



Max Weber's Model of Bureaucracy and how Ghana's public Administration conforms to it

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ABSTRACT

The mining industry has been overwhelmed by the activities of small scale miners. These miners and their activities are considered as nuisance to the environment and the sustainability of the industry. The government through its agencies (Ministry of Mines and Natural Resources) directly handles the issues of illegal mining. However the roles of opinion leaders such as chiefs, assembly members, District Chief Executives, clergy and other community organizers in the community cannot be disregarded. This research unravels how opinion leaders influence the activities of illegal mining in Ntobroso. The study used in-depth interview guide and semi-structured questionnaires to obtain information from some of the direct and indirect stakeholders of the mining activities in the district for the study. The research proved that opinion leaders are doing little to curb the situation because they do not feel strong enough to fight the menace but rather need strong men “*government support*” to come to their aid.

In line with the findings, the study recommends the need to collaborate with all opinion leaders such as the leadership of the district assembly, clergy, Imam and other recognizable groups such as dressmakers and tailors association, market women association etc who are highly respected in the community to engage the miners on the risks their activities pose on the community. Traditional authorities should be transparent enough and desist from permitting illegal miners to operate in their communities and discourage private land owners from doing same.

DECLARATION

I, Sylvia Larthey, hereby declare that except the references to other people's work which were duly acknowledged, this dissertation is the result of my own independent work carried out at the University of Ghana Business School, Legon, under the supervision of Dr. Albert Ahenkan and that it has not been presented in whole or in part elsewhere for the award of another degree.

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CERTIFICATION

I hereby certify that this Long essay was supervised in accordance with procedures laid down by the University

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DATE

DEDICATION

Many thanks go to Franklin Akossah, Kwabena Amoako, Prince Anin Agyei, and Justice Annan for their continuing advisement, input, time, and energy towards my project. They offered their constant support throughout the writing process and guidance and reassurance has been essential in my completion of this report. I dedicate this work to my parents Mr. and Mrs. Lartey for their unflinching support to my upbringing and education. I would in no way come this far without their help. It is also dedicated to my husband, Michael Ofori and our daughter Daniella for staying close to me during the good and the bad. God richly bless them all.

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LIST OF ABBREVIATIONS

AMDA	- Atwima Mponua District Assembly
CEO	- Chief Executive Officer
CHRAJ	- Commission on Human Rights and Administrative Justice
CNC	- Centre for National Culture
EPA	- Environmental Protection Agency
ERP	- Economic Recovery Programme
EPAC	-Environmental Protection Agency Council
DPCU	- District Population Census Unit
GDP	-Gross Domestic Product
GNA	- Ghana News Agency
GSS	- Ghana Statistical Service
IMF	- International Monetary Fund
NADMO	-National Disaster Management Organisation
NCCE	-National Commission for Civic Education
PRDC	-Provincial National Defence Council

CHAPTER ONE

INTRODUCTION

Background

Mining is extraction of precious minerals and geological deposits from the earth that are of economic interest to the miner. These minerals and deposits include manganese, tantalum, copper, tin, silver, diamonds and gold. There are mainly two common excavation forms of mining; Surface mining and Sub-surface (Underground). Surface mining is used where the minerals can be found fairly closed to the surface of the earth. The latter however involves digging sometimes hundreds to thousands feet deep to fetch minerals. Today surface mining has become more common in most countries. Mining could also be classed into small or large scale. Large scale mining usually involves a large human resource and is able to extract huge tonnes of minerals. The activity stays long longer until the minerals are completely excavated. An example of a large scale mine are Anglo-Gold Ashanti of Ghana, Newmount Ghana, Goldfields Ghana and the Serra Pelada mine in Brazil which yielded 29,000 tonnes of gold from 1980 to 1986 and employed 50,000 workers (Kricher, 1997).

Small scale mining may be legal (registered) or illegal (not registered). Where they are registered there is some level of supervision, hence moderate consideration for environmental concerns (Iddirisu & Tsikata, 1998). Nevertheless, much destruction is done to the environment in the sense that activities done here are more vigorous and relatively higher. In situations where small scale activities are not registered, there is no monitoring, hence these miners are left unchecked, and the degraded environment receives no remediation (Adu- Gyamfi , 2014)

In Ghana Small scale mining involves mining by cooperatives, groups, families or individuals, with minimal or no mechanization, often in the unofficial (illegal) quarter of the market. In many developing countries, artisanal and small- scale mining (ASM) is largely a poverty-driven activity which plays an important economic role (Hentschel et al, 2003). There is an

estimate that in the order of 13 million people in about 30 countries are directly engaged in small-scale mining, a significant proportion of who are women and children. An additional 80 to 100 million people across the developing world could depend on small-scale mining for some aspects of their livelihood. The main focus of Ghana's mineral mining and mineral extraction remain focused on gold.

The mining activity in the Atwima Mponua District is dominated by small scale mining operations and majority of the population is predominantly farmers growing both cash and food crops. Mining activities in the district contribute significantly to the socio-economic development of the people.

Over the years, the mining industry in Ghana has made historic news in both local and international media. This is because Ghana's mining industry continues to play vital role in supporting the economy of Ghana. The mining sector has contributed about 40 percent of gross foreign exchange earnings, 5.7 percent GDP among others (Aryee, 2003; Ofori, 2015). The issue of illegal mining has also risen in recent times in Ghana, Africa, and the world at large. Series of incidents of illegal mining has been reported over the last decade where many souls have perished (Miles, 2007). The Chief Executive Officer (CEO) of the Ghana Chamber of mines, Toni Aubynn has indicated that about three hundred 300 individuals lost their lives in the year 2011 due to illegal mining activities. It was also reported that in a single incidence over 100 illegal miners died when the pit in which they were operating caved in near Dunkwa-on-Offin in the Central region. There has been series of reported cases of collapse mining pits in the media including a collapse of mining pit (loose) which trapped and killed about 15 people in Aboso and another collapse of embankment in Akyempim near Dunkwa claiming several lives of which only 17 bodies were able to be removed by the rescue team. Children have also lost their lives by accidentally falling into abandoned pits especially in communities closed to the areas where these illegal miners operate. Besides

such unfortunate incidents, illegal miners have caused and continue to cause irreparable havoc to the environment especially water bodies which serve as sources of water for domestic, industrial and irrigation purposes. Pollution of soil and water bodies with mercury, sludge and other chemicals, destruction of farms and farm lands, degradation of land, vegetation and deforestation are aching results of illegal mining.

The Ministry of Lands and Natural Resources is the state institution that oversees the mining industry. The environmental aspects of mining are directly regulated by the Environmental Protection Agency Council Act (EPAC act of 1974) and Mining Regulations. According to Acquah (1995) the Minerals and Mining Law of 1986 made provision for environmental protection and pollution prevention.

Due to the negative impact of illegal mining on the lives of Ghanaians especially those in the mining areas, opinion leaders who are known as community stakeholders (GNA, 2016) have risen to deal with this menace. Opinion leadership refers to the relationship between leaders and followers in the society (Yu, Wei & Lin, 2010).

Opinion leaders mount pressure on authorities to use its clout to enact strict, enforceable punitive sanctions to deal with operators of illegal mining (Galamsey), a practice which is increasingly becoming intractable. For example the Ghana News Agency reported in April 1 2016 that some opinion leaders have called for punitive sanctions against illegal mining in Dormaa Ahenkro in the Brong Ahafo Region.

It is against this background that this study seeks to examine the role of opinion leaders in the mining communities, how they perceive illegal mining activities and the measures put in place by the opinion leaders to deal with the illegal mining activities in the mining areas.

The Research Problem

The mining industry has been overwhelmed by the activities of unapproved small scale miners popularly called “Galamsey operators” (Banchirigah, 2008). The operations of these Galamsey miners and their activities are considered as nuisance to the environment and the sustainability of the industry. Nevertheless, these small scale miners are often tagged as criminals who must be dealt with by society. Numerous studies have been done on illegal mining activities both in the developed and developing countries (Kambey et al, 2003). However, little research has been undertaken on how opinion leaders in the communities influence the activities of illegal mining (Bero et al, 1998). The government through its agencies (Ministry of Mining and Natural Resources and Chamber of mines) directly handles the issues of illegal mining. However, the role of opinion leaders such as Chiefs, community organizers among others in the communities cannot be disregarded.

This study is to fill the gap in literature by examining the role of opinion leaders in the mining communities, how they perceive illegal mining activities and the measures put in place by the opinion leaders to deal with the illegal mining activities in the mining areas.

Research Objectives

The study will be guided by the following objectives.

1. To examine the perceptions, expectations and positions of opinion leaders on illegal mining in Ntobroso.
2. To assess the role of opinion leaders in illegal mining activities in the community.
3. To examine how opinion leaders can help solve illegal mining in Ghana

Research Questions

1. What are the perceptions, expectations and positions of opinion leaders on illegal mining in Ghana?

2. Are opinion leaders propagating illegal mining in Ntobroso community?
3. How can opinion leaders help solve illegal mining?

Significance of Research

The purpose of this study is to examine the role of opinion leaders in the mining communities, how they perceive illegal mining activities and the measures put in place by the opinion leaders to deal with the illegal mining activities in the mining areas.

Organization of the Study

The study is divided into five chapters. Chapter one involves the introduction which covers the background, problem statement, purpose, objectives, research questions, and organization of the study. Chapters two and three present on the literature review and research methodology respectively, whilst four and five cover the research findings and discussion of the data, conclusion and recommendation respectively.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This section reviews the relevant and contemporary literature in relation to the study so as to achieve the research objectives. The first strand of literature gives a historical overview of mining in Ghana, traditional leaders and nation building consensus, the social justice theory in explaining the position of opinion leaders with regards to illegal mining activities. Finally, the social justice theory would be used in the study to explain the expectations, perceptions and positions of opinion leaders with regards to illegal mining activities.

Historical overview of mining in Ghana

The Ghanaian small-scale mining industry is well over 2,000 years old. Vestiges of alluvial gold extraction and winning activities have been found that date as far back as the sixth century, and there is a wealth of evidence indicating that precious metals recovered from regional artisan activities were attracting Arab traders to certain areas of the country as early as the 7th and 8th centuries AD. In fact, it was the rich gold deposits of the western Sahara that were largely responsible for the wealth and strength of large ancient Ghanaian empires and cultures, and by the 15th and 16th centuries, at the peak of European colonial exploration, Ghana was fittingly labelled the „Gold Coast“

Small-scale mining in Ghana, as in most developing countries, was for decades treated as an informal industrial sector, employing thousands of people but featuring largely rudimentary, unmonitored and uncontrolled practices. Up until the 1980s, small-scale mining activities in Ghana remained largely unregulated and received little, if any, support from governmental bodies. This, however, changed with the implementation of the national Economic Recovery Plan (ERP), which, following years of careful planning, was finally launched in the mid-1980s. In a desperate move to revitalize a stagnating economy, the then Provincial National Defence Council (PRDC) government consulted authorities from both the World Bank and International Monetary Fund (IMF) to assist in the drafting of national economic plans and policies. The Ghanaian minerals sector was heavily targeted, which, between 1960 and 1980, had experienced mass declines in mineral output: gold production had declined from 900,000oz in 1960 to 232,000oz in 1982; manganese output had dropped from 600,000t in 1960 to 160,000t in 1982; bauxite production declined from 407,000 in 1974 to 64,700t in 1982; and diamond output had declined from 2,340,000 carats in 1975 to 683,524 carats in 1982. Foreign investment was promoted, and a series of tax breaks and benefits were offered to foreign companies seeking to acquire mineral prospecting licences in Ghana.

Mining Today

Since 1989, the recovery of mining activities in Ghana cannot be considered as an isolated phenomenon. It is believed to be driven by the global paradigm which emphasizes private sector led development as the driver of economic revival in developing countries (Boateng et al, 2014).

Mostly the youth involve in illegal mining activities because of the unemployment situations that have risen in recent times (Ofori, 2015). Approximately thirty years ago, the government of Ghana, having realized the economic role small scale mining was playing in terms of production output, introduced a series of regulations and policies that were aimed at legalizing and formalizing small scale mining operations in the country. This was the very first attempt by government to regulate what had been traditionally regarded as an informal sector activity (Hilson & Potter 2005). Although small scale mining has increased and become very widespread in the country, the now branded “illegal” segment of the small scale mining has expanded disproportionately vis-a-vis the licensed segment.

As already mentioned, small scale miners who operate illegally as commonly referred to as Galamsey in Ghana. The word Galamsey is believed to originate from the phrase „gather and sell“ in the days when it required very little efforts to gather gold nuggets from the dust and rocks to sell (Pettersson, 2002). As many as 85 percent of the industry’s participants are reported to be operating illegally in the country (Hilson & Potter 2005). Literature shows that the number of individuals engaging in illegal small scale mining has expanded from about 30000 in 1995 to more than one million in 2006 (Banchirigah, 2008).

Tschakert (2009) observes that, those involved in the illegal mining business are a very heterogeneous group, coming from different backgrounds and situations. With regards

to age and sex for example, one may think that only male adults would engage in the business due to its hard- labour nature. Nevertheless, literature by (Yakovleva 2007; Banchirigah 2008) reveal that not only men, but women and even children of different ages find themselves mining for the precious gold substance at various mining sites in the country. There have been efforts by studies conducted by Aryee (2001) to show the difference between the Galamsey and registered small-scale gold miners operating in Ghana. The technique mostly used for small-scale mining is amalgamation (Akosa et al., 2002). In this process, mercury is mixed with gold concentrate to form gold amalgam, which is heated to separate the gold (Ntibery et al., 2003). Both legal and illegal small-scale mining is practiced in the country (Avotri et al., 2002). In the Tarkwa area, small-scale mining is found all around, both in the forest and along rivers.

Effects of Mining on the environment



Large Scale mining

Environmental problems caused by large-scale gold mining include the following:

- Land degradation, for example, removal of vegetative cover and destruction of flora and fauna.
- Impact due to processing technique includes contamination of water bodies and soil by release of cyanide, arsenic, sulphate, and heavy metals as Pb, Cu, Zn and Fe.
- Cyanide spillage. There have been a number of accidental cyanide spillages in Ghana. The major spillages occurred in 1989, 1991, 1994, 1996, 1999 and 2001.
- Roasting of ore containing pyrite gives rise to the production of SO₂ in the atmosphere which produces acid rain. The acid water then releases high levels of toxic ions from the rock matrix in the groundwater. This has been the main mode of extraction for the Prestea

mine during the last decade. SO₂ could also been transported with north-eastern winds from the Ashanti Goldfields in the northeast (Kortatsi, 2004).

- Noise and vibrations.
- Dust from blasting operations.
- AMD (Acid Mine Drainage) from solid waste from sulphidic ore leaching heavy metals and acidity into water and soil.
- Siltation of surface waters.
- Grease and oils from various activities in the mine.

The management of waste from large scale mining is done in accordance with approved environmental plans. The spent heap and waste rock heaps are stabilized and re- vegetated. Tailing slurries are channeled into tailing dams that also are re-vegetated. Reagent containers and packing materials are sold out to contractors who dispose of them. The monitoring of these contractors is poor. Spent oil and grease are sold to end-users.

Small scale mining

Illegal miners account for the most significant part of the environmental damage of the small-scale miners. Legal small- scale miners must have environmental permits and are monitored regularly by field officers. Amalgamation is the technique mostly used (Ntibery et al., 2003).

The main environmental problems are mainly:

- Land degradation;
- Pollution of rivers and streams by mercury;
- Atmospheric impacts from mercury fumes during gold recovery and dust;
- Mercury in groundwater from accidental spillage during gold processing;
- AMD from solid waste from sulphidic ore leaching heavy metal and acidity into water and soil;

- Siltation of surface waters;
- Deforestation due to wood used for stabilizing mining shafts;
- Damage to infrastructure due to undermining of roads and houses.

The management of waste on small-scale mines particularly illegal ones does not have a Waste management plan. Estimated 5 tonnes mercury is released from small-scale mining operations in Ghana each year (Hilson, 2001). High concentrations of mercury have been found in sediments and fish in the vicinity of small-scale mining activities using amalgamation as their main technique. The concentration in most fish fillets in these areas exceeds the recommendations of the United States Food and Drug Agency (Babut et al., 2003).

Economic Impacts of mining

2.5.1 Employment

Most small-scale miners in Ghana are engaged in the extraction of gold and diamonds simply because they can generate wealth quickly. The reality, with the exception of specialist commodities, in most situations, it is economically unviable to mine anything other than precious metals and stones. About two-thirds of Ghana's small-scale miners are engaged in the extraction of gold, and most of the balance extracts diamonds; only a small group of miners are involved in industrial minerals production.

Developing countries benefit a lot from small scale mining, manifested mainly as employment and revenue. Although it does not require a large sum of money, small-scale mines require adequate manpower; labour-intensive small-scale mining operations are economically feasible because investment costs per job are typically only 10–12 per cent as those costs in large mining operations. Small-scale mining, therefore, has a significant impact on the employment situation in the developing world, especially in rural areas where there are

limited options. Moreover, the enactment of relevant legislation and effective legalization of small-scale mining has had a constructive impact on the economies of certain emergent countries. By formalizing operations, illegal smuggling channels are being removed, thereby enabling the complete capture of internally mined product. The successful containment of the minerals mined on a small-scale contributes enormously to sector revenues, and also contributes positively to foreign-exchange earnings. There are no accurate small-scale mining employment records that can be found for Ghana, although it is anticipated some 200,000 are involved directly in the extraction of gold and diamonds, the great majority of which are galamsey. A technical document published by the World Bank entitled Strategy for African Mining, estimated that about 30,000 people are employed within the legalized segment of the Ghanaian small-scale mining sector.

2.5.2 Rise in cost of living

Songsore et al. (1994), postulates that the positive economic development that often follows the establishment of a mining operation though have a positive economic impacts on mining communities, it can negatively affect the consumption levels of the poor. The high incomes levels of mine workers, especially in relatively isolated areas, can lead to rising local prices for key products (food, fuel and transport) totally ignoring the poor to suffer.

Furthermore, mining can use significant amounts of land and water, which can impact the poor who solely rely on these resources for their livelihood and food security.

The sudden closure of Dunkwa Goldfields mines in Ghana in the late 1980s deprived all the communities in the area from electricity supply since this had been previously provided by the mining company Songsore et al (1994). This totally brought the community to a standstill since almost everything we use is operated by electricity. According to Anderson (1997) the often remote location of mining operations increases the challenges for local economic development in the after effects of mine closure, with government resources typically hard to free up for these areas.

Opinion Leaders

Literature by Garvin et al (2009) suggests that opinion leaders are local community leaders such as chiefs, local organizers, leaders of the farmers among others. Opinion leaders serve as the mouth piece of the people in the community. They speak on their behalf, defend their people when the need arise. Opinion leaders are respected sources of information who are connected to novel ideas and possess sufficient interpersonal skills to exert influence on others' decision- making. Studies by (Aubynn, 2009) referred to opinion leaders as the stakeholders in the communities who ensure open, honest and frank discussions that promote development in the society. Because community leaders live and work within a social environment, external influences certainly impact learning. For example, social learning theory emphasizes the influential power of leading by example and the ability to modify others' behaviour by modelling alone. If the chief in Ghana who is usually the traditional head of the community leases his land to a mining company to extract mineral in exchange of money, the likelihood of community members to replicate the action is quite high.

According to Don Hale (2017), opinion leaders are in a position to influence other people's actions because they:

- ✚ are respected.
- ✚ have a view that carries weight in a community.
- ✚ are catalysts for the formation of public opinion.
- ✚ are highly interested in an issue or issues.
- ✚ are better informed than the average person.
- ✚ are believed to have more knowledge of a subject or issue
- ✚ are avid consumers of mass media.
- ✚ are interpreters of media content.
- ✚ actively search out information on a subject.
- ✚ like to let their opinions be known
- ✚ actively share information

Studies by (Knierzinger, 2011) relays that, the Ghanaian society is still buried in neotraditional structures, even in urban areas. Differing from the many prophecies of doom since independence, chieftaincy is still much admired. A single reason for this persistence is the remarkable malleability and fluidity of neotraditional systems. Mostly on the local level, a substantial percentage of the population is permanently engaged in negotiations and disputes

over neotraditional offices and corresponding claims. Knierzinger, 2011 also argues that this leads to a high degree of political participation, however to conflicts and to the abuse of chieftaincy as an instrument of elite formation. Membership in the neotraditional system enhances social status, facilitates contacts with politicians and foreigners, increases the possibility of going abroad and goes with a kind of political immunity.

Theoretical framework

The social justice theory is used in the study to explain the activities of illegal mining and to examine the perceptions, attitudes and positions of opinion leaders in the mining communities specifically the Ntobroso Community in the Atwima Mpanua District.

Social Justice Theory

The theory was propounded by Nancy Fraser in 1995. Social justice theory is concerned with fairness that goes beyond individual justice or preferences. Social justice sees the benefits of all the society (Baldry, 2010). Linking this theory to the activities of illegal mining in Ghanaian society, the theory argues that the activities of those who mine gold or any other natural resources should not lead to their own benefit but to the benefit and the good of all people in the community. Also social justice is a social requirement which makes it possible for all to participate on an equal footing in social life also known as “*participatory parity*” by Fraser. On this backdrop, opinion leaders who are a representation of the community and have been entrusted as custodians of community resources are expected to have the public good at heart.

The situation however is not always the case in most illegal mining areas in Ghana, where traditional rulers who are to protect the resources entrusted in them rather allegedly receive bribes and other proceeds from these illegal miners and watch them destroy vast forest lands (Ghana Business News, April 30, 2012)

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

This chapter presents the research approach, study area, target population, sampling arrangement, data collection, data management and data quality control as well as data analysis procedures used in this study. Finally, a brief relevant profile including (demographic, land size and population, chieftaincy and mining activities) of the Atwima Mponua District.

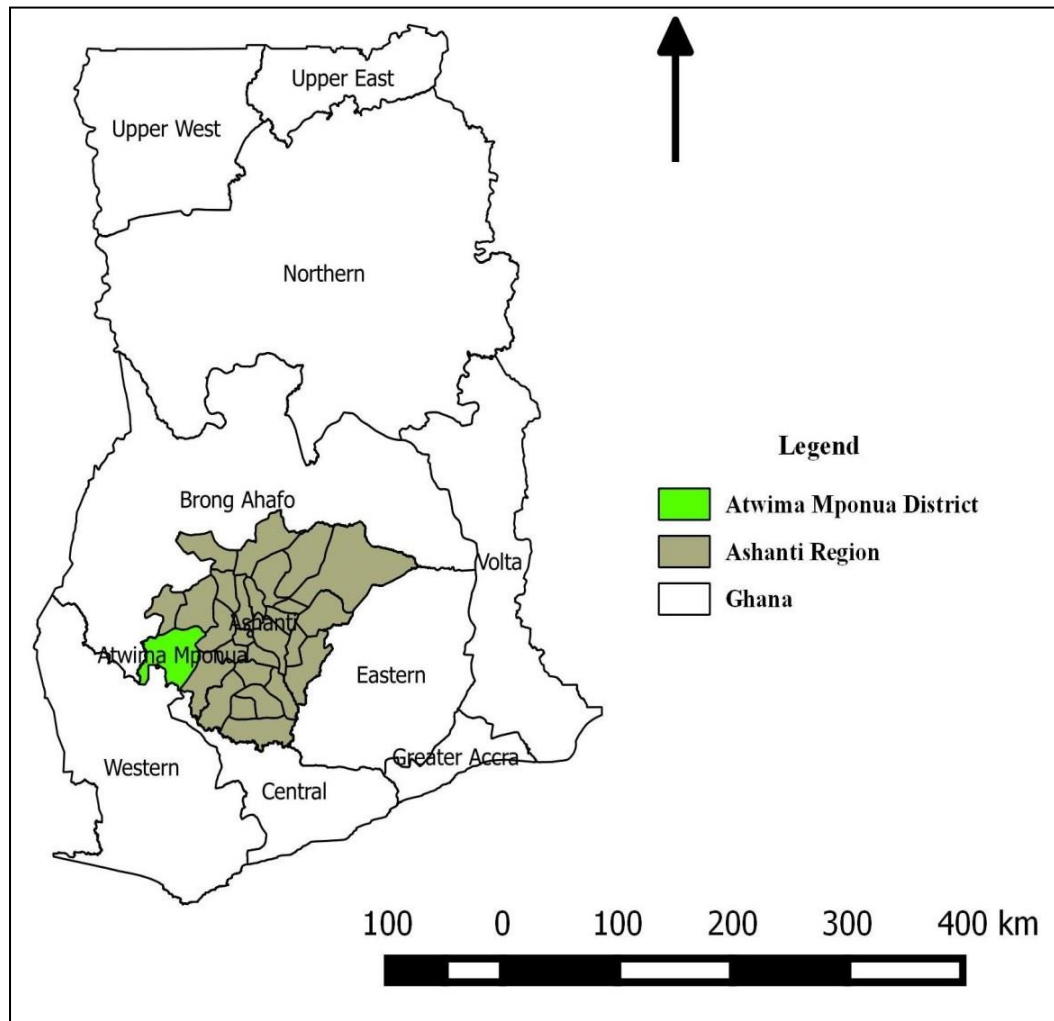
Research Approach

The choice of a research methodology is guided by the research questions and objectives, the focus of the study, the purpose of the study, the extent of existing knowledge, the amount of time and other resources available as well as the researcher's own philosophical underpinnings (Attuahene, 2010, pg; 23) With consideration to the factors mentioned above, the case study qualitative approach was considered the most appropriate.

Study Area

The Atwima Nwabiagya district in Ashanti region whose capital is Nyinahin was selected for the study.

Figure 1 below shows the location of the study area on the map of Ghana.



Research Design

The study employs a case study approach. The choice of a research methodology is guided by the research questions and objectives, the focus of the study, the purpose, extent of existing knowledge, amount of time and further resources available as well as the researcher's own

philosophical underpinnings (Nyantakyi, 2007, pp.35-36). Considering the above mentioned factors, the case study approach was considered the most appropriate.

Target population

The target population for the study comprised of the District Coordinating Director, the District director of Environmental Health, The District Director (NCCE), District Director- (NADMO), District Director (CHRAJ), Assembly Member, Unit Committee Members, Nana Gyase Hene, Nana Kyidom Hene, Nana Hema, Chief Farmer, Clergy, Imam, other opinion leaders, and ordinary citizens.

Sample size and sampling Methods

The total number of respondents was 18, five traditional rulers, two unit committee members, two members of the clergy, four members of the district assembly including the coordinating director, one Imam, two from the health office and two politicians. This was made possible by resorting to systematic sampling procedures.

Profile of AMDA

Location and Size

The District lies between longitude 2°00'W and 2°32'W and latitude 6°32'N and 6°75'N covering a land area of 1,883.2km². The District shares boundary with eight Districts, principally in the South with the Amansie West District, Ahafo Ano South District to the North, Atwima Nwabiagya District in the East and Bibiani- Anwhiaso-Bekwai District of the Western Region to the West. The location of the District offers it the opportunity to interact with three political regions (Brong Ahafo Region, Western Region and Central Region) of the country. Nyinahin, the capital is more in the west of the District, about 45km from Kumasi. Figure 1.1, Figure 1.2 and Figure 1.3 show the Atwima Mponua District in the National Context, Regional Context and the District maps.

- **Implication for Development**

This has implication for development as the proximity of the District to Kumasi; the regional capital has both advantages and disadvantages. In the case of the latter, the youth turn to drift to Kumasi in search of jobs as is shown by the marked deficit of males in the age classes of 20 to 29 years of the District population pyramid (see Table 1.9) even though males outnumber females in the District.

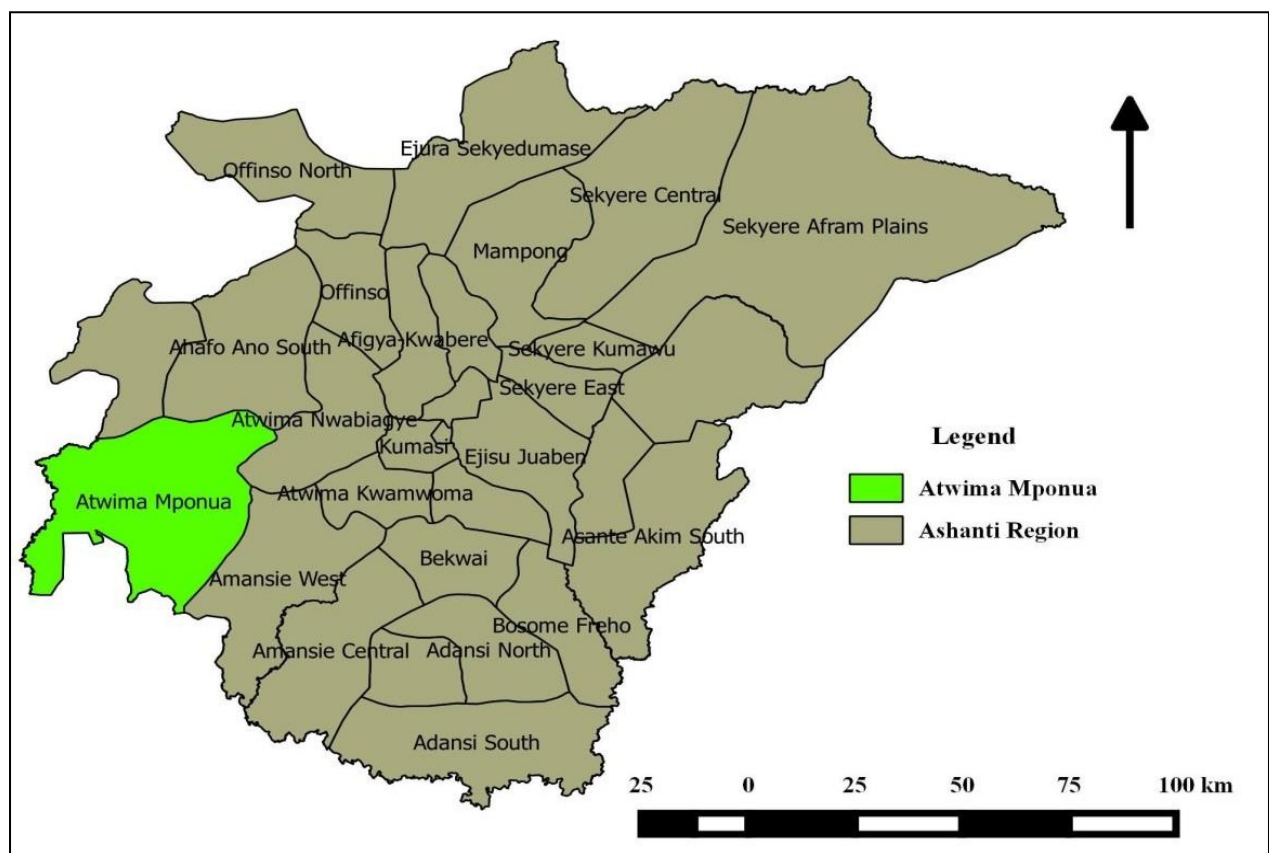
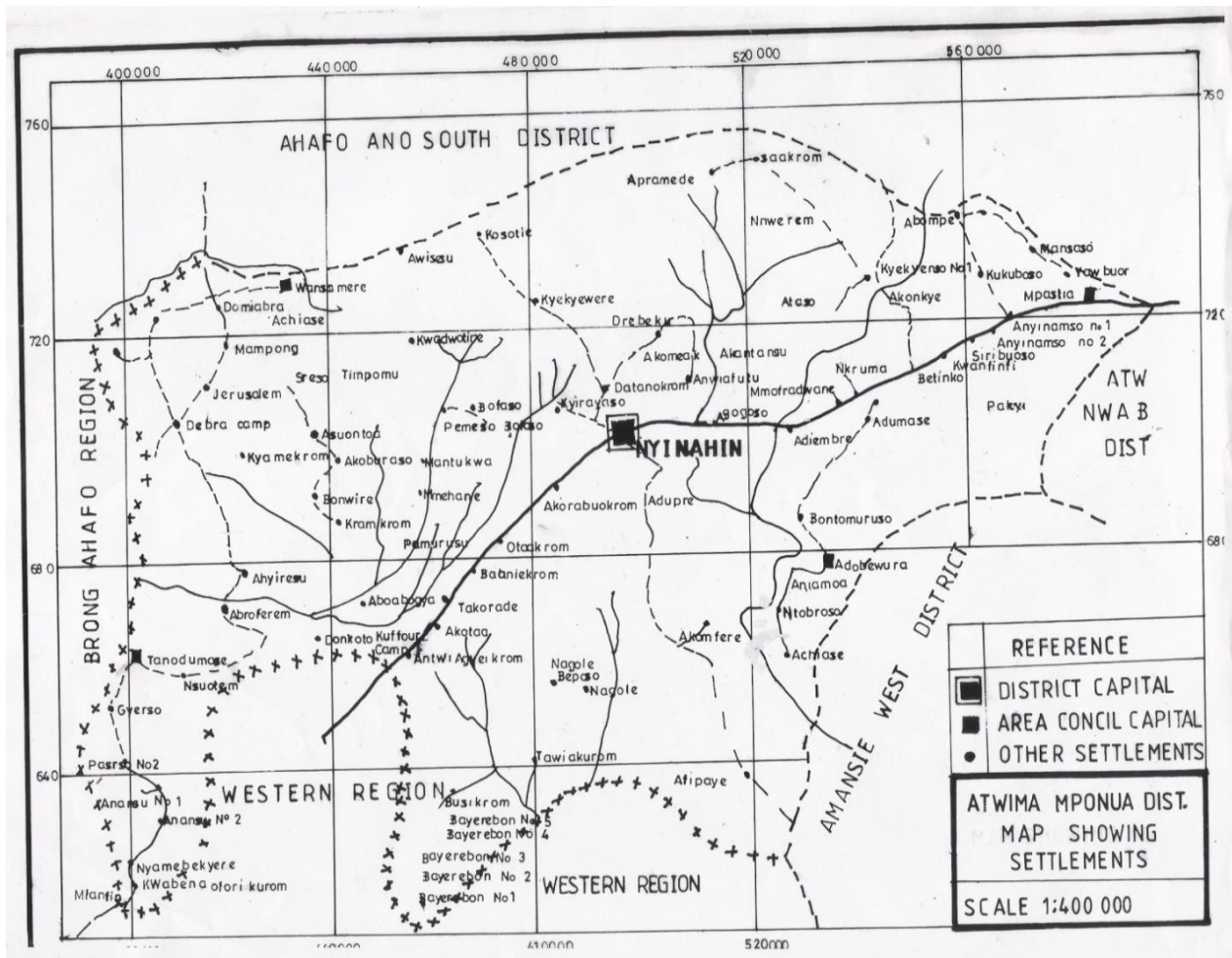


Figure 2
Atwima Mponua District in the Regional Context

Source: DPCU-AMDA, 2017

Figure 3



Source: Town and Country Planning Department–AMDA, 2014

Relief and Drainage

The District has undulating topography dissected by plains and slopes with average height of 76 meters above sea level. The high grounds are the portion of the Atiwa-Atakpame mountain range that lies to northwest of the District. The District is drained mainly by the Offin and Tano Rivers with large marshal areas.

Like most areas that lie in the wet semi-equatorial forest zone in Ghana, the District is marked by double maxima rainfall seasons. The major rainfall period begins from March to July peaking in May. The average annual rainfall for the major season is about 1,700 millimetres – 1,850 millimetres per year. The minor rainfall period begins in August tapering off in November with an average minor annual rainfall of 1,000 millimetres – 1,250 millimetres per year. However, from December to February is dry, hot and dusty. The average temperature is about 27°C with variations in mean monthly temperature ranging between 22°C to 30°C throughout the year.

Vegetation and Forest Resources

The vegetation is basically of the semi-deciduous type. Forest occurs along the major rivers and streams. There are four forest reserves in the District stocked by such valuable timber species as wawa, sapele, esa, asafena and among others. The total land area of the forest reserves is 75,323.0 hectares representing 40 percent of the total land area of the District (Table 1.6). The reserves include Asanayo Forest Reserves, Gyemara Forest Reserves, Tano-Offin Forest Reserves and Offin Forest Shelter.

Geology and Minerals

The District is underlain by the Birimain and Tarkwaian rocks that are rich in minerals such as gold and bauxite. Gold bearing rocks are found at Ntroboso, Bontomuruso, Anwiafutu, Kyekyewere, Ataso, Aniamoa and other parts of the District. Gold prospecting is going on in a number of communities in the District. Bauxite is found at Nyinahin and however remains un-exploited.

- **Implication for Development**

It can be expected that exploitation of the minerals in the District legally will greatly energize the development of the District through job creation, improved household incomes and the much needed revenue in the form of royalties to the District Assembly and has various implications for development. However, illegal mining activities are very rampant in the District. These illegal miners usually use excavating machines to create large pits that are left uncovered leading to the creation of artificial dams. These dams pose a great danger to the lives of people living in these communities. Their illegal activities have negatively affected the forest vegetation in the District especially communities like Amadaa, Ntroboso, Bontomuruso, Aniamoa, Achiasse and Anwiafutu thereby rendering their agricultural lands unproductive.

Traditional Authorities (Chieftaincy)

Traditional Authorities play very important role in the administration of the District. The traditional set up of the people accords the chief power and reverence in the communities. The chief in the traditional setting exercises both executive and legislative powers within the stool boundaries and is assisted to rule by a well-structured hierarchical council of elders including queen mothers. However, the District has no Paramount but rather Divisional/ Stool Chiefs who owe direct or indirect allegiance to the Manhyia Palace. There are six traditional authorities or divisional chiefs in the District namely Nana Nyinahinhene, Nana Toasehene,

Nana Nkawie-Kumahene, Nana Nkawie-Paninhene, Nana Atwima Agogohene and Nana Bantamahene.

The District Assembly has good rapport with these authorities and this has ensured a successful administration and effective maintenance of law and order. This implies that there is a peaceful atmosphere between the District Assembly and Traditional Authorities in the District ensuring tremendously development over years through resource mobilization and other developmental issues.

Population Size and Growth

The results of the 2010 PHC show that the total population of Atwima Mponua District as at 26th September, 2010 is 119,180 which account for 2.5 percent and 0.5 percent of the population of Ashanti Region and Ghana respectively as indicated in Table 1.8. With this population, the Atwima Mponua District is the ninth populous district in the region with Kumasi Metropolis (2,035,064) recording the highest and the least is Offinso North District (56,881). The result indicates that the District's population increased by 10.1 percent over the 2000 population figure of the District (108,235). However, between 2000 and 2010, the District recorded an annual average intercensal growth rate of 0.9 percent which is lower compared with the regional average of 2.7 percent and national average of 2.5 percent. With an annual average intercensal growth rate of 0.9 percent, the population of the District is projected at 123,862 in 2014 and 127,494 in 2017 (using the exponential method). This means that the District has the potential to increase in size and grow to support any development in the District.

Population Density

The total land area of the District is approximately 1,883.2 square kilometres. This gives population density of 57.5 persons per square kilometer for 2000 and rising to 63 persons per square kilometer in 2010 as denoted in Table 1.8. This means that there is a change of 5.5 persons per square kilometer over the period of 10 years. However, the 2010 District's population density is lower compared with the regional average of 196 persons per square kilometer and the national average of 103 persons per square kilometer. Similarly, in 2000, the District recorded the lowest population density. The implications of the high population growth and density reflect in demand and pressure on infrastructure, food supply, energy, water and other services.

Table 3.0: Population Characteristics, 2000-2010

Categories	Year						
	2000		2010				
	Number	Population Density	Number	District Share	Percentage Increase	Intercensal Growth Rate	Population Density
Ghana	18,912,079	79	24,658,823	0.5	30.4	2.5	103
Ashanti Region	3,612,950	148	4,780,380	2.5	32.3	2.7	196
Atwima Mponua District	108,235	57.5	119,180	-	10.1	0.9	63

Source: Ghana Statistical Service, 2000 and 2010 Population and Housing Census and DPCU-AMDA, 2014

Population Distribution of Urban and Rural Localities

In Ghana, the classification of a locality as urban or rural is based on population size. Localities with population of 5,000 or more are classified as urban and those below 5,000 as rural (GSS, 2013a). Based on this criterion, the Atwima Mponua District is therefore predominantly rural as 87.6 percent of the population reside in the rural localities, with only 12.4 percent staying in the urban localities (Table 1.9). Out of the 310 communities, only Nyinahin and Mpasatia are urban localities constituting 0.9 percent as against the remaining 99.1 percent as rural localities.

Situation of Mining Activities in the District

The District currently has about 35 Small Scale Mining Concession Owners who have been licensed by the Minerals Commission. Out of these Licensed Concessions, 23 are currently operating in various parts of the District. In addition, it has been observed that Ghanaian concession owners have engaged expatriates, especially Chinese, as partners in the exploitation of the mineral resources in most of the mining sites. The challenge here is that the District finds it difficult to know how many of these technical experts (Foreigners) are working at each site since no official information on their immigration status is available at the District level. The small scale mining in the District is predominantly characterised by the use of heavy equipment such as excavators and dynamite for blasting rocks.

However, illegal mining activities are very rampant in the District. These illegal miners usually use excavating machines to create large pits that are left uncovered leading to the creation of artificial dams. These dams pose a great danger to the lives of people living in these communities. Their illegal activities have negatively affected the forest vegetation and destroyed about 482.66 acres of land in the District especially communities like Amadaa, Ntroboso, Bontomuruso, Aniamoa, Achiase and Anwiafutu thereby rendering their agricultural lands unproductive and various environmental hazards. It is therefore

recommended that sustainable collaboration between the Minerals Commission, the Environmental Protection Agency (EPA), the District Assembly and other stakeholders to clamp down on illegal mining activities in the District. The Nyinahin bauxite however remains un-exploited.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

Introduction

This chapter of the dissertation presents detail findings, the discussion and analysis of field data gathered from the field. Data for the study was gathered from respondents who are stakeholders in the effort of combating illegal mining in the area and Ghana at large.

Respondents numbering eighteen (18) formed part of the study. Respondents span across various areas of professions and stakeholdership in the area. Of the eighteen respondents, they all participated in the study. This made the outcome of the study much more comprehensive, representative and convincing enough to form the conclusion of the study. Data gathered during the research work was analyzed using simple chart, graphs and tables.

The results of the finding are grouped under the following headings:

- (a) Opinion Leaders' Perception about Illegal Mining
- (b) Propagation or otherwise against Illegal Mining in Ntobroso
- (c) Measures in Combating Illegal Mining
- (d) The good or bad of illegal mining and why?

Background Information about Respondents

The study comprised of 18 respondents who are all stakeholders in illegal mining. Respondents included Assembly and unit committee members and queen mothers, chiefs, politicians, teachers, nurses, NADMO, Environmental health and NCEE directors and religious leaders.

Table 1.0 gives details of the various respondents groups.

RESPONDENTS GROUP	FREQUENCY	PERCENTAGE (%)
Unit Committee member	1	5.5
Chiefs	4	22.2
NCCE Director	1	5.5
District Coordinator	1	5.5
Assembly member	1	5.5
Queen mother	1	5.5
Environmental health	1	5.5
Director		
Religious leaders	2	11.1
Health Professionals	2	11.1
Politicians	2	11.1
NADMO Director	1	5.5
Teacher	1	5.5
TOTAL	18	100

Source: Field Data, 2017

4.2.1 Gender Composition of Respondents

On the socio-demographic characteristic of sex composition of respondents, data gathered indicated that, 16 representing 88.9% of the entire respondent's ratio were males with 11.1% of the frequency of 2 being females. The sex composition of respondents is graphically represented below;

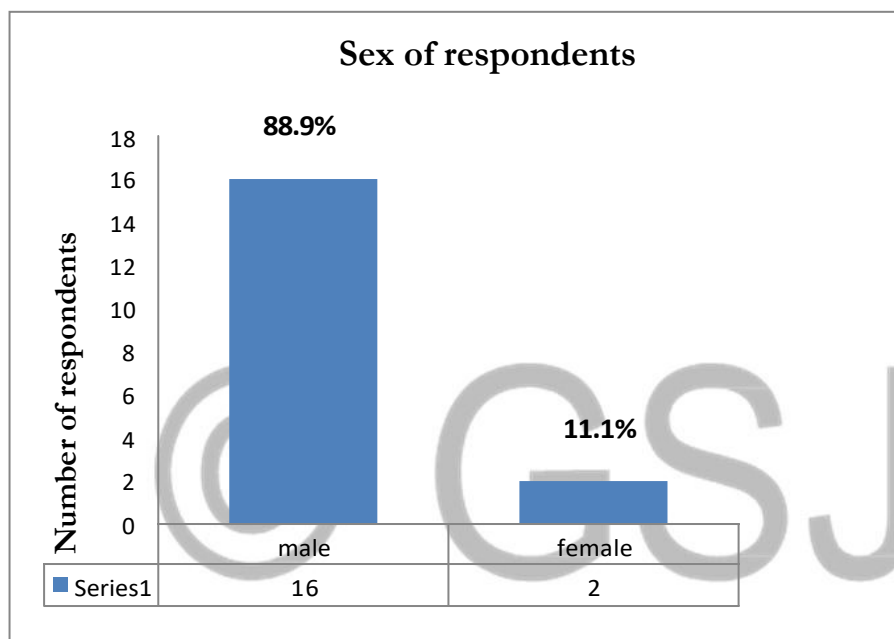


Fig. 4 Sex of respondents

Presentation of Findings

4.3.1. Opinion Leaders Perception about Illegal Mining

Regarding the understanding of respondents in the study of how illegal mining is in terms of being a good venture or otherwise, interview was granted on the subject matter. Data gathered indicated that, respondents were split in terms of making position of the goodness or badness of illegal mining in the area and the country at large. For instance, of the 18 respondents in the study, 12 with the percentage of 67 argued that, illegal mining in the area and the entire country is “*bad*”. For mining in the area on small scale without the necessary legal permit is something suicidal against the environment and the people’s health although some people make ends meet from this venture. Galamsey activities are dreadful and has impacted negatively on farming and other traditional activities in the area, they remarked. In the narration of some respondents, they remarked as follows

“Galamsey is not good in my opinion. At first when we were doing our traditional farming, we had a conducive environment and clean water bodies that one could easily fetch from either for household uses or even in the farm. However, in recent times when these Galamsey boys and Chinese came here, all the water bodies is nothing to mention. I am saddened about our environment and the future generation, and how they are going to even survive in the mist of all these poor environmental situation they will inherit from us. In fact, government must rise to the challenge of Galamsey, other than that, we will even die before our time”(Sub Chief– Ntobroso, 2017).

The view shared by these group of respondents about the goodness or not of illegal partly agrees with the findings of Boateng et al (2014), in his analysis of the impacts of Galamsey at the Atiwa district. In his study, it was revealed by the respondents that it causes crop loss and also affects their crop yield and income. The farm produce are destroyed because of large machines like bulldozers which are used to clear the land in Galamsey operations (Boateng et al, 2014).

Despite the seemingly convincing perception of some group of respondent’s about the negativity of illegal mining activities, other respondents shared different opinion. On their

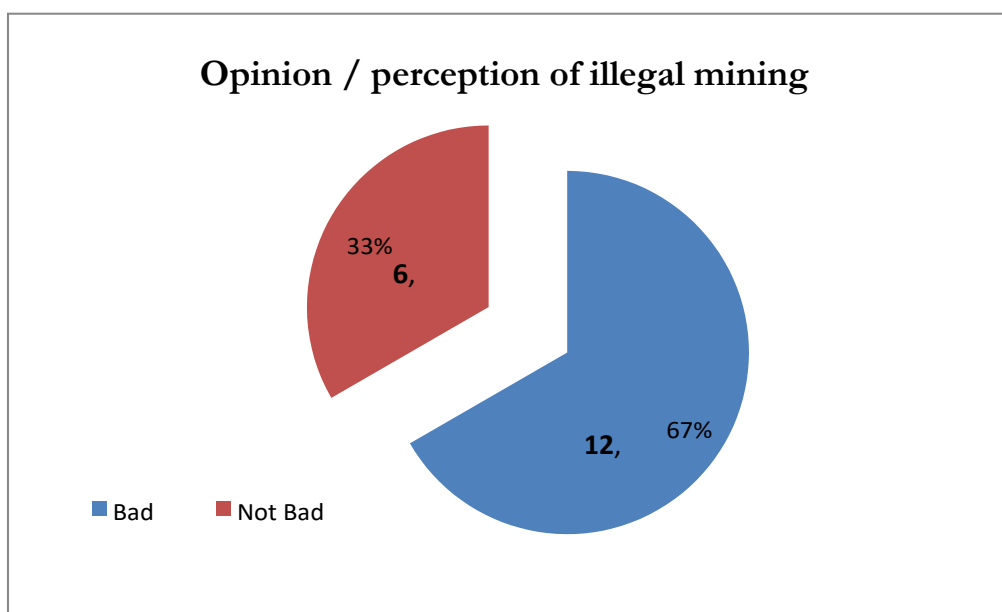
part, illegal mining is “*not bad*” as claimed by the previous respondents group. They comprised of 6 respondents forming a percentage of 33. Respondents with this notion fumed that, illegal mining in the area is not a bad venture as it helps put food on the table of many people in the vicinity. To them, of late, farming in the area do not generate the needed income for village folks to live as farm produce are not purchased on time and in instances where they are, products are cheaply bought and this subject the people to economic hardship and poverty. Again, farming takes a lot more time to yield. However, with the illegal mining activity, folks are able to generate income quick with substantial amount of money to live on. We were really suffering to survive when the Galamsey operations had not come in this area. But since its adventure, all though we are not rich, some people have benefited so much. Galamsey is therefore good. In the words of one respondents, he put it as;

“I have been in this community since 1972. I think the galamsey helped a lot. There is no job in Ghana. So it helped the youth” (Teye Mensah, Assembly Member- Ntobroso, 2017).

Various studies on illegal mining have also established similar responses as some of the major cause of illegal mining; a study by Nasiru et al (2014) on “managing the impacts of mining on Ghana’s water resources from a legal perspective” confirms that economic gains is one of the major driver for engaging in illicit mining.

Respondents’ opinion on the question posed is indicated in the figure below

Fig. 5 Respondents’ opinion on illegal mining



Source: Field Data, 2017.

4.3.(2) Propagation against Illegal Mining

Regarding the interviews on whether various stakeholders are propagating against the continuation of illegal mining in the area, respondents were split on the subject matter although one group of respondents outnumbers the other. Respondents' size of 14 representing an overwhelming 78% response rate of the entire respondents ratio opined that, they have and still propagating against illegal mining in the area. Their position was made following their answer of "yes" to the said question on this topic. Respondents went further to explain the various mechanisms and approaches they have often adopted to propagate against the illegal act. To them, on most occasions, meetings have arranged to educate the people on their actions and the possible dangers they to the life of the inhabitants. Further probe by the interviewer had it that, sometimes, announcement is made by the chief and other opinion leaders to the miners to stop their activities and or go for permit from the government to regulate their activities. Moreover, caution is sometimes given against the destruction of the environment, farmlands and water bodies. In the words of one of the chiefs who happened to be a respondent at the same time, he indicated that,

"As for me, I know for sure illegal mining is not good as it destroys our environment and poses danger to our lives here. As such, sometimes I call for announcement on the community information centre to draw their attention of the dangers of their operations. In some instances, I wish I could even invite the police to arrest those in charge, but as a father of the community it sometimes becomes impossible to do this"(Nana Kusi Ampomah, Sub Chief– Ntobroso, 2017).

On the other hand, 4 respondents representing 22% of hold a contrary view. To them, they have not and seen nobody making attempt in propagating against the undertaking of illegal

mining business. However, respondents in their category failed to expantiate their position as they felt short of giving additional information on it.

The differing views on the issue of propagation against illegal mining is found graphically in

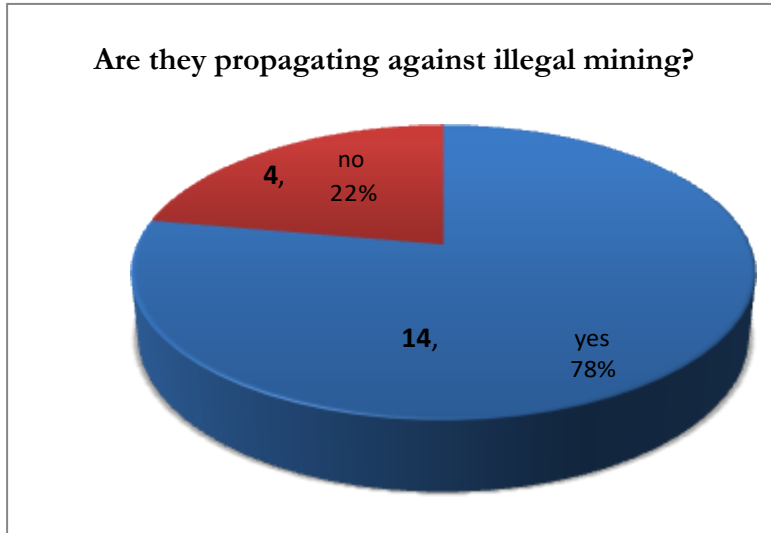


Fig. 6 Propagation against illegal mining

Source: Field Data, 2017.

Measures to Solve the Illegal Mining

Following the revelation by most respondents that illegal mining in the area is bad, a further investigation was carried to ascertain how the various stakeholders would want the menace of illegal mining to be tacked. Respondents gave various opinions as to the measures that can be employed to dealing with the issue. The different indicated views are interpreted below;

Out of a total of 18 respondents in the study, five (5) representing 27.7% overwhelmingly indicated that, they are not strong enough to deal with the menace of illegal mining in the area. Respondents of this notion further narrated that, in the past, leaders and the entire community members have tried their possible best to either reduce or wipe of the ca ncer of illegal mining in the area. Nevertheless, their efforts have often proven futile and have therefore come to the realization that, they are not the right people to curb the issue.

On the other hand, two (2) respondents with the percentage of 11.1 proposed the use of the military in dealing with the issue. On their part, ordinary citizens cannot face the illegal miners as they do not have the needed strength, governmental support and implements to fight them. However, the military officials have all the weapons and governmental support to throw them out of business and that such military approach most likely will succeed than any other. One of the respondents with this position remarked as;

“Who am I, an ordinary village man to go and tell them to stop their work? I do not have such powers, they should bring the “men”, referring to the military to come and drive them away” (Unit Committee Member, 2017).

Further, different respondents argued that, the illegality can only be solved by the central government as it has got the laws, power and mandate. Respondents asserted further that, without the government, nothing regarding illegal mining will ever succeed in the area and the country at large. As such, the ultimate power lies in the hands of the government to control and to a large extent eradicate illegal mining in the country. People who participated in the study and of this stance totaled 6 representing 33.3%.

On the same question, the final group of respondents representing 27.7% proposed constant public education and the adoption of the bargaining approach by the chiefs as a measure to overcoming galamsey in the area. On their part, most of the illegal miners do not have much knowledge on the devastating effect of their activities on the environment and the health of the people as they are only concerned about generating income from their activities. As such, to draw the attention of doers of the impacts of illegal mining will entail educating them about it as well as training them on new methods and approaches of dealing with the menace in the area. Others also suggested that, community leaders such as the chiefs should carry the mantle of holding constant talks with the operators on the effect of their operationalizing

whilst cautioning them of what is not allowed in such business and this would put some kind of fear in the people.

Why illegal mining is good or bad.

i. The benefits of illegal mining to Ntobroso

For the purpose of making judgments based on the peoples' own perception of illegal mining in the area, a question regarding why some people indicated at the preliminary of the goodness of illegal was posed to the category of respondents who affirmed that illegal mining in the area is good. Their follow up response to the initial question is discussed below;

Of the 5 respondents who argued of the goodness of illegal mining, 3 with the percentage of 16.6 of the same respondents group identified that, their choice for the continuation of illegal mining in the area is due to *"its job creation potential"*. According to them, the area of Ntobroso has no business opportunity enclave neither do the farming activity there benefits the people so much. Galamsey therefore has become a means by which most of the youth survive as they are able to generate income from their activities. A quote by one the respondents in connection to this has it as

"We have no job. Even farming of late is not helping us, as we do not have money to engage in large scale farming and we have gold that we are sitting on. How do you expect us to survive whilst we are not making any good use of the natural resource God has gifted us with? We cannot live hungry, we must eat and cater for the children and the entire family. Galamsey has come to save us from poverty somehow" (Teye Mensah, Assembly Member-Ntotroso, 2017).

Regarding the same question, 2 respondents, each respectively fumed that, illegal mining in the area has resulted in the *"expansion of economic status"* and the *"booming of businesses in*

the area".A further interrogation caused the respondents to explain further that, until the coming into being of galamsey in the area, their economic status was of no mention as most of the people lived in abject poverty. But things in this area has somewhat changed since we started doing galamsey. Again, they posited, at first one could not engage in trading and make profit. Galamsey has helped also in the sale of commodities. A confidant"s revelation has it as;

"My sister, now that you have come to meet us smiling, we were not like this at first. Things were hard as we could do no business. No matter what we sold, people could not buy because they did not have money. But of late, little by little, we are making small profit on our sales and it is all these monies we use to cater for ourselves and the children's' fees"(Mbrantie hene Ntobroso, 2017).

Source: Field Data, 2017.

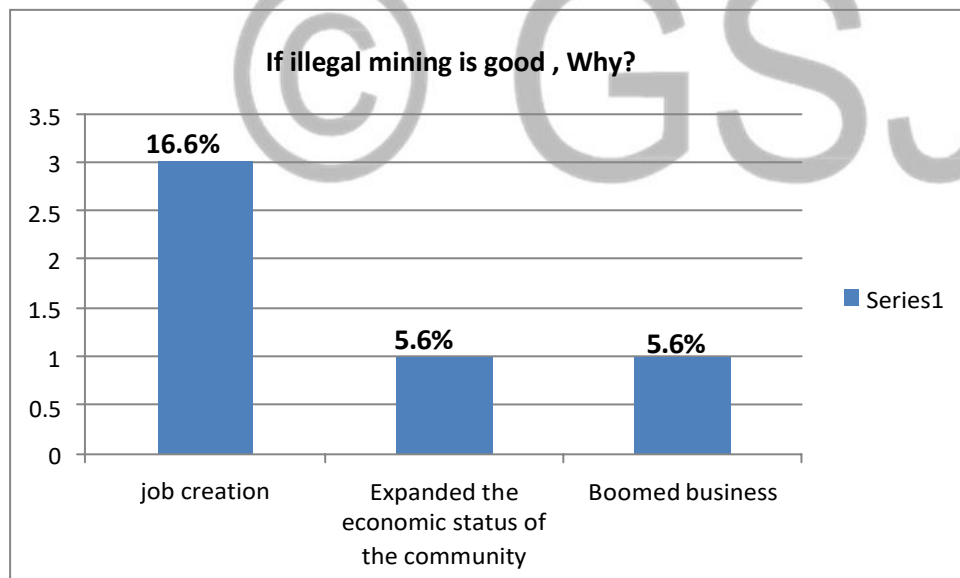


Fig. 7 illustrates the above revelations

(ii) The negative effects of illegal mining in Ntobroso

Regarding the investigation on why illegal mining is bad in the area, all the 13 respondents in this category enumerated similar disadvantages that illegal mining pose to the area.

Respondents identified them as:

Destruction of farm lands, water bodies and the entire environment: Participant in the study who spoke on the negative impact of illegal mining in the area explained this by arguing that, through the activities of illegal miners, all the farm lands, water bodies and environment is nothing to speak about to the extent that village dwellers will now have to depend on sachet and borehole water when going to farm and even for domestic usage. Our cry is not even for ourselves but the unborn generation and where they will get water to survive, respondents fumed.

Fig 8

The current state of the River Offin, the sole source of water for the inhabitants of Ntobroso and its surrounding communities destroyed as a result of mining activities.



Source; Field survey, 2017

Open pits and the loss of lives: Respondents in the study outline one main critical damage posed by the activities of illegal miners as being the leftover of open pits which undoubtedly and in most cases have caused the death of minors. One respondent expressed his view and frustration as;

“I have been in this community since 1972. I think the galamsey helped a lot. There is no job in Ghana. So it helped the youth. But it ended up doing so much harm to our community. They left us with the pits opened. If you check the path you used to get to this town, you will realize there are open pits. I have lost my son last year in October when he was playing with a friend after school. I was called to come and see my son lying in the pit dead. My first born died because of galamsey. I have never stopped dreaming about my son.

Listen, am meeting the town this week. We have to stop the miners from operating. I will personally take you on a motor bike to the site. They (Chiefs) don't respect me, they think am a stranger who robbed my way to win the assembly. Because I keep speaking against them (Assembly Member- Ntobroso, 2017).





Fig. 9 Display of open pits left behind by illegal miners, filled by rain water posing risk to the lost of many lives

Source; Field survey, 2017

(iii) Skin diseases and sound pollution: In the views of the respondents in this category, one of the devastating effects of illegal mining activity in the area is the issue of skin diseases and sound pollution. Respondents narrated that, their health condition has been worsened by air pollution and the constant noise of mining equipment that have come to the area partly due to illegal mining activities.

CHAPTER FIVE

CONCLUSION, SUMMARY AND RECOMMENDATIONS

Introduction

The chapter sought to present the summary, conclusions and recommendations of the study. The recommendations were made based on the results of the major findings that came up in the analysis of the study and conclusions were drawn based on the findings. The chapter also considered the implications of the findings for social policy practices as well as suggestions for future studies.

Summary

The study sought to examine the roles of opinion leaders in the Ntobroso community in combating illegal mining.

Summary of Major Findings

The research has revealed that, community members of Ntobroso have a peculiar perception about illegal mining and agree that it has caused more harm than good. The majority of the respondents spoke against the act and showed great passion for the immediate action against the operations. Generally all respondents affirm that illegal mining in Ghana and their community is a menace but it has also been a blessing to them because the youth do not have jobs to care for their families since farming has become an expensive venture. It has also been revealed that the community has suffered a great loss as a result of illicit mining. Lives have been lost as well as a great deal of vast farm lands that were once producing large quantities of cocoa and other farm yields. Results of the bad state of the Offin River and the pollution as a result of mining are nothing to write home about.

The few that spoke in favour of the act seem to be direct beneficiaries of the activity, appraised that their plight of unemployment came to the rescue since the inception of small scale mining as that has been their source of income. There is also the revelation that community has received an economic facelift since the inception of mining activities as

community members that are hired for the mining activities now have enough money to spend.

The study has also discovered that at least opinion leaders are aware of their responsibility of ensuring the safety of the resources entrusted in them as they acknowledged during the research that they must all come together to find lasting solution to the problem.

Again, the study revealed the perception of lack of political will in the district assembly. Respondents who worked in the assembly seem to have done little in solving the problem. Other respondents representing 27% felt they were not even strong enough to fight the situation and requests for “strong men” to come to their aid. The district coordinating director who is the second highest authority in the assembly during in an open discussion confessed he did not feel strong enough to fight galamsey in his district.

Conclusion

Illegal mining activities have been a blessing as it came as a solution to the unemployment challenge facing the youth of Ntobroso. This blessing in the long run has only brought a curse to the community as it has posed serious detrimental risks including the loss of lives.

The study has provided valuable information and data on the best approach to solving the illegal mining activities in Ntobroso. Opinion leaders have done little in fighting the menace collectively. To ensure that the challenges are met, all opinion leaders who are the mouthpiece of the community must come on board to get a strong backing from the government to bring the activities to a halt.

Recommendation

Based on findings of this study, the following recommendations have been provided for combating illegal mining in Ntobroso.

- **AMDA**

The assembly should be given the necessary enforcement tools to curb the illegal mining situation. The Assembly in collaboration with the Centre for National Culture (CNC), Environmental Protection Agency (EPA), Environmental Health Department (EHD) as well as

National Commission for Civic Education (NCCE) must undertake sensitization programmes to brief the people on the effect of “galamsey” on the future of the children in the Community and district .

- **Traditional Authority**

There is a need to collaborate with other opinion leaders such as clergy, Imam and other recognizable groups such as dressmakers and Tailors association, market women association etc who are highly respected in the community to engage the miners on the risks their activities pose on the community. Traditional authorities should be transparent enough and desist from permitting illegal miners to operate in their communities and discourage private land owners from doing same.

- **Environmental Protection Agency & Environmental Health Department**

The EPA as well as the Environmental health department should be provided with adequate human and technical resources to undertake effective monitoring and enforcement of environmental standards for small scale mining operations.

Areas for further research

Based on the issues raised in 5.2 and 5.3 above, there is a need for further research into reasons why opinion leaders such as traditional rulers, clergy, imams, assembly leaders do not feel strong enough to fight illegal mining in their communities therefore giving a leeway for unlicensed miners to continue in the act. Particularly issues surrounding the weak leadership in the district level. This will enable the nation to effectively fight illegal mining in the local level since most of these acts thrive mainly in the rural areas.

References

- Acquah, P. C. (1995). Natural Resources Management and Sustainable Development: The Case of the Gold sector in Ghana, UNCTAD New York and Geneva.
- Aryee, B. N., Ntibery, B. K., & Atorkui, E. (2003). Trends in the small-scale mining of precious minerals in Ghana: a perspective on its environmental impact. *Journal of cleaner production*, 11(2), 131-140.
- Atwima Mponua District Assembly- AMDA 2017, Town and country planning Department
- Aubynn, A. (2009). Sustainable solution or a marriage of inconvenience? The coexistence of large-scale mining and artisanal and small- scale mining on the Abosso Goldfields concession in Western Ghana. *Resources Policy*, 34(1), 64-70.
- Akosa, A. B., Adimado, A.A., Amegbey, N.A., Nignpense, B.E., Carboo, D. and Gyasi, S. (2002). Report submitted by Cyanide investigate committee. Ministry of Environment and Science. June.
- Ayee, J., Soreide, T., Shukla, G., & Le, T. M. (2011). Political economy of the mining sector in Ghana. World Bank Policy Research Working Paper Series
- Banchirigah, S. M. (2008). Challenges with eradicating illegal mining in Ghana: A perspective from the grassroots. *Resources Policy*, 33(1), 29-38.
- Banchirigah, S. M. (2008). Challenges with eradicating illegal mining in Ghana: A perspective from the grassroots. *Resources policy*, 33(1), 29-38.
- Bero, L. A., Grilli, R., Grimshaw, J. M., Harvey, E., Oxman, A. D., & Thomson, M. A. (1998). Closing the gap between research and practice: an overview of systematic

- reviews of interventions to promote the implementation of research findings. British Medical Journal, 317(7156), 465-469.
- B.K. Kortatsi, 2004. Concentration of Trace Metals in Boreholes in the Ankobra Basin, Ghana. CSIR-Water Research Institute, P. O. Box M32, Accra, Ghana
- Child Protection in the work place, 2004. NSW Ombudsman level 24,580 George street, Sydney, NSW 2000.
- Garvin, T., McGee, T. K., Smoyer-Tomic, K. E., & Aubynn, E. A. (2009). Community-company relations in gold mining in Ghana. Journal of environmental management, 90(1), 571-586.
- Hentschel, T., Hruschka, F., and Priester, M., 2002, Global Report on Artisanal and Small Scale Mining, Report commissioned by the Mining, Minerals and Sustainable Development Project, IIED and WBCSD publ., 67p.
- Hilson, G., & Potter, C. (2005). Structural adjustment and subsistence industry: artisanal gold mining in Ghana. Development and Change, 36(1), 103-131.
- Iddirisu, A. Y., & Tsikata, F.S. (1998). Mining sector development and environment project: Regulatory framework study to assist small scale miners. Final Report for the Minerals Commission Board
- Kambey, J. L., Farrell, A. P., & Bendell- Young, L. I. (2001). Influence of illegal gold mining on mercury levels in fish of North Sulawesi's Minahasa Peninsula, (Indonesia). Environmental Pollution, 114(3), 299-302.
- Knierzinger, Johannes, 2011: Chieftaincy and Development in Ghana: From Political Interim

ediaries to Neotraditional Development Brokers. Arbeitspapiere des Instituts für
Ethnologie und Afrikastudien der Johannes Gutenberg- Universität Mainz

Kricher, J .1997. A Neotropical Companion. Princeston University Press. 451 pages.

Miles, L. (2007). The last stand of the orangutan: state of emergency: illegal logging, fire and
palm oil in Indonesia's national parks. C. Nellemann (Ed.). UNEP /Earthprint.

Ntibery, B.K. &Atorkui, E. &Aryee, B.N.A. (2003).Trends in small-scale mining of precious
minerals in Ghana: a perspective on its environmental impact: Journal of Cleaner
production, vol. 11, pp. 131-140.

Ofori, D. R. (2015). Illegality or social injustice?: understanding the nuances of the Gala msey
mining situation in Ghana.

Peck, P. and Sinding, K. (2003). Environmental and social disclosure and data richness in the
mining industry, Business Strategy and the Environment, 12 (3): pp. 131-146.

Pettersson, F. (2002).Mineral policies and the Ghanaian economy.Luleåtekniskauniversitet.

Songsore,J.,P.W.K. Yankson and G.K. Tsikata (1994), Mining and the Environment;
Towards a Win-Win Strategy”.

Tschakert, P. (2009a). Digging Deep for Justice: A Radical Re-imagination of the Artisanal
Gold Mining Sector in Ghana. Antipode, 41(4), 706-740.

Xia, Y., Cao, M., Zhang, X., &Bae, H. Y. Mining Algorithm of Opinion Leaders Based on
Analysis of User Attention Behavior.

Yakovleva, N. (2007). Perspectives on female participation in artisanal and small-scale mining: A case study of Birim North District of Ghana. *Resources Policy*, 32(1), 29-41.

Yin, R. (1984). *Case study research: Design and methods* (1st Ed.). Beverly Hills, CA: Sage Publishing

Yu, X., Wei, X., & Lin, X. (2010, October). Algorithms of BBS opinion leader mining based on sentiment analysis. In *International Conference on Web Information Systems and Mining* (pp. 360-369). Springer Berlin Heidelberg.

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*****Appendices 1

INTERVIEW GUIDE FOR OPINION LEADERS IN NTOBROSU COMMUNITY

This interview guide is designed to solicit views on the role of opinion leaders on illegal mining in the Ntobroso community in the Atwima Mponua District of Ashanti Region in Ghana. The researcher is a Master of Public Administration (MPA) student of the University of Ghana. This thesis is being conducted in partial fulfilment of the requirements for the award of a Master's Degree in Public Administration. I would be very glad if you could help by supplying information for this study. This is purely for academic purpose and your response will be treated with the strictest confidentiality and anonymity. Thank you for your anticipated cooperation.

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Interviewee Information

Name of Organization / Association / Religious body / Group etc:

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Gender:

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No. of years lived or worked in the community:

.....

Current Position/ Role in the community:

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lvii

INTERVIEW QUESTIONS

Introduction

1. What is your view on illegal mining in Ghana?
2. Are there reports of illegal mining activities in Ntobroso?
3. How long has this activity existed in your community?
4. Have you heard that some influential members in the country could be promoting this activity?

Objective 1. To examine the perceptions, expectations and positions of opinion leaders on illegal mining.

- I. What are your perceptions on illegal mining in your community?
- II. What have been the results of these activities to your community?
- III. Have opinion leaders such as the clergy, imam, traditional leaders, district assembly etc in Ntobroso expressed their concerns on these activities?

Objective 2. Are opinion leaders propagating illegal mining?

- I. Have you heard of rumors of any opinion leader promoting illegal mining in your community?
- II. Do you believe these rumors could be true? Why?
- III. Have there been reported cases of any leaders' involvement in illegal mining in your community?

Objective 3. To examine how opinion leaders can help solve illegal mining in Ghana

- I. Do you think opinion leaders have a role to play in salvaging the current situation?
- II. Have you taken any action to control the current situation?
 - If yes, give a brief account of the activity
 - If No, give reasons.

- III. Do you think some leaders in the community have been unconcerned in fighting illegal mining in community? Why?

Appendix 2

MEDICAL SCREENING OF FOOD VENDORS
About 800 food vendors were assisted to screen and had issue with medical certificate. Out of the number screened, 5 people representing 0.63% were identified with typhoid and they were referred to medical officer for treatment.

TABLE BELOW INDICATE THE NUMBER OF FOOD VENDORS SCREENED

ZONES	NUMBER SCREENED
NYINAHIN	304
OTAAKROM	76
MPASATIA	221
KUFFOUR CAMP	199
TOTAL	800

MINING ACTIVITIES
Mining is one of the activities which are causing destruction to our lands, rivers, streams, farm lands, forest and wild life.
We have identified that miners refuse to do reclamation. The pits are left uncovering which lead to accumulation of ponds which causes:

- Breeding of mosquitoes, black flies etc which causes malaria and river blindness.
- Increasing in flooding in the nearby communities.
- Accidental deaths to children living in those communities.
- Pollution of rivers and streams which serves as water source to the nearby communities.

Attached are the photographs of the mining pits

A page from the Environmental health 3rd quarter report of AMDA 2016

Source: Field survey, 2017



A bird view of the current state of the Offin River as a result of illegal mining activities

Source: Field survey, 2017