

GOLD EXPORTS AND COST IMPLICATIONS OF ILLEGAL GOLD MINING IN GHANA

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Abstract

Precious commodity as its often called, gold has been a major export commodity and export earner for Ghana. Formally called the Gold Coast due to her large mineral reserves, Ghana has been the second largest producer of gold in Africa and eleventh in the world. AngloGold Ashanti is the largest official mining company in Ghana. Along with other large mining companies, they extract, refine and export gold in Ghana. However, due to its lucrative nature, following liberalization, many small scale and mostly illegal gold miners have joined in to mine. Illegal gold mining, known as *galamsey* in local parlance has many serious implications for the country. This paper uses predominantly, an Empirical/case study approach to examine the nature of gold exports for Ghana, the role of small scale gold mining and the cost implications of illegal gold mining. The findings are that, illegal small scale gold mining has consequences for the environment in terms of destruction of ecosystem, water bodies and livelihoods, “ byway of loss of agricultural lands. Health challenges also exist for miners and communities. Findings also reveal that illegal gold mining does not only involve local, but foreign participants who form alliances with local illegal gold miners.

Keywords: Ghana Gold Export, Ghana Small Scale Gold Mining, Galamsey, Ghana Illegal Gold Mining, Cost Implications.

1. INTRODUCTION

Located in West Africa, Ghana has often been nicknamed the land of gold. Noted for her large gold deposits, Ghana was formerly called the Gold Coast by the British when they first arrived in the former colony.

Ghana, like most modern economies relies heavily on export earnings to develop her economy. Ghanaian exports for the period 2003 to 2016 on average was 1960.80 million US Dollars. Ghanaian exports peaked in 2012 first quarter reaching 4118.30 US Dollars. In 2016(4th quarter), exports rose to 3126.10 US Dollars from the third quarter figure of 2872.20 US Dollars.

The main exports of Ghana are timber products, cocoa, gold; and others such as aluminum, diamonds, manganese, tuna, etc. Cocoa and gold, however stand out amongst the exporting commodities. The mining industry contributes 5% of the country’s Gross output (GDP) with gold accounting for over 90% of all exports of minerals.

Ghana is Africa’s second largest producer of gold, behind South Africa and is the eleventh biggest gold producing country in the world. Gold mining in Ghana is done on both large scale and small scale. Currently, there are about 23 companies producing gold on large scale, whilst over 300 companies are registered to produce gold on small scale. The largest gold producing company in Ghana is AngloGold.

Small scale gold mining in Ghana in Ghana is not necessarily a problem, however, in recent times, many illegal small scale miners have joined in gold mining in Ghana. The phenomenon, popularly called *galamsey* has resultant consequences(implications), not only for the miners who suffer health hazards, or even loss of lives, but the communities in which such illegal gold mining takes place. There has been several reports of miners dyeing through cave-ins and destruction of the ecosystem due to illegal mining in Ghana. Further, it has

been discovered in recent times that illegal gold mining in Ghana, regardless of the associated cost implications is not only carried out by natives, but foreigners from other countries such as China. In this paper we examine the gold exports in Ghana and the economic cost implications associated with illegal gold mining in the country.

1.1 Problem Statement

Ghana has huge deposits of gold which the country exports for foreign exchange, the country is one of the significant gold producing countries both on the African continent and in the world. The country's huge gold deposits gives her a comparative advantage in gold exports. Gold exports has been beneficial as it has contributed to the much needed foreign exchange earnings for a developing country such as Ghana. However, gold as a natural resource and its exports has attracted many small scale illegal gold miners who operate illegally through hazardous and unapproved methods.

In Ghana, the Ministry of Lands and Natural resources regulates the exploration of minerals, by granting the required license to mine. In addition, there is the Minerals commission and the Mineral Commission Act (1986); under the ministry of mines, which is the institution that provides the regulatory framework for mining. Further, the Environmental Protection Agency (EPA) provides regulations for protecting the environment. Regardless, there is rampant illegal gold mining in Ghana with destruction to water bodies, forest reserves, farmlands as well as severe consequences for the miners themselves, with health hazards and casualties to the miners. Such consequences have economics cost implications for the economy. This has led to the need for research study to determine the cost implications of gold exports and illegal gold mining in Ghana.

1.2 Aim of study

Gold, gold exports is important to the government and the people of Ghana. Further, illegal - gold mining is of major concern. The associated cost implications cannot be over-emphasized, be it health hazards, death of miners concerned, treats to communities and livelihoods, loss of legitimate earnings to government as a result of smuggling etc. It is for this reason that this paper has as aims to determine the cost implications of illegal gold mining in Ghana.

2. LITERATURE REVIEW

2.1 Trade /Exports and Liberalization

A wide range of literature in academia explains the rationale of trade. David Ricardo (1817) describes trade as based on the theory of comparative advantage of nations as they differ in resource and other factor endowments. In general, trade related literature postulates a positive relationship between trade and liberalization on one hand and economic growth on the other hand. In their studies, Edwards (1992), as well as Krueger (1997) favour this positive relationship argument. According to Wacziarg and Welch (2003), trade liberalization increased the growth of Gross Domestic Product. Economies such as that of Ethiopia has experienced economic growth as submitted by Sukar and Ramakrishna (2001). In terms, of exports, the export-led economic growth hypothesis shows a positive correlation between export and economic growth. Helpman and Krugman (1985) in their studies submits that growth can be improved by exports through adopting technologies from foreign countries, utilizing foreign capital and scale economies benefits. Exports also removes foreign exchange

barriers (Eshafani (1991)).

2.2. Gold Exports in Ghana

In terms of mineral goods, Down and Stocks (1977) submits that after agriculture, the most important and oldest is mining. Eggert 2002 notes that minerals in general can impact positively on the livelihoods of the citizenry. Most studies submit that minerals such as gold can significantly contribute towards development of the economy (Davis 1998, Ascher 1999). Gold in Ghana accounts for over 95% of mineral export revenue in Ghana (ICMM 2015). Madeley (1999), notes that it has a fair share of international trade. Ghana's gold production has a long history (Tsikata 1997). Ghana is the second largest gold producer of gold (Coakely 1999). The country produced 3.3% of gold in the world worth 5,64 billion US Dollars (KPMG 2014). Mining; especially trade in gold has contributed to the development of Ghana dating from colonial times (Akabzaa 2000; Agbesinyale 2003). For the period 1983 to 1998 mining contributed USD 4bn interms of FDI to the economy of Ghana (Ghana minerals commission 2000). Between 2001-2004, contribution of mining to gross domestic product increased to 5.2% on average as compared to 1991 figures of 1,3%(Ghana minerals commission 2006). Interms of foreign exchange earnings (gross), mining's contribution increased 1998 to 46% from 1986 figures of 15.60 % (Ghana minerals commission 2000)

2.3 Illegal Small Scale Mining in Ghana

In spite of the benefits of mining and gold to the Ghanaian economy, mining and gold exports possess problems; especially illegal small scale mining. Garving Hilson (2005) submits that small scale mining in Ghana has a history of 2000. Small scale mining in Ghana is known as '*galamsey*' which means "gather them and sell" as submitted by Aubynn et al (2010:3). Thomas Hentscher et al (2002) defines small scale mining as mining done by individuals, families, cooperatives or groups with little or no mechanization and it's often done on informal/illegal basis. Peiter et al (2000) adds further that operations involve low level technology and are labour intensive.

Aubynn et al (2010:3) reports that less than 30% of estimated 250,000 small scale miners are legally registered. Carson et al (2005) submits about 85% of the small scale miners operated without a license. Although small scale gold mining was formally legalized in Ghana in 1989, many small scale gold mining is done on illegal basis due to lengthy, red tape/bureaucracy and expensiveness of the process (Hilson et al 2014:297). Ineffective application of laws; besides crackdowns occasionally, has compounded the situation (Hilson and Yakovelva 2007). In Ghana, illegal gold mining accounts for 10% of gold production Ntibery et al (2004). Hilson et al. (2014) also notes the involvement of foreigners who collaborate with Ghanaian citizens for mutual gain. A great number of foreign involvement from China involves the „Shanglin gang“ from Shanglin County of the Guangxi province (South China Mining post 7/06/2013).

Bush (2009) submits that galamsey in Ghana is as result of poverty. Andrews (2015:4) describes it as "an economic necessity for those engaged in it". Participants often work in conditions harsh in nature (Andrews 2015:4).

The dangers to miners can be devastating. Boiko-Wayrauch (2010) estimates that a miner on average dies in a week. Illegal small scale mining also affects food and agricultural products (Essumang et al 2007). Roulet et al 1998 submits that chemicals left in soils are washed into water bodies when it rains and thus affect water security. Aryee et al (2003) submits that illegal gold mining results in water and soil contamination, degradation of land as well as

flora and fauna contamination.

3. RESEARCH METHODOLOGY

Gold exports and cost implications of illegal gold mining in Ghana adopts predominantly a qualitative Empirical/case study in order to provide an insight into one of the most important issues affecting the economy of Ghana today. The case study approach used in this study will seek to be interpretive in nature. Bryman (2008; 17) in his study, he submits that in order to explain how members of a particular social group interacts; the interpretive approach is very useful. There are a many earlier studies on illegal gold mining in Ghana. However, most of the studies have been in traditional social sciences with focus on impact of illegal gold mining. In this study; we draw a connection between Economics, international trade in gold and how it has triggered the socio-economic phenomena of illegal gold in Ghana. In this regard, the study will examine data relating to Ghana gold exports, Government of Ghana agencies and departments that regulate gold mining in Ghana, and gold mining laws in Ghana.

3.1 Econometric Analysis

The study is qualitative (Empirical) in nature, however, in explaining the rationale behind gold exports in Ghana, we adopt a simple econometric model.

An augmented gravity of model of trade by Hiscox and Kastner (2002) that explains the reason behind trade as:

$$\ln(M_{ij}/Y_{it}) = \alpha + \beta \ln Y_i + \gamma \ln Y_j - \delta D_{ij} + \lambda \ln L_{ij} + K \ln W_{ijt} + \varepsilon_{ijt} \dots \dots \dots (1)$$

where M_{ij} is the volume of trade between two countries (i and j), Y_{it} represents the percentage of incomes between the two countries, Y 's represent income levels, D represents distance between two countries with resource difference two countries as represented by L_{ij} , K_{ij} and W_{ijt} measuring the wealth of the country exporting. This augmented model can be used to explain Ghana's pattern of trade with other countries. From our introduction we realized that Ghana has resource abundance such as gold as represented in equation 1.

Export led growth postulates that export can accelerate economic growth as represented below inequation 2 below. Using Granger causality, a simple relationship between export and economic growth as $GDP=f(Ex) \dots \dots \dots (2)$,

Where GDP =Gross Domestic Product (Economic growth).

In regression form we express equation 2 as

$$GDP = \alpha + \beta EXP + e \dots \dots \dots (3)$$

Where GDP =Gross Domestic Product EXP =Exports

e =error term

From above, it suggests that for a country like Ghana to develop; promote its GDP growth, it needs to export factor endowments or trade.

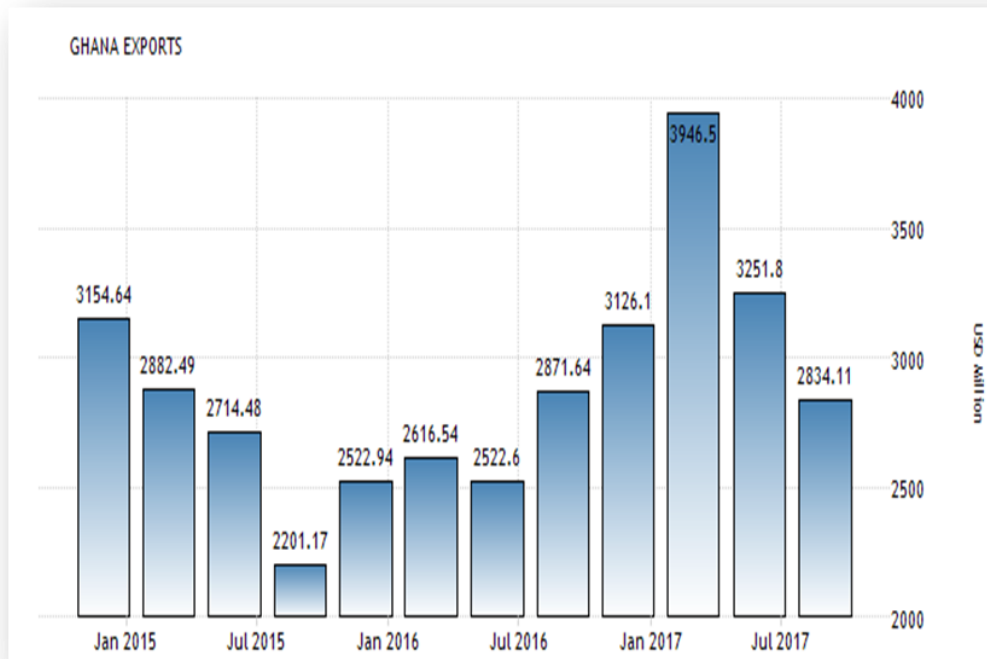
4. FINDINGS AND DISCUSSIONS

4.1 Gold exports in Ghana

Ghana in 2015 exported 10.5 Billion US Dollars and ranked the 84th World's largest exporter. Ghana exports from the year 2013 to 2016 averaged 1960.80 Million US Dollars. Ghanaian exports in the first quarter 2012 reached an all-time high of 4118.30 Million US Dollars and in 2003, reached a record low of

565.06 Million US Dollars. From 2010-2015, Ghana exports increased at 6.3 % (per annum). In 2016 Ghana exports increased from 2872 US Dollars in the third quarter to 3126.10 Million US Dollars.

Figure 1: Ghana exports data from January 2014-July 2017



Source: Tradingeconomics.Com: Bank of Ghana

Ghana's top export destinations include: India (\$3.21B), Switzerland (\$1.39B), China (\$1.06B), the Netherlands (\$669M), and France (\$607M). Countries such as United Kingdom also continues to remain an important trading partner. Minerals in Ghana contribute 5% of the Gross Domestic Product (GDP) and accounted for about 38% of Ghana's total export in 2014. Gold however, accounts for over 95% of overall mineral exports. Gold alongside cocoa form the greater chunk of Ghana's export as shown in the table below:

Table 1: Ghana export data of Gold and cocoa from 2005-2008 in Millions USD

Year	Product	Export Value(Million USD)	Export Quantity (tons)	Value Share of Total exports
2005	Gold	864	72	28.2
2006	Gold	1,131	66	31.3
2007	Gold	1,459	76	41.3
2008	Gold	1,814	70	45.0
2005	Cocoa	792	498,004	25.9
2006	Cocoa	1,096	685,482	30.3
2007	Cocoa	896	506,358	25.4
2008	Cocoa	1,031	474,706	25.6

Source: IFAD-IFPRI Strategic Partnership Program

Gold currently lead exports at a rate of 41.2%, followed by Cocoa beans with 18.8%. In 2012

Ghana exported 3.3% of world gold worth 5.64 billion US Dollars, and Ghana ranked second after South Africa in Africa. This statistics makes Ghana a giant in gold exports in Africa and the World.

4.2 Gold production in Ghana

Total gold production (Table 1) in 2008 was over 70 tons with total export share of 45%. Ghana is the second largest producer of gold in Africa and 11th in the world by 2016 figures... Ghana currently produces about 90 metric tons out of world total (rounded) gold output of 3100 metric as shown in Table 2 below.

Table 2: World top gold producers 2016

Rank	Country	Production(Metric tons)
1	China	455
2	Australia	270
3	Russia	250
4	United States	209
5	Canada	170
6	Peru	150
7	South Africa	140
8	Mexico	125
9	Uzbekistan	100
10	Indonesia	100
11	Ghana	90

Source: Author's compilation

World gold production data shows that Ghana ranking has seen some upward and downward swings however, generally declining; exiting the world top ten producer list. In 2010, Ghana ranked 10th (82 metric tons), in 2011 climbed up to 8th with production increase (100 metric tons), fell in 2012 to 10th with 87 metric tons. The country increased production to 90 metric tons in 2013, however stayed at number 10 and this did not change in 2014. Ghana gold production however fell outside the top ten in 2015 and 2016; ranking 11th. In Africa, Ghana produces about 16% of the continent's gold as compared to 51% of continental leaders.

4.2.1 Ghana gold production; historical background:

Ghana's gold production has a long history. Before colonialism, Ghana, the then Gold Coast produced and exported gold through trans-Saharan trade routes. Before the mid-nineteenth century, gold mining was alluvial in nature, with gold been mined in streams. It was not until the 1860's that under the earth surface gold mining was discovered; as well as rich ore deposits. In the late 1870's to 1880's, actual mining was began; with Obuasi gold mine being the richest gold mine to be discovered. The Ashanti Goldfields Corporation (AGC). Modern gold mining in Ghana began on large-scale beginning of the twentieth century with European investors providing the investment of capital. The colonial government under British rule; in order to protect the profits of European companies, took control of gold mining in Ghana (then Gold Coast). After independence, the Nkrumah government took control. In the 1960's, gold production saw a decline and it took twenty years to recover. During the period of decline, investor interest in gold mining was low. Mining was however seen as potentially a good source of export earnings. The government of Ghana Since the 1984, has promoted the

positive turnaround of the mining by passing the Minerals and mining Law in 1986 which provided reduced income taxes and capital. The passing of the law gave companies the privilege to write off 75% of their capital invested against taxes accrued in year one then 50% of taxes remaining after. The government essentially set the corporate tax rate at 45%. Offshore bank accounts were also allowed by the government for foreign staff income, payment of dividends and servicing of loans. Resultantly, the mining sector; including gold mining saw a recovery beginning of the 1990's and mining; after cocoa became the second highest export earner. In the early 1990's over 21% of production of gold was primarily from the Ashanti and western regions. In 1987, Ghana's production of gold production was 327,000 ounces however reached one million ounces in 1992. Currently, Ghana's gold production ranks second in Africa.

4.2.2 Current state of gold production:

Gold production is fairly liberalized. Both large scale and small scale miners are involved. Production is still regulated by the Government of Ghana through various Ministries, Departments and Agencies (MMDA's); as well as laws

1) Mining regulatory Laws

The first major law regulating mining was the Minerals and Mining Law 1986 following the Economic Recovery program in 1983. Other regulations include the Small-Scale Gold Mining Law 1989(PNDC Law 218); which regulates artisanal or small scale gold mining in Ghana, the investment Promotion Act 1994(Act 478), the Minerals Royalties Regulations Law 1987(LI 1349), The EPA Act 1994(Act 490), as well as the Environment Assessment Regulations 1999; amended in 2002.

The current general legislative framework for mining in Ghana is the Minerals and Mining 2006(Act 703). This Act contains provisions pertaining to; among other things, but not limited to:

- Ownership of minerals and cadastral system
- Mineral rights
- Royalties, rentals and fees to be paid
- Dispute resolution
- Reconnaissance license
- Prospecting license
- Mining lease
- Surrender, suspension cancellations of mineral rights
- Small scale mining

2) Gold mining regulatory bodies in Ghana

In Ghana, the government ministry responsible for administration of the mineral sector and exercises the power to grant mining and exploration licenses is the Ministry of lands and Natural Resources. The department body within the ministry that administers the mining Act is the Minerals Commission. The Minerals Commission also promotes mineral development, recommends mineral policy, and advises government on matters relating to minerals and liaises between the government and industry. Several other bodies are associated with gold mining regulation in Ghana:

- The Environmental Protection Agency(EPA): has responsibility over environmental issues, including mining
- Mines Department: Conducts safety and health inspections and ensures records related to mining are maintained.

- Lands Commission: Examines new applications for mining and keeps legal records of licenses
- Geological Survey Department: responsible for conducting geological studies in areas such as geological records maintenance and map production.
- Ghana Chamber of mines: The association made of representatives of mining companies.
- The Precious Minerals Marketing Corporation (PMMC) is the government agency responsible for buying gold (and diamond) output in order to promote small-scale gold and diamond mining in Ghana.

3) Structure of gold mining (production) in Ghana

Ghana's gold production is done by two main groups; *large scale miners* and *small-scale miners*. Before 1989, small-scale gold mining was not allowed in Ghana. The government of Ghana, however after the Economic Recovery Program in 1983, liberalized the mining sector and passed the Small-Scale Gold Mining Law 1989(PNDC Law 218). Both large and small scale gold mining have contributed to Ghana's development over the years.

Table 3: Ghana Gold production contribution to GDP and Employment)

Year	Contribution to GDP (%)	Employment Total
1990	4.83	N/A
1995	5.63	19,557
2000	5.56	15,120
2005	5.02	13,766
2008	5.58	17,829
2009	5.76	17,332

Source: Ghana Minerals Commission

Large scale gold mining firms are from countries such as Australia, South Africa, United States and Canada. It is estimated that over 85% of large scale companies are owned by foreigners, with only 15% owned by the state as indicated in a study by Akabzaa and Darimani (2001). Notable are; Goldfields Ltd, AngloGold Ashanti Ltd, and Newmont Africa. Others include Red Back Mining Inc, Gold Star Resources Ltd. Large scale gold mining in Ghana operates on lands of above 25 acres, are capital intensive, and adopting state of the art technology. As compared to small scale mining firms, large scale firms are easier to monitor and regulate. Small scale mining is mining that is done on concessions of 25 acres maximum, by individuals or small groups of people who are poor. Small scale mining is labour intensive, mostly employing crude methods and tools such as pick-axes, shovels, pans etc. In Ghana small scale mining is done by methods that involve little capital expenditure by individuals or persons less than ten in number or by ten or more person co-operatives. Since its legalization, the small scale mining sector has been growing astronomically. The sector also continues to have significance in the economy in terms of employment and creation of wealth. Small scale mining (SSM) is estimated to directly employ one million people and indirectly; 4.5 million. Small scale mining in 2014 contributed 34.4 % of the total gold production in Ghana. Since 1989, small scale gold mining has increased tenfold to 1,500 000 ounces from 17,234 ounces. From 2005 to 2013, gold produced by small scale miners increased seven fold from 225, 411 to 1, 576, 478 ounces. The percentage share of gold production by small scale firms has been increasing; as compared to that of large scale companies.

Table 4: Ghana's total gold production from 2005-2014

year	Large scale producers (Ozs)	Small scale producers(Ozs)	Total production of gold(Ozs)	Percentage share of small scale production
2005	1,913,534	225,411	2,138,945	11
2006	2,090,721	247,063	2,337,784	11
2007	2,239,696	388,594	2,628,290	15
2008	2,378,012	418,943	2,796,955	15
2009	2,564,095	555,737	3,119,832	18
2010	2,624,391	767,196	3,391,587	23
2011	2,697,661	978,611	3,676,272	27
2012	2,856,243	1,481,670	4,337,913	34
2013	2,820,419	1,576,478	4,396,897	36
2014	2,685,399	1,484,793	4,170,192	36

Source: Ghana Minerals commission

4.3 Illegal small scale gold mining in Ghana

From above, the importance of small scale gold production cannot be over-emphasized. It is however of importance to note that small scale gold mining is of two forms; Licensed versus unlicensed. The extent to which small scale gold mining is legal is in reference to the framework that regulates and makes small scale mining legal. The main regulatory framework is the Small-scale Gold Mining Law of 1989(PNDCL 218). The Law legalizes small-scale mining in Ghana by purchasing a license.

Licensed small scale mining are operations that have acquired the required licenses and environmental permits. Unlicensed (illegal) operations on the other hand are operations without the required license and environmental permits. Unlicensed gold mining in Ghana is illegal and is referred to in local parlance as “galamsey”. It is estimated that only 30% of small scale miners are registered. Illegal gold mining in Ghana has several cost implications for the economy of Ghana (discussed in section 4.4). In recent times, illegal gold mining has been on the national agenda and a challenge for many governments to address, given the dangers it poses.

Although Ghana has many laws governing gold mining and many regulatory bodies, illegal gold mining is rampant. Several factors have been attributed to the insurgence of illegal gold (galamsey) in Ghana.

4.4 Unemployment and Poverty

According to the World Bank group, small scale mining is a largely-poverty driven activity. In Ghana, poverty plays an important factor. Unemployment rates in Ghana is high, and poverty is prevalent. Further, salary incomes are low with daily minimum wage of about \$2.5. Agriculture is the largest employer and many citizens engage in subsistence farming. A combination of these factors facing rural folks who are poorly educated with few employment opportunities, or desire to boost their incomes to make ends meet in the face of harsh economic realities may engage in small scale mining and ignorance or factors that may impede their formal registration is likely to lead them to galamsey (illegal). Poverty stricken individuals or families are usually those trying to earn enough money in order to survive;

parents or students who want to fund school or university studies, and farmers looking for supplementary income. Illegal gold miners could be able bodied men who dig trenches to women who do washing to children who drop out of school due to poverty.

4.3.2 Bottlenecks in obtaining License

The Minerals and Mining 2006(Act 703) stipulates that all minerals on land is the property of the Republic of Ghana and vested in the President of the Republic. Any individual who wishes to mine must apply for a license to do so. It is not the license, but the process of acquisition that is the problem. All though the Minerals Commission of Ghana has about nine district centers providing support to existing mining companies, the powers of these centers are very limited. District centers can only assess an application for a mining license at the initial stage for minimum requirements, however, they have no power to grant small scale mining licenses. According to Aryee et al (2003), few changes have been made to the licensing process. In acquiring license for 1-5 acres concessions, the government has to review and approve every three years, whilst concessions of 5-25 acres are subject to renewal every five years. The minerals act of Ghana stipulates that only citizens of Ghana; 18 years above qualify to apply for license for small-scale mining. In order to acquire a small scale license, the applicants must submit a fully filled copies of a small scale mining application form (10 copies), and site plans of prospected area sent to the district center. After appraisal of the application, the District Assembly involved will publish the plans as well as the notices lasting 21days. In the absence of any objection, the district officer in charge will compile the completed forms and forward to the main office of the Minerals Commission in Accra. After receiving the forms and fees, the Minerals Commission will advise the Ministry of Lands and Natural Resources as to whether to grant the license or not. If the application receives approval, the Minister in charge will append his signature and a license is granted. The process as outlined may appear very simple, however, as submitted in earlier studies such as Hilson (2013), Hilson (2015), the process of licensing can be time consuming, with prospective applicants having to chase their applications in the Capital. Besides time, most small-scale miners may be poor rural folks who may not have the resources to go through the cumbersome process and thus the tendency to resort to galamsey (illegal mining).

4.3.3 Traditional Land Tenure System

In most parts of Ghana, traditional chiefs rule over jurisdictions called traditional areas. The Kings and chiefs of these areas do not only rule over the people, but serve as custodians of the land. These chiefs see lands in their traditional areas as the property of their ancestors passed down to them and thus their own. In order to mine, the small-scale miner must not only fulfil the requirements of the law, but may have to appease the chief by paying huge sums of money to the traditional ruler. Sometimes, chiefs may exercise the sole power without recourse to the provisions of the law, and allocate lands to ignorant small-scale miners to operate illegally.

4.3.4 Inadequate Institutional support

After the introduction of the small scale mining gold Law, the Government of Ghana with assistance from the World Bank (WB) and others; introduced the Small- Scale mining project. This project was to provide the needed institutional assistance for the sector. The minerals Commission Law of 1986(As amended by the Minerals Commission Act of 1993), subsequently established the Minerals Commission with the mandate of government policy formulation as pertains to the exploration of minerals and to handle all mineral agreements of public nature. Government institutions include:

- the Precious Minerals and Marketing Corporation(PMMC) which buys small-scale minerals such as gold, m
- Mines department that oversees health and safety of mining
- The Geological Survey department responsible for prospecting.
- The Environmental protection agency of Ghana also plays some role in protecting the environment.

Although these institutions exist to provide the needed support for small-scale gold mining, the situation in reality is different. Most of these government agencies are fraught with cash flow problems, poor infrastructure and lack of needed equipment such as basic information communication tools, transportation, to name but a few. All these culminate in rendering poor support for the sector.

4.3.5 Foreign Involvement

The Ghana minerals and mining Act of 2006 stipulates that small-scale gold mining (25 acres and under) are reserved for only Ghanaians and foreigners are prohibited. In recent times however, many foreigners mainly from China have taken advantage of the lax rules and inability of the Ghana government to regulate the sector; coupled with high levels of corruption to engage in illegal small-scale gold mining in Ghana.

Miners from China began arriving in the 1990s, but their numbers skyrocketed somewhere in 2010, induced by rising gold prices. Many of the miners are mainly from the Shanglin County in Guangxi Province, with minority from other provinces such as Henan, Hunan and Heilongjiang. Shanglin, in particular with its strong historical background has given miners from the region rich gold mining experiences. Official estimates put the number of Shanglin miners at 12000, and the total number of Chinese miners in Ghana is estimated at 20,000. Most of the Chinese miners partner with Ghanaian citizens; with the Chinese providing the capital excavating equipment. They are helped by visa brokers and corrupt immigration officials who receive bribes for on-arrival visas, come to the country through neighboring countries such as Liberia, Togo or Burkina Faso. Those who enter legally may be on Tourist visas and may not have work permits; but get extension illegally. Since such miners have no permits, they engage in illegal gold mining in the country. Although the government of Ghana has done some crackdowns, foreign involvement persists just as the resultant effect; illegal gold mining.

4.4 Cost implications of illegal gold mining in Ghana

In this section we discuss the cost implications of illegal gold mining in terms of environmental, health miners and above all revenue and export potential of Ghana.

4.4.1 Cost implications of Health, safety and lives of illegal miners

Illegal gold mining has cost implications for the miners concerned. Mining in general has health and safety implications for miners all over the world, in terms of infections from chemicals, and danger of being trapped underground.

The dangers are more pronounced for illegal gold miners who engage in open pit gold mining, without regard to their own health and safety. According to Ghana business news about 200-400 persons die yearly from mining related accidents. Illegal gold miners often use dangerous chemicals such as cyanide and mercury in ore processing which likely to be harmful to their own health. Increasing health problems means increasing government

spending on health facilities; and channeling hard earned foreign exchange earnings to the health sector.

In addition to health issues, a common phenomenon on the news is miners dying from cave-ins of trenches and holes dug for gold mining. In 2017 alone, dozens of miners have died from illegal gold mining. On April 10, 2017, citfm, a local radio station reported of five miners out of seven asphyxia affected, dying during mining underground for ore in Talensi in the Upper East Region of Ghana. On 4th July, 2017 Joy News in Ghana, through its online portal; myjoyonline reported of 19 miners who got trapped in a pit at Prestia-Nsuta (Western region of Ghana) five of which managed to escape with remaining 14 remaining trapped. Rescue efforts later proved futile. According the five survivors, they were coming out of the pit, when it collapsed. Reports eventually revealed that it was an old pit left behind by a large mining company. In 2016 four miners were reported dead due to a cave in Prestia-Ankobra in the same region. The ages of two of them were 36 and 37.

The socio-economic costs leaves a lot to be desired. First, health issues means the government needs to allocate hard earned export earnings to the health sector. Further, illegal mining accidents mean more government spending on search and rescue, social welfare for children left behind by dead miners; as well as reduction in the active labour force which could affect productivity, export and foreign exchange earning potential of the country. The latter is true as most of the people involved in galamsey are young and able bodied; as well as formerly involved in other productive sectors such as cocoa production.

4.4.2 Cost implications associated with Water pollution

In Ghana, there is a saying that water is life. Ghana is still a developing country and majority of the population in the rural areas and in the absence of pipe born water depend on rivers. Streams and other water bodies such as Pra, Ankora, offin and other rivers have been a source of drinking water and livelihood. Water pollution is of one cost implications of illegal gold mining in Ghana. Accessibility to safe drinking water is part of the Millennium Development Goals and a universal right. However, in Ghana today, river bodies that provide drinking water have been polluted with chemicals such as cyanide, mercury and mud, in mining gold. Cost implications of illegal gold mining on water does not only relate to health problems as a result of drinking chemically polluted water, but the economic costs can be seen interms of increasing government expenditure on health facilities and a stretch on foreign exchange earnings, as well loss of economic activity as fishing, and negative effects on agriculture interms of effect on irrigation.

4.4.3 Cost implications associated with land degradation and gold, cocoa and other exports

One of the most visible implications of illegal gold mining in Ghana is land degradation. Illegal small-scale miners often dig pits, trenches indiscriminately and leave them uncovered. Recently, miners have upgraded from the use of shovels and pick-axes to the use of excavators that can destroy vast areas of forest land for mining. Most mining sites have become flood prone areas endangering the lives of locals.

Further, most farms have been encroached on; including cocoa plantations. Given that Ghana relies heavily on Cocoa production, in the south, and she abutter trees in the north. This can seriously affect the foreign trade of Ghana as well as foreign exchange earnings. Also, destructions of farms implies the importation of food, which will stretch the balance of payments accounts of the country. According to the World Bank, the total of 150000 hectares

of land were destroyed by illegal gold mining as at 1995. The figures are likely to be a lot higher now. Most large scale mining companies have observed encroachments on their concessions and as illegal gold mining continues, Ghana is in danger of drifting further down the world ranking as submitted earlier in the text.

4.4.4 Cost implications associated with Loss of revenue

The government of Ghana after legalizing small scale mining in 1989, established the Precious Minerals Marketing Co-operation (PMMC) to foresee the promotion of small scale mining and products. The PMMC is charged with buying small scale mining gold produce on behalf of the government of Ghana. The Company has licensed local gold buyers in mining communities to purchase gold on its behalf. Illegal gold mining by its illegal nature operate outside the regulatory framework; from land acquisition, mining to selling of products. It is unlikely illegal miners will sell their gold produce to the PMMC, depriving the state of the due revenues and foreign earnings. Where foreigners are involved; as the case is recently, the gold is smuggled out of the country, enriching foreign nationals and leaving behind degraded lands, polluted waters and so on for the state to bear the cost. An estimated amount of 60, 000 to 80,000 ounces of gold are smuggled out of Ghana, annually, representing a huge robbery to the state.

4.4.5 Cost implications associated with foreign involvement, diplomatic relationship and bilateral trade

A recent phenomena in the illegal gold mining saga has been the involvement of foreign nationals especially, Chinese. The Involvement of Foreign Nationals has led to a surge in cost implications, such as destruction of farming lands, cocoa plantations and water pollution. A worrying feature however, has been a treat to National security. There have been clashes between citizens and Chinese miners in many mining areas. Some of them wield weapons and might use them when confronted by locals for destroying lands and water bodies.

The government of Ghana in an attempt to curb the situation has on some occasions taken action to clamp down these foreign miners and there have been repatriations on some occasions. On June 5th 2013, for example, 169 Chinese miners were arrested in the Ashanti region of the country. According to the then President John D, Mahama, illegal mining causes clashes among citizens and between citizens and Chinese. According to immigration authorities, more than 45000 Chinese have been repatriated in a series of operations. According to the Guardian, Ghana depends on loans and assistance from China, and China is Ghana's major trading partners. A retaliation by Beijing is thus likely to damage bilateral relations which has a long history dating back to the 1960's when Ghana has her independence. Examples are tightening visa regulations for Ghanaian nationals and a delay in a \$3 billion loan which the Ghanaian authorities believe is as a result of arrest and deportation of Chinese illegal gold miners. Trade might eventually suffer, and economies affected.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

From this study, we realize that Ghana has had a long standing history of gold production, dating back to the colonial era: The economy continues to be a dominant gold producer in Africa and the world. Further, gold production has contributed significantly towards the development of the economy of Ghana; providing the much needed foreign exchange earnings; as well as jobs and incomes for the citizenry. The liberalization of gold

production in 1989 following the Economic Recovery Program (ERP) in 1983 allowed the operation of small scale gold mining. Small scale gold production has led to increase in gold production and export, however, liberalization, gold export and the existence of small scale gold mining has led to many a majority of small scale gold miners operating illegally. Bureaucratic procedures in obtaining licenses, unemployment and poverty, traditional land tenure systems, weak institutional support, involvement of foreigners coupled with lax immigration rules and other minor factors have compounded the situation and this is in line with studies by authors such as Hilson et al (2014), Hilson and Yakovelva (2007) .

From this study, we also see that illegal gold mining has several cost implications and this study has taken an economic approach to determine the economic cost to the economy. Among the cost implications found include loss of miners lives, in line with studies by Boiko-Wayrauch (2010); water pollution and resultant loss of economic activity, loss of revenues to government as a result of smuggling, treat to bilateral relations and trade, and land degradation.

5.2 Recommendations

Gold is an unrenewable natural resources and ought to be managed efficiently. Given the negative influences of mining on the environment, some scholars have recommended putting an end to mining. It is the recommendation of this study that the government, policy makers and stakeholders take steps to minimize the adverse effect of gold mining, with reference to this study; illegal small scale gold mining.

On the count of bottlenecks to obtaining licenses, the Small scale gold mining act stipulates that small scale gold mining is reserved for Ghanaian citizens, and as such, obtaining licenses should be made easier and accessible to prospective miners. The government can streamline the license acquiring process by setting up offices in district capitals and empowering them to grant appropriate mining licenses with minimal cost so as to allow the average Ghanaian to obtain a license to mine. Lengthy time for issuing licenses could also be avoided with effective decentralization of the process. Bribery and corruption in granting licenses should also be tackled by establishing a complaint center and a toll-free helpline and cracking down on corrupt officials who exhort money from prospective miners.

on the count of poverty and unemployment; the government is encouraged to provide alternative sources of livelihood for the youth especially, step up the industrialization drive of the country, developing initiatives such as *youth in agriculture* and promoting entrepreneurship with support for funding and technical assistance as well as providing a safety net for the vulnerable, such as orphaned children are but a few things the government can do to discourage people from illegal gold mining. Providing equal access to education beyond basic level for the less privileged will curb school dropouts and venturing into illegal gold mining with the hope of quick gains.

For those who would like to undertake small-scale mining, the government should provide the needed loan facilities, through the National Investment Bank (NIB) for example and encourage co-operatives and partnerships that will pull resources and expertise together to promote synergy.

On Foreign Involvement; the government needs to strengthen immigration rules, tackle corruption in The Ghana Immigration service (GIS). Background checks needs to be done on immigration officials and measures such as declaration of assets and monitoring of activities of immigration officials on consistent basis taken. Another measure is for the Ghana police conducting random checks on foreigner's passports and public services such as hotels and

transport services demanding passports for checking before rendering services. Civic education and citizen whistle blower should also be encouraged to cramp down on foreigners engaged illegally in gold mining.

The Current ongoing “Operation Vanguard” which is a joint military and police taskforce to fish out illegal gold miners in seriously affected areas is laudable. Such exercise should, however not be a flash in the pan, but should be on a continual basis.

The government of Ghana over the years have engaged in privatization of inefficient industries over the years sometimes with little benefit to the Ghanaian. Since most citizens do not have the required capital and equipment to do mining the right way, the government could promote local foreign partnership (Joint-ventures hip), where every foreign investor in the mining sector will have to partner a local.

As time goes by, more Ghanaians will be able to stand on their feet and gain valuable mining experience going forward. Joint ventures have contributed immensely to the Chinese Economy forexample and could be adopted in the small-scale mining sector of Ghana.

On poor institutional support; the government should strengthen the state institutions such as the Minerals Commission, to perform their core mandate. Office space, ICT tools, transport and adequate staffing will go a long way to ensure they are the position provide the much needed support and control of the small scale mining sector Promotion of green mining. Bringing the rampant illegal small-scale mining menace under control should be the first step of the government. Following control, should be support for the sector as above. Another important thing the government can do is promoting green mining.

Measures could include geological support in prospecting at the right places, land reclamation of mined lands through cover up’s and afforestation (tree planting) and organic fertilization in turning mined lands into agriculturallyuseable.

5.3 Limitations and Further Study

5.3.1 Delimitations

This study looked at gold exports in Ghana, historical and current state of gold mining in Ghana, illegal small scale gold mining in Ghana, the cost implications; as well some recommendations for curbing the problem. This study however, did go into details; as regards solving the illegal gold mining issue in Ghana; as well as foreign involvement in perspective.

5.3.2 Further Study

Based on limitations of study, further research should focus on areas such as tacking illegal gold mining in Ghana, as well as shading more light the issue of foreign involvement in illegal gold mining in Ghana.

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