

Internalizing the Negative Externalities of Mining in Ghana: Should Corporate Social Responsibility Be Voluntary?

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Abstract

Mining operations in Ghana and elsewhere have resulted in both positive and negative externalities in mining countries. Whilst the positive externalities have always been highlighted, not much attention has been paid to the negative externalities on mining communities despite several protestations from civil societies, NGOs and people living in mining areas. The impact of the negative externalities as manifested in health, social and environmental consequences have been borne by mining communities at huge cost. In the face of the consequences of the negative externalities, many have questioned whether CSR as a mechanism to address mining organizations' negative impact on society should remain voluntary. This paper looks at the negative externalities of mining activities on communities and proposes that mining companies should internalise the cost of negative externalities arising out of their operations through CSR to avert future regulations of their impact on society.

Keywords: Externalities, CSR, Mining, Investment, Cost

1. Introduction

Mining development and mineral production constitute a major source of foreign and fiscal revenues for many third world economies and an important activity for some developed economies and for all of these mineral producing countries, it has been hoped that mineral revenues will provide a basis for economic development (Mate 2002).

The mining industry has seen a boom in the last two decades across the world. The 1990s opened up an abundance of global opportunities for the world's non-coal mining industry. The political changes that took place in the early 1990s had a far-reaching impact for the world mining sector as companies were able to take advantage of the opening of a number of countries to foreign involvement and investment (OECD, 2004)

Worldwide expenditure as of 1996 (OECD, 2004) indicate the great interest of mining companies in exploring both established and promising regions of the world for new mineral deposits. The perceived opportunities and relative merits of regions outside the OECD area are readily apparent.

In the midst of the global boom, mining and its related activities have seen significant increase in Ghana in the past two to three decades, although mining dates back into the pre-colonial times. The boom in mining perhaps could be attributed to the World Bank/IMF-led Mineral Sector Reforms which begun in the mid 1980's. According to Hilson (2004) the industry long recognized as a world leader in the production of numerous industrial and precious minerals, the country has made considerable achievements in its mining economy under reform and that by amending policies to establish a more favourable mineral investment climate for foreigners, the Ghanaian government has, since 1983, facilitated unprecedented increases in annual production of gold (500 percent), diamonds (300 percent) and bauxite (more than 600 percent).

Akabzaa (2009) notes that statistical summaries on the minerals industry provided by the Minerals Commission give credence to the fact that mineral exploration and mining activities have been bolstered following the reforms and that total mine output for all major minerals mined increased several fold. He additionally indicates that annual gold production increased from 282,299 ounces in 1984 to 2,143,000 ounces in 2005, manganese from 267,996 tons to 1,719,589 tons, bauxite from 44,169 tons to 606,700 tons and diamond from 341,978 carats to 1,065,923 carats, during the same period.

The reforms created attractive new mining sector policies, resulting in a huge foreign investor interest witnessing a massive inflow of foreign direct investment into the mining sector over the last decade. Awudi (2002) states that these investments have resulted in significant increase in mineral extraction and its export particularly gold, out of the country and have led to a tremendous growth in the sector's contribution to the foreign exchange earnings of the economy. The total value of minerals exported as a percentage of total national exports increased from 20.3% in 1983 to 45.48% in 1995 and has since 2004 contributed 42% to the total merchandise export.

The contribution of mining to GDP has increased from 2.3% in 1991 to 5.2% in 2007 (Owusu 2007) and offers employment to an estimated 524,000 people, both in the large and small scale mining sector. The sector also

contributes 7% of the country's total corporate tax earnings and is the leading foreign exchange earner. Gold, the most important mineral, now earns over US\$600 million and making up almost 90% of the mineral output, has replaced cocoa as the leading foreign exchange earner. Again Awudi (2002) further reveals that the mining sector companies together offer about 20,000 direct jobs whilst mining support industries and institutions such as assay laboratories, contract miners, explosive companies, restaurants, transport companies, security services, catering services have also sprang up and have also contributed some level of employment to Ghanaians.

Mining activities, however generate both positive and negative externalities. The positive externalities in mining manifest itself in benefits associated with mining. These include increased FDIs, reduced unemployment, macroeconomic gains, and employment-related gains among others. For example, the sector according to Akabzaa (2009) had attracted nearly US\$6 billion worth of FDI at the close of 2005, accounting for nearly 60 per cent of FDI flows to the national economy during the period. The country now boasts 16 operating mines, six projects at mine development stage and over 150 local and foreign companies with exploration licences, mainly in the domain of gold.

Hilson (2004) underscores that while there is little denying that considerable macroeconomic gains have occurred in Ghana's mining sector under reform, a burgeoning literature insinuates that associated growth has had detrimental impacts upon indigenous communities and that perpetual expansion of mining and mineral exploration activity has displaced numerous subsistence groups outright and destroyed a wide range of cultural resources, and have caused widespread negative externalities such as environmental problems, including excessive land degradation, contamination, and chemical pollution

Despite the over US\$6 billion FDI attracted in mineral exploration and mine development during the last two decades in Ghana, mining has traditionally been associated with negative externalities, yet decisions in the mining industry as Romero (2004) put it involves trade-off between negative and positive externalities of mining. Most often than not the positive externalities has been highlighted at the expense of the negative externalities. Romero (2004) outlines negative externalities attached to the mining industry as social, health and environmental costs. He explains that the environmental cost comprises the negative impacts that mining may have on the environment, such as pollution and environmental damage whilst social cost comprises the negative impact that mining activity may have in mining communities for example the alteration of the social structure, increased delinquency, prostitution, alteration of the local culture and forced relocation.

Ghana like any other mining country is beset with negative externalities (problems) concerning social and environmental issues. According to Awudi (2002) the "gains" from the sector in the form of increased investment are being achieved at significant environmental, health and social costs to the people, in spite of series of public outcry against the mining companies operating in Ghana who themselves are yet to openly acknowledge that their investments are inherently a major pollutant and a source of social conflicts around.

The following are concrete evidence of negative externalities of mining in recent times:

- The alienation of large tracts of land from communities, depriving poor and marginalised communities of their land surface rights and as a result depriving many communities of their sources of livelihood. From 1990–98, mining investment in gold in the Wassa West District resulted in the displacement of 14 communities with combined populations of 30,000. (Akabzaa 2009)
- Vegetation clearance by the surface mines and mining of terraced areas exposed large areas of unconsolidated soils and waste rock dumps to rainfall based erosion and scour mobilizing sediments in receiving waters.
- Spillages and leakages of hazardous cyanide solution and mineral processing waste waters, leading to chemical pollution and contamination of water bodies leading to decline in safe drinking water in mining communities For example the recent spillage of cyanide in Ahafo Kenyasi which led to the imposition of GH¢ 7million.
- Emission of dust particles in mining areas, resulting in the reduction of air quality in mining communities. For example, recent studies have shown elevated dust particulate matter exceeding EC, WHO and EPA (Ghana) levels in Tarkwa due to surface mining activities. (Awudi 2002)

2. Materials and Methods

As part of efforts to concretise existing evidence on negative externalities of mining, a study was conducted in the Tarkwa-Nsuaem Municipality of the Western Region of Ghana. The purpose was to elicit information on the impact of mining on the health of the mining community. Tarkwa is a leading mining community in Ghana and it is located 372 km south west of Accra, Ghana's capital. The area lies between latitude 400'N and 500 40'N and longitudes 1045' 2010 W with a total land area of 2354 sq km. As a hub of the mining industry in Ghana, Tarkwa has a higher concentration of mining companies and other allied mining service providers and industrial laboratories than any other mining area in Ghana. This is due to the existence of extensive natural resources particularly proven mineral deposits such as gold and manganese accounting for the presence of six large scale mining in the area.

The methodology used for the study consisted of desk study and secondary data collection. The desk study consisted of review of related literature and existing reports and works relating to mining activities in the study area. The study also used non-structured interviews to elicit information from the Ghana Health Services and the Minerals Commission. These institutions were purposively selected to collect information necessary for this study.

The study identified six mining-related diseases in Tarkwa-Nusaem Municipality. These include malaria, skin diseases, acute respiratory infections (ARI), chest infections, asthma and tuberculosis (TB). Malaria is the leading cause of outpatient cases in the study area. In 2000, the Health Directorate recorded 31,471 outpatient cases of malaria. This increased by 303.9% to 127,109 in 2009 (Figure 1). The high incidence of malaria in the area has been attributed to mining activities. The excavation of land surface by mining companies and small scale operators (*galamsey*) creates large pits with stagnant water during the rainy season. The stagnant water pits provides breeding opportunities for *Anopheles gambiae* mosquitoes, the vector commonly associated with the transmission of malaria.

The second highest outpatient case of mining-related diseases is acute respiratory infections caused principally by concentration of dust in the atmosphere by mining activities. Dust whether toxic or non toxic present serious health challenges for mining communities and also has damaging effect on vegetation by blocking plant pores and reducing light penetration of photosynthesis. This is believed to be responsible for the high level of respiratory disorders and skin ailments in the area. This is followed by skin diseases, chest infections, asthma and tuberculosis which are all air borne diseases. Skin diseases increased by 381.5% from 2489 cases in 2000 to 11985 in 2009. Chest infections, asthma and tuberculosis increased by 47%, 625.6% and 288.1% respectively from 2000 to 2009 (Figure 2). The 288.1% increase in TB over the period confirms recent research findings by London School of Hygiene and Tropical Medicine that listed Ghana among countries with high prevalence of TB among mine workers and mining communities in sub Saharan Africa.

Significantly, gold production has witnessed tremendous increase over the period 2000-2009. Whilst the total production for the year 2000 as a percentage of total output over the period 2000-2009 was 1.53%, this increased to 27.73% in 2009 as shown in Fig 3. This portrays an upsurge in mining related activities in the study area from 2000-2009. The increase in mining (gold production) have been associated with negative externalities which have resulted in huge cost of health to people living in the Tarkwa mining area who have been affected by mining related diseases.

3. Durbin-Watson Statistical Test for Autocorrelation

To further establish whether there is correlation (Figures 1, 2 and 3) between mining activities and the prevalence of mining related diseases, the study used the Durbin-Watson statistics to detect the presence of autocorrelation between gold production and the prevalence of mining related diseases in the study area using the residual from regression analysis (Durbin-Watson 1951) at 5% level of significance. It test the null hypothesis H_0 that the error are uncorrelated against the alternative hypothesis H_1 that errors are correlated using the ordinary least square (OLS) estimates β and the residuals e_1, \dots, e_n . The test statistic is

$$d = \frac{\sum_{t=2}^n (e_t - e_{t-1})^2}{\sum_{t=1}^n e_t^2}$$

Ignoring the end effects, we have $d = 2(1 - \rho)$ where ρ is the sample of the residuals at lag1. The null hypothesis is $H_0: \rho = 0$, that is the errors are uncorrelated with a first order scheme as against the alternative hypothesis $H_1: \rho \neq 0$ which means that the errors are correlated with a first order scheme. The calculation of the test produced the results below:

$$\rho = \frac{569625157.2}{774964447.18}$$

$$\rho = 0.7350$$

But $d = 2(1 - \rho)$

$$d = 2(1 - 0.7350)$$

$$d^* = 0.53$$

Since $0 < d^* < 2$ there is some degree of positive autocorrelation between gold production and the prevalence of diseases in the study area.

From the above, it is quite clear that there is a link between gold production and mining related diseases. The most visible impacts of gold mining are the costs borne by communities especially in the areas of health, social and environment hazards. Toxic materials used in the extraction process, such as cyanide, or generated as by-products of mining, such as mercury, have resulted in devastating consequences. Surface mining has increased dust in the area.

4. Corporate Social Responsibility in Mining

As a measure to address the attendant social, health and environmental cost associated with mining, Corporate

Social Responsibility (CSR) has been offered as the answer to the negative externalities generated by mining as identified earlier on. According to Akabzaa (2009) mining companies and governmental agencies are trying hard to convince Ghanaians that the companies are contributing significantly to the development of local communities within their operational areas through CSR, in response to its impact on the society, yet there is increasing evidence to suggest the contrary

Corporate social responsibility is polemic and its antiquity dates back a century ago. It lacks consensual definition and yet the concept has seen significant interest both in academia, industry and business literature. Its exponential growth over the last decade has been phenomenal. Utting (2005) believes that CSR over the last two decades has become embedded in corporate culture due to expansion of NGOs, unethical practices of some transnational corporations (TNCs), perceptions of inequitable financial flow patterns that favoured TNCs at the expense of labour and environmental conditions, disasters and perceived social injustices across the globe.

In its broadest sense, CSR typically includes issues related to business ethics, community investment, environment, governance, human rights and labour issues at the workplace. Corporate social responsibility is essentially a concept whereby companies integrate social and environmental concerns in their business operations on voluntary basis. The concept is not rested on the premise of legalities but a voluntary compliance by organisations to address its impact on the society. Utting (2005) maintains that the CSR agenda centred heavily on the promotion of voluntary initiatives to minimize practices or improve social, environmental and human rights dimension of business performance. In effect CSR activities of organization are based on what Freitag (2009) calls use of organizational discretion to address its impact on society

Given the negative externalities or footprints of mining as outlined or identified earlier, the question that arises is who pays for such impacts on the society. Ethically, is the industry justified to say that as good corporate citizens, their imprint and impact in the society should be addressed on voluntary basis? As Freitag (2009) poignantly stated CSR policy and activities are neither mandated by regulatory agencies nor are they compelled as part of normal business operations. He describes CSR initiatives as those activities an organization engages in to support social causes and meet self-imposed obligations.

As host mining community in the study area suffers the consequences in terms of mining related diseases as a resulted of increased mining activities, the question that agitate the mind of many is whether corporate institutions should be allowed to address its impact voluntarily. In contrast, judging from the nature of negative externalities impacted on the society by the mining industry, there is no justification for the industry to address its impact on voluntary basis. The voluntarism argument cannot cross the line of morality and ethical business.

Admittedly, Romero (2004) argues that if one analyses the many cases in which mining communities are in conflict with mining companies, one can realise that issues that arise from the relationship between the two parties lie in a non-regulated area. By implication Romero is suggesting that because issues lie in unregulated area, mining organisations undertake CSR projects that suit their interest at the expense of communal interest

It is quite interesting to note that the CSR of most organisations are often guided more by a company's own production and cost constraint rather than community identified priorities and entitlement. Utting (2005) admits that in reality, CSR practices remain limited to specific and ad hoc interventions. In the midst of the competing claims between mining organisations and host communities due to the negative externalities of the industry, Romero suggests that governments need to develop a legal administrative procedure that specifically addresses the complaints arising from the relationship between mining companies and local communities. By this, does it imply that the decision of such quasi judicial body will be enforced and complied by mining organisations? The stance taken by Romero is perhaps a demonstration that the voluntary nature of CSR has not been able to "coerce" the industry to address CSR issues in a holistic manner to assuage host communities agitations in terms of dealing with negative externalities of mining due to the fact most of the issues lie in an unregulated area.

According to Utting (2005) civil society among others are demanding corporate accountability through regulatory arrangement that go beyond conventional voluntary approaches by, interalia, placing greater emphasis on corporate obligations, legalistic approaches and some form of punishment in case of non compliance. It must be admitted that a combination of forces including civil societies, environmentalist, NGOs like Mining Watch, Oxfam, the Greens, WACAM, Friends of the Earth and a salivating media are pushing for organisations including those in the extractive industry to be accountable for their negative externalities as most have failed to address its own impact on society particularly in the wake of major corporate scandals. The future trajectory of CSR can therefore not be sustained in corporate discretion, voluntarism and self imposed obligations.

The CSR agenda has today, broadened to include range of issues and practices from the gradual hardening of regulatory approaches, from voluntary initiatives that characterised corporate self regulation to multi stakeholder initiatives and more recently the renewed attention to legalistic approach emerging with corporate accountability agenda. (Utting 2005) **By this**, the mining industry must wake to the reality that in near future, it would be required to address its impact on the society not on voluntary basis. The implications of regulating CSR initiatives in the industry will be:

- Increasing cost of meeting legalities by mining organisations

- Host communities would not bear social and environmental cost
- Failure to internalize negative externalities would generate constant hostile aggression towards mining companies
- Peaceful co-existence of mining companies and their host communities would no longer be operational

5. Addressing Negative Externalities: What Mining Companies Should Do

The mining industry has an arduous task in addressing the negative externalities attached to mining. The industry cannot continue to trumpet the positive externalities of mining at the expense of local mining communities who have and would continue to bear the environmental, health and social cost of mining.

In addressing the negative externalities, the first the industry has to embrace is the formation of an industry watchdog to promote voluntary benchmark that seeks to encourage a model of good corporate behaviour in the society. Such an industry watchdog which is supposed to be independent would therefore develop policies to guide CSR activities of member companies to address some of the negative externalities of mining especially in host communities. This would portray the industry as not only interested in their well being but also seeks to promote mining communities interest.

There is also the need for the institutionalisation of community development fund by mining organisation to be managed by independent trustees selected from the community. The involvement of the local people in the management of the fund would improve trust, and reinforce the host community perception that they are part and parcel of the management of resources accruing from the exploitation of their natural resources. The fund could be used to address the urgent need of the local community and in the words of Romero (2004) to promote the development of linkages with other industries, to help local people develop new skills, to take advantage of the multiplier effect where it is greater and to improve conditions by incorporating mining activity in local and regional plans. Although many mining countries have created different types of fund like Ghana's mineral development Fund, Romero himself concedes that most of these funds have achieved limited success due to bureaucracy and transparency problems and suggest a direct payment of revenue or royalties from companies to local communities and the balance paid to the provincial or local government.

Addressing negative externalities through CSR by mining organisations should not be an act of imposition on mining communities. The affected communities must be involve in the decision making process as regard to project that ought to be initiated first in the community for the benefit of the people. The involvement of the host community would enable mining communities to identify which negative externality ought to be given the needed urgent attention. In this, mining communities would provide the needed support to enhance the cordial relations between them and the mining companies.

Traditional literature discusses internalizing negative externalities either through state intervention or through regulation (Pigou, 1932) or through a process of bargaining between the 'polluter' and the 'victim' (Coase, 1960). The industry, therefore, needs to internalise the cost of it negative externalities. By internalisation, it implies that the cost of negative impact on the society is borne by the company creating it before it is transferred to the society. The internalisation of the cost could manifest itself in the process of reviewing and improving manufacturing processes to contain the negative effects of production. This would include the re-assessment and replacement of production equipments and processes which sometimes come at significant cost to the organisation. But the benefits lie in the future as improved production process is able to contain and avoid the 'passage' of negative outcome of production to the society. For example by improving and increasing tailing storage facilities and adopting improved method in disposing mineral waste, mining companies can prevent spillage of cyanide and heavy metals like arsenic into rivers and avoid payment of heavy penalties as happened to Newmont Ghana Limited recently (Nyarko, 2010). However, most organisations sacrifice costs to be internalised in favour of profit.

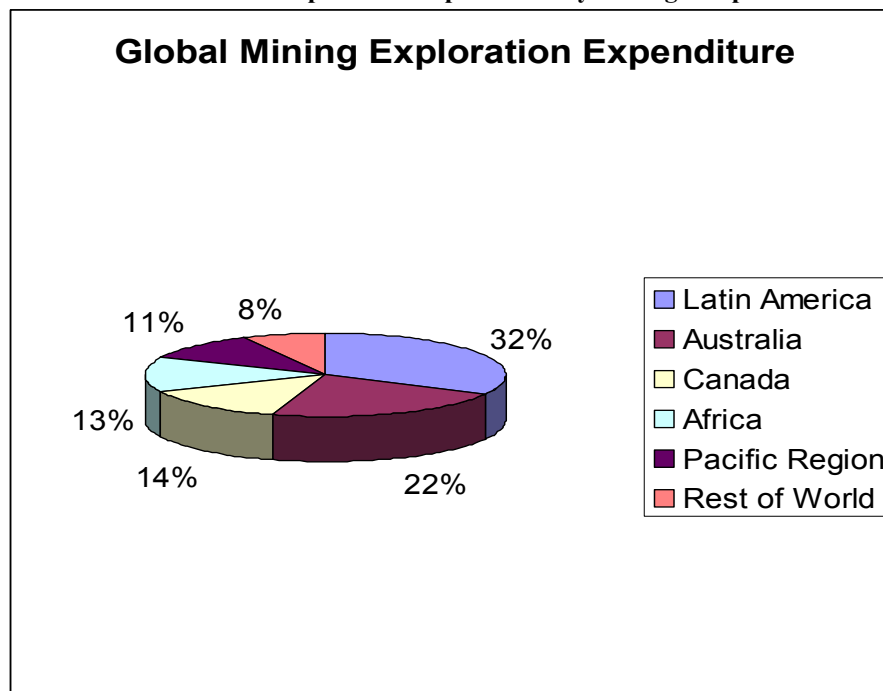
6. Conclusion

While mining has positive externalities for Ghana's economy in form of foreign exchange, employment, and governmental revenue, the extent of the impact of the negative externalities on mining communities has been questionable. As we have noted mining has led to significant and unsustainable land degradation, pollution of rivers and streams, high cost of living, health hazards, yet efforts of the mining organizations to address their impact on host communities have been minimal. This is primarily due to the voluntary nature of CSR. Mineral extraction would continue to be with the people, no matter the protest in certain circles and what was needed was the adoption of best practices in mining to address the negative impacts. However if the industry wants to push for the voluntary nature of CSR, then it must work hard to clean its image and demonstrate its preparedness to address negative externalities attached to mining and its approach must be guided by sincerity and commitment, else there would be no justification for the industry to implement CRS initiatives voluntarily.

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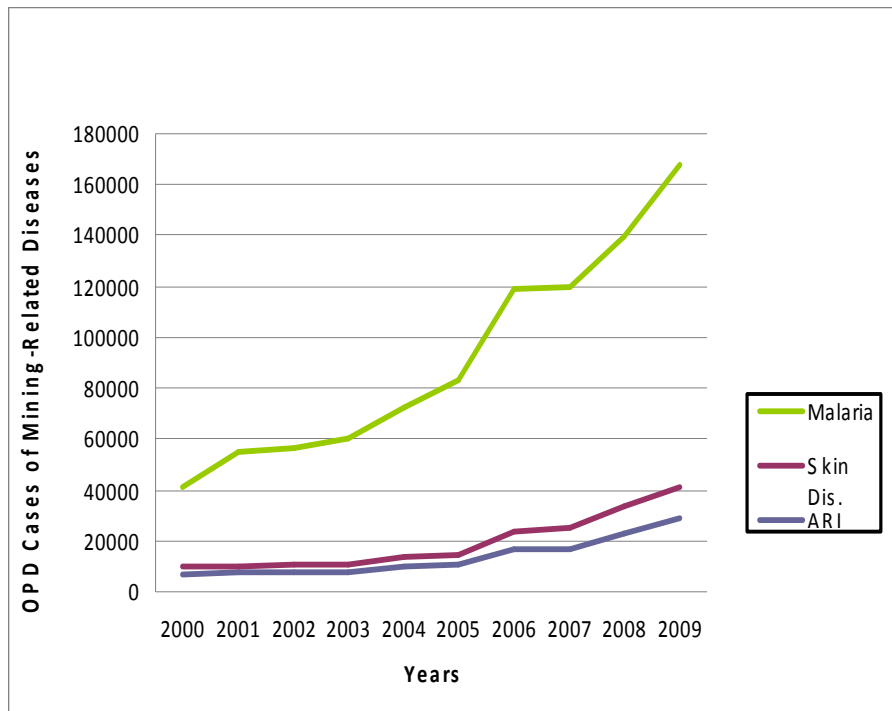
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Fig 1. Worldwide non-ferrous exploration expenditure by mining companies



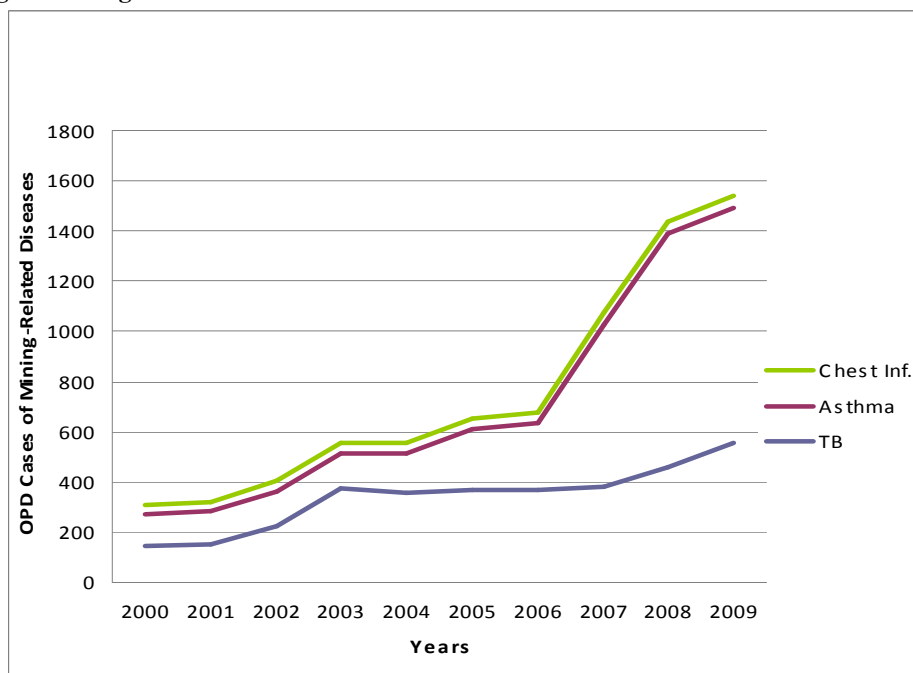
Source: OECD (2004)

Fig. 2. Mining Related Diseases in Tarkwa



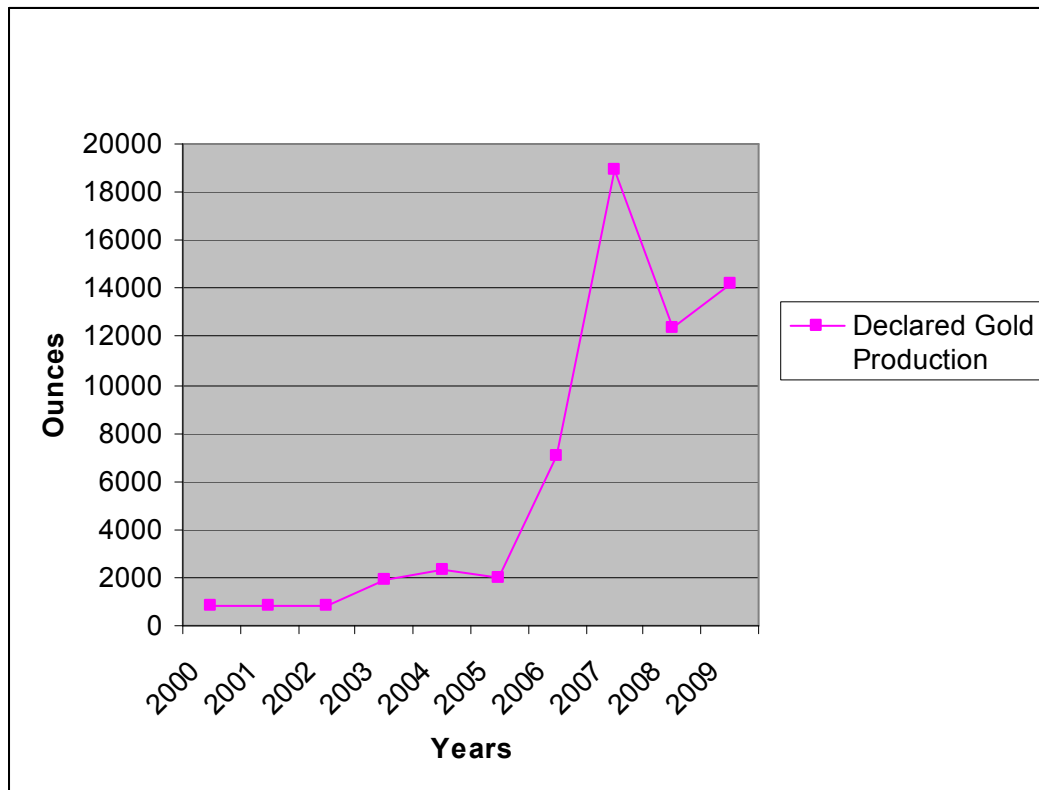
Sources: Estimated from Data

Fig. 3. Mining Related Diseases in Tarkwa



Source: Estimated from Data

Fig 4 Declared Gold production in Tarkwa



Source: Estimated from Data

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