

**ILLEGAL MINING AS THREAT TO SUSTAINABLE DEVELOPMENT
IN GHANA: A POLITICAL ECOLOGY APPROACH**

*İsmail KERVANKIRAN**
*Michael Gameli DZIWORNU***
*Kadir TEMURÇİN****

Abstract:

Within the past few decades, Ghana's mining sector specifically the small scale mining subsector has been marred by controversies mainly due to its threat to sustainable development. This paper provides some insights into the inextricable linkage between sustainable development and illegal gold mining popularly referred to as "galamsey" and examines the effectiveness of political response and processes at the local and national level. While acknowledging the incommensurable role of the mining sector in poverty reduction through employment generation, the adverse impact on the environmental, economic and social fabric of society cannot be ignored. Notwithstanding this hard evidence at hand, successive governments are handicapped to reverse the devastating effects partly due to the complicated and multifaceted nature of the small scale mining sub-sector. Semi-structured interviews were conducted in three illegal mining communities comprised 12 illegal miners and officials task to monitor mining activities. We also extensively utilized official government reports and relevant academic literature to draw attention to the multiplicity and diversity of illegal mining. By examining livelihood strategies and reviewing successive government policies on mining and sustainability, we discovered gaps in the area of policy implementation and systemic marginalization of majority of communities where illegal mining occurs. In this paper, we advocate for a broader multidimensional and sectoral collaboration as a fundamental approach to confront illegal small scale mining activities.

Key words: Sustainable Development, Political Ecology, Illegal Mining, Ghana.

* Assist. Prof. Dr., Süleyman Demirel University Faculty of Arts and Sciences Department of Geography - Isparta/Turkey ikervankiran03@gmail.com

** Graduate Student, Süleyman Demirel University Faculty of Arts and Sciences Department of Geography - Isparta/Turkey dzimike.md@gmail.com

*** Prof. Dr., Süleyman Demirel University Faculty of Arts and Sciences Department of Geography - Isparta/Turkey kadirtemurcin@sdu.edu.tr

INTRODUCTION

The human-environment interaction, which according to Ostergren and Le Bossé (2011) is one of the basic facts of life, has so many implications. The environment offers infinite possibilities, of which humans make important choices based on cultural and technological development (Ostergren & Le Bosse, 2011). Unfortunately, some of these choices be it necessary has been a driving force for environmental degradation and change. The exploration of natural resources is by no means a recent phenomenon. However, the transition from exploration to exploitation has hitherto resulted in catastrophic impact on the environment and society in general. Martinez-Alier (2002) categorically stated that future generation will feel the impacts of poor environmental decisions irrespective of economic growth.

Contribution of the mining sector to the economic development of Ghana has been widely acknowledged (Roe & Samuel, 2007; Hilson, 2007; Ghana Chamber of Mines, 2011). Ghana was once a leading producer of Gold in the world accounting for 36% of total world output between 1493 and 1600 (Tsikata, 1997). Gold accounts for 90% of the overall mining output in Ghana (Akabzaa, 2007). Current estimates show that the country is the second largest gold producer in Africa and the 9th largest producer in the world despite the 2% decrease in production from 92 tonnes in 2010 to 91 tonnes in 2011 (Aryee, 2012). The sector directly contributed 38.3% of Ghana's total corporate tax earnings, 27.6% of government revenue and 6% GDP in 2011 (Ghana Chamber of Mines, 2011). In 2013, 40.7 tons of gold from the artisanal and small-scale gold mining sector were exported, at a trade value of US\$1.7 billion (Minerals Commission, 2014). The country also produces a significant variety of other mineral resources such as manganese, diamond and bauxite.

The structure of the mining sector in Ghana is complicated and comprises large and small scale mines. The large scale mines control an 85% stake in the industry and include multinational companies from Canada, Australia, and South Africa and in recent time the United States (Akabzaa & Darimani, 2001). Small scale mining (legal and artisanal gold mining operations) on the hand dates back more than 2000 years (Hilson, 2001). Current statistics however shows that the artisanal and small scale mining sector account for 34% of gold mining in Ghana (Ghana Minerals Commission and Human Rights Watch, 2015). In terms of employment, the large scale mining industry employs 28,000 people whilst over 1 million are directly engaged in the small scale gold mine with an estimated 4,400,000 dependents (Dreschler, 2001; Mutemeri & Petersen, 2002; UNECA, 2011; Aryee, 2012; McQuilken & Hilson, 2014). Attention to current

developments in the mining sector shows occasional skirmishes and clashes between the small and large scale mining sectors principally as a result of land use disputes (Andrew, 2001; Hilson, 2005). Martinez-Alier (2002) in his book on “*The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation*” underscored the impact of the destructive nature of gold mining on the environment. Gold mining is highly dependent on toxic chemicals such as mercury and cyanide which disrupt the ecological balance by way of damages biodiversity, landscape, habitats, and human health and water bodies (Martinez-Alier, 2002; Guimaraes et al., 2011). Water resources in particular are reddened hazardous due to contamination by heavy metals, acid mine drainages mercury and cyanide from gold mining (Martinez-Alier, 2002).

Researchers and policy makers have long expressed concerns over the illicit activities of artisanal mining, yet efforts to tackle the somewhat irreversible impacts have inadvertently stalled (Hilson, 2001). This is mainly due to the multifaceted nature of small scale mining. On one hand the environmental, social and economic cost cannot be underestimated (Hilson & Murck, 2000; Kemp et al., 2011; Mudd, 2010) while on the other hand, systemic disparities in development evident in rural and urban regions to some extent justifies such activities (Hilson & Murck, 2000; ICM, 2002, 2012; Owen & Kemp, 2012; Pegg, 2006). By utilizing theoretical concepts associated with political ecology, this study examines how “modernized” economy structure influences access to and control of gold resources with associated impact on sustainable development.

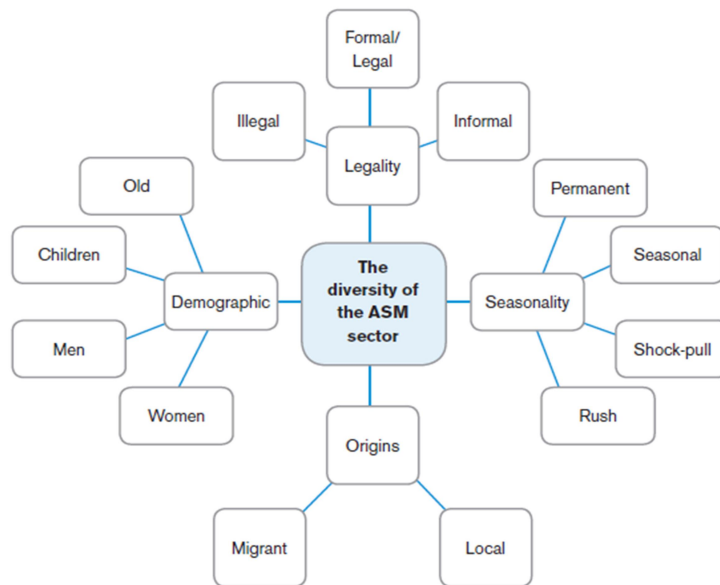
1. OVERVIEW OF ARTISANAL MINING IN GHANA

The adverse impact of mining particularly artisanal mining euphemistically called *Galamsey* on sustainable development has been well documented (Heath et al., 1993; Veiga, M.M. and Beinhoff, C., 1997; Warhurst, A. 1999; Warhurst, A., 1994; UN, 1996; ILO, 1999; Kitula, 2006; Fisher, 2007). A universal definition of ASM is yet to be established (Bugnosen, 2003; Buxton, 2013; Human Rights Watch, 2014). The criteria for defining small scale mining differs from country to country and with reference to Ghana small-scale mining refers to “operations of individual Ghanaians or organized groups of Ghanaians (4-8 individuals), or a co-operative often of more individuals, entirely financed by Ghanaian resources at a certain limit, and carried out on a full time basis using simple equipment and tools (Fatawu & Allan, 2014). It also refers to prospecting and mining in an area designated, and which uses specialized technologies and methods not involving substantial expenditure” (Bugnosen,

2005). Figure 1 shows the structure and diversity of small scale artisanal mining in Ghana.

The “actors” in the artisanal mining sector at the local level constitute residents in the mining communities, migrants, nomadic peoples, seasonal subsistence farmers, and retrenched large-scale mine workers (Hilson, 2005). The power dynamics in the ASM encompasses sponsors, gold buyers and land owners with collaborations with local traditional authorities and more recently Chinese migrants who according to Hilson et al. (2014) and Hirons (2015) are benefiting significantly from the activities of the ASM sector. The artisanal mining sector is characterized by non-compliance to environmental regulations, low level of productivity due to insufficient skills and qualifications of miners evident at all level of the operation culminating in low income and salaries (Buxton, 2013, Human Rights Watch, 2015). The application of rudimentary tools is highly prevalent in the artisanal mining sector (Hilson, 2001; Kambani, 2003; Buxton, 2013).

Figure 1: The structure and diversity of ASM

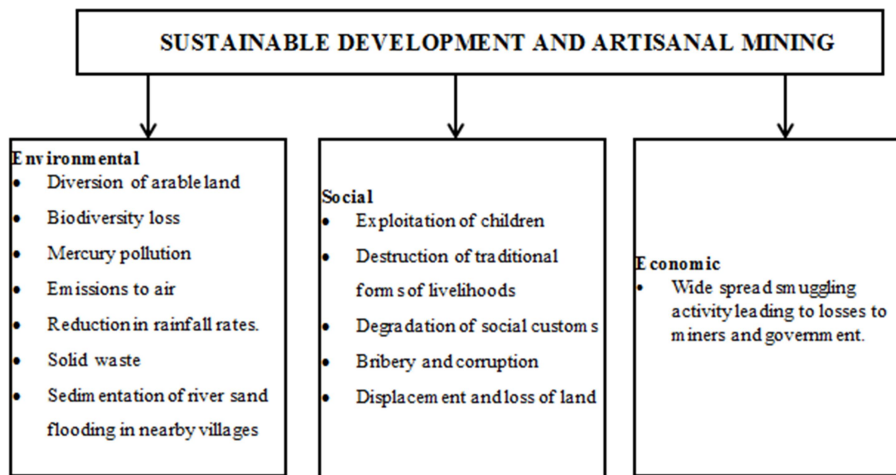


Source: Buxton, 2013.

2. WHY THE NEED FOR SUSTAINABLE DEVELOPMENT IN THE MINING SECTOR?

The question of whether sustainable artisanal mining is possible in the face of pronounced poverty, disparities and inequality remains unanswered. The answer to this question would require brief examination of the sustainable development thought. The sustainable development concept emerged through the 1980 World Conservation Strategy and the 1972 Stockholm Conference on the Human Environment to the early days of the International Conservation Movement (National Research Council, 2003). Ideally, the sustainability framework seeks to address the damage to environment and socio-cultural integrity that has accompanied accelerated and unchecked economic development in many regions of the world in post-World War II years (Planning Commission, Government of India, 2012). The sustainable development concept means different things to various interest groups; however the general consensus highlights fairness to future generations (Brundland Report, 1987). Essentially, the concept propagated and advocated the need to protect the interest of future generations at the expense of potential short-term benefits (OECD, 2008). Sustainability is not contradictory to growth, profit, and development (Gellermann et al, 2015). The growth should benefit the poorest and vulnerable in society while at the same time empowering them to reap the benefits of increases in economic activity for improvement in their living conditions (OECD, 2008). Events over the past few decades supported by solid evidence of climate volatilities has more than ever necessitated the application of sustainable development approaches to reverse the devastating consequences for the systems that support the progress and continuity of human life and society (Strange and Bayley, 2008). The sustainable development concept which during the initial stages was solely concerned with environmental issues has tended to embrace economic and social dimensions along the way (Murray, 2001). The imperceptible linkage between the three dimensions of sustainable development and artisanal mining in Ghana is illustrated in figure 2.

Figure 2: Linkages of the Three Dimensions of Sustainable Development and Artisanal Mining.



Source: Adopted from Azapagic, 2004; Ghose, 2003; Sharma et al., 2009; Chikkatur et al., 2009.

The argument of this paper is that artisanal gold mining is a creation of the economic system that surrounds the extraction of natural resources. The paper analyses the indirect role of the restructured economic system, involving global institutions, multinational corporations, governments and communities in environmental degradation through activities of artisanal mining (galamsey) in Ghana.

3. POLITICAL ECOLOGY APPROACH AND CONCEPTS EXPLAINING ARTISANAL MINING IN GHANA

3.1. Political Ecology Approach

This study applies political ecology approach to analyze the environmental challenges threatening sustainable development as a result of artisanal gold mining in Ghana. Walker (2005) describes political ecology as a field of enormous intellectual vitality and impetus, positioned to make uniquely valuable contributions to understanding the environmental problems threatening people and ecosystems. This helps to critically examine the narratives and counter-narratives of artisanal gold mining, considering the increased integration of local land users into global markets under unequal relations of power and how this relations create a situational rationality that force land users to degrade their

environments (Blaikie & Brookfield, 1987; Walker, 2005). The approach combines the concerns of ecology and political economy to focus on how people interact to establish and contest access to and use of resources (Rangan and Kull 2008; Vayda and Walters 1999) focusing on social relations that shape resource management and poverty (Franklin and Downing 2013).

The relevance of applying political ecology approach to understanding the threat of illegal mining to sustainable development is justified by the fact that environmental change is product of social and political relations which are interlinked at different scales, from the local level to global level (Adams 2009). Individuals or communities as land managers at the local level have direct access and/or control over the landscape. The state acts at the regional or national level, and multilateral corporations, international organisations and nongovernmental organisations (NGOs) act at the international or global level. Interaction of the actors with other factors and circumstances brings about environmental change (Hupy and WinklerPrins, 2003). The economic, ecological and political marginalization, pressure of production on resources and flawed environmental data and policies that can be understood through chains of explanation shape the environmental actions of the local land users, especially the artisanal miners (Walker, 2005). Political ecology introduces concepts of relative power at many levels of environmental and ecological analysis (Greenberg & Park, 1994) for detailed understanding of environmental changes threatening sustainable development.

3.2. Narratives

Narratives explain environmental degradation and inform policy responses (Fairhead & Leach, 1995). They are stories of relationship between people and of their environment (Franklin & Downing, 2013). Powerful narratives that are often partial truths such as multinationals are responsible for environmental degradation, artisanal miners are responsible for environmental degradation, governments are responsible for environmental degradation, and consumers are responsible for environmental degradation, build power and influence. There are other narratives such as tropical forests are pristine, unclaimed lands that no one lives on, indigenous mining methods are not founded on modern science and do not fit into the mining technologies required for sustainable mining and total lack of recognitions or valuing or understanding of significance of forests to indigenous peoples whose truth are elusive due to lack of data or poor data, different local contexts which makes grand narratives impossible as many different factors at play within each context with those factors working across multiple scales ideal for assessment with political ecology lens. Environmental

narratives are scientific stories built on social values and perceptions that are ultimately stories about people and nature (Neumann 2005). This paper analyses the different narratives and counter-narratives on illegal mining as a threat to sustainable development in Ghana. It is worthy to note that there are different competing narratives and counter-narratives with different values on artisanal mining.

3.3. Marginalization

The unequal power relations influence control and access to resource and environment and the right to access and control skew in favour of elites and government (Bryant 1998). The outcome of this relationship is often politically or socially marginal people who have access to ecologically marginal areas. The marginal occupy economically marginal positions in the social and political structure and benefit from marginal ecological services. This creates structures of winning and losing, expressed through the concept of marginalization (Robbins, 2012). According to Robbins (2012) marginalization leads to simultaneous and increasing impoverishment and land degradation of the poor. This paper highlights the outcomes of conflicting interests of the use of land and its resources. Local communities are generally excluded in land allocation processes (Robbins, 2012). This paper is therefore set to identify similar issues pertaining to the allocation of mining concessions in Ghana.

3.4. Political Object

Political object is the non-human objects and their characteristics that shape the world of human politics (Robbins, 2012). According to Robbins (2012) the concept gives account of how non-human objects; such as the case gold in this paper, influence human cultures by their effect on the political economy and societies. Gold as political object is heavily subjected to political decisions such as the laws which regulate the access and management of the resource. The paper analyses the extent to which gold resource management institutions restructure social processes in Ghana, and how these actions influence sustainable development.

3.5. Chain of Explanation

Chain of explanation explains the relationship between the environment and the society and identifies the implications of actions ranging from the individual through to multilateral organisations with associated changes. This identifies the various variables in the commodity chain using available evidence (Bassett 1988). Robbins (2012) argues that from political ecology perspective, regional decisions influence local conditions and change in market situations

cause change in land values which then leads to land degradation and social disorder. In this paper, the concept of chain of explanation is used in the political ecology approach to localize the causes of illegal mining and its effects on sustainable development. It traces the contextual forces constraining and directing immediate outcomes (Blaikie & Brookfield, 1987) of the activities of artisanal miners. The paper in the light of this concept traces the socio-economic, political, and ecological processes through analyses of the interactions between actors related to gold extraction in Ghana on a multi-scale level.

4. METHODOLOGY

This study adopted two qualitative methodologies, namely semi-structured interviews and extensive review of existing literature utilizing both primary and secondary sources of data. The interview sessions were conducted in three mining communities in Tarkwa, Prestea and Ayanfuri in February 2016. These three study sites were selected due to intensity of the activities of artisanal miners and considerable environmental degradation and impact. In order to ensure a representative sample and geographic diversity, a total of 12 participants engaged in illegal mining activities were purposively selected, four from each of the three communities mentioned above. The aim of the interview session was to provide some insights into the nature of their activities and how sustainable development is affected. Based on the approach of the study, a separate interview was conducted with one official of the Minerals Commission in the districts within which the mining communities were located. This was to ascertain the power and institutional dynamics in the small scale mining sector.

4.1. Findings, Analysis and Discussion

4.1.1. The Narratives of Illegal Gold Mining in Ghana

The results from the review of existing literature and previous experiences of illegal mining informs of striking set of narratives on illegal mining and its threat to sustainable development. The narratives and counter narratives provide the basis for discussion on the causes of illegal mining. The common narrative of illegal mining is that it is caused by poverty (Hilson & Garforth, 2012). The poor and uneducated are ignorant of the threats of illegal mining to the environment and its consequences on sustainable development so therefore practice illegal mining (Banchirigah, 2008; Hilson, 2009). Poverty, according to this narrative is not only concerning the inadequacy of income or sources of income but also inadequate alternative economic opportunities to enable the people observe the principles of sustainable development.

In an interview with an illegal miner in Prestea, he said,

“Our fathers used to mine gold on this land on the small scale in the past, but government gave the land to the company (large scale mining company) and now even farmland is difficult to get. Anywhere we find more gold on the remaining land, the company comes that the place is for them so we have to sneak through some places and get some gold so that we can sell to sustain ourselves and our family”.

There is the inadequacy of alternative economic and employment opportunities in rural areas of Ghana, especially mining communities (Teschner, 2011; Bush, 2008). According to Banchirigah (2008) the narrative that poverty causes the people to engage in illegal mining does not explain the causes of such activities in full.

The counter narrative therefore is that artisanal mining is a traditional activity of the local people sustaining their livelihood for decades (Tschakert & Singha, 2007). Artisanal mining was an alternative to agricultural activities; the main source of livelihoods of rural communities, creating diversity to the livelihoods opportunities. This therefore creates alternative opportunities for work in the dry season. Policies implemented under the economic reforms in the past four decades have however, provided generous incentives to large-scale mine investors but promise few benefits to host governments and their citizens, especially those in the mining communities (Hilson, 2007). These policies have hindered the practice of artisanal mining in most mining communities since the laws and regulations mandated the handing out of concessions to large scale mining companies (Hilson & Yakovleva, 2007) making artisanal mining hitherto not considered as illegal, now largely described as illegal mining. Hilson (2007) posits that the government now prioritizes foreign controlled large scale miners to the neglect of concerns of local subsistence groups, hence promoting large-scale mineral exploration and mining activity causing widespread community dislocation. This has led to conflicts, arising from enclosure of the commons, changing property and tenure systems, and large scale land acquisitions, between mining companies and artisanal miners (Hilson & Yakovleva, 2007). Artisanal mining has been described as illegal mining in most cases to relate the activities of local communities in their resistance to their gold rich lands being taken from them (Bush, 2008; Nyame & Grant, 2014). Although, much is done towards mainstreaming artisanal mining activity which is often done without reclamation, the sector still largely operates outside the official regulatory regime and the comparatively small but cumulatively large plots of land become desolate in a short period of time (Nyame & Blocher, 2009; Nyame & Grant,

2014). The tenet of this counter-narrative is that artisanal mining; even when practiced against the precepts of the new laws and regulations of the sector and therefore described as illegal mining, is a legitimate source of livelihood for the people. This is because illegal mining has been attributed to the unavailability of land and the only viable option remaining for the local people is to work alienated lands or other restricted areas (Hilson, 2007).

Illegal mining is however not exclusively practiced by indigenous people in mining communities who consider it as traditional source of livelihood but also engaged in by migrant miners; both internal and trans-border (Nyame & Grant, 2014). There is a common notion in what is described the get-rich narrative that artisanal mining holds the possibility for anybody to make wealth (Hilson & Garforth, 2012). Hilson & Garforth (2012) attribute the proliferation of the illegal mining in recent years to the urge of people to generate “quick” wealth. Tschakert (2008) in a different view argues that this quick wealth motive is often attractive to people that are in need of finance for starting up an alternative business. Majority of the illegal miners interviewed at Ayanfuri in the Western Region of Ghana come from outside the community and their presence there was propelled by the presence of gold in the community.

One illegal miner in Ayanfuri rightfully said

“I came here about a year and half ago, my friend told me I can find a job in the galamsey business. Where I come from, there are not jobs and I have to make a living for myself and family. The money I make here is small, but it is better than nothing”

Illegal mining as a source of livelihood is fueled by high level of unemployment (Hilson & Potter, 2005). Hilson and Potter (2005) attribute the unemployment to the effects of the Structural Adjustment Programs (SAP) and similar neo-liberal policies that have forced people out of work as part of the austerity measures taken to combat Ghana’s fiscal debt in the past three decades. Many that were unable to find viable replacement employment such as retrenched civil servants, teachers and redundant large scale mine workers have migrated to rural areas in search of employment (Hilson 2009). This provides a counter-narrative to the get-rich narrative (Hilson & Potter, 2009). The unemployment situation is worsened by the lack of alternative livelihood possibilities besides artisanal mining (Hilson & Garforth 2012) since large scale surface mining which has taken up large tracts of land from farmers does not provide enough jobs to match the total number of people laid off from agriculture (Hilson, 2007) creating situational rationality that forces marginal land users to degrade their environments (Walker, 2006).

4.1.2. Causes of Illegal Gold Mining in Ghana

Literature and observations highlight what is classified in this paper as major and minor causes of illegal mining in Ghana. These are conditions that compel people to venture into artisanal mining and by their modes of operation and in the light of regulations considered as illegal mining. The major or immediate causes are conditions that affect individuals and cause them to engage in illegal mining while the minor causes indirectly influence the economic conditions of people to engage in illegal mining. The major causes include poverty worsened by marginalization, unemployment deepened by structural reforms, and economic restructuring. The minor causes on the other hand include bureaucracy, loss of access to and control of land and resources, the influence of global actors, and weak regulations.

The major causes of illegal mining are in most cases economic factors. Although, it has been pointed out that not all artisanal miners are illiterate or poor (Nyame & Grant, 2014) poverty is identified as one of the main causes of illegal mining (Hilson & Garforth, 2012; Hilson & Potter 2005; Banchirigah, 2008). Financial difficulties distress people and compel them to engage in illegal mining. Most people, especially from mining communities see artisanal mining as the only viable livelihood option available (Hilson & Garforth, 2012). Few barriers to entering illegal mining as it is a local community arrangement governed by customary law as opposed to government partnerships governed by statutory law characterizing large scale mining and legal artisanal mining makes it appealing to individuals that lack financial capital (Nyame & Blocher, 2009; Hilson & Garforth, 2012).

Another major cause of illegal mining is unemployment, especially emanating as a consequence of SAP (Hilson & Potter, 2005; Nyame & Blocher, 2009). Unemployment is divided into two different factors (Hilson & Garforth, 2012) comprising the urban unemployed who move to rural areas and engage in illegal mining and rural population who were disinterested in farming due to loss of comparatively viable land to large scale miners and artisanal miners (Hilson & Garforth 2012; Nyame & Blocher, 2009). Lack of formal employment opportunities compelled both the rural and urban unemployed to consider illegal mining as an option for securing livelihood.

Kwame¹ in an interview confirms he operates an illegal mining site located in the concession of a large scale mining company in Tarkwa and has operated such pit for more than two decades. He said to have started illegal

¹ Fictitious name to conceal identity of respondent.

mining when he returned home after being laid off by a renowned company which he was working for at Tema.

The problem in actual sense is lack of alternative employment avenue forces people to engage in illegal mining (Teschner 2011, Bush 2008) where even arable lands originally used or leased out for farming are now increasingly being used for illegal mining without reclamation (Nyame & Blocher, 2009).

The quest to restructure the economy in the past few decades is a major cause of illegal mining in Ghana. The increased integration of third-world land users into global markets under unequal relations of power undermines the local land users' localized environmental knowledge and long histories of successful adaptation to sometimes harsh and unpredictable environments (Walker, 2006). People in mining communities as rational beings, also tend to realize maximum economic gain from available resources in response to the notion of economic diversification. The extraction of as a valuable resource to mining communities on small scale has been a historical traditional source of livelihood to the local people (Banchirigah, 2008). The combination of farming and artisanal mining was a common practice in mining communities and the declining incomes that faced farmers in the process of market liberalization (Hilson & Garforth, 2012) compelled many to venture in illegal mining. The inadequacy of reliable alternative source of livelihood makes people to engage in illegal mining without conforming to environmental regulations to ensure sustainable resource exploitation for ensuring sustainable development.

Alongside the major causes of illegal mining identified are the minor causes since they are not mutually exclusive. The minor causes are the economic forces which are not attributed to the individual's economic failures but social and political processes that shape the economic landscape within which the people make decisions and are compelled to engage in illegal mining. One of such factor is bureaucracy. The processes for securing legal mining permits and concessions for artisanal mining are cumbersome and characterized with delays and high cost. According to Nyame & Blocher (2009), government leases lands to large scale companies and this contract is formal and predictable but artisanal miners prefer local community arrangements because both parties like the informality and flexibility of such a contract. The bureaucratic requirements are the main obstacle to securing license for artisanal mining hence the unregulated illegal mining (Nyame & Grant 2014; Hilson & Potter, 2005).

In addition, loss of access to and control of land and land resources is a minor cause of illegal mining in Ghana. The competing interests between local communities and the government concerning the favorable methods of mining

have in most instances led to the marginalization of local people from their land and livelihood resources. Banchirigah (2008) points out that large scale mining concessions in the town of Tarkwa have during the 1990's displaced 14 farming communities with a population of over 30,000. This has intensified the already prevailing unemployment issue since large scale companies are not able to provide substitute employment for the majority of the displaced people (Banchirigah, 2008). Marginalization of the local people due to the hand out of concessions to large scale mining companies has pushed groups of people to the margin, where they are often forced to live off ecologically marginal lands or otherwise find alternative sources of livelihood. For those that still engage in farming after dislocation, ecologically marginal lands often become the limited farmland available. Given the decline in arable land, the marginal land gradually loses fertility partly due to over-cultivation and the yields decline, making it difficult for subsistence on agriculture (Amponsah-Tawiah 2011). The people subsequently resort to artisanal mining without meeting the statutory requirements hence the description of this livelihood activity as illegal mining. Loss of farmland and loss of access to land resources exacerbates the economic conditions of communities, expose them to poverty and pushes them into illegal mining. This quite alarming because large scale mining takes possession of the land legally which is capital intensive and not labor demanding (Amponsah-Tawiah 2011) in comparison to farming and artisanal mining. Mineral rich lands of communities from which they earn supplementary income was also lost to large scale mining. The land lost to large scale mining has historically not only been used for farming but also for artisanal mining (Bush, 2008).

The Structural Adjustment Programme (SAP) which emanates from the influence of global actors is another minor cause of illegal mining in Ghana. The policy was adopted in the 1980's as measures in response to the fiscal problems of the government. This has created economic difficulties for many Ghanaians, in particular for the most vulnerable groups such as food crop farmers (Hilson & Potter, 2005; Agbesinyale 2003). The actions taken included austerity measures and structural reforms with focus on privatization and liberalization of economy, and was induced as a part of the Bretton Wood's institutions agreement the Government of Ghana concerning debt relief (Agbesinyale, 2008; Sowa 2005). The economic liberalization was aimed at attracting foreign direct investment (FDI) to help boost economic activities (Sowa 2005). There have been increases in the amount of concessions given to large scale mining companies in response to the agreement thus leading to decrease of viable land for alternative economic activities. The associated privatization of state and parastatal institutions led to retrenchment of public sector employees causing rise in unemployment in the

Ghana and many of the newly unemployed individuals sought employment opportunities in the illegal mining (Hilson & Potter, 2005).

Lastly, weak regulatory regimes are minor cause of illegal mining in Ghana. The duality of the land tenure system in Ghana where the government has legal right to land resources and traditional authorities are acting as custodians of the land makes access to land complicated (Hilson & Yakovleva, 2007). Majority of lands is vested in traditional authorities (Nyame and Blocher, 2009). One common way for people to gain access to land is by seeking approval from the custodians. The relatively easier means of securing lands from traditional authorities in comparison with the difficulty associated with going through formal institutions make it more attractive to access land through traditional authorities lacking the formal land tenure requirements (Nyame & Blocher, 2009). Law enforcement also appear inefficient and/or lacking (Teschner, 2011) and this facilitates the widespread of illegal mining.

An official of the Minerals Commission in the Tarkwa Nsawaem Municipality in an interview confirms that,

“Sometimes we get to know of the activities of the illegal miners but we do not have the capacity and resources to control and monitor their activities in the district. They rather contact the chiefs to be allowed to operate on some lands than come to the commission for licensing”.

5. THE NATURE OF GOLD AND THE EFFECTS OF ILLEGAL MINING ON SUSTAINABLE DEVELOPMENT

Gold is a political object that attracts political struggle and conflict in its exploration and extraction between local communities and the government. People in mining communities extract gold in small scale and consider this activity as traditional source of livelihood (Hilson, 2007). The government on the other hand, favours the extraction of gold on the large scale preferably by multinational corporations to promote foreign investment and economic growth (Hilson, 2007). The government therefore, having constitutional rights over the gold, makes regulations and gives concessions of viable gold areas to large scale mining companies (Nyame & Blocher, 2009). Government gives more incentives such as low loyalty payments, waived duties on imported equipment, attractive ownership structures, and permission to repatriate profits to large scale mining companies (Hilson, 2009) with expectation of encouraging in-flow of FDI, creation of formal employment, generation of tax revenue, promotion of skills and technology transfer, and sustainable extraction of resources (Nyame & Blocher 2010). Many large scale mining companies are unwilling to cede unused

portions of their concession to the local communities (Hilson, 2009). Government's regulation in the minerals sector and marginalization of the local people who consider gold as the non-human object that shape the politics of extraction create disputes at the landscape level. The conflicting interest and illegal extraction therefore raises concerns over the threats illegal mining poses to sustainable development.

6. CONCLUSIONS

This narrative, essentially is a consolidation of a wide range of research on the activities of illegal miner with a political ecology interpretation. This paper examined the major authorities on illegal mining research in Ghana and the constructive arguments put forward as to the power and institutional dimensions of the small scale mining sector and more importantly, its impact on sustainable development. The marginalized and poor explicitly derive livelihoods from legally and culturally constituted claims on natural resources crudely referred to as natural resource entitlement (Mearns, 1996). The entitlement concept according Dietz's (1996) comprises the rights to own, use and intervene in resource decisions. The so called "resource entitlement" by segments of the population in mineral rich areas draws on the premise that access to minerals on their homelands is essentially a traditional rights with or without title and that this right serves as the only means to generate income to sustain their families (Priester, 2007). To address the complexities of illegal mining, requires a multidimensional and multisectorial approach including formulating realistic and comprehensive measures to address the catalysts (unemployment, marginalization, poverty, resource entitlement), coordination between government agencies, educating illegal miners on the negative impact and its effect on sustainable development, enforcement of environmental laws.

REFERENCES

- Adams, W. M. (2009). *Green Development 3rd edition: Environment and sustainability in a developing world*. Routledge, New York.
- Agbesinyale, P. (2003). The Gold Boom's Implication for Land Tenure and the Environment in Ghana. In *Ghana's Gold Rush and Regional Development: The Case of Wassa West District* (143-160). SPRING Research Series, no. 44, SPRING Centre, (Fakultät Raumplanung) Faculty of Spatial Planning, University of Dortmund, Federal Republic of Germany.
- Akabzaa, T., and A. Darimani, (2001). *Impact of Mining Sector Investment in Ghana: A Study of the Tarkwa Mining Region*. Unpublished Report, Washington SAPRI.

- Aryee, B. N. A. (2012). Contribution of the Minerals and Mining Sector to National Development: Ghana's Experiment. *GREAT Insights*, 1 (5), 14-15.
- Azapagic, A. (2004). Developing a framework for sustainable development indicators for the mining and minerals industry. *J. Cleaner Prod.*, (12), 639–662
- Banchirigah, S.M. (2008). Challenges with eradicating illegal mining in Ghana: A perspective from the grassroots. *Resources Policy*, 33, 29-38.
- Bassett, T. J. (1988). The political ecology of peasant-herder conflicts in the northern Ivory Coast. *Annals of the Association of American Geographers*, 78 (3), 453-472.
- Blaikie, P., & Brookfield, H. (1987). *Land Degradation And Society*. London: Methuen & Co Inc.
- Bryant, L.R. (1998). Power, knowledge and political ecology in the third world: a review. *Progress in Physical Geography*, 2 (1), 79-94.
- Bugnosen, E. (2003). *Small-Scale Mining Legislation: A General Review and an Attempt to Apply Lessons Learned* in The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries (Hilson, G. (ed.), Lisse: Abingdon, A. A. Balkema, 5-21
- Bush, R. (2009). Soon there will be no-one left to take the corpses to the morgue: Accumulation and abjection in Ghana's mining communities. *Resources Policy*, 34, 57-63.
- Buxton, A. (2013). Responding to the challenge of artisanal and small-scale mining. How can knowledge networks help? *IIED*. London.
- Chikkatur, A.P., Sagar, A.D., & Sankar, T.L. (2009). Sustainable development of the Indian coal sector. *Energy*, 34, 942–953
- Drechsler, B. (2001). Small-Scale Mining and Sustainable Development within the SADC Region. *MMSD*. London
- Fairhead, J., & Leach, M. (1995). False forest history, complicit social analysis: rethinking some West African environmental narratives. *World Development*, 23 (6), 1023-1035.
- Fatawu N.A., & Allan, A. (2014). Managing the impacts of mining on Ghana's water resources from a legal perspective. *The Journal of Energy and Natural Resource Management*, 1 (3), 156-165
- Franklin, S & Downing, T. (2013). *Political ecology of vulnerability*. Poverty and Vulnerability Programme GECAFS Project, Stockholm Institute of Environment, Stockholm.
- Ghose, M.K. (2003). Promoting cleaner production in the Indian small-scale mining industry. *J. Cleaner Prod.*, 11, 167–174.
- Guimaraes, J.R.D., Betancourt, O., Miranda, M.R., Barriga, R., Cueva, E., & Betancourt, S. (2011). Long-range effect of cyanide on mercury methylation in a gold mining area in southern Ecuador. *Sci. Total Environ*, 409, 5026–5033.
- Hilson, G., & Garforth C. (2012). Agricultural Poverty' and the Expansion of Artisanal Mining in Sub-Saharan Africa: Experiences from Southwest Mali and Southeast Ghana. *Population Research Policy Review*, 31, 435-464.

- Hilson, G., & Murck, B. (2000). Sustainable development in the mining industry: clarifying the corporate perspective. *Resources Policy*, 26, 227–238.
- Hilson, G., & Potter, C. (2005). Structural Adjustment and Subsistence Industry: Artisanal Gold Mining in Ghana. *Development and Change*, 36 (1), 103-131.
- Hilson, G., & Yakovleva, N. (2007). Strained relations: A critical analysis of the mining conflict in Prestea, Ghana. *Political Geography*, 26, 98-119.
- Hilson, G. (2009). Small-scale mining, poverty and economic development in sub-Saharan Africa: An overview. *Journal of Cleaner Production*, 34 (1-2), 1-5.
- Hilson, G., Hilson, A., & Adu-Darko, E. (2014). Chinese participation in Ghana's informal gold mining economy: drivers, implications and clarifications. *J. Rural Stud.*, 34, 292–303.
- Hirons, M. (2015). Trees for development? Articulating the ambiguities of power, authority and legitimacy in governing Ghana's mineral rich forests. *The Extractive Industries and Society*, 2, 491–499
- Human Rights Watch (2015). *Precious Metal, Cheap Labor: Child Labor and Corporate Responsibility in Ghana's Artisanal Gold Mines*. Human Rights Watch, United States of America
- Hupy, M.C., & Winkler Prins, MGAA, (2003). A political ecology of forest exploitation in the lower peninsula of Michigan: 1800 – 1950. *The Great Lakes Geographer*, 12 (1), 28-44.
- ICMM, (2012). Human Rights in the Mining and Metals Industry Integrating Human Rights Due Diligence into Corporate Risk Management Processes. ICMM, London, UK.
- ICMM. (2002). The Mining and Metals Industries: Progress in contributing to Sustainable Development, *Working Paper*. 27 February.
- ILO. (1999). Social and labor issues in small-scale mines. Report for the Tripartite Meeting on Social and Labor Issues in Small-scale Mines, Geneva, 17–22 May 1999. *International Labor Office*.
- Kambani, S. (2003). *Key Issues in Illegal Mining and Marketing in the Small-Scale Mining Industry*. In G. Hilson, (Ed.), *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries* (45-57). Lisse: Abingdon, A. A. Balkema.
- Kitula, A.G.N. (2006). The environmental and socio-economic impacts of mining on local livelihoods in Tanzania: A case study of Geita District. *Journal of Cleaner Production*, 14 (3-4), 405–414.
- Martinez A. J. (2002). *The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation*. Edward Elgar Publishing.
- Mudd, G.M. (2010). The Environmental sustainability of mining in Australia: key mega-trends and looming constraints, *Resources Policy*, 35 (2), 98–115
- National Research Council, (2003). *Our Common Journey: A transition towards sustainability*. Washington, D.C.: National Academy Press,
- Neumann, R. (2005). *Making political ecology: Human geography in the making*. London: Hodder-Arnold.

- Nyame, F.K., & Blocher, J. (2010). Influence of land tenure practices on artisanal mining activity in Ghana. *Resources Policy*, 35 (1), 47–53.
- Nyame, F.K., & Grant J.A. (2014). The political economy of transitory mining in Ghana: Understanding the trajectories, triumphs, and tribulations of artisanal and small-scale operators, *The Extractive Industries and Society*, vol. xxx, no. xxx, pp. xxx-xxx, viewed on <http://www.sciencedirect.com/science/article/pii/S2214790X14000136>
- OECD (Organization for Economic Cooperation and Development). (2008). *Employment Outlook:2008*. Paris: OECD.
- Ostergren, R.C., & Le Bosse, M. (2011). *The Europeans: a geography of people, culture, and environment*. New York: The Guilford Press.
- Owen, J. R., & Kemp, D. (2012). Social licence and mining: A critical perspective. *Resources Policy*, 38 (1), 29-35.
- Pegg, S. (2006). Mining and poverty reduction: Transforming rhetoric into reality. *Journal of Cleaner Production*, 14 (3), 376-387.
- Planning Commission. (2012). Government of India, Sustainable Development, Emerging Issues in India's Mineral Sector, May 2012.
- Rangan, H., & Kull, A.C. (2008). What makes ecology 'political'? Rethinking 'scale' in political ecology. *Progress in Physical Geography*, vol. 1-18
- Robbins, P. (2012). *Political ecology*. (2nd Ed.). Oxford: Wiley-Blackwell.
- Roe, A., & Samuel, J. (2007). The challenge of mineral wealth: using resource endowments to foster sustainable development. *Ghana Country Case Study*. International Council on Mining and Metals.
- Sen, A. (1981). *Poverty and entitlements*. Oxford: Pergamon Press for the International Labor Organization
- Sharma, Y.C., Aggarwal, P., & Singh, T.N., (2009). Economic liabilities of environmental pollution by coalmining: Indian scenario. *Environ. Dev. Sustainable*, 11, 589-599.
- Sowa, N.K. (2005). An assessment of Poverty Reducing Policies and Programmes in Ghana. *CEPA*, Accra.
- Teschner, BA. (2011). Small-scale mining in Ghana: the Government and the galamsey. *Resources policy*, 37, 308-314.
- Tschakert, P., & Singha, K. (2007). Contaminated identities: Mercury and marginalization in Ghana's artisanal mining sector. *Geoforum*, 38, 1304-1321.
- Tschakert, P. (2008). Recognizing and nurturing artisanal mining as a viable livelihood. *Resources Policy*, 34, 24-31.
- Tsikata, F. (1997). The vicissitudes of mineral policy in Ghana. *Resour. Policy*, 23 (1-2), 9-14.
- United Nations (1996). Recent developments in small-scale mining; A report of the Secretary-General of the United Nations. *Natural Resources Forum*, 20 (3), 215-225
- Vayda, P.A., & Walters, B.B. (1999). Against Political Ecology. *Human Ecology*, 27 (1), 167-179.

- Veiga, M.M., & Beinhoff, C. (1997). A way to reduce mercury emissions from artisanal gold mining and provide badly needed training. UNEP (United Nations Environment Programme). *Industry and Environment*, 20, 49-51.
- Walker, P.A. (2006). Political ecology: where is the policy? *Progress in Human Geography*, 30 (3), 382-395.
- Warhurst, A. (1994). Environmental best practice in metals production. Mining and its environmental impact. In R. E. Hester, R.M. Harrison, (Eds.), *Issues in environmental science and technology* (133–159). Letchworth, England: Royal Society of Chemistry.
- Warhurst, A. (1999). Environmental Regulation, Innovation, and Sustainable Development. In A. Warhurst, (Ed.), *Mining and the Environment: Case Studies from the Americas* (15-49). Ottawa, Canada: IDRC.
- WCED (World Commission on Environment and Development). (1987). *Our common future*. New York: Oxford University Press. (Brundtland Report)