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Baseline Information for the National Action Plan on Artisanal and Small - Scale Gold Mining: Tanzania

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zero Hg mercury working group

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STATUS OF ASGM IN TANZANIA

ASGM is legal and recognized by the Mining Act of 2010 and implemented through Zonal Mining Offices (ZMOs) and Regional Mining Offices (RMOs). The Mining Act of 2010 has enhanced support to ASGM by designation of ASM areas; confiscation of exploration licenses held for speculation only (i.e. with no active exploration); and support to the ASM sector pertaining to access to adequate equipment. The Commissioner of Minerals is the recognized licensing authority for gold processing facilities (mainly medium scale processing i.e. leaching of tailings, electro-winning, smelting and refinery facilities) as well as gold buyers (gold brokers and dealers).

The government has actively encouraged entry into small scale mining by its citizens, simplifying procedures for acquiring Primary Mining Licenses (PMLs) and decentralizing the Ministry of Energy and Minerals (MEM) inspections functions to zonal and district offices across the 10 zones delineated by the government (Northern Zonal Mine Office, Arusha; Lake Nyasa Zonal Mine Office, Songea; Western Zonal Mine Office, Mpanda; Central Zonal Mine Office, Singida; Southern Zonal Mine Office, Mtwara; Lake Victoria Western Zonal Mine Office, Mwanza; Lake Victoria Eastern Zonal Mine Office, Musoma; Eastern Zonal Mine Office , Dar es Salaam; South Western Zonal Mine Office , Mbeya; and Central Western Zonal Mine Office, Shinyanga).

Through the guidance and requirements set out by the Ministry of Energy and Minerals, small scale miners are organized and have formed Regional Mining Associations (REMAs) that have roots up to the village level. At the national level they are recognized by the government and coordinated by their national umbrella organization called Federation of Miners Association of Tanzania (FEMATA).

Miners are required by the law to sell their gold to registered gold brokers and goldsmiths, gold dealers buy gold from brokers and export to international market. However, some of it slips through the borders undocumented.

NUMBER OF MINERS

Because ASGM is an informal sector the number of miners is not known exactly. Currently there are approximately 14,880 PMLs. It is estimated that upwards of 690,000 persons labor[1] in this sector across the 10 zones. Roughly half of this total labor figure can be found in two key gold belt areas: Lake and Central Western zones.

1 Project Information Document (PID) Additional Financing - Tanzania Sustainable Management of Mineral Resources (P151124)

MERCURY USE IN ASGM

Mercury use is legal in Tanzania under the Industrial and Consumer Chemicals (Management and Control) Act, 2003. No official estimate of mercury use in ASGM has been made, but a rough estimate can be made based on the amount of gold produced. Most ASGM gold is produced using the concentrate amalgamation method. Different studies have shown that for concentrate amalgamation, between 1.3 and 3 grams mercury on average are used per gram of gold produced. Gold production per annum from ASGM is estimated to be 4 metric tonnes (10% of total annual national gold production)[2]. Therefore, a rough estimate of mercury use in ASGM per annum is between 5.2 and 12 tons. Most of this mercury is either emitted to the atmosphere or lost in tailings and/or water bodies.

Despite the fact that mercury use in ASGM in Tanzania is legal, the actual mercury used in ASGM within Tanzania is obtained illegally through mercury trade inflows routes through Kenya via the lake zone bordering regions, and from South Africa via Zimbabwe through the southern bordering regions.

METHODS OF MINING

Mining work is mainly done by workers (casual and/or contracted) within a PML. The PML owner or investor (with an agreement with the PML owner) is the owner overseeing processing and selling of the product, which can either be as the processed gold or gold-bearing ore sacks (unprocessed). Gold ore or processed gold (gold doree) buying is mainly done at processing sites that are mostly located on the area within the mineral right or outside the area that had been licensed for processing minerals.

Auriferous/quartz gold mining is the main ASGM practice in Tanzania. (Alluvial gold mining is also carried out in river beds and on river banks, but currently constitutes only a small percentage of the ASGM sector in Tanzania, due to diminished alluvial gold resources.)

2 Project Information Document (PID) Additional Financing - Tanzania Sustainable Management of Mineral Resources (P151124)

Auriferous/quartz gold mining involves several stages that include ore size reduction (crushing and milling), concentrating, amalgamation with mercury, and recovery through evaporation of the mercury from mercury-gold amalgam. This gold recovery system typically involves:

i. Concentration method by using mainly sluice boxes (with intermittent and increasing use of constant water flows);

ii. Washing of sluice carpets (various types of carpets include sisal bag carpets, towels, etc)

iii. Amalgamation of the concentrated ores obtained from sluice carpets;

iv. Gold – mercury amalgamation on cement paved washing ponds that minimize dissipation of mercury contaminated water. This is a requirement for gold processing centers;

v. Mercury filtering by using fine cloth to eliminate excess mercury from gold-mercury amalgam after completion of the amalgamation process;

vi. Open burning to evaporate mercury (often done using a cooking stove or with firewood) and generally without mercury capturing equipment.;

vii. Further smelting is carried out by gold brokers and gold dealers by using LPG torches in order to eliminate remaining mercury in the gold doree and to form gold blocks for refinery by gold dealers in their facilities.

Ore concentrating by sluicing process

Amalgam open burning

A mother with a child at the processing site

Ball milling the ore at Processing site

CHALLENGES IN ASGM

Small-scale operations are often rudimentary and conducted in an ad-hoc manner particularly within unlicensed areas as well as in gold rush areas. Inadequately managed mining and licensed areas are characterized by a lack of adequate controls and monitoring; there is minimal adherence to safety and environmental standards; and a virtual absence of supporting physical or institutional infrastructure[3].

Zone and resident mines offices of the Ministry of Energy and Minerals are increasing working towards enforcing adherence to safety and environmental standards but they are generally faced with limited resources (human, financial and capacities) in the large areas which they are meant to supervise. Further, environmental monitoring for the sector is also limited due to size of the supervision area compared to the number of human resources available. Furthermore, ASGM sites exist in rural areas where accessibility is sometimes limited particularly during rainy seasons.

Additionally there is limited capacity (human resources, technological and financial) to undertake human bio-monitoring activities of mercury exposure as well as levels of environmental contamination and hence data for human bio-monitoring and levels of environmental contamination are limited in most ASGM areas.

3 Project Information Document (PID) Appraisal Stage - Sustainable Management of Mineral Resources Project, 2009

Communities living within mining centers as well as those residing downstream of the mining areas are mostly considered particularly impacted or vulnerable to health impacts from ASGM. Because limited research has been carried out on environmental contamination or health impacts from ASGM activities there are no existing plans for rehabilitation of any resulting contaminated areas.

RECOMMENDATIONS FOR NAP DEVELOPMENT

The Minamata Convention on Mercury, Annex C Paragraph 1 (g) requires that all the relevant stakeholders should be involved in its design and implementation of the National Action Plan (NAP) on ASGM. Key stakeholders should also be engaged in the implementation process. Having stakeholders involved from development through implementation will help to instill a sense of ownership of the process, making it easier to implement the interventions proposed by the NAP. While the term "stakeholder" is not defined in the Convention, the term can include multiple relevant ministries in the government (e.g., environment, mining, health, labor) as well as their local government counterparts, small-scale miners or associations that represent their interests, NGOs, large-scale mining interests, health specialists and providers, gold buyers, academia, and others. In particular miners and mining community members have a personal connection to the issues and understand the intricacies of how ASGM functions in reality.

During consultations with miners conducted under this project, miners raised concerns on health effects of mercury and hence urged government to enhance and propagate feasible alternatives to mercury in gold recovery as well as improved gold recovery technologies. Miners showed interest in the availability of such feasible mercury-free, easily accessible technologies with low emissions and exposure minimization. In addition to that, they raised concerns on the lack of availability of occupational health monitoring and treatment/ management of the negative effects of mercury exposure to affected individual miners near mining centers.

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