016)

These days, we have observed a lot of diseases which can be related to the mining activities. Diseases such as chicken pox and stroke were not common but now, people at the age of forty suffer from stroke in our community (Resident of Huni-Valley, 6th January, 2016)

On noise making, a resident had this to say:

We also face a lot of noise pollution especially when they are heaping the stones at the tailings dam at night. This causes our buildings to shake a lot and most of the buildings in this community have so many cracks in them all because of the mining activities (Resident of Koduakrom, 18th December, 2015).

5.2.6 Unemployment

Goldfields Ghana which used to operate three underground labour intensive mines closed their pit in 1999 and about thousand workers were laid off. Increased unemployment due to mine privatization between 1992 and 1998, and reduction in gold prices, has been major threats to employment in the gold mining industry in Ghana (see Akabzaa and Darimani, 2001). A study by Sarfo-Mensah et al. (2010) on youth unemployment challenges in gold mining areas of Ghana attributed the causes of unemployment to inadequate skills, unwillingness of some youth to work in any other establishment apart from the mine, refusal to go into farming, lack of capital to set up businesses after apprenticeship. Goldfields has contributed towards employment in their communities but studies suggest that this is not enough as residents continue to complain

about the lack of jobs in the area and more especially, with the mining company (Agergard et al., 2009). This is corroborated by community members:

Unemployment is a big issue over here. We have been saying to them to give our youths permanent jobs and not contract ones because most of these people can facilitate development in our communities (Opinion leader of Koduakrom, 18th December, 2015)

At first, when the mines arrived, they were not helping the community at all. I schooled in this village after which I travelled to learn apprenticeship in Kumasi but when I returned, I could not get a job in the mines but they keep employing strangers from Takoradi, Kumasi and Accra. I only had an opportunity to work in the mines this year but that did not last due to the reduction in gold prices and I was laid off (Resident of Koduakrom, 18th December, 2015)

What I have realized about gaining employment in the mines is that if you are from the community and want to be employed, it is very difficult. Sometimes, they will tell you there is no vacancy but you will see people coming from other places to work over here. Other times, they will tell you to go to school, even when you do, they do not employ you. As I speak to you, I am a graduate with no job (Resident of Damang, 24th December, 2015)

Downing (2002) contends that employment in the mining sector cannot substitute for lost local jobs. This is so because in adhering to sustainability terms, the argument will only stand if the lifespan of the mine will be equal to the lifespan of the sustainable economy it destroys. Fluctuations in the price of gold have also caused unemployment in the gold mining industry. For instance, the falling price of gold in 2014 resulted in about 8,700 loss of jobs in the mining industry of Ghana. Thus, the sector was made up of 21,103 in 2013 but this reduced to 12,382 in 2014 due to measures geared at cutting down operational cost. This means that 41% of the workforce lost their livelihoods. Similarly, the Ghana Mineworkers Union data revealed between January 2013 and March 2014, it lost 3,080 members constituting about 16.1% of its

membership through retrenchment attributed to the fall in gold prices (Ghana web, 2016). Another factor that has been cited in relation to unemployment within the gold mining industry is the energy crisis. In light of this GFG in March 2015 announced that due to the rising cost of operating the mine due to the energy crisis, they will be laying off 200 workers (Myjoyonline, 2015).

5.3 Conclusion

The International Council on Mining and Metals (2010) contends that mining industries continue to drive the transformation of mining communities in countries such as Botswana, through the performance of socio-economic developments. Scholars such as Danielson and Lagos (2001) have stated that mining operations have been positive in terms of increased employment, better health care and improved infrastructure. This chapter touched on the positive and negative impacts Goldfields Damang has had on surrounding communities. In addressing the question of community livelihoods, although Goldfields Damang mine has contributed a lot in terms of infrastructure, there is still much to be done. Aubynn (2003) posits that mining communities depend on their lands for survival and that any form of development in these areas affect their livelihoods negatively and concerns about the environment and sustainability are raised. As such, whereas the company flaunts its achievements and claim to be a responsible mining company, community members on the other hand deem those as inadequate. Moreover, community members are not satisfied with the practices of the mining company. As Hilson and Banchirigah (2009) noted, most alternative livelihood programs do not address important issues such as whether programs put in place by mining companies offer enough opportunities that reflect what the community wants and the skills they possess. In this chapter, employment was regarded as the main problem community members complained about. Although the mining

company spoke about addressing the issue of unemployment through their SEED program, community members felt that was temporal and could not sustain them for the future. Overall, this chapter has presented differing views of company initiatives and community response to these initiatives. In as much as community members agree to some of the projects undertaken by Goldfields Damang, these projects have not translated into their wellbeing.

CHAPTER SIX

Conclusions and Recommendations

Introduction

This chapter summarizes the social, economic and environmental impacts of Goldfields Damang gold mine, as discussed in Chapter Five. Emphasis will also be on integrating the theoretical framework in understanding the findings from the study. As such, this chapter is divided into two parts. The first section is dedicated to integrating the findings of the research with the theoretical framework and draws a comparison between CSR and sustainability frameworks implemented by Goldfields Damang. The section will touch base with some recommendations for stakeholders in the mining industry. The last section considers the way forward for subsequent research.

6.1 Conclusions and Recommendations for stakeholders in the mining industry

This study has examined the activities of Goldfields Damang in the context of sustainability and sustainable development. Political ecology was used as the major framework for this study while drawing upon literature on development, neoliberalism, structural adjustment policies and other measures geared at promoting sustainable development in mining, namely environmental impact assessment, impact and benefits agreements and social network analysis. Related to political ecology, this study examined the role of political actors in natural resource governance. The study dwelt on a thesis espoused by Robbins (2012). To reiterate, the degradation and marginalization thesis argues that “otherwise environmentally innocuous production systems undergo transition to over exploitation of natural resources on which they

depend in response to state development intervention and/or increasing integration into regional and global markets” (Robbins, 2012: 159). The second thesis also posits that “control of resources and landscapes has been wrestled from local producers or producer groups (by class, gender or ethnicity) through the implementation of efforts to preserve ‘sustainability’ ‘community or nature’. In the process, officials and global interests seeking to preserve the ‘environment’ have disabled local systems of livelihood, production and socio-political organization” (Robbins, 2012 p. 178).

Relating the marginalization and degradation thesis and conservation and control thesis to the results of the study, it can be stated that development led Ghana to adopt structural adjustment policies at a time when the country was in distress. This SAP led to the influx of multinational gold mining companies in Ghana. However, due to the power of multinational companies which are seen in the conditions placed on Global South countries, Ghana privatized its mining sector in the late 1980s. The effect of this privatization was that powerful forces took over lands from community members with the help of governmental agencies. These community members who have spent their lives depending on these lands for their livelihood became deprived of these lands. Farmlands have been enclosed by mining companies and the spin-off effect that arises from this is increased marginalization due to loss of livelihoods.

In a bid to generate more profits, mining companies through surface mining activities, have led to over exploitation of the resources on lands thereby degrading these lands. Loss of land means that people’s survival base is threatened or lost. This leads to scarcity and community members are forced to survive without their lands. The resultant effects are problems such as unemployment, poor water quality, land degradation and inadequate compensation as it has been revealed in this study. To conserve lands through private ownership, mining companies have put

in place to measures to address landlessness but these measures have been deemed unsustainable by community members.

The study revealed through the literature reviews that impact and benefit agreements have not been implemented by any mining company in Ghana. What have been widely acclaimed is EIA and social network analysis, but EIA and social network analysis this lacks transparency and public participation. In addition, the study revealed that unemployment remains a key problem in mining communities. Though Goldfields Damang have instituted some local businesses through the SEED program, residents are not satisfied and want the company to do more especially with regards to employing local people.

Again, the study revealed that compensation and resettlement packages that are paid for the loss of land are inadequate and community members would prefer having control over their lands than depending on compensation. However, the mining company on the other hand cites their compensation package as one of the best ever witnessed in the country. A company official expressed that everything done in the company is according to legislation and that they have had no issues with compensations in their communities:

Every now and then, we come across households living close to our operations and if we feel by the laws they cannot stay there, we move them. In 2014, we moved two households and in 2015, we are moving 5 households. So far, we have not had any issues at all. Our procedures are even considered by the Chamber to be the blueprint for the industry. We have to do some work and make a presentation on it so they can adopt it for the industry. We have always tried to educate farmers on how best they can use the money paid as compensation but the practice has been that, it never worked. The notion out there that mining companies go in there and destroy peoples stuff and give them whatever is not true (Mining company official, 5th January, 2016)

In addition, the study revealed that much debate on CSR in developing countries has been placed at the doorstep of extractive industries. To this end, companies have succeeded in using CSR as a social license to operate. CSR policies by mining companies have been seen to be the same policies mining companies espouse in thinking about sustainability and sustainable development in their communities of operation. Companies do not necessarily draw any difference between CSR and sustainability and further argue that their CSR policies are framed with sustainable development in mind. Because CSR adopts a market strategy found in capitalist societies, it is unable to provide the needed resources required by the society and does not respond to environmental and social concerns. CSR has been seen as a feature of the minimal regulatory regimes of neoliberalism (Raman, 2010; Andrews, 2016: 9). For instance, a company official had these words to say when asked about sustainability practices by the mining company:

The company has set up the Goldfields Ghana Foundation in 2002 which carries out all the sustainable projects in our communities. For every ounce of gold we produce, we put a dollar in that fund and when we make profit, 1% goes into the fund. This pool of money is what we use for the entire projects in our communities but we also save 10% of the entire pool in an investment with the bank which is yielding a lot of profit. As I speak to you, the Damang mine sit with more than \$500,000 which we are not suppose to touch until the life of mine. When we exhaust the resource, the communities will have that money to use for few years to rehabilitate some of the projects ongoing. So at every level, we have thought of the communities. Also, we take notice of the fact that we deal in a non-renewable resource and that plays an initial role in all our activities and programs. For example, in the communities, all the projects we undertake are done in collaboration with the district assembly and community leaders to the effect that when we are not here, those things do not become white elephants. We won't go and put up a school building in any community in the district when the district assembly has not requested for it (Mining company official, 5th January, 2016)

Boon and Ababio (2009) argue that mining companies are not bound by law to implement infrastructural development and social services in their communities. These activities are therefore undertaken by mining companies in mere response to moral convictions rather than legal obligations. However, the Mineral Commission's CSR guidelines passed in 2012 directs companies on how to carry out the CSR responsibilities but transparency is the main issue to be addressed as companies are required to report CSR planning, monitoring and assessment. Also included in the guidelines is for mining companies to contribute to social, economic and institutional development of communities in which they operate (Andrews, 2016).

For the most part, Boon and Ababio (2009) contend that there is a close link between CSR that creates dependency and CSR that helps in developing a community or region in a sustainable manner but admit that mining companies challenge has to do with engaging in CSR that addresses development in communities. Guena (2002) posits that "mining corporation strategy is based on a sustainability model that integrates economic, social and environmental issues into long lasting plans for local communities beyond the closure phase" (cited in Jenkins, 2004: 31).

In response to a question on what constitute sustainable mining practices, an official at the Chamber of Mines stated:

As a signatory to the Global Compact, the Chamber shares in the universal definition of mining which requires that companies should undertake their activities in a manner that yields optimal returns for the current generation as well as posterity (Official of Ghana Chamber of Mines, 16th December, 2015).

As part of measures directed at addressing sustainable development in the operations of mining companies, reclamation has been advanced as a good practice and Ghana is no exception. Reclamation connotes the re-vegetation of lands that have been degraded through mining

activities (Lamb & Gilmour, 2003). This re-naturalization is very useful in ensuring sustainable development when land used for mining is likely to lose its nutrients. The main objectives behind land reclamation as cited in Cao (2007: 473) are:

- a) To eliminate health and safety hazards (e.g. dismantling all facilities and structures threatening human health and safety);
- b) To restore impacted land and water resources (e.g. re-vegetating progressively and stabilizing residues to reduce potential of acid mine drainage or water contamination);
- c) To eliminate off-site environmental impacts (e.g. cleaning up sites to conform to the community's surrounding landscape);
- d) To ensure that post-mining land has a viable self-sustaining future with respect to both environmental and socio-economic benefits (e.g. developing publicly owned land for recreation, historic purposes, conservation purposes, or open space benefits, or for constructing public facilities in communities);
- e) To encourage better use of energy and natural resources and to guarantee sustained mining operations.

In Ghana, mining companies have devised their own forms of reclamation based on the Environmental Protection Agency regulations. For instance Tetteh (2010) observes the following as some of the practices AngloGold Iduapriem adopt in reclamation: earthworks/slope battering; spreading of oxide material; spreading of top soil; construction of crest drains and broadcasting of cover crops to control run-off and erosion; tree planting and field maintenance. Goldfields Damang also has good reclamation policies which have been useful in their operation. A company official explains:

EPA makes it mandatory for all mining companies to pay something called reclamation bond. If you are going to damage an area, depending on the size of the area and all that, there is an amount of money you lodge with the government and it stays with the EPA. The idea is that if a company fails to reclaim the land as required, the state can fall on that money to use it to do the reclamation do Ghana is protected. Even before you clear the land, you need clearing permit from our environment department, they must go and make sure that where you want to clear is good. They give you the correct guidelines, you must stock pile top soil, ship it nicely before you go in whether it is for mining or to burry cables. The tree species that you fell, they have a nursery that they can pick seedlings from and replant at the same place when you are done. We flush out the chemicals, treat the soil, and bring other nutrients to support plant growth, grass and other cover crops and nitrogen.

Recently, we had a tailings dam that was decommissioned. We have grown large oil palm plantation on it and we handed it over to the Kyekyewere women group and they have been taking care of it and harvesting the fruits and selling them for profit (Mining company official, 5th January, 2016)

Moreover, communities and companies have different views of activities undertaken by the mining company. For instance, while community members see blasting as causing a lot of noise and cracks in their buildings, the company thinks otherwise and advances the following argument:

The reality on the ground is that community members will come and say to you to move me, move me, even though by all the regulations, you are not suppose to move that person. When it comes to blasting, they will mount all the argument saying that blasting affects them. You will do all the scientific investigations and it says NO but you are talking to a farmer who may not understand all your scientific investigations so you try as much as possible to persuade the person to accept that ‘hey’ you are safe but if the individual claims he is not safe, you are forced sometimes to seek permission from the Minerals Commission and EPA to say even though the person is beyond the danger zone,

looking at the concerns raised, we would want to resettle or relocate them (Mining company official, 22nd December, 2015)

Lastly, the study revealed that women experienced mining activities differently. The fact that women cannot gain employment in the mining industry means that women are not benefitting from the mines. Goldfields Damang has put in place some hands on skills training for women; local people do not have the seed capital to establish their own businesses.

6.1 Final Points

Based on the findings of this study, the following recommendations are made for the Ghanaian legislature, policy researchers and activists:

- 1) For the legislature and the Ministry of Lands, Minerals and Forest Resources: Laws governing compensation and resettlements must be revised to address the injustices landowners face. Community members input must be incorporated in revising these laws especially members whose lands have been affected by the activities of mining companies in the past and presently. Members should be involved from the licensing stage till the life of the mine.
- 2) For the Mineral Commission, Chamber of Mines and Legislature: Legislation should be passed to create a difference between CSR and sustainable mining practices. Since there is no law that clearly promulgates CSR, companies' decisions in this regard have not been accepted wholly by community members. It is very imperative for government agencies who exercise supervisory roles over mining companies to impress on mining companies to incorporate community member's views in drafting CSR policies by mining companies.

- 3) For the Ministry of Environment and the Environmental Protection Agency: The Environmental Protection Agency must be strengthened and resourced very well to perform their responsibilities. At present, the EPA has 350 staff as against 25million Ghanaians which makes it impossible for the agency to police the environment (Peacefmonline, 2016). Also, EPA must be transparent in dealing with proponents of resource development. Full public participation must be adopted and disclosure of findings has to be made public to community members.
- 4) For the Legislature: Strict laws must be passed on the use of cyanide by large scale mining companies. Cyanide has rendered most water bodies in mining communities unsafe for drinking and any other activity. As espoused by the Associate Director of Wassa Association of Communities Affected by Mining, the Mineral and Mining laws of Ghana (2006) is silent on the use of cyanide by multinational mining companies.
- 5) For mining companies: In terms of sustainability, I suggest mining companies must address this concern hand in hand with community members. This study revealed that unemployment was a major issue in all four communities. Although Goldfields Damang has helped with their SEED program, this assistance has not solved the problem of unemployment in their communities. Better systems that integrate community members in any form or effective training to gain hands on skills must be promoted.
- 6) For mining companies and community members: This study revealed that infrastructure such as clinics and pipe-borne water that has been constructed by the company has not yielded the results it was intended. Most of these infrastructures have become “white elephants” and it will be prudent if the company pays attention to them. A way to do this

is to liaise with community members who are very effective at reporting problems that may arise from the usage of these facilities.

- 7) For mining companies and the District Assembly: Creating more employment opportunities for the local people both in the mines and building their capacity must be strengthened. For instance, many of the youth who benefited from the scholarship and bursaries but have not continued their studies must be absorbed by Goldfields Damang. Also, more women should be trained and given seed capital to start up their own businesses.

Further research in the gold mining sector of Ghana should focus on how impact and benefit agreements can be a useful tool to address sustainable development in Ghana. Also, research geared towards understanding public participation as mechanism to ensure better CSR policies are implemented can also be examined. I also advocate for further research that seeks to understand community members perceptions about mine reclamation. Furthermore, research that will examine the potential for Ghanaian mining companies to learn from Canadian mining companies would be excellent. Again, research that focuses on comparing various CSR policies vis-a-vis global “best practices” can also be investigated. Finally, it will be interesting to compare a mine in distress in Ghana and a flourishing mine to understand their sustainability practices.

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Appendix

List of Interviews

Pseudonyms	Title/Role in the community	Community	Date of Interview
“Mike”	Company official	Goldfields Damang	22 nd , 23 rd December, 2015 and 5 th January 2016
“Toms”	Official	Ghana Chamber of Mines	16 th December, 2016
“Kwam”	Community member	Subri	17 th December, 2015
“Ako”	Community member	Subri	18 th December, 2015
“Momeen”	Opinion leader	Subri	21 st December, 2015
“Carpe”	Opinion leader	Koduakrom	18 th December, 2015
“Sunshine”	Community member	Damang	4 th January, 2016
“Forgive”	Community member	Damang	5 th January, 2016
“Goodness”	Community member	Damang	6 th January, 2016
“Mensah”	Community member	Damang	23 rd December, 2015
“Tony”	Community member	Koduakrom	17 th December, 2015
“Safowaa”	Community member	Koduakrom	18 th December, 2015
“Promise”	Community member	Huni-Valley	5 th January, 2016
“Engineer”	Community member	Huni-Valley	6 th January, 2016
“Kingkong”	Community member	Huni-Valley	6 th January, 2016
“Pap Solo”	Opinion leader	Damang	24 th December, 2015