

ASGM GLOBAL FORUM IN PHILIPPINES FROM 7th – 9th DEC, 2010

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1. Artisanal and Small Scale Mining

The nature and extent of the growth of artisanal and small-scale mining sub-sector in Tanzania is influenced drastically by social, political, economic structure and geological setting of the country. The growth therefore is attributed to several factors. One of which is the attractive geological environment which has various sites of high-grade mineralization easily workable with simple tools. These include alluvial gold on the river beds and low lands basin areas and mineralization occurrences in various locations such as faults, folds, shears, veins and in banded iron formation (BIF).

There is also a search for sustainable livelihoods in the mining sector due to collapse of other productive sectors such as a poor market of agricultural products and droughts. Lack of public and private employment, including the closure of both the state-owned mines in the 1980s and privately owned mines in Tanzania in the early 1960s, has forced semi-skilled people to opt to artisanal mining. Another factor is that from 1970 to 1990, Government had long and complicated process for granting mineral rights to applicants. This increased the number of informal artisanal miners. The discovery of various gold deposits south of Lake Victoria in the mid-1970s attracted indigenous people into mining activities as a fast way of getting rich. Finally, the economic policy reforms on mineral trade liberalization and the new legal and regulatory framework has encouraged the growth of artisanal and small scale mining subsection.

Small scale mining in Tanzania can be characterized as mining operations which are labour intensive for operators with informal technical knowledge of mining and mineral processing and little capital. They can embark on mining with crude tools like picks, shovels and pans (See Figure 1&2). In the operations, miners are coupled with wastage of

minerals due to poor ore and mineral recovery during mining and mineral processing. There is a wide scattering of mine waste products (tailings) and poor handling of mineral processing chemicals such as mercury.

Artisanal miners basically conduct their operations on an informal basis without adhering to laws, regulations and technologies. They shift from one site to another, working on both licensed and unlicensed land. They are disorganized, lacking work preparation before production, and totally omitting the prospecting that would enable them to know the value of their mineral deposits.

The use of inadequate mining and processing techniques leads to low productivity. The Government is habitually unable to control artisanal mining because it lacks adequate operational resources to enforce existing regulations.



Figure: 1 Illustrate mining using rudimentary tools



Figure 2: Local ball mill for grinding the mined ore

2. Geology and Mineralization

Generally, Mwanza is situated in the famous Lake Victoria greenstone belt bearing a numerous quartz veins that host gold. Also geological settings of the gold is found in alluvial on the river beds of low lands basin areas, faults, folds, shears and in banded iron formation (BIF).

The most common gold ore occurrence is that which is hosted in the quartz mineralization disseminated as coarse to fine distributions. In most areas, gold ore occurs in high grade hosted in thin quartz veins up 3 feet that outcrop to the surface in some areas.

3. Gold Recovery Process

The ore is crushed by hand hammers into small sizes which are then dried and grinded by ball mills into fine powdered raw material. The obtained fine powder from mill is then put into sluice boxes where water is carefully added using buckets or water pipes (See figure 3). A constant water flow is maintained to high recovery of gold from the ore. The sluice boxes are covered by carpets to capture fine gold as it runs down the sluice boxes. The finer the gold grains are, the less efficient is the sluicing process. After sluicing process, the

carpets are washed in large metallic or plastic trays or containers. The obtained mineral ore concentrate will be amalgamated by using mercury (See figure 4).



Figure 3: Gold extracted using local table



Figure 4: Illustrate ore amalgamation with mercury

4. Gold Retorting

The mercury based gold extraction processes prevalent within artisanal and small scale mining are both efficient and harmful. While ensuring relatively high levels of gold recovery, they cause environmental and health problems for people living within the mining settlements.

This mercury consumption can be minimized by using a simple mercury recycling device known as a retort. While mining legislation in Tanzania dictates the use of retorts for gold recovery, virtually no miners use them, indicating the inadequacy of previous introduction attempts. Few miners who use retorts in Geita have recycled many kilos of mercury with less mercury spilled into the environment and the saved money is normally spent on purchasing mercury.

By considering that, Mwarema has kept sensitizing her members to use retort for good recovery of gold which enhance the environment of the surrounding community and safeguards the well – being of the miners themselves.

5. Mwanza Region Miners Association (MWAREMA)

MWAREMA was formed on 6th September, 1986 after the Government of the United Republic of Tanzania in 1983 directed Small Scale Miners in each region to establish their associations (REMA's) in order to link miners and the Government. Mwarema is based in Geita district at Nyarugusu village where the main office is located. The association is headed by the Chairman assisted by General Secretary. To date the association has more than 700 members as Geita covers 579 Licences for small scale mining.

The association has various significant roles to her members. These include:

- Training artisanal and small scale miners to abide to the mining laws.

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