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## ARTISANAL AND SMALL-SCALE MINING IN IVORY COAST

REGULATIONS, IMPORTANCE TO DEVELOPMENT, AND  
POLICY SOLUTIONS



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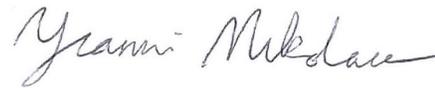
The Center for  
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# NOTE FROM THE PRESIDENT

We at CID are happy to present to you our first research report. Artisanal and small scale mining (ASM) is a key focus of our mining development research because of the sector's direct impact on local communities. We chose the Ivory Coast for our first case study on this issue given the reemergence of the issue in the country.

In this report, we present historical challenges facing the ASM sector in Africa, evaluate the situation in the Ivory Coast, and propose several policy recommendations. We hope you enjoy and share this report, and we look forward to writing more on ASM in different countries.

Sincerely,



Yianni Nikolaou  
Founder and President



The Center for  
Industrial Development

## INTRODUCTION

The Ivory Coast lies on the Brimian Greenstone Belt, a rock formation containing the richest gold deposits in the world. While the Ivory Coast is the world's leading cocoa producer and has traditionally been dependent on its agricultural sector, the national government has begun to actively court foreign investment into its promising mining sector. The end of the country's civil conflict in 2011 encouraged the enactment of liberal mining codes to attract investors who were fearful of investing because of the conflict. The renewed interest in the Ivory Coast's natural resources has brought the country's informal artisanal and small-scale mining (ASM) sector back into the policy debate. ASM includes both artisanal miners who use basic tools and extraction processes and small-scale mining, which involves the limited use of some machinery. The government estimates that there are now some 500,000 ASM miners, with the sector having grown in the last few years due to rising gold prices and falling cocoa prices (The Economist). Ivory Coast's ASM sector has been neglected and persecuted by the national government which favors large-scale mining projects (LSM). The ASM sector, however, requires special policy attention given its important role in local economic development, its effect on the environment, and the potential for ASM, LSM, and national government actors to benefit from collaboration.

## DEFINITION AND SIGNIFICANCE OF ASM

Both artisanal and small-scale mining of gold involves the use of manual labor and basic tools supported by little infrastructure. It is seasonal in many countries, with locals using mining income to supplement their farming income in the offseason. ASM mines are typically opened under an extralegal agreement between miners, local authorities, and military or armed authorities, with each party demanding some form of tax or fees in exchange for their service or permission. The mines are operated by "CEO's" who work with the local chief to make important managerial and risk decisions including assigning managerial roles to certain workers, enforcing pay and distribution schemes, and deciding on mine expansion or shut down (Campbell 2013, 176). With regards to the latter point, ASM operations are sensitive to the fluctuations in gold prices, with more mining occurring when the price of gold is high. The less capital intensive nature of ASM, however, allows for mining to continue even when the price of gold decreases to the point where large-scale mining operators halt their operations. It has been estimated that ASM accounts for approximately 15% of the world's gold production, or about 400 tons of gold per year (Telmer 2013).

ASM activities are usually accompanied by a burgeoning "secondary economy" that incorporates miners, security providers, retailers, health providers, financiers, and several other service providers. It is estimated that this secondary economy supported by ASM activities is valued at five times the value of the gold produced by the local ASM operation. In 2012, this figure was equivalent to US\$100 billion dollars globally (Buxton 2013, 3).

## BENEFITS OF ASM

ASM has great potential benefits for the development of a local community since it defies traditional industrial mining challenges. These challenges include limited direct socioeconomic benefit to the local community due to the traditionally capital intensive nature of mining and the industrial sectors trends toward creating economic “enclaves” (Campbell, 2013, 21). In contrast, ASM activities not only provide jobs to locals, but these jobs also pay significantly more than jobs in other sectors. In the Democratic Republic of Congo, for example, monthly profit for shaft managers can range from \$1,440 to \$6,426. Individual miners can make from \$44-\$128 a month. In comparison, it is estimated that agriculture generates \$17 a month, informal business \$20, formal business \$62, and public administration \$25 (Greenen 2015, 92). While it is a fact that a portion of mine workers squander their earnings on alcohol, prostitutes, and conspicuous consumption in mining towns, evidence has shown that the majority of ASM generated income gets channeled into local communities to the benefits of many small businesses and families (Campbell 2013, Greenen 2015).

## PROBLEMS ASSOCIATED WITH ASM

The two primary categories of problems associated with ASM activities are conflict mines, or mines controlled by armed groups, and environmental damage. Given that ASM activities are outright illegal in many African countries, mine owners and operators cannot rely on the government to enforce their property rights and ownership of their mine and its labor. These conditions force mine operators to turn to extralegal protection which in many post-conflict countries like the DRC or the Ivory Coast takes the form of armed groups of former rebels. Traditional ASM mine owners often lose control of their mines rapidly after contracting armed groups. These groups extort mine owners and take control of the mines, using the profits to fund other illegal activities. Unfortunately, these conflict mines have become the face of ASM operations as far as the international community is concerned.

The second problem area largely associated with ASM operations is environmental degradation. A process called mercury amalgamation is used to separate pieces of gold from the mined rock. This process is cheap, easy to use, and relatively effective compared to costlier methods. Mercury costs miners about 0.1% of their revenue from the gold which means it does not play a significant role in the decision to start up new ASM operations. The low cost and high availability of mercury contribute to ASM miners not knowing (or simply ignoring) its negative health effects, and therefore not exploring or investing in alternative processing methods.

For the reasons mentioned above, the ASM sector has become the largest source of global demand for mercury, with analysts estimating that the industry uses between 850 and 2,000 tons of mercury per year. Consequently, ASM operations have become the largest source of anthropogenic mercury pollution in the world (United Nations Environment Program 2013). The UNEP report estimate that 45% of the mercury used by the ASM sector ends up going directly into the atmosphere with significant mounts entering local waterways and the soil surrounding ASM sites.

Another issue with the informal ASM sector is the dangerous process through which the mined gold reaches the market. ASM miners do not have immediate access to developed gold processing infrastructure due to miners lack of capital and their inability to bring illegally mined gold directly to traditional licensed gold markets. The only option left for traders to bring their gold to market is a complex maze of middlemen and bribed officials who help get the gold out of the origin country, all the while facing threats from armed bandits. This process reduces the value of the gold due to the many layers of bribes that must be paid to avoid government intervention and to protect the gold from being stolen. These factors ultimately effect the value of the gold at the site of the mine and thus the value of the economic benefits the local workers receive (Greenen 2013, 146).

## REASONS FOR POLICY NEGLECT

The African ASM sector's need for policy attention has been neglected for several reasons. Policymakers, unfortunately, see the industries activities as substantial impediments to broader plans to develop large-scale projects. This view has been reinforced by The World Bank's "Strategy for African Mining" report which has had significant influence among African policy makers. This report focuses on foreign direct investment-driven large-scale mining activities. While the resulting liberal mining policies have resulted in great growth in large-scale mining, this growth has been limited to small enclaves of economic boom that are disconnected from the wider economy (Campbell 2013, 140). The wealth created by these large-scale operations is only spread across the country if the government is effective in collecting royalties and reinvesting them into the broader economy.

Further, when a country's mining sector is dominated by foreign multinational corporations (MNCs), the exploitation of the country's national resources becomes largely aligned with the profit maximization goals of a foreign company rather than national development strategies of the host country. If the goal is to exploit the resources for the greatest immediate financial gain, conservation plans are not given consideration. Large profits for MNCs do not help countries that have weak systems of royalty collection or poorly designed reinvestment plans to use the royalties. These separate interests have a profound effect on the level of policy attention ASM receives: a country becomes preoccupied with promoting policies to attract MNCs rather than promote ASM, and once the MNCs begin extraction, the national government's attention shifts further away from developing productive ASM policies and more towards renegotiating contracts with MNCs and protecting their interests. Legalization and support for ASM activities become afterthoughts in many country's development plans.

When the ASM sector does receive attention, national governments tend to focus on its negative aspects including poor health, safety, and environmental records while not acknowledging that these problems are largely a result of the sector's largely informal character. (Campbell 2013, 140). Even when a national government decides on a policy to improve an artisanal mine's productivity, evidence suggests that the impacts of such policies are limited for two primary reasons. These reasons include the inherent limits of often underfunded government institutions and the failure of policymakers to involve the ASM miners in the policymaking process (Brycseon et. al. 2014, 178). A significant result of this detachment is a commonly held view that artisanal miners are adventurers, working and playing hard in boundless pursuit of wealth and flamboyant living at the cost of local environmental damage.

The negative view of the ASM industry and its participants also contributes to international efforts to improve traceability of minerals through “fair trade” and “fair mined” initiatives. International focus on industry transparency and fair trade threatens to divert attention from the important socioeconomic causes of the ASM sector. When international attention influences a nation to implement policies that support fair trade and fair mined initiatives, these policies tend to apply to the few “official” ASM mines registered in a country, thereby isolating the vast number of unrecognized mines that employ thousands (Bryceson et al. 2014, 142). Therefore, while fair trade and fair mined are relevant to large MNCs with vested interests in preserving an ethical reputation to increase shareholder value and brand image, this approach is far removed from the circumstances of the ASM sector and its actors.

An alternative view of ASM actors promoted by those calling for reform of the ASM sector is artisanal miners as a marginalized, impoverished workers driven to pursue mining to maintain their basic livelihoods “in the face of national governments’ and large-scale mining companies’ subversion of their land and mineral rights” (Bryceson et. al. 2014, 179). The latter view has been supported by evidence from field interviews of artisanal miners in the Democratic Republic of Congo conducted by Sara Greenen. Of the 104 miners interviewed, 40 percent said they participate in ASM for gainful employment to support their families, 19 percent because it’s the only job they can master, and 10 percent because it is the only activity in their area. Only 5 percent reported they did it because they liked doing it, and only 3 percent reported participating to make quick cash to be spent on frivolous activities like drinking and prostitution (Greenen 2015, 90).

The latter view of an artisanal miner as a marginalized laborer threatened by state and industrial interests also emphasizes the need for mining policies to encourage collaboration between ASM, MNC, and government actors to develop policies that lead to productive coexistence. All parties stand to gain from collaboration. Concerning the link between ASM and industrial interests, collaboration can be fruitful given that the two industries complement each other. The primary problems the ASM sector faces include output, security, and infrastructure. Artisans stand to benefit from the expertise and facilities of industrial mining. The primary problems for industrial interests involve achieving high yield in the least capital intensive way possible. These inherent limitations mean that some sites are more suitable for ASM which involves small-scale labor-intensive extraction. Large low-grade deposits are best suited for capital-intensive industrial methods while small high-grade deposits are ideally suited for labor-intensive artisanal methods. (Ansoms 2011, 162). If there is no collaboration between the ASM sector, MNCs, and the national government, and all mining policies favor MNCs, then a large part of a country’s mineral resources will not be extracted.

## ASM IN THE IVORY COAST

The fall of cocoa prices has created a strongly renewed interest in the typically seasonal ASM sector in the Ivory Coast. The rising price of gold has convinced many agricultural laborers to go work in the mines in hopes of getting a years’ worth of income in just a few months. African governments have predominately had negative responses to ASM activities, often criminalizing their practices out right or neglecting to develop specific policies that take the sectors unique aspects into account. Countries often apply laws intended for the large-scale industrial mining sector to the ASM sector. (Telmer 2013). The Ivory Coast has followed these trends, shutting down more than 280 “illegal” ASM sites since 2015 (The Economist).

In 2014 alone, the Ivory Coast shut down 158 ASM sites (Kouame). The recently announced 2017 Mining Code has no specific policies that apply to the ASM sector. In fact, the only reference to “Native Title and Land Rights” states that large-scale mining interests do not need to own or buy into a plot of land in order to apply for and maintain an exploration or mining permit for that land. By extension, the Mining code states that a “native title holder” cannot oppose the claims and property rights of the permit holder (Aka 2016). This new mining law reflects the trend for national governments to cater to large-scale mining interests often at the expense of the ASM sector, which employs substantially more locals than the foreign industrial mining sector does.

The Ivorian government has maintained this negative view of the country’s ASM sector for many of the same reasons mentioned in the prior section. One of the most notable sources of the government’s disdain is the heavily publicized illegal mine allegedly controlled by Lieutenant-Colonel Issiaka Ouattara. Ouattara is a former rebel leader who is now a commander of the Ivorian Republican Guard. Many still refer to him by his nickname “Wattao.” During the Ivorian civil war, Wattao quickly rose through the rebel ranks and was appointed as commander of a large zone of the rebel held northern territories. Each zone commander was responsible for securing and collecting revenues from their zones that went to funding the rebel movement. While these zones were officially dissolved after the end of the civil war in 2011 and the rebel commanders integrated into the national army, Wattao’s influence did not subside. U.N. investigators found that many of the former rebel commanders like Wattao still maintained unofficial control over their former zones, controlling them like warlords and expanding their activities from gold mining to smuggling other crops and levying illegal taxes on transport through the zones. Wattao’s zone contains the most productive ASM mine in the Ivory Coast which produces as much as 25lbs of gold a day, which is equivalent to 13.8 percent of the country’s official annual production or \$96.8 million (Reuters 2015). It is difficult for policymakers to discuss the Ivory Coast’s ASM sector without mentioning illegally controlled mines and the many instances of potential corruption within the national army.

Virtually all ASM operations in the Ivory Coast use mercury to separate their gold from the mined rock. This process has led to noticeable negative effects on the local environment including contamination of nearby soil important for farming. Contamination of soil is not the only way the ASM sector is affecting farmers: mining operations are expanding into land traditionally used for farming. Mine operators convince farmers that they will benefit from the construction of a mine on their farm, however this arrangement can quickly turn into a nightmare if gold is not found and even if gold is found: if the mine expands, the use of mercury expands and further contaminates the land. If no gold is found, the farmer is left with open mines, contaminated land, and no financial gain.

The Ivorian government is addressing all ASM activities in the country as if they are controlled by former rebel groups. This approach has led to the prohibition of all ASM activities in the country in favor of LSM operations. Instead of focusing on integrating nonviolent ASM activities into the formal economy, the Ivorian government is liberalizing policies designed to attract the LSM industry. There is economic benefit to be had through similarly liberalizing some ASM activities as well. Simply formalizing all ASM activities, however, has not proven to be the clear cut solution to the sector’s development that many make it out to be. Efforts to formalize ASM sectors in Africa have not consistently led to sustainable development of artisanal mining co-ops or enhanced security and efficiency for the miners (Greenen 2015, 190).

In fact, formalization has many downsides since the costs are high, it involves obtainment of many official documents, and adds several layers of potential bribery. If artisanal mine operators get through these obstacles and become legitimate in the eyes of the state, their mines then face increased scrutiny, they are restricted to artisanal exploitation zones, and they can be forced to engage in semi-industrial modes of production that require additional investment and taxes. In Ghana, for example, policies toward ASM treated it as a formal industry consisting of many motivated entrepreneurs. The result was an excessively bureaucratic, costly, and cumbersome application process to receive a government-issued small-scale mining license. Fees included 1000 Ghanaian Cedi or GH (about USD\$230) for the preparation of site plans, a 100GH application form, a 250GH processing fee, a 550GH “consideration fee”, 750GH to the EPA for an environmental assessment, all these fees do not account for “informal payments” to landowners and police. In total, these fees equated to approximately \$1,000 USD, which doesn’t sound like much until it is considered that the GDP per capita income of Ghana was \$1,340 in 2015 (Campbell 2013, 147).

## POLICY RECCOMENDATIONS

At the bare minimum, Ivory Coast should aim to legalize and develop a more nuanced policy for the ASM sector, taking into account the shortcomings of policies that have been tried in other African countries. The focus of these policies should be to legalize artisanal and small-scale mining operations while addressing the common issues plaguing ASM miners and improving the productivity and safety of the industry as a whole.

The Ivory Coast should legalize ASM activities, with the exceptions of the known mines operated by former rebels in the northern parts of the country. These violently controlled operations must be approached with caution, not force, to avoid inciting an armed conflict. In addition to discovering the extent of Wattao’s mine’s production, U.N. investigators also found a 60-tonne arsenal of heavy weapons, ammunition, rockets, and other weapons dispersed in areas he controls (Reuters 2015). The national government must be aware of this arsenal and attempt to peacefully engage in treaty negotiations with violent mine operators, offering a path towards legalization which would benefit all parties involved.

The Mining Ministry should resume its efforts to engage local chiefs who often control access to certain mines and provide capital for new ASM mines. Recognizing the existing systems of mine organization will help establish a mutual trust between miners and the government. The Ministry must provide incentives for chiefs to work with the government and officially register their mining operations through a simple process at a low cost. The government should change its approach from one of persecution to one of support. Without compelling incentives or understanding from the government, local chiefs will not be proactive in seeking to register their mines. The incentives to register should include training programs and access to more advanced mining equipment, both provided in partnership with the LSM sector. Training programs need to focus on mine safety issues including proper shaft construction and use of mercury alternatives such as Borax, or simply non-chemical methods of extraction and refining. Mine collapses at ASM sites are unfortunately a common occurrence given the rudimentary structural support mechanisms and mercury pollution threatens the livelihood of both the miners and the local environment. Non-chemical methods of extraction include shaking tables, centrifuges, and magnets (Environmental Protection Agency).

With regards to technology, more efficient generators for electricity, mechanized tools, and sorting technology would have immediate effects on the productivity of ASM mines.

Other services that the government can offer ASM operations through partnerships with the LSM sector include access to GIS (geographic information system) mapping data and advanced geographic surveys including soil sampling projects. The latter data would be especially helpful in identifying areas ideal for ASM activities since these mines usually go no deeper than 100 ft. The shallower gold deposits best suited for ASM activities are easily identifiable by the advanced mapping technologies employed by the LSM sector.

The Ivorian government can incentivize the LSM sector to participate in these training programs by offering direct payments to participating LSM companies. These direct payments would be seen as worthy investments for the government to make given the many positive externalities they would be creating. These positive externalities would include improvements in public health, national employment, and sustainable local development.

The Mining Code should be reformed to accommodate the legalization of the ASM sector. Currently, the Mining Code stipulates that an exploration permit holder has the rights to the land for four years and can renew their permit twice for a period of three years each time. Permits can be issued for any amount of land up to 154 square miles. The only stipulation for a reduction in the land claimed by a permit is a reduction of the size by a quarter every time the permit is renewed. A stipulation should be added to require LSM companies to maintain a consistent level of exploration and/or development activities on the land they have permits for. If the companies remain inactive on their permitted lands, their permits should be canceled. Further, the amount of land area that an LSM company can get a permit for should be reduced. These two measures will help free up land that can be used by the ASM sector and reduce the number of cases the Ivorian government deals with concerning ASM parties encroaching on LSM operations. LSM operators often get permits for large areas of land and wait until the price of gold is high enough for development to be economical. Development of these lands is often uneconomical because these large areas of land can contain the shallow gold deposits best suited for ASM operations. For that reason, ASM interests find their way onto land that they do not know has been permitted to large MNC. It is easy for an ASM miner to mistake permitted land for available land when there is no sign of development on that land.

Finally, to address the complex and clandestine processes Ivorian's must go through to sell their gold, the government should encourage and support the construction of multiple central trading and processing plants in ASM regions. The government can charge a reasonable fee for a license to operate a trading house that way established trading houses can easily transition into legal practice. Central trading houses will help discourage the transport of gold outside of the Ivory Coast to be sold in neighboring countries. The buying and selling of gold outside of the Ivory Coast significantly limits the local economic impact of the ASM sector. Further, government protection of licensed trading houses will guarantee a level of security that traders traditionally have to pay bribes for. Having multiple trading houses in different regions will also shorten the distance traders need to transport their gold which also decreases the likelihood of traders being robbed in transit.





## CONCLUSION

Ivory Coast's ASM sector has much to offer in terms of local economic development. It is crucial for the Ivorian government to include ASM representatives in the policy making process so their important perspectives are taken to account. While there is certainly a need for harsh regulations against violently held mines like the ones controlled by former rebels, the vast majority of the Ivorian ASM operations are locally organized and employ hundreds. These ASM operators should be empowered with better technology to improve productivity and reduce their environmental impact.

Mining sector policy should not be seen as an "either or" choice between the LSM and ASM sectors. Instead, the Ivorian government can promote both sectors and encourage productive collaboration between the two. A thriving LSM sector can play a large role in the development of a productive, safe, and sustainable ASM sector. By creating policies similar to those recommended in this study, the Ivory Coast could benefit from an ASM sector that creates local economic growth and an LSM sector that both supports the ASM sector and provides royalties with which the government can invest in other development projects.

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