

# Research on Key Problems Facing Ivory Coast's Mining Industry

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**Mining is one of the major sources of income to indigenous people in Ivory Coast. There is job creation and employment increase. However, some of the major problems facing Ivory Coast in recent years include high population, corruption and unemployment, lack of trained youth, poor health facilities, insecurity and the negative effects of the political instability between 2002 and 2011. According to multiple investigations and interviews, the above mentioned problems have led to many problems in the mining sector, such as illegal mining activities and unauthorized selling of land to illegal miners. Most parents encourage their children to go to illegal gold mines at the expense of their lives and education. For this reason, this paper is focused on providing a comprehensive analysis; in-depth summary of the problems facing Ivory Coast's mining industry. This is to enrich the theoretical basis, scientific foundation for economic development and to promote the mining industry in Ivory Coast. Possible solutions are proposed in the recommendations.**

**Keywords:** Ivory Coast, mining industry, illegal mining problem, GIS, GVC.

**Acronyms and Abbreviations:** **SODEMI** State Society for Development of the Mining Industry; **UN** United Nations; **MDA** Ministry Departments Agencies; **NGO** Nongovernmental Organization; **GIS** Geographic Information System; **GVC** Village-based Cooperative.

## INTRODUCTION

Ivory Coast in West Africa has a flat and high sandy soil on the east part, rocky and mountainous on the west part and the coastal area has tropical forest

## METHOD

This paper uses Zouan-Hounien (Fig.2) in the western part of Ivory Coast which has the largest artisanal mines as a typical example. This region is called "Dix-Huit Montagnes Region" due to the mountains. The "Dix-Huit Montagnes Region" has six (6) regions, including Zouan-hounien. Floleu, a village located 17 km away from Zouan-Hounien and only 2 Km away from the lty mine has a mine and this mine has existed for several years and it is well known to all even by the government. This underground mine extraction is normally done with both traditional and inappropriate equipments.

A large part of the local population, including children and people from Zouan-Hounien, 17 km away from the mine use it as their source of income. Despite the deployment of the police to the site by the government on several occasions, Floleu

illegal gold miners continue to operate day and night due to Non-transparency and corruption. This results in loss of lives and properties due to the landslides. Over 5 people died and 12 other missing in 2012 at Floleu due to the landslides as reported the government of Ivory Coast (AFP, 2012). The Government of Ivory Coast decided on January 07, 2015 to grant transparent mining exploration licenses to the mining company in order to exploit the gold at Floleu in due process and solve this illegal mining problem (Ministères, 2015).

## Illegal mining problems

The national company (SODEMI) statistical data showed that 24 out of 31 regions of the country are being controlled by illegal miners with more than 500,000 people involved (Assie, 2009). Despite, the awareness campaign among the various players (local residents, artisanal miners...) in the chain of tracking gold mining activities, it is very difficult to determine the exact number of the people engaged in illegal mining activities. Recently, the government of Ivory Coast is working

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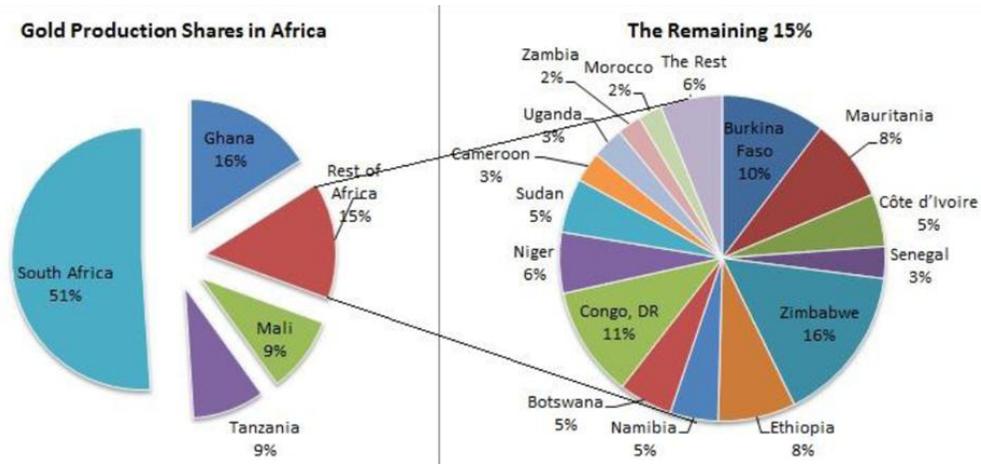


Fig. 1. The distribution of gold mine production in Africa (averaged between 2005 and 2009). Total gold production between 2005 and 2009 averaged approximately 482,000kg. (Source: The US Geological Survey 2010 – elaborations by the authors)



Fig. 2. Location of Zouan-hounien

hard to put a stop to this scourge which undermines the country's basement and mainly takes place in Zouan-Hounien, Ity, Zanzan region, Djeckenou and other regions (Randgold Resources Ltd., 2012).

Because agriculture is periodic and slow, gold price is rising and fast, illegal mining activities had been gradually rising in most of the parts of Ivory Coast. Indigenous and foreigners, including children are walking many kilometers every day to reach Floleu, the illegal mining site. Several reasons have been evoked, but the main reason of the majority of the population in this mining site was overwhelmingly mentioned in connection with poverty. A 48 year old man named Charles Gueu from Zouan-Hounien described in an interview how being an artisanal miner is one of the only ways to live after the political unrest:

As he said " *I'm a farmer, i have two (2) wives with eight (8) children who need at least 1500 CFA (~3\$) every day for the daily food. I can earn money from cocoa only three times each year, but i can earn lot money every day if i work hard in the mining, it is fast and rentable. As a result, i sold my cocoa plantation to a foreigner because mining pays for everything* ".

When we asked him about the future, He replied that " *To be honest, it will be hard for me and my family if the [6] government decides to close the mining sites around Zouan-Hounien because I cannot get back my cocoa plantation [7] and as I'm getting old I'm not sure if i can go too far to find another mining sites to work*". All actors such as [8] community leaders, mining workers, indigenous interviewed as part of this research spoke frankly about the high rate 9 of poverty in the area.

As Eric Kedro (15 y.o) secondary school student said, " *i study in Danane a city 50 Km away [10] from Zouan-Hounien, I don't have any proper relative there to help us, i share a room with six other students. We [11] eat once a day, it is really difficult. I have four sisters and one brother, the income of my father is not enough to give [12] us a luxury life. Even the school's fee is sometimes a big problem that's why during the holiday i work in the mining [13] site. I can earn much money every day to help my mother, my father and my sisters and brother. My Brother who is [14] only 12 Years old also comes here with me. We work hard and our parents are proud of us*". "Do you know that [15] you're risking your life everyday working here?" as we asked him. "Yes, we are poor, we need to eat, and we don't [16] have any choice. Many friends stay here, sometimes we can't find them. My cousin went too deep and never came back", too sad he replied us.

The mining site is full of foreigners, Kabore Oueremy (36y.o) from Burkina Faso told us. He stated:

*The poverty rate in Burkina Faso is high than here, Ivory Coast has many mineral resources; we like here because [21] we can work in cocoa, coffee plantation and earn much money. During the rainy season, we work as employees in [22] cocoa plantation and back the mining sites once the crop year ends.*

### **Non-compliance with laws and regulation**

Running a mine is a very complex issue and capital intensive. This is simply because it requires very sophisticated [26] technologies and expertise to manage the firm effectively. Unlike the developed and developing countries (China, [27] Australia, Germany, United State, Canada, South Africa...) the government of Ivory Coast does not have the [28] expertise, the sophisticated technologies and the required revenue to invest into the mining industry. In addition, mining activities have adverse effects on the natural environment.

Environmental problems such as air pollution could lead to the outbreak of communicable diseases such as tuberculosis, silicosis, and asbestosis, the government of Ivory Coast does not have enough revenue to put up enough infrastructures such as hospitals and to train enough qualified health personnel in case of an outbreak of diseases.

As a result, in order to exploit the natural resources and promote the mining sector in the country and also not to risk the health condition of the people, the government of Ivory Coast has appealed to investors from some of the above mentioned countries to invest into the mining industry. Some mining companies once in Ivory Coast will take advantage of the illiteracy of the local people, almost half of the population is illiterate (Fig. 3). They exceed the required boundaries with the exploration and fraudulently extend the contracts that had expired and deny the indigenous people the right over their own lands. A mining company known as NEWCREST wanted to continue with mining exploration and deny the people of HIRE (a town in the southwestern part of Ivory Coast) the right over their own land, even after 3 years contract with the government had expired (Gbalet, 2014) (NEWCREST vrs HIRE (2009-2011), (Blattman and Miguel, 2010).

Ivory Coast is a welcoming country; many foreigners are moving and living there. Even during the political unrest the rate of immigrant per year was around 0.3% of the total population. The number of immigrants reached 12.3% (2,231,277) of total population in 2005 and expected 11.3% (2,406,713 immigrants) in 2010 as reported the UNPD (United Nations Population Division) in 2009 in its year publications (UNPD, 2009). Most of those foreigners hail from the neighboring countries (Mali, Burkina Faso...) have illegally invaded the mines in Ivory Coast although they risk their own life every day. Recently, in the central part of Ivory Coast (Sakassou) over five illegal miners, including children, were killed on October 13, 2014 in the collapse of an illegal gold mine (Brooks, 2014).

### **Negative effects of the politic unrest**

The safety of lives and properties is currently an issue; this is due to the fact that Ivory Coast faced a ten-year political unrest. This political unrest scared foreign investors even if the current government is trying to restore the trust and attract them back. Legislation and laws in the mining sector have been put in place with a new mining code by the current government to develop the mining industry in Ivory Coast. The government has relaxed on some of the policies that come with the acquisition of the mining permits, but the high insecurity and the recurrent violent conflict in some parts of the country lead to the hesitation of the foreign investors.

The illegal mining activities are predominant in the western, northern and the central part of Ivory Coast because the rebels have occupied these areas since the political unrest in 2002. The restoration the security in the system and the deal with other pertinent issue like the tribal conflicts, xenophobia and improving the standard of living of the people in these parts of Ivory Coast are a complex issue. The current government took several efforts to unite the nation after the political unrest through reconciliation forums the nation remains divided. As a result of the division among the people of Ivory Coast many foreign companies are afraid to invest their money into the mines in Ivory Coast. The government and the stakeholders in the mining sector are unable to implement the laws and to effectively manage the mining industry. Some former rebels have taken advantage of the situation and the

people to exploit the mines. Local people also connive with some miners who are illegally mining gold and diamond and exporting to the neighboring countries (BAVIER, 2014). In addition, the action of rebels and local people in the western part to exploit the minerals illegally disturbs the mining operations of Ity mines owned by COMINOR which is the only legal mining company in the area. The rebel action in the west affects negatively the government shares in the company, the government only own 10% of the annual production (Fig. 3) (International Crisis Group, 2005).

Most of the foreigners in Ivory Coast have engaged in clandestine activities (farming, mining activities...) since the political unrest in 2002. The successive crises in Ivory Coast during the last decade have slowed the development of the people and economic growth of the nation leading to the high rate of poverty, unemployment, almost half the population is poor and living in difficult conditions (Fig. 4), (Bryceson et al., 2009, Mann, 2005). The money earned from the sales of gold can immediately be used to solve the basic necessities of life, such as clothes, school fee, food, medicines... (Fig. 4). Virtually there was no rule or an effective system to govern the people in Ivory Coast during the political unrest. Many foreigners illegally entered in the country without proper documents. These foreigners who are currently in the country have easily connived with the poor local people exploit the natural minerals of the country (Fearon and Laitin, 2003).

As long as some former rebels will be involved in the mining activities in Ivory Coast the implementation of the mining laws and the registration process will be problematic. As a result the illegal mining activities in Ivory Coast remain a major problem.

#### **Lack of adequate infrastructures**

From the research phase of development to the final operational phase of mining, it requires a high-tech development and enough expenditure for a good exploration and exploitation of gold and other minerals. The government of Ivory Coast does not have the required technology to explore and to perform deep drilling. The government of Ivory Coast prefers to allocate a large portion of the national budget to the agricultural sector instead of the mining sector. This is simply because agriculture production is less capital intensive and more reliable than running mines.

The mineral extraction is more complex and requires much financial resources, complex technologies and well-seasoned workers. The government of Ivory Coast is unable to support the mining sector because currently the government is seeking for funds from international donors to solve the immediate problems such as insecurity, education and the high unemployment rate. In addition, soil degradation is a major problem created by mining activities so the deterioration of the natural environment can be a key factor the government of Ivory Coast.

To control the environment, the government of Ivory Coast prefers to give the mining sector to foreign investors who have the requisite technology for mining activities. As a result, the revenues and the taxes the government gets from these companies help the government to solve the above mentioned problems and also to promote good living conditions within the country. Due to the government's inability to exploit the minerals, the problem of mining industry in Ivory Coast have increased exponentially.

#### **The disregard of mining sector**

Though Ivory Coast has important mineral deposits such as gold, diamonds, cobalt, copper, iron ore, manganese, monazite, tin, tungsten, bauxite, nickel, etc..., it has in the past ignored the extraction of the mineral resources and focused mainly on agricultural activities that made it the world's top cocoa producer with 500000t this year 2015. The first president Felix Houphouet-Boigny encouraged the people of Ivory Coast to grow cocoa, cotton and coffee that brought wealth to hundreds of thousands of peasant farmers, but he showed no interest in mining activities (La Mancha, 2012, IBPUS.COM.2012). Today, the Agricultural sector contributes to 22% to the national GDP again 5% for the mining sector (AFRIQUE, 2014; mondiale, 2015).

In addition, gold is the largest mineral resource among all the natural resources discovered in Ivory Coast. The mining ministry and all the other stakeholders in the mining industry have focused on gold production and given little attention to the extraction of the other minerals. Annual gold production by the four (4) main gold mines (Tongon, Bonikro, Ity, Angbovia) in the country rose by 4 tons to 18 tons in 2014 as reported the Ministry of Mines in Ivory Coast (Cluff Gold plc, 2012). The contribution of the mining sector to the national GDP is only 5% (gold represents around 0.7%in 2012) (l'industrie, 2015; INTER, 2015).

The high rate of manganese production (Tab.1) is due to the fact it is being operated by some giant companies such as China National Geological and Mining Corp (CGM) for Lauzoua and Mokta Mine, 180 Km away from the economic capital Abidjan and Compagnie Meniere du Littoral (CML), SODEMI, Kouamouo (SODEMI, 2013). And also the illegal miners are engaged in the illegal gold mining activities simply because the sales of gold in Ivory Coast is faster and lucrative (40\$/g) than manganese and other minerals (Tab.1). The illegal operators are concentrated on gold mining; as a result the government annual revenue from gold production is very low. Since 2011(10685.00 Kg) after the political unrest, the gold production increased and reached 18 tons this year (2015).

This is due the fact that the current government has decided to develop and to promote the mining sector. This highest level of gold production will keep growing up and will reach in 2016 at least 20 tons (24h Gold, 2012).

#### **CONSEQUENCES**

It is an observable fact that the government of Ivory Coast has ignored a vast area in mining sector since SODEMI has remained the only state mining company in Ivory Coast. SODEMI was established 2 years after the independence in 1960. The inability of the SODEMI the only state mining company in the country to control most of the mining sites in Ivory Coast and lack of manufacturing companies in the country to process the raw materials into finished products has contributed to the increase in the illegal mining activities in the country. The illegal exploitation of the basement of Ivory Coast is known to both the authorities and the population, however the measures put in place by the government are insignificant to check and arrest illegal miners.

The existence of illegal mining is due to the fact that some miners can acquire illegal permits and violate the laws, rules and regulations of the mining sector of the country because the corruption rate in Ivory Coast is on the ascendancy.

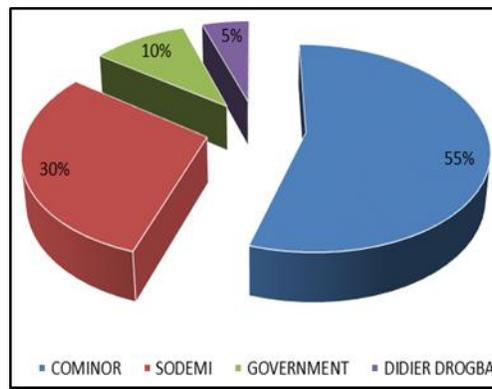


Fig. 3. The shares of the Ivory Coast's government in Ity Gold Mine

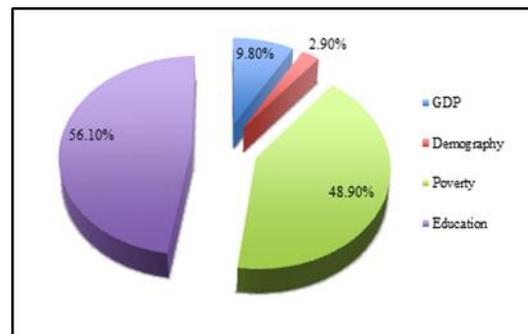


Fig. 4. Statistic of Ivory Coast GDP, Demography, Poverty and Education (Source NIS)

Table.1. Comparison of the mining sector of the agricultural sector

Mining sector	Gold Manganese	Annual production	2010	2011	2012	2013	2014	2015
			5. 316t	10. 685t	9. 831t	12. 66t	16. 8t	18t
Contribution to the national GDP			2%..... 5%					
Agricultural sector	Cocoa Coffee	Annual production	2010–2011		2012–2013		2014–2015	
			1. 49million(t)	80000t	1. 5million(t)	100000t	1. 8million(t)	120000t
Contribution to the national GDP			10%..... 22%					

The illegal mining activities in the country lead to problems such as conflicts between the illegal miners and the indigenous, insecurity, corruption, prostitution, water and air pollution, the influx of many children in mining activities, spread of infectious diseases, death..... (Anaky et al., 2010; Barnett, 2007).

**RECOMMENDATIONS**

We highly suggest that the government of Ivory Coast should close all the illegal mining sites as he has already decided (158 illegal mining sites closed in 2014 (Brooks, 2014) and 106 others will be closed from now (APA, 2015)) and then borrow money from the World Bank and other monetary agencies in the world to acquire GIS and to invest into the mining industry

in Ivory Coast (Mansour and Rees, 2012). The new advanced technologies such as GIS and the creation of the GVC in the mining sector as a solution in this paper for a few reasons that will be discussed below:

**The GIS**

GIS is a decision support system designed specially to analyze spatial information. Firstly, the strength and vitality of GIS will secure the mineral resources of Ivory Coast. All the mining sites will be identified and located. GIS will subsequently analyze the geographical and geological data for proper further exploration and exploitation of the country's minerals. The different types of minerals will therefore be graded. As a

result the government will be able control its own mineral resources before appealing to the investors.

The business agreements between Ivory Coast and Foreign mining companies will be easy to draft given that the necessary details are easy to come by using GIS (Fig. 5). The government of Ivory Coast will benefit greatly from the advantages of these new technologies. This is because GIS will locate the mines, estimate the lifetime of the located mines in the National territory. After a proper exploration and a good analysis of the geological data, the investors in the mining sector over the world will know about the mineral potential, the size of the minerals existing in Ivory Coast. They will also know about the governmental system of the Ivory Coast.

The administration in charge of the mining sector in Ivory Coast will proceed to engage in the partnership procedures with others international mining companies in order to develop the mining sector. The Ivory Coast government will finally reorganize the mining industry because of the excellent and promising results. Since the exploration and mining permits will be granted in the process with transparency, then the national GDP will increase and the dream of the current government to make Ivory Coast a great nation in the coming years will become a reality.

The contribution of new advanced technology methods will play a major role which leads good democratic governance in Ivory Coast. The current president Alassance Ouattara is actively concerned by the good livelihood of the people in Ivory Coast. The new technology will come to identify the people who are operating in mining sector

and to know the real problems that shake the local people while operating mining sites. The government of Ivory Coast will be informed of bad physical condition care of the local people and the environmental conditions and will be able to attend to their needs. The traditional methods used in the artisanal mining will be revalued and replaced by the new technologies. The local people will also benefit from several salutary effects such as the promotion of employment, schools for children (children go to school instead of being in illegal gold mines). Some roads and even towns will be built in these areas.

### **The GVC in mining sector**

GVC is a committee set up by the government to oversee its operations carried out across the whole country. This committee has been formed in the agricultural sector of Ivory Coast and the results have been excellent. The new technologies after helping the government to acquire the exact location and quantities of minerals in Ivory Coast, the new investment code brought into action in June 2012 to replace the old investment code which was created 20 years ago (1995) will support the development of the mining industry in Ivory Coast. Therefore the government of Ivory Coast will create GVC in each region of the national territory because the new mining code elaboration includes local people right and benefits. (Government of the Republic of Côte d'Ivoire, 2012, p 8 27- 30.US Department of State, 2013)

The creation of GVC in the mining sector should be made a major option for the government. The GVC has already played a very important and remarkable role in the agricultural sector in Ivory Coast. Due to the transparency and good organization and management of the regional GVC, Ivory Coast still remains the leading world cocoa producer and the third coffee producer. The GVC has enabled the government of Ivory Coast to identify potential farmers. Its role is to collect, buy and stock the agricultural products but also to ensure the

transportation of the agricultural products to Abidjan the economic capital of the country in a more transparent and rigor way. We suggest that the government of Ivory Coast should do the same in the mining sector and hence more profits because the GIS will ensure the proper control of the every operation in the mining sector. GVC agents will represent the government in all regions of the country. Due to the high degree of organization in GVC committee the GVC's agents will easily and quickly identify the people involved mining activities and collect the mining products.

As a result, the exporters, the buyers and the sellers of mining products once identified and registered will do the mining business in due process. Since all the people involved in the mining activities will present a license in accordance with the laws and regulations of the country to the GVC agents before each operation and transaction, the activities carried out will be in order and hence development of the sector. The above mentioned licenses should only be signed by the authorities of the mining sector of Ivory Coast. The mining products should not be sold to a third party. The GVC only will be able to buy the mining products while respecting the prices set by the central government of the Ivory Coast.

This important part must be detailed with information regarding the authorization process and also imperatively be notified in the license provision by the ministry of mines. It will solve many problems such as unemployment, conflict etc.... Therefore number of the rebels and other people involved in illegal mining activities will greatly reduce. We believe that these recommendations would have tremendous impact on the national GDP and also improve the standards of living of the people of Ivory Coast if the government considers them with urgent response.

### **CONCLUSION**

In this paper, the analysis suggests that besides agriculture, which is the most recognized sector in Ivory Coast the government should invest into other sectors, especially the mining sector to boost the national economy by using GIS and also creating GVC. The government should establish strong institutions and seasoned qualified people with the required expertise to effectively manage the mining sector in Ivory Coast. A well organized and a loyal army is an urgent and an imperative need to fight the illegal mining activities in the country in order to attract new foreign investors and also convince the former investors who left the country during the political unrest to come back and continue the mining operations (Fig. 5).

The adoption of the framework law in the mining sector, the development and the adoption of the strategy of rehabilitation and maintenance of mining tracks can be useful. The government should keep going on the rehabilitation of basic infrastructure (tracks mining, irrigation schemes), develop and adopt one of the mining activities, funding policy and also strengthen assistance, strengthen the regulatory and normative framework and support services to investors in order to benefit from the advantages provided in the new investment mining code. In addition to the above mentioned suggestions it will be necessary to revive the free enterprise system for mining products processing, to facilitate the free movement of mining products.

The finalization and the adoption of the draft law on the marketing of mining products and on the new mining code and simplify approval procedures and registration in the official catalog of varieties will be important. The government should design an action plan on the fight against fraud on mining

products, trademarks and appellations that threaten mining then create a secure and conducive environment. The Analysis of illegal mining activities in Ivory Coast in this research is limited yet we believe a proper management of the mining sector will help the government of Ivory Coast develop the economy and also to control the number of children drawn into illegal mining activities and other sectors which will be considered in our further research.

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