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**Analysis of formalization approaches in the artisanal and
small-scale gold mining sector based on experiences in
Ecuador, Mongolia, Peru, Tanzania and Uganda**

Tanzania Case Study

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UNEP would like to thank the Government of Norway for their contribution to this work. A formalization analysis document of the artisanal and small-scale gold mining sector has been developed by UNEP to highlight critical elements of formalization process for policymakers.

Five case studies were developed as a means to inform the overall formalization analysis. The case studies are available on UNEP's web-site and were developed by the following regional experts:

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The case studies represent the views of the identified expert author. The case studies do not imply any expression of any opinion whatsoever on the part of UNEP or the country studied.

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1. INTRODUCTION

i. General Characterization of ASGM in Tanzania

A. Overview of the sector

Over the past three decades, the artisanal and small-scale gold mining (ASGM) sector in Tanzania has been increasingly important for poverty alleviation nationally. Tanzania, Africa's fourth largest producer of gold (after South Africa, Ghana, and Mali), is experiencing a boom in its mining industry. ASGM activities, taking place in many regions of the country, play a significant role both as a direct source of employment in mining communities and in generating additional jobs and revenues in the rural economy.ⁱ

Tanzania's mainly informal ASGM sector began to grow in the 1980s. The downturn in the performance of other productive industries, poor markets for agriculture, droughts, and other factors have been associated with the increase in the number of people working in ASGM in the 1980s and 1990s.ⁱⁱ A report by one of Tanzania's regional small-scale mining associations notes: "The closure of state-owned mines in the 1980s and privately owned mines in Tanzania in the early 1960s forced semi-skilled people to opt for artisanal mining. Another factor is that from 1970 to 1990, the government had long and complicated processes for granting mineral rights to applicants [increasing] the number of informal artisanal miners."ⁱⁱⁱ In the 1990s, when large tracts of land were allocated to large companies as part of a national economic reform process, many farmers became reliant on artisanal mining.^{iv} The rise in gold prices globally has been a factor in attracting people into the ASGM sector, but researchers widely recognize that most ASGM in Tanzania is driven fundamentally by critically limited livelihood options.

Diverse types of mineral extraction are important in Tanzania's artisanal and small-scale mining sector. Operations range from semi-mechanized and mechanized mining to the extraction of minerals using simple technologies with little or no economic capital and no mechanization. It is emphasized in studies that ASGM should be accorded careful regulatory attention, to address different types of mining operations and to ensure and improve their contribution to poverty alleviation and rural development.^v These activities involve gold production from both alluvial deposits and hard rock mining, and gold rushes have taken place in multiple regions of the country, especially in the area near Lake Victoria in the North.

B. Current status of ASGM

Estimates of the number of artisanal and small-scale miners in Tanzania range from 500,000 to 1.5 million.^{vi} The government has estimated that small-scale mining generates at least three jobs for each individual directly involved.^{vii} Gold and gemstones are the most widely extracted minerals by artisanal and small-scale miners, and the artisanal diamond mining sector has also been growing in recent years. National gold exports reached US \$1.076 billion in 2009, up from US \$932.4 million the previous year – including all large, medium, and small-scale mining operations. Artisanal and small-scale gold mining may account for approximately 10% of Tanzanian gold production, though most of the small-scale mining activities are currently informal (i.e., not licensed officially).

ii. Short History of the ASGM Legalization Processes in Tanzania

The 1979 Mining Act created opportunities for small-scale mining by allowing mining permits in areas designated for mineral prospecting that did not require large expenditures and specialized

equipment. In the late 1980s, the government began to support new opportunities for small-scale mining communities when it ended the monopoly of the State Mining Company and began liberalizing the mining and selling of gold. The government’s Small-Scale Mining Policy Paper of 1983 encouraged citizens to supplement their incomes by participating in mining activities. In the 1990s, the government developed a legal and policy framework for formally integrating small-scale mining into a national mineral development strategy, introducing the Tanzanian Mining Policy of 1997 and the Mining Act of 1998, components of a mining policy reform process that was supported by the World Bank. Among other policy aims, the reforms included the aim of legalizing and formalizing the small-scale mining sector by establishing a suite of basic environmental and safety standards for ASGM along with a new permitting system.

At the same time it passed the 1998 Mining Act, though, the government prioritized the development of large and medium-scale mining as an economic strategy, leading to many large tracts of land being allocated to larger companies. Since then, a number of public debates have emerged on Tanzanian mining policy, highlighting a need for allocating land for artisanal and small-scale mining activities specifically and making the licensing system more equitable and accessible to marginalized groups. Although national poverty reduction papers in the early 2000s overlooked artisanal mining, by 2005 they began to emphasize that, “the livelihoods of artisanal miners need to be balanced with commercial mining.”^{viii} The Ministry of Energy and Minerals formulated strategies aimed at developing small-scale mining, initiating measures for improving information and statistics on ASGM, and developing extension services aimed at assisting miners to improve technologies. Government policy papers recognized that detailed knowledge of dynamics in mining communities is vital to regulate extraction activities effectively, and the official government policy objectives have been to promote small-scale mining cooperatives, to support the improvement of equipment in small-scale mining, to encourage partnerships between small-scale miners and companies, and to deliver assistance to mineworkers through technical training at selected sites.^{ix}

Responding to a number of concerns about mining laws, the President of Tanzania commissioned a high-level review of mining legislation and policies in 2008, led by the Bomani Presidential Mining Sector Review Committee.^x The findings of the Bomani Review Committee emphasized the need to amend the mining legal framework and associated mining policies, particularly so that Tanzanian citizens have greater opportunities to benefit from and participate in the mining sector. This led to a new Mining Law being passed in 2010. The analysis in Table 1 highlights four key evolving areas of national policy and how they generate shifting sets of possibilities and lessons for formalizing ASGM activities.

Table 1: Overview of Four Key Evolving Areas of ASGM Policy in Tanzania

1) Land Allocation Policies for Small-scale Gold Mining

First, the Tanzanian Parliament promulgated a new mining law in 2010 that stipulated measures to allocate land areas specifically for small-scale mining. Recognizing the need for the government to expand significantly upon previous efforts to regulate ASGM, this legislative measure signals a potentially momentous development designed to help to reduce conflict between small-scale miners and larger companies, provide a more equitable playing field for accessing mining permits, and create a more stable foundation for local environmental planning and livelihood planning. Improving security of tenure is widely recognized by researchers as a key strategy to improve small-scale mining technologies and labour practices. Although most of the mineral exploitation and exploration rights in Tanzania historically have been allocated to large and medium-sized companies, the new mining law was established with the recognition that poorer artisanal and small-scale miners in Tanzania should be included more centrally in the process of allocating land and mining rights. To make this policy effective, concerted efforts are needed to conduct geological

investigations in small-scale mining areas, to ensure appropriate resource viability, and to ensure that poorer mining groups are not marginalized by being confined to too narrow a field of designated permit areas.

2) Decentralization of Permitting

Second, the government decentralized the permitting process for Primary Mining Licences intending to make the small-scale mining formalization process more efficient and more accessible to rural communities. These reforms came after the 2008 Bomani Commission concluded that mining sector decision-making had been too disconnected from district-level governance and cross-sector land use decision-making. The recent move to decentralize the permitting of artisanal and small-scale mining to the Zonal Mines Office level has thus created new possibilities which may be seen as an improvement over the previous system, in which licences were issued solely at the offices of the Commissioner of Minerals in Dar es Salaam. Evidence so far suggests that this reform is making the permitting of mining more time-efficient and less bureaucratic, while better integrating small-scale mining into the local development planning process. Little information exists yet on the demographics and socioeconomic profiles of the local beneficiaries of these reforms. Also, the Zonal Mines Offices still have minimal resources and limited capacity to issue and track licences effectively.

3) Microfinance Policies

Third, the government initiated steps in 2011 to develop microfinance services tailored for the artisanal and small-scale mining sector. While past attempts to create public-private sector linkages have been *ad hoc* and limited, recent efforts to encourage banks, companies, and microfinance institutions to assist mineworkers could yield numerous opportunities for enhancing technological capacities across the sector. As artisanal and small-scale miners often lack collateral and do not qualify for credit under existing commercial banking channels, a number of strategies drawn up by the government are vital (discussed later in this report). Ongoing debate about reform processes in Tanzania highlight the need for attention to financial empowerment strategies to support marginalized groups.

4) Policies for Capacity-Building

Fourth, government has initiated policies and programs to strengthen institutional capacities to conduct outreach and training activities with artisanal and small-scale mining groups (licensed as well as informal/unlicensed workers) and improve environmental management, technology upgrade programs, and regional regulatory implementation. Zonal Mines Offices are responsible for conducting extension services, but limited funds have hampered their capacity to do so. Future programs to support local participation and planning in mining communities (with support from international donors) could be key to improving local capacity-building and environmental regulation. Past programs to reduce mercury use and address health and safety were most effective when developed through strong collaboration and partnership at the local level, for instance, with organizations such as the Mwanza Regional Miners Association and the Tanzania Women Miners Association. “Top-down” policies and interventions have tended to be ineffective; local ownership and “bottom-up” approaches to project design are vital to achieve positive and sustainable results.

2. MERCURY AND OTHER ENVIRONMENTAL IMPACTS IN ASGM

i. Brief assessment of mercury use and other environmental and social impacts

The diversity of ASGM activities presents a complex set of challenges and opportunities. Many perspectives exist when it comes to understanding what artisanal and small-scale mining entails and which issues should be prioritized in Tanzanian regulatory strategies. Studies emphasize the contribution this sector can make to poverty alleviation in Tanzania, but they also note that problems of labour exploitation, smuggling, and land use conflicts need to be addressed in policy measures to license and regulate miners.^{xi} Mercury amalgamation, a simple and inexpensive way to extract gold, is the most commonly used method, thus ASGM also poses significant environmental and health risks arising from mercury use.^{xii, xiii}



Figure 1: Location of Geita and Lake Victoria, Tanzania

Much of the recent gold mining boom in Tanzania has taken place in the Geita District region, situated near Lake Victoria in the North of the country (Figure 1). This area has been the site of a variety of government and donor-supported programs designed to mitigate health and environmental impacts associated with ASGM. The population of artisanal and small-scale miners in Geita District is estimated to be 150,000, the majority of them unlicensed. Studies of this region^{xiv} note that effective government approaches to reduce mercury use include assisting small-scale miners to become legalized and improving educational services at the ASGM sites.

Mercury use in this region is regarded as a risk to the health of operators, communities downstream from the

mine areas, and the environment. Processing gold near rivers using amalgamation has been a practice for example in the Isingile River in Rwamagasa. There are three specific technical concerns about mercury use in the region:

- Retorts can capture 95% of the emissions and enable the mercury to be re-used,^{xv} yet many miners have not had access to education or training programs regarding their use.
- “Amalgamation ponds” are frequently made of wood, not concrete. Although environmental legislation (described and analyzed below) dictates that mercury-contaminated mineral concentrates and tailings should be stored in settling ponds with lined structures, only some miners comply.
- The more technologically sophisticated technique of cyanidation can sometimes reduce or replace rudimentary mercury use in gold extraction, but the combined use of cyanide and mercury is a particularly notable danger. As Massawe (2010) notes, “Cyanide use has become popular in the Lake Victoria area, where cyanidation is used to leach tailings that were mainly discarded by ASGM.” It has been suggested in past studies that mitigating mercury risks must begin with efforts to improve awareness of the dangers of combining mercury and

cyanide and methods of managing tailings (especially to address the disposal of tailings containing mercury into water courses).

A study of the Geita District by Gunson et al. (2006) estimated that 27 kg of mercury is released to the environment in the Rwamagasa area each year, while atmospheric emissions from other amalgamation burning is about 14 kg from the Blue Reef mine site and 7 kg from the other nearby mine sites including Nyakagwe and Nyamtondo.^{xvi}

Efforts to reduce mercury use and adopt improved methods for gold extraction require building trust with workers at the mining sites and developing capacities for fabricating and accessing local equipment^{xvii}. Some programs to facilitate improved technologies have led to notable benefits, as discussed below. While miners often do not know the technology standards or do not have access to capital to improve their equipment, mandated but underfunded government outreach services to assist them – though minimal to date – have also led to some important improvements. It is widely acknowledged that more human and financial resources need to be committed to community outreach and capacity-building. A number of studies have examined mercury use and the need to tackle mercury-related risks and many have stressed that the most effective way to address risks in Tanzania is to license ASGM and regulate practices in accordance with a set of clear, reasonable, and enforceable standards.^{xviii}

Various positive and negative aspects of ASGM in Tanzania have been discussed in detail by Kitula (2006). ASGM can be a traditional livelihood activity, a full-time source of employment, or a season-specific part-time job and ASGM populations can include migrant peoples, local communities with a longstanding history of mining, and people from all walks of life.^{xix} There are rich diversities of labour practices and population demographics in Tanzania's ASGM sector.

ii. National and international initiatives

The Government of Tanzania learned key lessons by collaborating with development institutions, researchers, and civil society organizations to address ASGM practices. Some pilot programs generated important benefits, particularly in minimizing mercury use and developing local capacities for upgrading technologies and reducing health risks. In 2006, the government partnered with the United Nations Industrial Development Organization (UNIDO) to develop a “Manual for Training Artisanal Miners”^{xx} and create training programs in selected ASGM communities in Geita District. The initiative involved a “train-the-trainer” exercise^{xxi} in which a team of local mining engineers, nurses, environmental management specialists, and others worked together to implement a program of capacity-building at selected sites. Four booklets (in Swahili) conveyed some of the main themes of the training, including:

- Mercury and health;
- How to use and re-use mercury;
- How to protect your water; and
- How to get more gold.

Stakeholders in education and awareness campaigns used these booklets and also posters and radio and television programs as vehicles to promote community awareness of ways to reduce gold mining risks, such as mercury misuse. The initiative actively promoted cleaner technologies to miners and demonstrated the technical, social, and economic benefits of reducing mercury use.

The government's work with UNIDO led to the development of a “Transportable Demonstration Unit” model whereby groups of trainers travelled to multiple mining sites and demonstrated technologies to improve mining and gold processing practices. Local miners' associations and local

government authorities in the village council collaborated on the project. According to project evaluation reports, this led to notable improvements in gold extraction practices, including the uptake of retorts, the construction of safely protected amalgamation ponds, and related environmental management safeguards.^{xxii} These assessments indicated that about 98 retorts are currently being used by miners and gold buyers, and that four local fabricators had made more than 230 retorts for use in Geita District.^{xxiii}

There have been positive examples of mercury reduction in other parts of the country as well, some resulting from university projects. A participatory “action research” project by Jönsson et al. (2009) introduced retorts to miners in two Tanzanian mining sites, in Matundasi and Londoni. They explain, “Twenty miners were given retorts and their attitudes and receptiveness to them were studied. Of the recipients, 18 used the retorts over a period of five months, recycling 10 kilos of mercury.”^{xxiv}

In 2010, the government partnered with a World Bank program, Sustainable Management of Mineral Resources Project (SMMRP), to provide training on mining issues such as “processing technology, environment and health, community consultation, training, and organization and formalization of artisanal mining activities.”^{xxv}

Key lessons learned from past experiences include the following:

- Education and training programs to reduce mercury use and address environmental health risks need to be accompanied by long-term measures to empower mineworkers to access and adopt enhanced technologies;
- Initiatives to tackle mercury-specific issues need to take into account and meet other community priorities, specifically to ensure that marginalized groups’ locally defined priorities are addressed. Mining accidents and health risks caused by the collapse of mine shafts, poor ventilation and lighting, poor mining methods, exposure to mercury and other hazardous substances, and the spread of communicable diseases such as HIV/AIDS are all serious concerns. The best way to identify and address community priorities is by promoting local planning and to design interventions through a bottom-up participatory approach.
- Barriers limiting the uptake of improved small-scale mining practices can be economic, social, institutional, and legal.^{xxvi} Improving access to social services, to credit, and to mining permits so that miner’s labour is legally recognized (e.g., improving security of tenure), should be part of efforts to improve small-scale mining practices. This requires developing policies to support both poorer artisanal miners – including highly marginalized groups (e.g. women miners) – as well as more established small-scale mining entrepreneurs (in accessing permits and capital, developing livelihood/business plans, designing suitable risk management plans, etc.)
- There must be a connection between pollution-prevention technology and economic incentives for individual miners and processing operations. Scoble et al. (2007), discuss how owners of inefficient and pollution-prone sluices resisted some of the technology changes: “the reason for this situation is that washing pond owners allow miners to use sluices for free provided they leave the tailings behind for further processing. It is in the best interest of the owner to have poor [gold] recovery during the first washing. The arrangement is exploitative at best and underscores the need to ensure equity and opportunities for miners to access improved technology.”
- Stakeholders involved in community development programs in Geita District stressed the need for the government to allocate more land for marginalized artisanal miners to minimize exploitative and illegal mining and create a supportive and secure climate for local environmental planning and institutional engagement. Without formal legal status, poorer

miners may be excluded from education programs and government services, and lack of security of tenure in turn may make local livelihood planning and resource regulation difficult.^{xxvii}

3. KEY ISSUES IN THE ASGM LEGAL FRAMEWORK AND LESSONS LEARNED

In policy literature in Tanzania, the terms “artisanal” and “small-scale” mining are often used to refer to mining activities carried out by individuals, families and/or groups of local communities and/or migrant workers, the majority of whom have no formal technical training and depend on rudimentary tools. Tanzanian mining legislation does not provide a direct definition of “artisanal” mining; only “small-scale” mining has been defined in law, its operations characterized by small capital investment, low levels of technological sophistication, and full ownership by Tanzanian citizens (1998 Mining Act and 2010 Mining Act). The specifics of the law and recent reforms are discussed below.

i. Mining framework that applies to ASGM

A. Mining titles/licences and related obligations and rights

The Mining Act allows small-scale miners to obtain Primary Prospecting Licences (PPLs) and Primary Mining Licences (PMLs). Under the 1998 Mining Act, a PPL was granted for a period of 1 year with the possibility of renewal, authorizing the owner to prospect for minerals within one of Tanzania’s 8 mining zones^{xxviii} and a PML was granted for 5 years providing the licence holder the right to mine an area of up to 10 hectares. Under this system, a PML could be mortgaged, renewed, or transferred to another holder (Mining Act of 1998).

Various changes were made in 2010. According to the 2010 Mining Act, “A primary mining licence shall confer on the holder the right to prospect for and mine minerals as provided for in this Division of this Part” (2010 Mining Act, Division C, Clause 54). Thus, a primary mining licence may now include prospecting activities for small-scale miners. Also, the 2010 Mining Act stipulates that “A primary mining licence granted under this section shall be valid for a period of seven years and may be renewed” (2010 Mining Act, Division C, Clause 55). There is no guarantee of licence renewal, and some analysts have suggested that the 5 year period for PMLs (as under the law until 2010) should be extended to 10 years if the miners’ application can show the merits of this. Thus, the 2010 Mining Act, by extending the period to 7 years, appears to make it only marginally easier for licence holders to conduct long-term planning in their operations.

In some cases, recognizing the conflicts between small-scale and large-scale miners, the government has designated certain regions as small-scale mining sites. However, as the Boman Presidential Mining Sector Review Committee noted, “There are also complaints that small miners are usually allocated tiny mining sites that make it difficult to operate without interfering with each other.” Detailing multiple examples of this, the report notes the case of Mirerani, “where the 50 x 50 meters area allocated to each small miner is too small compared to Plot C which was allocated to big miners.”^{xxix}

Researchers have examined the difficulty faced by many artisanal and small-scale miners in obtaining Primary Mining Licences.^{xxx} In part, these difficulties arise because much of the mining activity in Tanzania takes place in mineral-rich land areas where large mineral exploration and mining companies have been active in registering for licences as well, providing stiff competition for artisanal and small-scale miners.^{xxxi,xxxii} The study by Fisher (2007)^{xxxiii} focuses on how the PML system has been unevenly applied across the country with different implications for poorer, marginalized artisanal miners and more established small-scale miner entrepreneurs. Her conclusions

stress, “while legal integration can benefit certain wealthier categories of people, who fit into the model of an ‘entrepreneurial small-scale miner’, for others adverse incorporation contributes to socio-economic dependence, exploitation and insecurity.” Her study further notes that artisanal miners have been marginalized and that, “for the issue of marginality to be addressed within integration processes, the existence of local forms of organization, institutions and relationships, which underpin inequalities and discrimination, need to be recognized” (p. 735).

While the cost of licences may be prohibitive for some poorer artisanal miners, in other cases, the barriers to accessing licences have had more to do with other factors such as the bureaucratic processes associated with the licence application and/or lack of knowledge of the legal requirements and institutional procedures, and lack of understanding of their rights.^{xxxiv} Some of these barriers have been addressed through recent reforms in the licensing process. As mentioned earlier, for example, for many years the only way to secure a PML was to apply at the Ministry of Energy and Minerals office in Dar es Salaam, as licences were not processed at regional offices. This has been reformed recently; now the Zonal Mines Office can process PML applications, and this may be an important step towards making the licensing system more accessible to poorer ASGM groups. The analysis below examines recent debates about the legal classification of different types of ASGM.

B. Types of business entities to perform ASGM operations

PML holders encompass diverse types of individuals and business entities in Tanzania. The 2010 Mining Act states that a “primary mining licence means a licence for small scale mining operations, whose capital investment is less than US \$100,000 or its equivalent in Tanzanian shillings” (2010 Mining Act). This builds further on the 1998 Mining Act, which stipulated that while the mining licensing system in Tanzania generally works on a “first come, first served” basis (which has historically benefited large-scale enterprises which have the economic means to acquire licences), the PML system is open to Tanzanians only. In some cases, companies – if they are owned by Tanzanians – can hold PMLs. Table 2 outlines the clauses on eligibility for PMLs.

Table 2: Legal Clauses on the Eligibility for Primary Mining Licences (1998 Mining Act, Part I)

<p>No primary Prospecting Licence and no Primary Mining Licence may be granted to an individual, partnership, or body corporate unless:</p> <p>(a) in the case of an individual, the individual is a citizen of Tanzania</p> <p>(b) in the case of a partnership, it is composed exclusively of citizens of Tanzania</p> <p>(c) in the case of a body corporate, it is a Company; and</p> <p style="padding-left: 20px;">(i) its membership is composed exclusively of citizens of Tanzania</p> <p style="padding-left: 20px;">(ii) its directors are all citizens of Tanzania;</p> <p style="padding-left: 20px;">(iii) control over the Company, both direct and indirect, is exercised from within Tanzania by persons all of whom are citizens of Tanzania</p>
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Some analysts have contemplated whether reforms should be made so that PMLs are available to non-citizens/foreign firms (as well as Tanzanians). The 2010 Mining Act stipulates that gemstone mining will no longer be licensed to foreign firms, as part of an effort to empower local artisanal gemstone miners. As the Bomani Commission emphasized in its 2008 report that more attention needs to be given to empowering Tanzanian small-scale miners, the Government of Tanzania has been searching for ways to fulfill this goal. While the Mining Act has not provided a detailed strategy for promoting partnerships between PML holders and investors, and while the Act restricts foreigners from

investing in PML areas, the legal clauses for PML may be perceived in different ways in different contexts. In some contexts, the PML holder may be a former artisanal miner who transformed an operation into a more sophisticated small-scale mine; or a PML holder may be an entrepreneur who has several artisanal/small-scale mineworkers working within the licensed area. The law does not differentiate between these realities though (the law is the same regardless of the particular business entities involved), and little information exists in government offices on the demographic and socioeconomic profiles of the PML holders.

However, it is widely known that “informal” leasing and transferring of mining titles is a common practice in many of Tanzania’s ASGM areas. In various cases, concerns have been raised that the legal holders of PMLs are dissociated from the mining activities on the ground. The study by Jønsson and Fold (2009) indicates that although PML owners are responsible “for hiring and paying labour, organizing the mining, and endorsing safety and environmental regulations,” this “rarely transpires.” Their study focuses on mining settlements on the border between the districts of Manyoni and Singida in central Tanzania and in Chunya District in Southwestern Tanzania. It found that “most PML owners are not engaged in actual mining activities, but instead lease out the mineral access to pit holders who organize the mining activities.” Pit holders are a common feature in the organization of Tanzania’s mining communities, and “though sub-leasing of pits contradicts the mining legislation, formal contractual obligations between the PML owners, pit holders and workers are exceptionally rare.” Their study notes that, in many cases, relations may be terminated without notice, leaving the pit owners (and the mineworkers) with no job security. Various studies^{xxxv} have indicated this is a weakness in the legislation in its current form and there is a need for amendments to formalize the position of pit holders and/or find other ways of ensuring that the licensing system is more connected to the on-the-ground activities.

In recent government documents, it appears that giving legal recognition to “artisanal miners” is being considered, though it is not yet clear what developments there may be in the licensing system and how the PML system might be adapted. In one policy document detailing future plans, the Ministry of Energy and Minerals indicates the possibility of considering a way “to categorize legally artisanal miners and small-scale miners like in Ethiopia” (Ministry of Energy and Minerals, 2010, p. 18), but the idea has yet to be developed.

C. Transfer of rights and mining titles upgrades

The Mining Act allows the holder of one or more Primary Mining Licences to convert them into a larger mining licence. As Tesha (2000) notes, “a Primary Mining Licence can easily be converted into a mining licence in case a small-scale miner wants to involve foreign investors in its small-scale mining operation” (p. 2). However, the Act does not currently provide specific legal stipulations on how sub-division of larger mining companies’ concessions could work in order to create legal possibilities for sharing land areas with artisanal and small-scale miners. The 2010 Mining Act (Part II, Section 9) provides some general legal provisions on transferring mineral rights, noting “No special mining licence; mining licence or any undivided proportionate part thereof shall be assigned to another person without a written consent of the licensing authority.” It also notes that the mineral rights holder may be “entitled to assign the mineral right or, as the case may be, an undivided proportionate part thereof to another person.” Clarification of this dimension (formalizing of the sub-division of concessions) may be useful in the future, especially as government policy papers have recognized that more land needs to be allocated and available for legalizing artisanal miners. Interviews conducted for this study did not clarify the entitlement of various stakeholders to initiate efforts to share land areas and create opportunities for transfer of titles within licensed areas.

D. Negotiation with land owners and consultation with communities

The 1998 Mining Act and the 2010 Mining Act have to be reconciled with the 1999 Land Act and the 1999 Village Land Act. According to government policy, national mining laws can overrule other laws, and whereas mining issues are dealt with at the ministry level or zonal level, land issues are primarily managed at the village and district levels. Consultation is required if there are disputes.

The law does not provide clarity in addressing compensation issues for surface land holders or other constituents, and the 2008 Bomani Commission report noted that the government needs to clarify compensation policies, procedures, and amounts for artisanal miners in cases where resettlement is an issue. The Bomani Commission also notes that public consultation requirements for all kinds of mining need to be clarified.

ii. Environmental Legal Framework

Unlike large mining companies, owners of PMLs do not have to complete environmental impact assessments (EIAs). A more streamlined and specifically tailored set of environmental and safety requirements are codified in the legal framework for small-scale mining. According to the 1998 Mining Act, the holder of the PML is responsible for basic environmental and safety requirements, which include the usage of retorts to contain mercury vapour on mining sites, for example. The list of requirements for the PML holder is shown in Table 3.

Analysts have suggested that a set of complementary guidelines (or additional regulatory clauses) should be developed to clarify some of the specific measures in the above 11 requirements. For example, it may be useful to stipulate a specific distance away from water bodies with respect to construction of washing ponds (Requirement #1), rather than stating that the pond should not be constructed “close to” the river. (The term “close to” may attract different interpretations, making it difficult to enforce.) A set of accompanying guidelines could also clarify the specific design of the washing ponds (e.g., stipulating a concrete lining to prevent seepage).

The government has initiated plans to review the above requirements. In one sense, the general approach of the existing system is advantageous because it keeps the regulatory requirements simple. A problem encountered in other countries is that numerous environmental laws and requirements make the small-scale mining regulatory process too complicated. As the study by Mutagwaba points out, “the [Tanzanian mining] regulations recognize the inability by small-scale miners to conduct formal environmental impact assessments and prepare environmental management plans. The miners lack the technical know-how and the financial requirements to carry out such studies.”^{xxxvi} At the same time, while this observation is important, current laws do not stipulate requirements for the applicant of PMLs to state the intended gold processing method in detail before the licence is granted. Further specification in this regard may be advantageous in the future.

In 2008, the Government of Tanzania developed a Mercury Code of Practice, which provides a general set of guidelines on mercury management, including measures on how to reduce risks from amalgam burning, standards for technology, guidelines on tailings management, and other measures. The Mercury Code of Practice was developed at the same time as UNIDO-supported pilot programs were conducted in gold mining communities in Geita District, where, in collaboration with the government, key standards for targeting regional challenges were formulated. For instance, the standards include measures to prevent the combined use of mercury and cyanide and to prevent whole ore amalgamation.^{xxxvii} As there are multiple types of artisanal and small-scale mining, some analysts have suggested that it would be beneficial to create multiple categories of “artisanal” and “small-scale” mining with corresponding environmental guidelines and regulatory requirements in addition to this Mercury Code (as long as there remains a simplified set of requirements for artisanal miners).

Table 3: Mining Regulations (Environmental Management and Protection), 1999

Requirements for Primary Mining Licence Holders	
Issue	Regulation
Settling ponds	1. The holder of a Primary Mining Licence shall ensure that washing or settling ponds are constructed in his Primary Mining Licence area to provide for washing and sluicing, and no such washing and sluicing shall be done along or close to rivers, streams or any other water sources. Where a settling pond is used as part of the mine drainage system, all channels discharging into the river system must be covered and the slopes protected from erosion.
No vegetation clearing	2. Vegetation clearing will NOT be undertaken within twenty metres (20m) of any stream or riverbank.
Use of a retort	3. The holder of a Primary Mining Licence shall NOT heat mercury amalgam to recover the gold without using a retort.
No cyanide leaching	4. The holder of a Primary Mining Licence shall NOT use cyanide leaching without the written approval of the Chief Inspector.
Abandoned workings to be backfilled or fenced	5. No holder of a Primary Mining Licence shall commence development of new workings in his primary mining licence area without backfilling or fencing the abandoned previous workings developed by himself or his agent.
Damaged areas to be inspected	6. Prior to the commencement of mining in any area that may have been environmentally damaged, the Primary Mining Licence holder shall request an inspection of the same area by an inspector to confirm environmental disturbance. Any area, for which the authorities have not received a request for an inspection, shall be considered as normal.
Tailings disposal	7. The holder of a Primary Mining Licence shall ensure that tailings are disposed of at a proper place in a manner approved by the inspector.
Children not to be employed	8. No holder of a Primary Mining Licence shall allow children below the age of 16 to be employed or engaged in any mining or processing operations in his primary mining licence area.
Pit latrines to be constructed	9. Every Primary Mining Licence holder shall ensure that pit latrines are constructed and maintained at a distance of not less than one hundred (100m) metres inland from any water source other than washing or settling ponds.
Protective gear to be used	10. Every Primary Mining Licence holder shall ensure that each employee is provided with protective gear and no person shall handle any toxic substance without using appropriate gear.
Offences	11. Any person who contravenes any provision under this part shall be guilty of an offence and shall be liable, on conviction, to a fine not exceeding TZS 50,000 (approximately US \$31.29), or imprisonment not exceeding 3 months, or both.

iii. Relationship between small-scale and large-scale mining

In recent years, policy statements by the Ministry of Energy and Minerals have highlighted the importance of ensuring equitable policies to address concerns about land use competition, displacement, large-scale/small-scale partnerships, and other issues. Partnerships can support poverty alleviation through: the creation of small and medium-sized businesses which will generate jobs; provision of health, education, water, and electricity infrastructures; and making credit facilities available to assist artisanal miners. A number of large companies have advertised their community engagement strategies, including programs with artisanal and small-scale miners (e.g., AngloAmerican, Barrick, etc.) Government policies have generally not been put into place to monitor these partnership models rigorously or to formalize agreements between local artisanal mining communities and companies when it comes to strategies for sharing tracts of land. Nonetheless, sharing land has been encouraged in some cases by the government as an important way of creating equitable development plans.

A report by Hayes (2008) notes, “In 2007/2008 the Government of Tanzania has set aside 295,000 ha for small-scale mining throughout the country; however this is tiny compared to the demand and only some areas have actually been assigned.”^{xxxviii} In many cases, areas where artisanal and small-scale miners have worked for years overlap with areas where large companies have acquired licences. In recent years, policy advisors have argued that government officials need to put more pressure on companies to support ASGM. A number of strategies could be used, including technology assistance, training, land allocation, and other mechanisms, while also recognizing that the promotion of partnerships between artisanal and small-scale miners and large-scale companies should be linked with an effort to expand the capacities of the government to respond directly to the concerns of marginalized mining groups in contested areas. No national policy framework is in place to govern relations between small-scale and large-scale mining; it takes diverse forms in different districts.

In 2006, the government’s Ministry of Energy and Minerals began negotiations with some of the foreign exploration companies operating in the country to identify viable areas for small miners. In 2007, negotiations with an Australian company were finalized to set aside an area for small miners equal to 48.24 sq. meters at Nyarugusu in Geita district. According to the Bomani Commission Report, which referred to this example and others, in many cases “small miners have partnerships with big miners only during the exploration period and ... agreements between the two parties are usually for exploring in the small miners sites only.” The report notes that misunderstanding between small-scale and large-scale miners is common, necessitating clearer policy commitment to long-term opportunities for small-scale miners in the agreements and the development of policies for – and more active government involvement in – mediation.

Importantly, existing policies do stipulate measures for relinquishing concession areas and limitations on exploration (by limiting area and duration of licences). These policies, if carefully pursued, could improve opportunities for ASGM legalization. Given these legal dimensions, it is important to note that a recently emergent priority in government policy papers is “to demarcate some of [the] relinquished areas after PL renewals for small-scale mining” and “to publicize areas that fall vacant to help other applicants, in particular small-scale miners, apply for those vacant areas.” While the government aims to “promote cooperatives and joint ventures in SSM [small-scale mining] to improve their performance” it also seeks “to discourage hoarding of licenced areas by LSM [large-scale mining].”^{xxxix}

4. KEY ISSUES OF INSTITUTIONAL ASPECTS AND LESSONS LEARNED

i. State function and initiatives in the formalization of small-scale mining

A. Ministries of Mining and Environment or corresponding executive government institutions

Since the passage of the Tanzanian Mining Act in 1998, government authorities have emphasized that small-scale mining is a poverty-driven activity. As the Ministry of Energy and Minerals is the principal agent managing the development and regulation of this sector, its responsibilities have increased in recent years. The National Environmental Management Council (NEMC) deals with environmental issues. The Ministry of Finance oversees the allocation of the revenues collected by Tanzania Revenue Authority (TRA). The Ministry of Energy and Minerals conducts a range of permitting and monitoring functions, and coordinates the activities of the Zonal Mines Offices (ZMOs) and Resident Mines Offices (RMOs). The mandate of the Ministry includes the provision of extension services to improve mining methods and, significantly accentuating the importance of these services, Tanzania's Poverty Reduction Papers have drawn attention to the need for institutional support in artisanal and small-scale mining communities.^{xi} However, due to budgetary limitations, many of the extension services have been restricted in their scope and reach.

The Ministry of Energy and Minerals has taken an important step in initiating the development of a Small-Scale Mining Development Division under the Commissioner for Minerals. This division acts as a national centre for small-scale mining management and includes the mandate of coordinating an expanded set of outreach programs at mining sites. Efforts to strengthen the capacities of the Ministry over the past decade have yielded important lessons. Within the past five years, projects supported by the World Bank and the Nordic Development Fund have sought to equip the Ministry with technical, managerial, and material support for implementing national policy objectives and regional coordination in mining affairs. The major focus of these projects, in terms of their budgets and their objectives, has been to address issues related to the development of large and medium-scale mining nationally. Partly resulting from that project, there has been an increase in the issuance of Prospecting Licences and Primary Mining Licences (Table 4).^{xii}

Table 4: Licence Granting Trend (for PLs and PMLs) in Tanzania

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Prospecting Licences	218	199	186	225	263	515	782	167	624	553	704
Primary Mining Licences	35	2,602	549	668	654	1,532	558	741	1,798	2,349	3,932

Thus, a renewed focus on strengthening government capacities for licensing, monitoring, conducting education, training programs, and technology upgrading services is needed in poorer rural areas with artisanal and small-scale miners.

Performance assessment reports note the Ministry of Energy and Minerals has been overstretched, finding it difficult to keep up with the number of license applications in recent years. As of 2009, 10,000 outstanding applications from 2007 had not yet been processed.^{xiii} While these challenges are being addressed, the Ministry continues to pursue the following among its objectives:

- Improve information and statistics on artisanal and small-scale mining;

- Identify and allocate exclusive areas for small-scale mining;
- Develop training and extension services;
- Facilitate geological investigations in small-scale mining areas;
- Improve credit and financing;
- Promote value addition;
- Improve marketing;
- Streamline the fiscal framework; and
- Enhance regularization and address cross-cutting issues such as environment, health and safety, gender, HIV/AIDS, and social responsibility.

Complementing the role of the Ministry of Energy and Minerals, the State Mining Corporation (STAMICO) provides professional mineral services, such as drilling, land and mine surveying, mineral exploration, and investment promotion, and promotion and modernization of the ASGM sector. A widespread concern is that geological assessment processes have not yet benefited poorer groups of miners due to the primary focus on more modernized and formalized mining associations in the government programs to date. The Ministry of Energy and Minerals has initiated steps to establish the Mineral Development Fund for mine development, payment for geotechnical investigation and advice, and for purchase and hire of mining equipment. It has also established the Mineral Revolving Fund for mining services in small-scale mining centres such as custom milling, value addition and mineral trading. The institutional objective of expanding microfinance services is discussed in Section 5(ii).

B. Distribution of responsibilities at the Provincial and Municipal levels

As noted earlier in the analysis, an important recent institutional reform is the decentralization of responsibilities in the permitting process for Primary Mining Licences. In an effort to simplify licensing procedures for small-scale mining, the Ministry of Energy and Minerals now processes licence applications and issues permits at the Zonal and Resident Mines Offices. This replaced the previous set-up where the licence application, evaluation, and issuance process for all PMLs was based only at the Dar es Salaam offices.

As part of the ongoing Sustainable Management of Mineral Resources Project (SMMRP), the Ministry of Energy and Minerals aims to develop institutional reforms and capacity-building measures to “enable local governments to integrate mining into district economic and administration planning” (SMMRP, 2010, p. 4). Although local government authorities have often been limited in their capacities and involvement in mining issues in the past, local governments are responsible for working with the Ministry of Energy and Minerals, especially through the Zonal and Resident Mines Offices, when complaints or other concerns arise. In recent years, policy evaluations in Tanzania have highlighted the need for building the capacities of local government authorities, improving their ability to collect revenues at a standardized level and monitoring the sector, and responding to concerns about conflicting licensing claims.^{xliii}

In recent years, multiple policy advocacies have emerged to address the role of local village leaders with respect to exercising governance over different kinds of artisanal and small-scale mining. In 2008, the United Nations Human Rights Council (UNHCR) drew attention to some of these complexities when offering an analysis of a set of recommendations made by the Global Mercury Project regarding the policing of migrant miners. The UNHCR report noted, “The Special Rapporteur endorses most of the recommendations made by the Global Mercury Project team. He would like to inject a note of caution, however, concerning the recommendation that was made on giving more

power to local village leaders to deal with irregular migrant miners. This could lead to exclusionary practices and create tensions or conflicts between migrants and their hosts.”^{xliv} This insight suggests that village leaders need to take into account the growing importance of ASGM to migrant populations and that governance structures in turn need to be designed to recognize these cross-district labour patterns and socioeconomic pressures among groups that are “migrant” as well as “local.”

ii. Role of miners’ organizations in the formalization process

Informal and formal local organizations of artisanal and small-scale miners historically have played a crucial role in Tanzania. Diverse informal organizations exist among groups of pit holders, diggers, gold processors, and others at any given artisanal and small-scale mining site, even if they do not have licences, and their capacity to work together to address environmental health, safety, and well-being is vital for the success of the community.

Knowledge exchange between different groups of miners’ organizations is an important strategy in generating lessons and sharing insights about organizational development, technologies, business practices, and livelihood challenges and solutions. For example, in 2007 the owner of Blue Reef Mine in Geita District invited informal miners from the area to his mine, as part of a government-supported initiative to give practical demonstrations of grinding, sluicing, and retorting, and discussed health and safety issues and organizational and business strategies for small-scale mining. A Miner’s Fair in Nyarugusu is also a popular event for bringing miners together and sharing knowledge and experience.

In 1983, the government directed Small Scale Miners in each region to establish associations to link miners and government institutions. Miners’ associations, such as the Mwanza Regional Miners Association (MWAREMA), formed in 1986, play major roles in coordinating miners and facilitating organization and capacity-building. Based in Geita District and covering 579 licences for small scale mining, MWAREMA has more than 700 members (Hainga, 2010). The association has various roles, including:

- Training artisanal and small-scale miners to abide by the mining laws;
- Helping ASGM to acquire good mineral markets for their products (gold);
- Advising members to sell their products (gold) to legalized mineral brokers and dealers;
- Advising ASGM to conduct feasibility studies for their mining plots in order to simplify acquisition of loans from commercial banks and other financial institutions; and
- Advising ASGM to enter into joint venture agreements for capital fundraising

The Tanzanian Women Miners’ Association (TAWOMA), another key organization with a national scope, was formed in 1997 with 350 active members (miners, mineral brokers and dealers, service providers, and mineworkers). Headquartered in Dar es Salaam, TAWOMA has 16 regional offices and 15 local branches, representing all of the major mining areas. TAWOMA plays an active role advocating for small-scale miners, giving input to legal reforms, and providing a platform for networking and information and knowledge exchange.

iii. Role of academic, research, and technology centres in formalization

The Ministry of Energy and Minerals has formed partnerships with the Small Industries Development Organization (SIDO), a parastatal organization now under the Ministry of Trade, Industry and Marketing, with the mandate to develop, create, promote, and sustain an indigenous entrepreneurial base in the small-scale industries. SIDO has played a role in disseminating technology and education

in small-scale mining. Current initiatives of the Ministry of Energy and Minerals (SMMRP, 2010) envision further partnerships with SIDO as well as the Mineral Resource Institute (MRI), Vocational Education and Training Authority (VETA), Southern and Eastern African Mineral Centre (SEAMIC), the University of Dar es Salaam (UDSM), Dar es Salaam Institute of Technology (DIT), and the College of Business Education (CBE), with the aim of providing courses and services to small-scale miners.

5. ECONOMIC INSTRUMENTS IN THE FORMALIZATION OF THE ASGM SECTOR

i. Fiscal systems and their role in the gold production chain

A PML is acquired subject to payment of application and preparation fees of TZS 10,000 each (approximately US \$6.3) plus an annual rent of TZS 100,000 (approximately US \$63). The cost of the fees is, as noted above, only one of many barriers to accessing formal licences. Some environmental analysts have suggested that revenues from mining licence fees and taxes should be used directly for community development and mining community assistance programs. However, small-scale mining experts caution that taxing the small-scale mining sector too much would be a deterrent to formalization in poorer mining communities.

The 2010 Mining Act increased royalties paid on gold to 4% (from 3% previously). The government is in the process of reforming mechanisms for audits for royalty payments and related fiscal issues. Currently, there are certain types of taxes that apply to large-scale mining and not to small-scale mining, including corporate income tax and various specific levies. The Bomani Report suggests that the taxation system needs to be revised, noting that the contribution of the large-scale mining sector to the national economy and community development is not meeting the citizens' expectations. The Bomani Report notes, in particular, that various exemptions on duties and taxes in the large-scale mining sector have weakened the country's revenue base but that amendments could increase government collection of taxes. The 2010 Mining Act requires all mining companies to list on the Dar es Salaam stock exchange, representing one step towards ensuring that more revenues from mining stay in the country.

Under the Mining Act, gold *brokers* are authorized to trade minerals within Tanzania provided they have a broker licence issued by the Commissioner for Minerals, and licensed *dealers* are permitted to export gold. However, no laws govern the distribution of profits amongst claim holders, pit holders, and mineworkers. Carstens et al. (2009) note, "In Geita District the usual division of profits is around 30% for the workers and 70% for the claim holder," though different assessments reflect diverse local profit sharing arrangements (Mwaipopo et al., 2004). Table 5 illustrates the value of national gold exports between 1998 and 2005, but the distribution of benefits from this revenue has been highly uneven at the community level.

Table 5: Value of Exported Gold – 1998 to 2007 (US\$ Million)

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
US\$	3.30	39.80	120.50	256.80	274.33	504.14	596.62	639.63	772.06	888.87

Ministry of Minerals and Energy, 2008

ii. The role of credit mechanisms and lessons learned

Numerous studies emphasize that improving access to micro-loans and microfinance services is fundamental to managing the ASGM sector more effectively, maximizing the sector's contribution to poverty alleviation, and upgrading mining practices.^{xlv} The government has developed a number of microfinance policies tailored for this sector, and while past attempts to create public-private sector

linkages have been *ad hoc* and limited, recent efforts to encourage banks, companies, and microfinance institutions to assist mineworkers could enable mineworkers to access working capital that will help support the transfer to improved, cleaner technology. Various strategies appearing in the 1997 Mining Policy are shown in Table 6.

Table 6: Microfinance Policy Objectives under the 1997 Mining Policy

Policy Objectives for Microfinance Promotion in the Artisanal and Small-scale Mining Sector	
a)	Supporting the formation of formal entrepreneur groups such as miners' associations with commercial companies
b)	Formalizing traditional funding systems by promoting the following: hire-cum-purchase system, forward sales, and mutual group savings schemes
c)	Encouraging financial institutions to formulate affordable credit schemes for the miners and establish mobile banking systems
d)	Promoting the use of third-party guarantees to enable other institutions to assist miners to get loans
e)	Facilitating the creation of mineral property markets to enable discoverers to sell their properties to developers at competitive prices
f)	Encourage NGOs to establish miners' cooperative banks and informal financial institutions, such as rotating savings and credit associations

Not all of the microfinance strategies listed have been implemented to date. For example, NGOs have not been closely engaged to date in the development of microfinance programs (Table 6(f)). However, according to the Ministry of Energy and Minerals, TZS 345 million (approximately US \$215,876) has been loaned recently to small-scale mining companies to improve extraction ability; this is part of a TZS 5 billion fund (approximately US \$3.13 billion) for small-scale mining, specifically.^{xlvi} The government has developed a grants program that could help improve credit access, and an equipment loan program that could be used to offer hire-purchase loans for crushers, compressors, ball mills, concentrating tables, jackhammers, and other equipment and tools which are commonly used and identified as priorities by miners. The government is still in the process of developing microfinance pilot programs, acquiring experience and lessons in this dimension of sector assistance and figuring out the types of programs that work best with ASGM groups.

As poorer miners often lack collateral and do not qualify for conventional commercial credit, there is a need to target marginalized groups of miners (as well as the more established and organized small-scale miners) with a suite of different strategies. Informal lending arrangements can cause miners to accumulate debt, presenting challenges for workers by limiting their options when it comes to economic planning and technology choice. Miners who have sought formal lending opportunities through official banking/microfinance channels often have been unable to secure formal credit, even in remote rural regions where formal microfinance institutions are present.^{xlvii} In cases where miners have licences, miners' associations have advocated that they should be allowed to use them as collateral with banks and to request assistance from the government to facilitate credit access.

In some cases, small-scale miners have formed registered cooperatives, creating Savings and Credit Cooperative Societies (SACCOS). The SACCOS model is an important example of how miners have mobilized to create an organizational structure that allows the acquisition of credit. A report by

Mutagwaba (2006) examines some of the experiences in Geita District, mentioning that the Government, through District Cooperative Offices, can assist in various ways:

- Inform miners how to form and run a SACCOS;
- Assist in preparing by-laws;
- Assist members to register with the Registrar of Cooperatives;
- Organize a meeting to elect board members;
- Train board members to run the SACCOS

According to experiences of the Geita District Cooperative Officer, some miners in the Geita District are aware of the advantages of the SACCOS. Mutagwaba (2006)^{xlvi} examined examples of SACCOS experiences in mining areas in Geita District, summarized in Box 1.

Box 1: Savings and Credit Cooperative Societies (SACCOS) in Small-Scale Mining Communities

- (i) **TUPENDANE:** Based at Rwamgasa small-scale mining site, almost 50 kilometres from Geita town (this is the site for the GMP project). This SACCOS was registered on 13th June 2001 and by September 2005 it had 40 members. The SACCOS started by raising \$7,000 through share sales. At the time of the visit they had \$5,300 in the bank. The SACCOS has used the interest gained through lending to members to build a modern, furnished office (with burnt bricks and corrugated iron sheets). All its members are small-scale miners.
- (ii) **MSHIKE-MSHIKE:** This SACCOS is based at Mugusu small-scale mining site, almost 25 kilometres from Geita town. The society was registered on 5th August 2004 and has 18 members all of whom are small-scale miners, mostly unlicensed, who retreat tailings at Mugusu mining area. They started the SACCOS with \$940 raised through the sale of shares to members. Mugusu is a contested site, reflected in the erratic operations of the SACCOS and its poor (or absent) record-keeping. Many of the not fully legalized small-scale miners have worked there for years and government representatives have allowed them to continue. However, a company that acquired a mining licence recently has attempted to use the courts to evict the artisanal and small-scale miners. Ongoing debate about the legality of the miners makes it difficult for long-term planning in this area, creating difficulties for the development of cooperatives and microfinance strategies.
- (iii) **KATOMA – MTAKUJA GOLD AND SILVER COOPERATIVE LTD:** This is a SACCOS of jewellers based in Geita town. It has a membership of six jewellers and also has a small-scale gold mining licence in the Katoma – Mtakuja area, north-east of Geita town. The Society was registered on 19th June 2003 and by September 2005, they had a balance of \$1,860. The group conducts both gold mining and jewellery business within Geita town.
- (iv) **KWAMARWA MINING COOPERATIVE SOCIETY:** This SACCOS, based Rwamagaza, was registered in June 2005. They started with a membership of 29 small-scale miners and were able to raise \$1,800 through sales of shares to the members. There are indications that the number of members has since increased, although it has not been communicated to the District Cooperative Office.

A number of key lessons should be highlighted:

- The existence of SACCOS within the small-scale mining areas is an encouraging sign that savings and credit societies can work with small-scale miners.
- Empowering women miners with microfinance is a particularly important opportunity for strengthening livelihoods, as women are recognized as good savers and decision-makers for family planning.
- PML holders are not the only target for microfinance programs; there should also be a focus on the artisanal mining workers themselves who may or may not be licence holders.
- Existing commercial banking models are limited in their reach and often charge high interest rates while demanding collateral or evidence of sophisticated business plans. As most artisanal and small-scale miners cannot meet the bank's requirements, innovative microfinance services tailored to diverse artisanal and small-scale mining situations are needed. Government assistance in strengthening ASGM groups' economic planning and in educating banks about this sector could be a useful step in making credit services more accessible to the poor.

Studies in Tanzania and elsewhere in Africa suggest that it is particularly important to develop pilot programs that combine targeted training – to encourage savings mobilization and business development plans including plans for meeting repayment requirements – with the delivery of sector-specific microfinance services. This could evolve through an initial focus on supporting a number of small groups of miners, using a microfinance model that can be adapted from the popular Grameen Bank; such types of programs may emerge with the involvement of institutions that have an explicit focus on pro-poor development goals (including NGOs that could act as third party guarantors, for example).^{xlix} Given the importance of microfinance in upgrading small-scale mining practices, and the growing recognition of its importance in mercury reduction efforts specifically, there are many reasons for it to be emphasized in future government programs and international development assistance programs in Tanzania's mining communities.

iii. Role of ethical market initiatives

National and international initiatives to develop ethical markets have an important role to play in linking public sector and private sector goals in the small-scale mining sector. However, as a study by Schroeder (2010) warns, analysts and policymakers need to be cautious when discussing the idea of “fair trade” and “ethical” production in mining communities. Schroeder examines the case of tanzanite in the context of commodity chains in Tanzania, concluding that certain international certification models (for tanzanite and also for diamonds) can sometimes be antithetical to the interests of marginalized groups in the artisanal mining sector.^l Some concerns have been raised that simplistic “conflict-free gold” campaigns can have the effect of demonizing unlicensed ASGM communities. Any initiative to support an “ethical” brand should not create over-simplistic notions of “ethical” and “unethical,” and unlicensed miners should be included in the process of developing these initiatives.

Spearheading an effort to develop fair trade systems in mining communities, the Alliance for Responsible Mining (ARM) focused on gold mining areas in Geita District in its effort to develop a fair trade certification system. This system would offer small-scale miners a premium for their gold output, conditional on established standards,^{li} though it has not yet been implemented in Africa.

ARM's initial phase of scoping out potential fair trade mining communities focused on Africa Precious Metals Ltd. in a trial assessment of certification standards. The government licensed the company to establish buying centres in Geita District, after having invested in gold refinery plants to

add value to gold exports from small-scale miners. Africa Precious Metals Ltd. created a business plan for its refineries to target miners, “who without a defined market have been losing out to middlemen and businessmen in the black market, to smugglers and through money laundering.”^{lii}

Bank representatives have indicated that the refinery aims to cater to small-scale miners by “improving the quality of their gold and subsequently their standards of living” and that the objective is to collect raw gold through the regional miners’ associations at attractive prices and refine it to a finished product quality of above 99.5% before exporting it as bullion gold. In the early stages of developing the refinery, UNIDO provided advice on the development of mercury management guidelines, safety, and related technical dimensions to ensure gold refinery facilities adopt best practice standards.^{liii} According to the ARM website, Africa Precious Metals Ltd. “has constructed five Fair Trade Centres with a view to improving the business environment for many of the miners operating in the informal sector.”^{liiv} Experiences to date indicate that carefully thought out partnership models between private sector institutions, ASGM groups, and government policymakers are needed in order to develop a certification system that can respond to the diverse needs and goals of mining communities themselves. As only a very small percentage of ASGM activities in Tanzania are formalized, it needs to be recognized that ethical certification models are very limited (even though they may be very important) since they only target formalized miners.

6. CONCLUSIONS AND RECOMMENDATIONS

Over the past two decades, as artisanal and small-scale mining in Tanzania has become an increasingly important sector for poverty alleviation, its diverse elements and dynamic nature have presented idiosyncratic opportunities and challenges for rural development. The evolution of mining sector policies over this period has yielded important lessons. The 1997 Mining Policy articulated objectives for developing small-scale mining which, in turn, opened up new possibilities for allocating permits, creating capacity-building policies, and implementing international collaboration projects at sites where rural communities depend on mining for their livelihood. The Government of Tanzania has been praised internationally for incorporating ASGM issues within its national poverty reduction policy papers since 2005 and encouraging support for the sector.

However, there have been uneven results with policy implementation. In some districts, national policies to license miners have led to positive results, but in others government mandates for licensing, outreach, monitoring and rural support in mining areas have been funded at a minimal level or not at all. Many of the official national policy objectives in the ASGM sector have not yet been implemented, leading the Bomani Commission (2008) to emphasize the need for policy reforms that support ASGM in new ways. Experiences to date highlight the importance of taking into account diverse aspects of marginalization that can affect livelihoods – and working with poorer mineworkers to develop policy strategies that tackle social, legal, economic, and environmental challenges in mining communities.

Overall Suggestions for Amending Mining Law and Regulatory Approaches

A key conclusion is that although important reforms were passed in the Mining Act of 2010, the legislation still does not recognize fully the diversity of ASGM in the field and the complexities of labour arrangements. Although the Government emphasizes the importance of licensing individuals, the reality is that landlords and licence holders often lease out land to unlicensed groups. Whereas the PML system has tended to be best suited for wealthier entrepreneurs, new policy adjustments and institutional innovation are needed to meet the needs and concerns of poorer mining communities, to make licences more accessible to artisanal miners, and to make regulation more effective. Two main recommendations for the legal framework are as follows:

- *Develop specific legal definitions and categories for “artisanal mining” to make the mining legislation and regulatory framework more responsive to local priorities.* There is no definition of “artisanal” mining under the 1998 Mining Act or the 2010 Mining Act, and no licensing option for ASGM workers besides the restrictive Primary Mining Licence system. The lack of differentiation between types of ASGM activities makes it unclear how to target and engage different groups. Different categories can help focus the requirements to the size of the operations. New policy options could include formalizing the role of “pit holders” at ASGM sites, so that the people running the mining sites are more secure in their job function (and less reliant on informal/insecure agreements with PML holders). This would be a useful step in addition to creating new mining categories and legal titles to give formal legal recognition to types of “artisanal” mining that are not currently formally recognized.
- *Develop different environmental and safety requirements for different kinds of ASGM.* Under the existing system, Primary Mining Licence holders often are not held accountable and the requirements are vague. For miners who are able to acquire PMLs, the environmental regulatory requirements are simple and uncomplicated compared to regulatory systems in other countries. The 11 environmental and safety requirements are easy to understand for the most part but adjustments to create a more specific and clear set of targets for different categories of ASGM operations would be advisable. This may help to clarify some of the roles and responsibilities for licence holders, including measures to address tailings management, mercury use, cyanide management, and related labour practices and standards at mine sites.

Other Suggestions for Strengthening the Licensing System and Related Institutional Policies

Experiences to date show that it is vital to ensure that administrative policies and institutional roles are designed in ways that improve the accessibility of licences in marginalized ASGM communities. This can be done by pursuing a number of new strategies linking government planners with groups who rely on ASGM.

While it is too early to draw conclusions regarding the impact of very recent reforms to decentralize the permitting process, it appears that the recent policy reform that decentralizes the institutional process for issuing PMLs – to the Zonal Mines Office level rather than the Dar es Salaam office – has been an important step in developing a more regionally situated management system that can respond to local contextual needs. Future studies will be essential to acquire an understanding of optimal institutional arrangements for permitting, to learn how to adjust the permitting systems to improve the accessibility of mining licences among poorer miner groups, and to learn how to strengthen institutional capacities in strategic ways.

The Bomani Presidential Mining Sector Review Committee of 2008 recommended involving local regional authorities more in future mining sector governance processes while raising awareness of small-scale miners’ rights and needs. In this respect, the newly established Division for Small-Scale Mining at the Ministry of Energy and Minerals can take a strong leadership role in enhancing institutional capacities at different levels of government and creating stronger linkages between national planning and local planning processes. Additional specific suggestions are below:

- Rigorous research is needed to support national and regional policy development and priority-setting, and should aim to strengthen knowledge of social, economic, environmental, and institutional challenges in the areas where ASGM is taking place.
- Engagement of the miners’ community in the discussions regarding practical arrangements for labour formalization and its relation to land management with a focus on: generating

information about miners' organization dynamics; optimizing spatial arrangements for permitting small-scale miners in different districts; and taking other measures to clarify policies on land use and addressing misunderstandings between stakeholders.

- Recent reports suggest that the government needs to renegotiate mining contracts with companies to develop equitable rural land use and development plans (Bomani Commission, 2008; UNHCR, 2008). Policy strategies that are driven by participatory bottom-up approaches and informed by detailed knowledge of local challenges are usually more effective than top-down strategies.
- It is recommended that future policies focus on supporting informal miners, recognizing that formalization should not be seen as a prerequisite for accessing public services. It should be stressed that the government has already achieved some successes in pilot projects to work with unlicensed mineworkers (as well as licensed miners) on capacity-building initiatives to date, as seen for instance through the positive experiences of the UNIDO-supported education and capacity-building program in Geita District. Further steps to engage unlicensed artisanal mining groups and adapt policies to support livelihood security could yield considerable benefits, recognizing that formalization challenges are linked with local technology practices and economic constraints.
- It is recommended that the government continue to develop new microfinance services and economic empowerment programs and keep track of the strategies that work best. Future studies and policy reviews will be useful in ascertaining which types of microfinance programs work best with different groups of miners. Multiple partnership models could be developed to address credit constraints in different ASGM contexts.
- Finally, international donors have a key role to play in supporting the engagement of mining communities in participatory processes during planning and policy development. Recognizing that the social, economic, legal, and institutional dimensions of ASGM are inextricably connected to technologies and environmental practices, international programs seeking to address technical issues should support the government in addressing these inter-linked realms of policy development, public engagement and dialogue, institutional innovation, and outreach.

7. REFERENCES

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^{xvii} A number of technical improvements have been made in retort design over the past decade. In some cases miners have perceived the retort as an economically uncertain instrument, as illustrated by one miner at the Blue Reef small-scale gold mine site in Nyakagwe who stated, “gold produced by burning an amalgam in an open crucible is clean and shiny...when closed retorts are used the gold is often dark and unattractive looking, decreasing its value.” The United Nations Industrial Development Organization (UNIDO) has demonstrated a number of technologies and retort models that are more trusted by miners, and past project experiences show that close collaboration with miners is vital in order to come up with local technology solutions that are suitable and effective (see Spiegel and Veiga, 2005; Spiegel and Veiga, 2010; Veiga et al., 2006).

^{xviii} Jønsson et al. (2009); Spiegel, S.J. (2009a). Socioeconomic dimensions of mercury pollution abatement: Engaging artisanal mining communities in Sub-Saharan Africa. *Ecological Economics* 68(12): 3072-3083.

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^{xxiii} Various proposed technologies have been received with different levels of confidence and scepticism for the overarching goal of phasing out and replacing mercury amalgamation as a means of recovering gold. Combinations of equipment that allow the efficient production of concentrated ores whose eventual conversion into marketable products takes place in a single stage, for instance, by the smelting of gold concentrates to gold and slag by the miners themselves, might find a market in some countries, provided they work and are

affordable. While complete elimination of mercury is deemed by the U.N. assessment teams as unrealistic at this stage for the majority of the operations, past mercury reduction programs have been able to achieve notable improvements through a more progressive approach (Scoble et al., 2007; Veiga et al., 2006).

^{xxiv} Jønsson, J.B., Appel, P.W.U., Chibunda, R.T. (2009). A matter of approach: The retort's potential to reduce mercury consumption within small-scale gold mining settlements in Tanzania. *Journal of Cleaner Production* 17(1): 77-86.

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^{xxvii} Fisher et al. (2009); Lange (2008).

^{xxviii} The condition for awarding PPLs is that the selected prospecting area must not be occupied by other mineral rights holders. According to the 2010 Mining Act, "A prospecting licence shall not be granted to an individual, partnership, body corporate, or any one of the partners, shareholders or directors of the partnership or body corporate who owns more than twenty other valid prospecting licences, unless the cumulative prospecting areas of such other prospecting licences do not exceed 2,000 square kilometres.

^{xxix} Bomani Commission (2008), p. 24.

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^{xxxi} In some cases (e.g. in Geita District), artisanal miners have argued that licences are not accessible because companies have been engaging in speculative investment (not real mining), thus making it difficult to find areas where PMLs could be granted. Government officials have noted that there is a need to ensure that companies have actual business plans and that artisanal miners have improved opportunities to be permitted in the future, though this has been difficult to enforce. Speculative investment for purposes of reselling licences to foreign investors continues to be a serious issue that prevents the allocation of territory to formalize artisanal mining.

^{xxxii} Large and medium-sized companies currently hold most of the country's mineral rights. This was an intended result of World Bank-supported policy reforms in the 1990s which prioritized foreign investment in the extractive industries and led to allocation of large tracts of land for mining companies in the late 1990s and 2000s. Conveying concerns about the introduction and implementation of the 1998 Mining Act, Moody (2007) contends that the mining codes in Tanzania have allowed foreign companies, "to usurp land previously worked by thousands of small-scale miners, thereby jeopardizing their locally based economies" (p. 54). A study by Lange (2010) brings a similarly critical focus to the "first come, first served" licensing policy approach that allowed the mining sector to grow at a fast pace without due consideration for small-scale miners. This is an issue that the Tanzanian Government itself has highlighted in its policy papers and represents an important area for ongoing discussions of reform.

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^{xxxiv} Jønsson and Fold (2009).

^{xxxv} E.g., Mwaipopo et al. (2004); Fisher, E. (2008). Artisanal gold mining at the margins of mineral resource governance: A case from Tanzania. *Development Southern Africa*, 25(2):199-214.

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