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ENVIRONMENT PROGRAMME

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

A compendium of case studies

June 2012

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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:

- Ecuador – Maria Laura Barreto, ARM/MERG
- Mongolia – Patience Singo, Sustainable Artisanal Mining project (SAM project)
- Peru – Olinda Orozco Zevallos and Frederico Cesar Gamarra Chilmaza, Red Social (Peru)
- Tanzania – Samuel Spiegel, Independent Consultant
- Uganda – Jennifer Hinton, Independent Consultant

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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LIST OF ACRONYMS AND ABBREVIATIONS

AGM	Artisanal Gold Mining
AMASUC	Asociación de Mineros Artesanales del Sur Medio y Centro del Perú (Miners' Association of Middle South Peru)
ARM	Alliance for Responsible Mining
ASGM	Artisanal and Small-scale Gold Mining
ASM	Artisanal and Small-scale Mining
AURELSA	Comunidad Aurífera Relave (Gold Community Relave Company)
BGR	German Federal Institute for Geosciences and Natural Resources
CASM	Communities and Small-scale Mining
CBO	Community Based Organization
CIMA	Compañia Industrial Minera Asociada (Industrial Mining Company)
COMIMACH	Bella Rica gold mine initiative
CTC	Certified Trading Chains
DGSM	Department of Geological Survey and Mines (Uganda)
DIA	Declaration of Environmental Impact
EIA	Environmental Impact Assessment
Fairtrade and Fairmined standards	Standards developed to certify gold produced by Artisanal and Small-scale Mining under Fairtrade and Fairmined trademarks. The owner of the standards is ARM.
GAMA	Gestión Ambiental en la Minería Artesanal (Artisanal Mining Environment Management Project)
GDP	Gross National Product
Grameen Bank	Professor Muhammad Yunus, at the University of Chittagong, launched in 1976 an action research project to examine the possibility of designing a credit delivery system to provide banking services targeted at the rural poor. In October 1983, the Grameen Bank Project was transformed into an independent bank by government legislation. Today Grameen Bank is owned by the rural poor whom it serves. Borrowers of the Bank own 90% of its shares, while the remaining 10% is owned by the government.
ICGLR	International Conference on the Great Lakes Region
IGV	Peru's General Sales Tax
ILO	International Labour Organization
LSGM	Large-scale Gold Mining
LSM	Large Scale Mining
MACDESA	Empresa Aurífera Cuatro de Enero (Fourth of January Gold Company)

MEMD	Ministry of Energy and Mineral Development (Uganda)
MMSD	Mining and Minerals for Sustainable Development Project
MRPAM	Mineral Resources and Petroleum Authority of Mongolia
MWAREMA	Mwanza Regional Miners' Association
NASMA	National Artisanal and Small Scale Miners Association (Uganda)
NEMA	National Environmental Management Authority
NFO	National Forest Authority
PML	Primary Mining Licence in Tanzania
PPL	Primary Prospecting Licence in Tanzania
PRODAMINCA	Mining Development and Environmental Control Technical Assistance Project
SACCOS	Savings and Credit Cooperative Societies
SAM	Sustainable Artisanal Mining Project
SDC	Swiss Agency for Development and Cooperation
SGM	Small-scale Gold Mining
SMC	Shamva Mining Centre
SMMRP	Sustainable Management of Mineral Resources Project
SONAMIPE	Sociedad Nacional de Mineros en Pequeña Escala (National Company of Small-scale Miners)
SOTRAMI	Sociedad de Trabajadores Mineros (Miners Workers Company)
Soums	Mongolia is divided administratively into 21 aimags (provinces) and the Capital city Ulaanbaatar. Aimags are divided into soums. Soums are divided into baghs, the least administrative unit.
SUNAT	National Superintendence of Tax Administration (Peru)
TACC	Training and Awareness Campaign Committee (Uganda)
TAWOMA	Tanzanian Women Miners' Association
UCMP	Uganda Chamber of Mines and Petroleum
UK	United Kingdom
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
WB	World Bank

I. NATIONAL CASE STUDIES APPROACH

This document compiles the summaries of the five case studies that were developed for the *"Analysis for stakeholders on formalization in the artisanal and small-scale gold mining sector based on experiences in Latin America, Africa, and Asia."* It also includes a description of the methodology used to develop these case studies.

The case studies comprise important inputs to the analysis of the main report cited above, and also serve as independent ASGM country analyses that provide information, recommendations, and guidelines for stakeholders interested in one of the selected countries, or in having a deeper knowledge and detailed information at a national level about formalization of ASGM.

A. How Case Studies were Formulated and Conducted

The case studies were developed based on a common terms of reference (Annex 1) that sought to identify similarities among countries as well as distinct or unique challenges and opportunities in a way that supports appropriate policy responses.

The five case studies were developed by regional experts. The Ecuador study was developed first as an example to guide the others. The experts were selected by a process similar to that of the overall project proposal (a public call for expression of interest through the UNEP website and the mercury partnership list). The Mongolia case study was developed through an in-kind contribution from the Sustainable Artisanal Mining (SAM) project.[i]

A summary of each case study is found in subsequent sections of this compilation and the full case studies are available as separate documents posted on the UNEP website.

B. Rationale of National Case Studies

The choice of the case studies was based on a combination of the strategic rationale that is presented below and the availablity and interest of the potential authors.

i. Latin America

Ecuador

Ecuador has experienced several stages of policy and regulatory reform and has developed a comprehensive regulatory framework for ASGM. Its ASGM sector is relatively well-organized with a variety of structures and associations to support, promote, and operate ASGM throughout the country. It offers some important lessons in the full range of formalization issues and challenges.

Ecuador does not have a long mining tradition, yet over the last 20 years it has developed ASGM into a truly national sector that has achieved important levels of formalization.

It is estimated that over the past several years ASGM has been responsible for 75% or more of the annual national gold production, which has ranged between 3 and 5 million tons. Conservative estimates suggest that 2.7% of the population depends on ASGM – at least 400,000 people.

Although it first boomed in the 1980s, it was in the 1990s that the ASGM sector made an important transition from informality to legalization, from cooperatives to all kinds of legal institutional arrangements, and from a dependency on mercury towards greater use of cyanide This transition was

motivated partly by a series of ASGM international cooperation projects in partnership with government institutions. The most important were the *Minimization of mercury emissions by small gold mines in Southern Ecuador*, an SDC project, and *Mining Development and Environmental Control Technical Assistance Project*, PRODAMINCA project. These projects had an important influence on advancing best practices in environment, health, and safety for the sector through various means including the use of retorts and other environmental management tools.

Since 2008, the government has actively promoted the sector. In 2009, Ecuador developed comprehensive regulations for ASGM that have the potential to advance it further. Nevertheless, aspects of this regulatory framework may pose practical obstacles to the process of further formalization of the sector.

Some ongoing challenges remain, related to both environmental issues and competition with large-scale operations, especially in the regions of Zamora and Esmeralda.

Peru

Peru has several decades of experience with ASGM in terms of policy, programs, and regulations. It also has made very interesting use of financial initiatives and is a source of important lessons on relationships between large and small-scale mining.

Peru has rich geological resources and a long mining tradition. ASGM is a significant factor in the country. It started to boom in the 1980s, becoming increasingly significant in the 1990s when the sector contributed around 10 – 20 tons of gold per year and employed around 30,000 – 50,000 miners. Today Peru is experiencing a gold rush, especially in the Amazon region. According to official data the production is around 28 tons per year and employment is around 81,000. Traditionally, ASGM in Peru has used mercury in the processing of gold but recently cyanide is becoming more common, particularly in small-scale mining operations.

Peru has received support from international cooperation agencies to develop its ASGM sector and to find solutions for the management of ASGM activities. In 2000, SDC, in cooperation with the Peruvian Ministry of Mining, began implementing the GAMA project (Gestión Ambiental en la Minería Artesanal) which was active for 9 years. The GAMA project emphasized environmental protection and best practices for mercury use in ASGM, but it also addressed some related institutional and organizational aspects of the sector.

In 2002, the first Artisanal and Small-scale Mining Law was promulgated (Law 27651), marking the beginning of a series of legal acts that allowed for the legalization of parts of the sector, particularly the small-scale sector, that previously were informal.

ii. Africa

Tanzania

A major African gold producer and a significant source of gemstones, Tanzania has a sizeable mining sector and has made recent advances in formalizing ASGM. It has interesting experiences in ASGM organization, liberalization of gold markets, financial initiatives, and in partnership initiatives between ASGM and large-scale mining (LSM).

Tanzania has significant mineral resource potential and a long and productive mining cycle dating back to the late 1800s. In the 1980s a series of measures were undertaken to develop the sector which, over the last 20 years, has contributed to a mining boom, particularly in gold. The boom includes both large and small-scale mining.

Tanzania is Africa's third largest gold producer after South Africa and Ghana. Gold exports reached US $1.076 billion in 2009, up from US $932.4 million the previous year. Between 1987 and 1997,

ASM was the major producer of minerals in Tanzania. Small-scale miners accounted for approximately 5 tons, or 10%, of total Tanzanian gold production in 2010. Estimates of the number of people working in the gold sector varied in that time period. The Tanzanian Ministry of Minerals and Energy estimates that the number of people directly involved in ASM is more than 1 million nationally, but the number in gold, as opposed to gemstones, is not clear.

Processing with mercury is the primary method used to recover gold, yet recent studies show that the levels of contamination of river and other water sources are not very high. The main related health problem is the inhalation of mercury vapour by miners burning mercury in open air.

In 1998 the Tanzania Mining Act came into effect with specific provisions for ASGM, including environmental regulations. This law marked an important step towards legalization of small-scale mining. In 2006, the Ministry of Energy and Minerals formulated strategies aimed at developing small-scale mining through various technical, social, and financial measures. In 2010, a new mining law was passed mandating the government to set aside new land areas specifically for artisanal and small-scale mining.

Tanzania had received support on ASGM issues through international cooperation projects with UNIDO, USAID, and the World Bank. In 2006, the UNIDO-led Global Mercury Project partnered with the Government of Tanzania to implement a pilot program that focused on building local capacity in selected artisanal and small-scale mining communities in Geita District. A recent project approved by the World Bank (2009-2014) includes activities related to ASGM.

Various lessons have been learned from project experiences to date which can help to guide future programming. The Government of Tanzania encouraged the development of collaborative programs to bring innovative training solutions for miners and improve strategies for formalization.

Uganda

Uganda faces some unique challenges due to the absence of recent mining experience and its regional context – proximity to conflict-affected ASGM countries like the Democratic Republic of Congo. Nevertheless, it is actively exploring policies, regulations, programs, and strategies to support the formalization of the burgeoning ASGM economy that is starting to contribute substantially to communities across the country.

ASGM is a relatively important economic activity for Uganda with goldfields dispersed in the East and Northeast, the West and Southwest of the country. In 2006 and 2007, the country's officially reported gold production was 0.021919 and 0.02543 tons respectively, however export in the same years was tallied at 6.107 and 3.566 tons.

While linkages with gold smuggled from neighbouring Democratic Republic of Congo have often been cited, a substantial proportion of exported gold seems to be derived from in-country ASGM. In 2008, unofficial ASGM gold production from almost 20,000 miners was estimated at over 1.2 tons, injecting US $23.3 million from miners' incomes into local economies.

The ASGM workforce has been steadily increasing since 2008, while the formalization rate continues to be low (over 95% unlicensed), and major losses due to smuggling still persist.

The government has, in the past 2 years, taken some specific measures to curb smuggling and to encourage licensing of mineral dealers and reporting of exports. Most recently, institutionalization of government support for ASGM extension services and improved regulation and enforcement is being planned. However, recent proposals to increase royalty rates, taxes, and fees for the minerals sector may, according to many, pose significant challenges to formalization of ASGM in the country.

With the exception of proposed reforms to fiscal provisions, most recent efforts have emerged following an important project undertaken between 2004-2011, the Sustainable Management of

Mineral Resources Project (SMMRP), funded by the World Bank, African Development Bank, Nordic Development Fund, and the Government of Uganda. This project has an emphasis on artisanal and small-scale mining with the objective of strengthening the government's capacity to develop a sound minerals sector based on private investments and improvements (programs, policies for training, organizational development, formalization, etc.) in selected ASGM areas.

The work culminated in a National Strategy for the Advancement of ASGM and a National Strategy for Promotion of Gender Equality in Mining, both of which provided a platform for formalized government support to ASGM. The project apparently has achieved a number of important outcomes that may provide useful insight for formalization of ASGM in other jurisdictions.

iii. Asia

Mongolia

Mongolia is an interesting and important example of a region with a relatively new ASGM sector, but with well-developed programs and regulations to support and guide the future of ASGM as a potential contributor to the socio-economic wellbeing of the country.

Without a long mining tradition, Mongolia is considered internationally to be a new mining frontier. ASGM in Mongolia results from a decline in traditional livelihoods due to a combination of economic crisis and extreme weather conditions experienced in the country since 2000. In 2003, Mongolia went from a non-existent ASGM sector to having over 100,000 artisanal and small-scale miners (largely in gold). This figure is the equivalent of about 20% of the rural workforce. It is estimated that about 400,000 people depend indirectly on this activity.

ASGM in Mongolia has used mercury (but not cyanide) in the processing of gold from its primary deposits. In 2008, Mongolia forbade the use of mercury but some clandestine use is an ongoing problem. No processing chemicals are currently used in secondary deposits (alluvial deposits).

Mongolia has a dedicated program to support the positive contribution of ASGM. In 2005, the Sustainable Artisanal Mining (SAM) project was established in partnership with the Mineral Resources Authority of Mongolia (now with Ministry of Minerals and Energy) and the Swiss Agency for Development and Cooperation (SDC). The project is currently in its third phase, which runs until 2014. One of the achievements of the project, in partnership with the government, has been to help develop a processing plant that does not use any mercury or cyanide in the recovery process.

In 2008, the government promulgated temporary regulations to legalize the growing ASGM sector and in 2010 new regulations were promulgated based on the experiences of the temporary regulations.

II. SUMMARY OF ECUADOR CASE STUDY

1. General Characterization of ASGM in Ecuador

Artisanal and Small-Scale Gold Mining (ASGM) emerged towards the end of the 1970s in Southern Ecuador's Portovelo-Zaruma area, as result of two factors: the rising international price of gold and substantial unemployment caused by the bankruptcy of the Compañia Industrial Minera Asociada (CIMA). In the 1990s, a revealing change in the ASM sector occurred that led to a gradual incorporation of economic planning, new processing technology, and modern equipment and machinery. The use of cyanide replaced mercury as the primary processing method for gold with an important associated increase in rates of recovery.

These changes were financed by the miners themselves. Equally crucial in this shift was an unprecedented legal disposition that allowed for the legalization of all operations that existed on the date of promulgation of the new mining law in 1992.[ii] Notably, the same type of improvements did not occur in the placer gold or secondary gold deposits.

In 2005, ASGM was responsible for 75% of the 5 tons of national gold production. Ecuador has 1,349 artisanal operations and of these, 1,069 are gold operations. The provinces with the most operations are Azuay, El Oro, Loja and Zamora[iii]. In 2002, ASGM generated 65% of the direct employment within the broader ASM sector in Ecuador (60,000 of 92,000 jobs).[iv]

2. Mercury in ASGM

In 1997, it was estimated that Ecuador emitted around 20 to 50 tons of mercury to the environment.[v] Later studies show a range of health problems associated with mercury and cyanide exposure. A 2002 study detailed mercury intoxication symptoms and elevated blood-Hg levels in children in the gold mining settlements in Nambija and Portovelo. The same study indicated that even children with low blood-Hg levels (<10 microg/L) may be affected by exposure to sodium cyanide, used extensively in local gold-mining operations.

Not surprisingly, the areas that have experienced the greatest impacts from ASGM are where the sector has been most active over the years, such as Portovelo - Zaruma, Ponce Enriquez, and more recently Chinapintza and Nambija. For example, in Portovelo - Zaruma, around 150 gold processing plants discharge 20,000 tons of heavy metals into the water system annually.[vi]

3. Key Issues in the ASGM Legal Framework and Lessons Learned

i. Mining framework that applies to ASGM

Ecuador promulgated its current Mining Law in January of 2009 and the related general regulations in November 2009. Both acts dedicate specific chapters to small-scale and artisanal mining activities. In the same period Decree 120 was promulgated which defined the specific small and artisanal mining regime. This is the first time in Ecuador that, in an integrated way, a legal framework has addressed the artisanal and small mining sector.[vii]

Given the relatively recent promulgation of this framework, it is too early to be able to provide a detailed analysis of its impact on the sector. Nevertheless, a preliminary analysis identifies some strengths and some areas of concern based on previous experiences in Ecuador and lessons learned from similar experiences internationally.

A. Legal definition of ASGM and mining titles

The Mining Law distinguishes between artisanal and small-scale mining.

The approach of the Mining Law to small-scale mining is to consider it an economic activity that can contribute to the national economy in particular to *"promote full employment, eliminate under-employment and unemployment, and foster productivity and competitiveness and the accumulation of scientific and technological knowledge."* This Law provides the long-term vision that is crucial to inform national plans to move the small-scale gold mining (SGM) sector forward.

The Mining Law defines small-scale mining as those operations that have an operating exploitation and/or processing capacity of up to 300 metric tons per day. The mining title for this activity is a special small-scale mining concession. Small-scale mining concessions can be granted to "natural persons" and corporate entities and they give the exclusive right to prospect, explore, exploit, process, smelt, refine, and commercialize all mineral substances that may exist in the concession area.

The Law treats artisanal mining as a subsistence activity which creates potentially unhelpful restrictions on that sub-sector. Artisanal mining is defined as mining activities carried out by an individual, a family, or an association, that are characterized by the use of tools and simple and portable machines in order to obtain minerals, the sale of which only covers the basic needs of the person or family involved and does not require an investment of more than 150 basic unified salaries (US $39,600). In the event of an association of three or more artisanal miners, their investment can be no greater than the equivalent of 300 basic unified salaries (US $79,200).

The type of title granted to artisanal mining is a permit with a duration of 10 years that may be renewed for equal periods. The beneficiaries of artisanal permits may only have one permit at a time and for only one determined location.

B. Types of business entities to perform ASGM operations

Artisanal mining permits are granted only to "natural persons," although this natural person can be organized into family groups, low income and "popular solidarity economy groups," and self-managed groups.

Under the small-scale mining regime mining rights are granted to individuals, legally constituted co-operatives, condominiums (a group of individuals), associations, and other corporate forms whose objective is to carry out mining activities in this sector.

It is repeatedly stated that association should be promoted, however it is not clear what is the incentive for association, especially in the case of artisanal mining. The Mining Law maintained the concept of condominium (a single licence for multiple adjoining areas) from the previous legal framework. It is not clear if the main purpose is to stimulate partnership between individuals within artisanal mining activities (the original concept) or whether it is intended for use in small-scale mining as well because there are clear restrictions on companies being part of a condominium.

C. Requirements for mining titles attribution

The granting of small-scale mining concessions is done by a bidding process. Small-scale miners who apply for concessions of up to 300 mining hectares are excluded from having to enter the bidding process, although they are required to present a petition to obtain concessions. For concessions over 300 mining hectares (the maximum is 5000 mining hectares) public mining auctions and tenders are required.

In public auction and tender procedures to obtain concession titles under the special small-scale mining system, bids may only and exclusively be presented by natural persons or corporate entities registered under the small-scale mining system.

The exclusion from bidding of those projects less than 300 mining hectares is a strategic decision but any use of the bid system for any SGM still raises some questions.

The ASM regulation stipulates that due to the special nature of small-scale mining activities, exploration and exploitation work may be carried out in the same area simultaneously. Concessionaires are exempt from the requirement to sign exploitation contracts, although they are required to present annual production declarations. These two dispositions definitely take into account the reality of SGM and simplify the process for the attribution of mining titles appropriately.

To acquire a permit for artisanal mining activity, the miner must present several documents to verify their classification as an artisanal miner (with information indicating, for example, the location, the coordinates of the area, method of exploitation, materials to be exploited, investment amounts, and production volumes). The disposition tends to simplify the requirements depending on how specific the information must be (for example, the information on investment amount or the technical and environmental details of the processing plant and refinery).

Both artisanal and small-scale gold mining operations must be registered as such in a special registry. Applicants must present information regarding the area, the technology employed, and the investment. Registration also requires a certificate of approval of the special programs for technical assistance, environmental management, mining safety training, and professional training held by the Mining Ministry. For small-scale mining registry applicants there is an additional requirement for attendance at, and approval of, the training programs promoted by the National Research Institute of Geology, Mining and Metallurgy.

While there is real value in the registry as part of the formalization process, the requirement for a certificate of approval for special programs and attendance at training programs for small-scale mining can create some obstacles for the legalization process, due to the lack of government capacity to organize and implement these kinds of capacity-building courses in a timely and practical manner.

D. Transfer of rights and mining titles upgrades

Small-scale mining concession holders, individuals, or corporate entities may assign and transfer their mining rights in whole or in part. The transfer must be authorized by the Mining Regulation and Control Agency and registered in the respective mining registry. Deeds of assignment and transfers of mining rights made by co-operatives, associations, or condominiums must have the express authorization of the majority of the members.

On the other hand, it appears that the transfer of rights (total or partial) is not allowed in the case of artisanal mining. This limitation for the artisanal mining operation can constitute a disincentive for any improvement of the activity.

The right of, and process for, a mining title owner to upgrade from artisanal mining permit to small-scale mining concession is not obvious. There seems to be some flexibility within the regulation for upgrading, however the responsibility to do so resides with the government; the procedures for a title owner to propose the title upgrade are not entirely clear.

E. Negotiation and consultation with communities

Procedures and rules for ASGM concerning social management and community participation are subject to the general regime that applies to all mining activities. There is a need to elaborate further on specific procedures and consultation guidelines that will be relevant for the particularities of artisanal and small-scale mining, as the capacity and approach will differ significantly from those of large-scale projects.

F. Other relevant requirements: labour conditions and profit sharing

The Mining Law prohibits children or adolescents from working in any capacity in any mining activity. All forms of informal employment in mining activities are strictly prohibited.

Notwithstanding the need for controls on child labour, the question of imposing corporate employment models on ASGM is complex and may be worthy of further investigation and elaboration to address the specific conditions, limitations, and needs of the sector.

The legal framework requires the government to prepare and implement social security plans and programs applicable to the special small-scale mining and artisanal mining regime.

Workers involved in small-scale mining must receive a 10% share of the profits and 5% shall be paid to the State. The funds are to be assigned to social investment projects in the area where the mining project is located. The financial implications of profit distribution will depend on how profits are calculated. In the context of small-scale mining this requirement may not be realistic given limitations on resources, methods of association, and accounting realities.

ii. Environmental legal framework

Artisanal mining operations must obtain an environmental information sheet (*ficha ambiental*) to operate in the area of the permit. The authorization related to these environmental information sheets is automatically renewed every semester, following payment of the fees.

Small-scale mining concession holders must obtain an environmental licence for their simultaneous exploitation and exploration operations, beneficiation (processing), and commercialization. The environmental licence has an annual cost equivalent to two basic unified salaries (approximately US $528).

The environmental studies include the specific and simplified management plans for small-scale mining, the content of which is determined by the appropriate regulation which may require joint management plans in the environmental impact studies, with specific attribution of responsibility.

The environmental regulations include a comprehensive set of guidelines for the use of mercury in ASGM operations requiring:

- Use of amalgamation cylinders;
- Use of mercury re-activators to ensure the recovery of mercury for reuse;
- Use of retorts;
- Use of personal protective equipment to carry out this process;
- Careful storage of mercury in hermetically sealed containers to prevent leakage;
- Prohibition of direct use of mercury in mills, gutters, or dredgers;
- Effluents produced in the amalgamation phase to be collected and stored in impermeable reservoirs, which, upon the closure of operations, must be rehabilitated in accordance with the provisions of the environmental impact studies.

These are a good start but others can be provided to give more specific guidance (e.g., minimum requirements regarding personal protective equipment, information and direction in the handling of cyanide in the context of ASGM, etc.)

Other important measures concern the use of explosives, mine closure and rehabilitation, and the protection of water resources.

The environmental regulation states that the Mining Ministry shall develop a program for handling explosives and regulate their use in the ASGM sector.

Mine closure and rehabilitation is an obligation for all mining concession holders. A problem for artisanal miners is that the obligation is not clear from the beginning of the operation because it is based on a post-closure assessment. An interesting approach to rehabilitation of mining sites in Ecuador can be seen in the granting of the right to process, refine, or sell any abandoned mining or metallurgical residues.

Small and artisanal operations must obtain a water authorization following the same requirements as other mining activities. For reasons of scale, and access to capital and expertise, this requirement can constitute a real obstacle for ASGM.

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

Conflicts between artisanal and small-scale mining and medium and large-scale mining began in the 1980s and new conflicts developed during the 1990s with a lack of specific procedures to manage the emerging market for the transfer of mining rights and to guide negotiations between small and large mining companies.

The key principle that influences the relationship between ASGM and medium or LSM operations is respect for mining titles. The legal framework has dispositions to regulate simultaneous mining activities in a concession, but only with authorization of the concession holder and under the umbrella of an operation contract. What is not very clear in the present framework is whether there can be associations between ASGM and LSGM that are not based on an operator contract but rather on other types of partnerships, such as consortia or joint ventures.

4. Key Issues of Institutional Aspects and Lessons Learned

Table 1 describes the main government institutions that are involved in the process of formalization of ASGM.

In 1997 the Law of Decentralization of the State and Social Participation was promulgated and in 2001 the National Plan of Decentralization came into effect. The idea was that all responsibilities of the state should be decentralized except national defence and security, foreign affairs policy, economic and fiscal policies, and the management of the external deficit. The decentralization process faced several challenges related to lack of resources and technical capacity to assume the new functions in the management of mining and environmental issues.[viii]

At present, the main miners' advocacy group is the National Chamber of Small-Scale Mining of Ecuador (Cámara Nacional de la Pequeña Minería del Ecuador), which represents the small-scale mining sector. Ecuador has two other kinds of mining organizations – the national (Cámara Nacional de Minería del Ecuador) and the provincial chambers (Cámaras Provinciales de Minería) in the Oro, Guayas, Azuay, Loja, and Zamora regions. These groups represent the interests of the medium and LSM sectors (including the national and international mining companies) but not ASM.

In the 1990s, there were a number of ASGM initiatives that focused on mercury and cyanide processing and related technical assistance in minimizing the environmental and safety impacts, which were supported by international cooperation with the important involvement of national and regional universities, and research centres and institutes. These initiatives resulted in significant internal research capacity. However, this capacity did not transform into long-term ASGM research programs or curricula in the universities or research centres. An additional limitation was that the capacity building occurred in some areas, such as environmental and mining engineering, but less so in the area of law, economics, administration, or business.

Table 1: Summary of the Main Government Institutions Involved in ASGM Formalization

Institution	Responsibilities
Constitution	• Promote the development of small-scale and artisanal mining, and promote its legalization in a way that guarantees technically adequate, socially just, and environmentally responsible conditions
The Ministry of Non-renewable Resources	• Responsible for the management of public policy in mining areas and the issuance of associated agreements and administrative resolutions including

(Vice Minister of Mines)	the management of public policy for ASGM • National Strategic Plan for the Sustainable Development of Small-Scale Mining and Artisanal Mining • National Education and Training Plan (capacity building in technical, economic, social, environmental areas) • Technical assistance regarding production control, available reserves, quality of the mineral, mining techniques, exploitation methods, ventilation, drainage, maintenance and industrial safety underground and on the surface, etc. • No special department to deal with ASGM
Mining Regulation and Control Agency	• Technical and administrative body responsible for exercising the State's power to monitor, audit, intervene, and control the various phases of mining activity • Establish a system for the management of socio-environmental conflicts that may arise in the ASGM sector, adopting clearly defined processes and procedures for application. • No special department to deal with ASGM • Technically, economically, and financially independent from Ministry
National Institute of Geological, Mining and Metallurgical Research	• Research, technological development, and innovation activities in Geology, Mining, and Metallurgy • Technically, economically, and financially independent from Ministry
Ministry of Science and Technology	• Coordinate the Technical Assistance program o Promote integrated management of sustainable mining development, mineral processing, operation and maintenance of tailings, storage systems, the closure of mining activities and the development of clean technologies • Institutional, organizational, and technological strengthening of institutions responsible for the management and control of the ASGM sector
National Financial Corporation Development Bank State Bank	• Implement funding plans to promote and provide training in the small-scale mining and artisanal mining sectors
The Ministry of Environment	• Defining, creating, and controlling the implementation of the public environmental management system of the country, including the artisanal and small-scale mining sector

5. Economic Instruments in the Formalization of the ASGM Sector and Lessons Learned

In Ecuador the medium and large-scale mining sector pays 25% income tax, 12% tax on profits, 70% windfall tax, and 12% in VAT. The regulation is clear that for small-scale mining operations the tax on profits is 5% (as opposed to 12% for LSM).

Revenues collected are to be used exclusively for social investment projects related to health, education, and housing in the area where the mining project is located. It appears that the 5% profit tax does not apply to artisanal mining, but until regulations are promulgated, it remains unclear. There is also a lack of clarity whether ASGM must pay income, windfall, or value-added taxes or if the sector is exempt from these.

In addition, holders of small-mining concession rights must pay 3% in royalties based on sales of the primary and secondary minerals. Small-scale mining concessions pay a one-off application fee equivalent to two minimum salaries (US $528)[ix].

Small-scale mining operations pay an annual conservation patent, the equivalent of US $2-10 per mining hectare, depending on the phase of mining (initial exploration, advanced exploration, or exploitation). However, in the case of small-scale mining the attribution of the concession is for all phases of the mining cycle. This means that it may be difficult to determine the appropriate level and cost of the conservation patent.

Mining concession holders who trade domestically or export metallic minerals originating from other concessions without a trade licence, or mining producers who sell metallic minerals to people or entities not authorized to commercialize them, are operating illegally.

Complying with the commercialization regulations may not be a problem for most small-scale mining operators but for the artisanal sector and for the workers in small-scale operations (who are often paid in gold) it may be a problem, in particular if they need to obtain a licence to commercialize the gold that they receive as payment for labour. It also can be problematic for the government to issue thousands of these licenses.

ASGM in Ecuador has been considered a high-risk sector without clear legal rights and with a lack of transparency in the commercialization of gold. This situation may have contributed to the lack of formal credit initiatives to help finance ASGM activities. The sector does have informal systems to finance the activity through individual and family savings or informal private credit.

With the new legal framework there are more conditions than ever to realize market value for operations, especially for SGM, because concessions last for 25 years, can be renewed, the area can be up to 5000 mining hectares, can be transferred, and associations are promoted. These basic conditions (regardless of data on the mineral potential of the area) can provide market value to SGM operations and create the conditions required to generate interest from the formal private financial sector and to develop specific credit programs for SGM.

The artisanal and small-scale mining legal regime states that the Ministry shall promote the development of production chains, fair trade practices, and socio-environmental certifications for mineral products that are exploited and processed by artisanal and small-scale miners. In addition, since the 1990s the country has been building the ASGM sector. The small-scale mining sector in particular has achieved a significant level of organization, legalization, and environmental and social management.

As a result, Ecuador is well-placed to enter into ethical gold market initiatives. In 2004, Ecuador was chosen by the Alliance for Responsible Mining (ARM) to be one of the pioneer countries to enter ARM's gold certification initiative. The unit that was selected was the Bella Rica gold mine cooperative COMIMACH. The Fairtrade and Fairmined certification process started at the end of 2010 and the cooperative is still in the process of achieving its certification.

6. Conclusions and Recommendations

A. General Summary

The advanced status of small-scale mining in Ecuador is a product of a number of favourable regulatory dispositions, international cooperation and support, and national acceptance of the sector. Another factor that may have played an important role was that that Ecuador never had a significant medium and LSM sector. The absence of these influences allowed space for ASGM to get the necessary internal support to be considered an important economic activity in its own right.

Although these structural conditions played a crucial role, it is important to acknowledge that the sector took advantage of all opportunities and showed leadership in moments when conditions were not favourable.

Since 2009, a comprehensive national approach to ASGM was developed through public policy and a regulatory framework. Ecuador has a specific regulatory framework for artisanal and small-scale mining but has also tried to integrate it as part of the overall mining sector regulation.

This approach supports recognition and legitimacy for ASGM. All mining titleholders are regulated and these provisions can enable "good neighbour" behaviour. This integrated approach also creates the opportunity for partnerships among the different operations and allows flexibility for development that reflects the diversity and complexity of the geology and the economic reality of the country.

B. Legal Framework for Mining Titles

The legal framework is quite new and therefore it is difficult to evaluate the impact it will have, but it is possible to identify the main strengths and some areas of concern based on previous experiences in Ecuador and lessons learned from similar experiences internationally.

While the objective is clear and valuable, further work is needed to clarify the particular legal framework of obligations and responsibilities of ASGM titleholders. It may be important to analyze and discuss the following points:

- Having at least two or three categories of mining titles for each sub-ASGM sector to deal with the diversity of organization, financing, and technical knowledge across the sector;
- Ensuring that the administrative and operational requirements to obtain the mining titles are appropriate to the capacity of mining operations to accomplish them;
- Clarifying the procedures related to allocation of responsibilities under conditions of association and partnership among different concession and permit holders;
- Reviewing the definition of artisanal mining as a subsistence activity and allowing some forms of legal entities to become permit-holders;
- Reviewing the efficacy of the concession bid system for small-scale mining;
- Examining the potentially negative impact of making the permit for the artisanal mining sector non-transferable and considering the possibility of renewing the permit after 10 years;
- Clarifying the approach to dealing with illegal or informal employment in the ASGM sector to ensure its relevance to particular labour models;
- Developing guidelines for the consultation process related to ASGM;
- Reviewing and clarifying approaches to profit-sharing.

C. Environmental Licences

It is clear that environmental management with an emphasis on cyanide and mercury remains a challenge, but so does the management of sedimentation and the treatment of tailings and contaminated mining waste. No less important are the challenges in social issues, especially related to health, security, and economic stability. In terms of environmental licences, the legal framework includes an approach that seeks to simplify the procedures for both artisanal and small-scale mining, promote joint instruments, and give clear guidelines on the use of mercury (but this is still preliminary). Additional work that could benefit this framework includes:

- Preparing guidelines about mine closure for both sub-sectors;
- Considering further development of guidelines for mercury use;
- Developing specific legal guidelines for the use of cyanide similar to those for mercury;
- Developing guidelines for occupational health and safety regulations;
- Creating economic incentives and technical support to promote the rehabilitation of old contaminated mining sites.

D. Relationships between Large and Small-scale Mining

In terms of the relationship between LSM operations and ASGM the framework is designed to promote formal recognition and cooperation amongst mining titleholders. The legal framework creates incentives that promote the partnership between ASGM and LSM operations through contracts of operation. Clarity in the following areas could help refine current incentives:

- Understanding whether a pre-existing artisanal permit holder has the right to continue when a small, medium or large-scale company has interests in undertaking activities in the same area;
- Consider allowing other forms of partnership (in addition to condominiums and cooperatives), such as joint venture and consortium;
- Generate guidelines and contract models for the potential partnerships, including clarifying the rights and obligations related to ASGM activities in the partnership.

E. Government and Institutional Structure

The present legal framework defines the responsibilities of the government in the management of mining and environmental licences for ASGM operations. The fact that the actual framework is comprehensive generates a series of new obligations for the different government agencies directly responsible for the management of the ASGM sector. Given these new obligations, the following ideas could be considered:

- Creating departments dedicated to the ASGM sector in different Ministries, including within the Ministry of Non-renewable Resources;
- Clarifying responsibilities of the different levels of government in the decentralization process;
- Clarifying the system, process, and approach for monitoring of ASGM activities, including the funding of monitoring activities.

F. Economic Incentives

Economic incentives were not a practice in the previous regulatory system for ASGM, which may explain the lack of financial or credit support initiatives specific to ASGM. The economic incentive aspects of the policy would benefit from the following:

- Preparation of a review of the economic contribution of the ASGM sector with regard to taxes, fees, and royalties. The establishment of different categories of artisanal and small-scale mining may assist in implementing a workable system – consideration should be given to a progressive tax structure that is sensitive to different economic realities within the sector, and allows for growth;
- Development of a credit system can support ASGM activities and promote environmental improvements;
- Clarification about barriers to commercialization and to development of an approach to addressing smuggling, including inter-regional actions regarding harmonization of royalties and export taxation.

III. SUMMARY OF PERU CASE STUDY

1. General Characterization of ASGM in Peru

Small-scale mining in Peru involves mainly gold. It is an informal, ancestral activity that became visible in the 1980s, beginning its formalization process in January 2002 with the coming into effect of Law 27651 (Formalization and Promotion of Small-scale Mining and Artisanal Mining). Among the factors that spurred its growth were the rise in world market prices of gold and the oversupply of unskilled workers in the country's labour market, associated with a lack of job opportunities in other economic sectors.

This sector exhibits the following characteristics:

- Exploitation of small-magnitude deposits;
- Immediate economic return;
- Little initial investment;
- Economic return higher than in other occupational sectors;
- Use of labour-intensive techniques;
- Developed (and mining villages created) in remote zones with difficult access;
- Scarce training and little environmental education;
- Existence of an illegal market of input procurement;
- Illegal market for the various products that are commercialized (ore, tailings, amalgam gold, coal gold);
- Unacceptable environmental practices associated with the intensive use of mercury.

At present three categories of Artisanal and Small-scale Gold Mining (ASGM) can be identified in Peru:

1. A modern entrepreneurial formal sector of small-scale mining and artisanal mining with its own mining claims and exploitation contracts, managed with a long-term vision, professional technical development, with production work at the mine, using clean processing technologies in compliance with the respective environmental licences and tax and labour obligations.
2. A sector in the formalization process, in permanent negotiation with the legal holders of the claims where they perform their labours. These miners have been developing diverse strategies to become formalized, but they encounter great obstacles.
3. A predominantly informal sector.

The process of formalization initiated with Law 27651, regarding the creation and management of companies, and the incorporation of cyanide leaching technologies in gold processing, has produced the most successful cases of formal small-scale and artisanal mining.

One of the most important characteristics of this sector is the intensive use of labour. The data shows that in 2009 an estimated 80,000 persons worked in small-scale mining with 300,000 more dependant on it. In the same year artisanal mining produced 28,700 kg and small-scale mining 4,700 kg of fine gold, which represented 16.62% of the total gold output of Peru, demonstrating a greater magnitude of growth than that of medium and large-scale mining.

2. Mercury in ASGM

Small-scale mining and artisanal mining use mercury in an intensive manner to recover extracted gold, from both primary deposits (veins) and secondary "placer" deposits, polluting air, soil, and waterways, thereby damaging the health of humans and ecosystems.

This mostly informal artisanal mining activity is carried out under inadequate conditions, lacking technical supervision and environmental management during both the amalgam preparation and burning stages. There are no specific state regulations regarding the use of chemicals such as mercury or cyanide in gold extraction, nor concerning the obligation to measure gaseous emissions of mercury.

Evidence of the intensive use of mercury and its devastating environmental impacts has been accumulating mostly in the Amazon region of Madre de Dios where alluvial mining takes place. It is calculated that mining operations there have destroyed over 32,000 hectares of forest and have gravely polluted several rivers.

In the case of artisanal underground pit mining, conducted mainly on the coast and in the Sierra, the most serious environmental problems of mining work are related to occupational health problems such as silicosis, gas emission poisoning, and ergonomic injuries of miners.

To accelerate the reduction of the use of mercury in ASGM it is recommended that the State develop public policies by promoting the following activities:

- ✓ Diffusing the negative effects of mercury pollution on people and the environment.
- ✓ Disseminating the technical norms for the correct use of mercury and the use of retorts for efficient recovery.
- ✓ Making available to miner/producers mercury-free processing techniques that are also more efficient in gold recovery: gravimetry, concentrating tables, cyanidation, and magnets. Working towards having dangerous chemicals being used only by technically trained personnel.
- ✓ Preparing legal norms for the control of mercury commercialization.
- ✓ Quantifying the use of mercury in ASGM, emissions, and discharges.
- ✓ Regulating the measurement of gaseous emissions of mercury in metallurgical operations.

3. Key Issues in the ASGM Legal Framework and Lessons Learned

i. Mining framework that applies to ASGM

Law 27651, "Law of Formalization and Promotion of Small-scale Mining and Artisanal Mining" (1992), outlines the norms and conditions for this sector, as well as its obligations and rights.

Most importantly, it establishes objective parameters for ranking miners as small or artisanal producers. The characteristics of artisanal mining producers are defined as follows:

I. The individual or set of individuals or legal entity is fully employed in the exploitation and/or direct production of minerals, performing their activities with manual methods and/or basic equipment.

II. Those having any title for up to one thousand (1,000) hectares, or having signed agreements or contracts with the mining title holders according to the established regulations.

III. Those having, by means of any title, an installed capacity for production and/or processing of 25 metric tons per day, gold placer gravels, and detrital heavy metals for which the limit will be an installed capacity of production and/or processing of up to two hundred (200) cubic meters per day.

Small-scale mining producers are also defined as those who:

1. Possess any title for up to two thousand (2,000) hectares (4,942 acres).

2. Possess any title for an installed capacity of production and/or exploitation of 350 metric tons per day, with the exception of placer gravels of gold and detrital heavy metals for which the limit will be an installed capacity of production and/or exploitation of up to three thousand (3,000) cubic meters per day.

Legal holding of a mining concession can be granted to a small scale mining and artisanal producer who may be: an individual, a set of individuals (which the Ministry of Energy and Mines defines as a Mining Association), and legal entities created by individuals or mining cooperatives.

This legal device, in force since 2002, has been used to formalize ASGM gradually, with 66,622 concession titles existing as of March 2011, many of which involve several miners organized as legal entities.

The exploitation contract is a new form of mining contract introduced in Law 27651 which establishes the contractual modality as one of the formalization alternatives for the artisanal miner. It allows the holder of a mining title[x] to authorize individuals or legal entities to perform artisanal mining in all or part of their mining concession, in exchange for compensation in money or in mineral.[xi]

There are several limitations and conditions attached to the ranking of small producer and artisanal mining producer. The most important are:

1. **Adjacent provinces:** artisanal mining may have up to 1,000 hectares as the Law stipulates, but these should be in a single province or in adjacent provinces[xii].
2. **Minimum production**: the artisanal miner is obliged to attain a minimum production by the tenth year of a value equivalent to 5% of the UIT[xiii] (the value of the UIT is 3,600 soles, approximately US $1,285) per year and per hectare. As an example: for a concession of 1,000 ha, the minimum production per year that must be accredited is 180,000 soles (equivalent to US $64,285).
3. **Registration as an artisanal miner and a small-scale miner**: "The condition of small-scale mining producer or artisanal mining producer will be accredited by the General Director of Mining through a biannual sworn declaration." [xiv]

ii. Environmental legal framework

The environmental legal framework, the General Law on the Environment, Law 28611, establishes the norms for a wide range of environmental issues applicable to all strata of mining. There is no specific law for ASM, but there are demands according to the following categories:

- Category I. Declaration of Environmental Impact (DIA by its Spanish initials), for projects which do not generate any significant negative environmental impacts. The majority of studies for artisanal mining fall into this category.

- Category II. Semi-detailed study of Environmental Impact (EIA by its Spanish initials), for projects of moderate environmental impact and whose effects can be controlled easily. Some small-scale mining and artisanal mining projects are in this category.

The difference between the two categories lies in the depth of the study and the degree of detail. But all categories of the study should address the same topics. Also, the standards for maximum allowed limits are the same.

As for commercialization and the use of mercury, the latter is not regulated. Mercury can be acquired legally and also from informal sellers who bring it to the mining village or camp to sell.

The Ministry of Mines has published a guide for the use of mercury in small-scale mining, but since the guide does not have the strength of a legal disposition, it is up to the miner to become aware of and to change his/her practices. The guidelines should have legal enforcement to encourage greater compliance, extending the environmental capacities and competencies of local governments to supervise these aspects, in coordination with the regional government and the other environmental authorities.

Sodium cyanide is not among the regulated products either, and therefore its sale and commercialization is legal across the country. Cyanidation is a very effective method of mercury substitution; with the correct conditions the gold recovery rate can be 90% to 95%.

Small-scale mining operations are required to obtain an approved social and environmental licence. When poor environmental practices in ASGM are revealed this gives rise to conflicts. The communities have a right to present their observations of problems that should be remedied by the company so those points may be addressed before approval of the Environmental Impact Study by the State.

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

Relationships between small and large mining operations have been evolving, which is reflected in the creation of legal dispositions, such as exploitation contracts; yet, there are still some aspects requiring greater regulation, for instance, commercialization.

Among the most frequent forms of relationship between small-scale mining and medium and large-scale mining are:

- An exploitation contract between a mining title holder and artisanal miners. This contract is one of the most viable ways for the artisanal miner to become formalized. This is considered in Law 27651.
- The mining company negotiates with a community for the use of the above ground terrain and social responsibility measures. In addition, some community members conduct informal mining in this concession.
- The medium-sized mining companies with processing plants buy their mineral from miners, either formal or informal, in onerous conditions.
- Some of these companies support informal miners who offer input materials to third party concessions in return for those miners selling the mineral to them.

4. Key Institutional Aspects and Lessons Learned

The presence of organized guilds of artisanal miners such as AMASUC (Asociacion De Mineros Artesanales Del Sur Medio Y Centro Del Peru**)** and of international cooperation were determining factors for Law 27651 to be promulgated by the Peruvian Congress and implemented by the Ministry of Energy and Mines.

The Ministry of Energy and Mines has not developed a policy of promotion of this sector as provided for in the Law, and the supervisory function has been transferred to the Directors of Mining of the regional governments without them having the resources or budgets to conduct it. The regulatory authority has responsibility while lacking the knowledge and specific competencies for its enforcement, in addition to bureaucratic hurdles and excessive and differentiated costs existing among the different regions for the same legal procedures. All of this makes the goal of formality difficult and lengthens the formalization process, a circumstance exacerbated by the tough geographical locations where artisanal mining labours take place, hence complicating their supervision.

5. Economic Instruments in the Formalization of ASGM and Lessons Learned

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

Fiscally, formal organizations, including mining companies from all strata, are subject to the general corporate income tax regime (3rd category) which levies a 30% tax on annual earnings. This tax payment is made at the end of every fiscal year.

In addition, mining companies, again from all strata, must discount 8% from pre-tax earnings on an annual basis to distribute as profit-sharing among their workers. On the other hand, Peru's General Sales Tax (IGV by its Spanish initials) of 18% on all commercial transactions exempts gold commercialization.

Gold exports are granted tax relief in the form of a tax reimbursement to the miner, administered by the National Superintendence of Tax Administration (SUNAT), equivalent to the IGV on expenses incurred to produce the exported gold.

The "Right of Validity" of the small miner/producer is US $1.00 per year, per requested or granted hectare and US $0.50 per year, per requested or granted hectare in the case of artisanal mining producers.

Since this is a high-risk activity, mining has special labour conditions and benefits: higher minimum wage; life insurance coverage; annual profit distribution of 8% of the company's earnings; and retirement at the age of 45 (instead of age 65).

Workers of artisanal mining organizations are generally the shareholders themselves, who are on the payroll and are covered by the general legislation for mining labour.

As for gold commercialization, the free sale of gold was decreed in 1991. This legal disposition is still in effect.

The commercialization of gold within the country and its export are regulated by the free market. In the domestic market gold can be commercialized (internally and externally) at any stage of processing.

This liberalized system has the advantage of taking the international price of gold as its reference point; however, there is great distrust regarding how the gold content is established and other factors, as processing plants impose quite onerous commercialization conditions.

ii. Role of credit mechanisms

In terms of economic instruments of formalization, an interesting aspect of the formal artisanal miners' experience is fast recovery of their investment costs. They command higher prices for their product by being in a better bargaining position. In the same manner, formality allows the miner to become entitled to fiscal credit, and if the miner later has the capacity to export it becomes possible to access export incentives.

iii. Role of ethical market initiatives

An important and unprecedented initiative in the gold market for small-scale mining is that which the Alliance for Responsible Mining (ARM) has been leading since 2006 with its network of allies in Colombia, Peru, Ecuador, and Bolivia. It consists of certification for ethical gold coming from community-based organizations of artisanal and small-scale miners, with the "Fairtrade" and "Fairmined" trade marks. In Peru, the NGO Red Social leads this initiative. The pilot organizations that are close to becoming certified are Comunidad Aurífera Relave (AURELSA), located in the Ayacucho Region and the Empresa Aurífera Cuatro de Enero (MACDESA), in the Arequipa Region.

The Sociedad de Trabajadores Mineros (SOTRAMI) is already certified and is also located in the Ayacucho Region.

6. Conclusions and Recommendations

1. Artisanal small-scale mining in Peru has grown in the last decade, encouraged mainly by the following factors: the existence of the resource of gold ore in deposits that are appropriate for small-scale exploitation; the rise in the international price of gold allowing for higher wages than in other activities; the lack of job opportunities in other sectors; and the excess supply of unskilled workers in the labour market. The growth of ASGM has been primarily informal.
2. The promulgation of Law 27651 and its Regulation in 2002 constituted a fundamental step in the process of formalization of the sector. This law opened the way for the formalization process of ASGM because it provides the illegal miner with a route for legalization and establishes objective criteria for the ranking of small-scale and artisanal miners. The dispositions of the law have established a set of benefits and differentiated treatment for small producers, such as: lower rates for the right of validity; penalties appropriate to the size of the mining project; minimum mining production; simplified environmental permits; training programs on environmental topics and on mining health, security, and hygiene, among others.
3. The most successful cases of formal artisanal mining are those that have been developed in accordance with Law 27651, customized to the training and management of community-based companies and mining associations, with the incorporation of environmentally sound and profitable gold processing technologies.
4. To boost the formalization process it is required that the various levels of Government develop, in an articulated, coherent and sustained manner, a set of public policies with clear objectives and strategies, as follows:
    a. Strengthening of the capacities of the regional Directors of Mining who supervise and handle the different legal procedures of ASGM. Responsible officers should be trained and provided with budgets, personnel, and technical implements appropriate to such responsibility. Access to this responsibility should be given through public bidding so as to avoid constant turnover of qualified personnel.
    b. Simplifying the administrative procedures that miners must complete for formalization.
    c. Conducting of Territorial Management studies by the Provinces.
    d. Involving regional and local governments in the tasks of participative environmental monitoring and developing environmental awareness in the community as a shared responsibility.
    e. Implementing a more active policy of training, orientation, and participation of informal artisanal miners, developing with them concrete and adequate formalization strategies.
    f. Standardizing the services rendered to small-scale miners by regional governments, especially in rates, the amount of time that the legal procedures take, requirements demanded of them, and interconnection with the national database. Costs and procedures of formalization should be adapted to the reality of the size of the mining venture so that producers will see it as an investment.
    g. Improving access to environmentally sound processing technologies.
    h. Improving access to more reasonable financing sources.
5. The artisanal miner/producer should have a role as an active participant, so that that the miner will not be a mere spectator of the decisions leading to formalization. To achieve this, it is

necessary to create concrete stimuli for formalization and policies for creating awareness, disseminating the benefits of formalization, highlighting successful experiences, and most of all constructing, in a participatory manner, a vision of formalized small-scale mining as socially and environmentally responsible that will serve as the basis for the development of miners, their families, and the community.

6. Aspects of law and regulation that can be improved should be discussed with all stakeholders, with an adequate framework for those changes to advance in a positive direction.

   The legal dispositions in force constitute a general framework that should be developed, considering the diversity of the small-scale mining operations in each region.

   Basic norms for mining each type of deposit should be established, with clear norms of mitigation of environmental impacts, indicating poor practices and highlighting good practices in mining.

   The current Peruvian legislation could be modified to become a more effective instrument in encouraging formalization. For instance, the regulation stating that an artisanal miner (being either an individual or a legal entity) cannot sign an exploitation contract with other artisanal miners, because that would bring about the loss of his ranking, is unnecessarily limiting. This prevents productive cooperation from forming, in which more advanced organizations can support formalization. In reality, this manner of work has been taking place, but it cannot become formalized.

7. There should be mechanisms of dialogue established with the representatives of artisanal miners, and all stakeholders, with the various entities of the government, so that demands, inquiries and proposals of those interested can be communicated effectively.

8. To strengthen the necessary capacities in this sector, it is essential to foster synergies between the State (at its different levels) with international cooperation, non-governmental organizations, universities, and the ASGM organizations themselves.

9. The unregulated use of mercury causes the main problems of pollution in the sector, to the detriment of human health and the environment. A strategic national plan aimed at reducing, and eventually eliminating, the use of mercury in small-scale mining should be established at the state level and with the participation of all actors involved.

10. Diverse technological alternatives to the use of mercury, such as gravimetry, concentration and/or cyanidation, etc., should be considered to determine which are the best suited to each situation, taking into account the producers' organization, its level of training, present and future environmental impacts, and profitability. As well, all of these factors should be weighed from a perspective of sustainable development of communities.

11. Large-scale mining in Peru has not created production chains with artisanal and small-scale mining. There are several actions that can be taken to strengthen that relationship, bearing in mind that similar activity occurs in the mining practices of all strata. The major possible actions would be:

    a. Legalizing the relationship of companies that buy mineral from small-scale miners, establishing a fair treatment in terms of gold content (*ley*), weight, *maquila (*expenses incurred when processing the mineral), etc., and in all other factors involved in the purchase.

    b. Promoting the transfer of technology and equipment that has been disposed of, but that can be used in small-scale mining.

    c. Training in technical aspects, mainly in entrepreneurial mining management.

d. Supporting some segments of the commercialization chain, for instance gold exporting.

12. The organization of unions of artisanal and small-scale miners is a fundamental aspect to advance the process of their formalization, production, development and representation. The first level of organization is that of a productive organization of an entrepreneurial nature, that allows the miner to have an active entrepreneurial role, enabling him/her to confront the challenges and difficulties of formalization, production and development of small-scale mining. The second level of organization, such as the Sociedad Nacional de Mineros en Pequeña Escala (SONAMIPE), plays an important role in relation to their constituents and respective organizations, because it makes it possible to deliver miners' requests, demands and questions to the authorities. The second level of organization also allows for exchanging experiences among producers from different latitudes, professionals, and NGOs, and allows them to be transformed into programmatic proposals. The mechanism of dialogue between all actors and the preparation of programmatic proposals are the foundations needed to gradually consolidate the small-scale mining sector as socially and environmentally responsible.

13. The process of certification of Fair Trade gold with the "Fairtrade" and "Fairmined" trade marks is an opportunity to improve the working and living conditions of ASGM in a socially and environmentally responsible way. The benefits of Fair Trade are: formalization, social security, paid vacations, productivity improvement, use of clean and lucrative technologies, improvement in entrepreneurial management, better prices, the possibility of exporting, and receiving a fair-trade premium equivalent to 10% or 15% over the usual selling price. Organizations already certified should become leaders and promote other organizations in their community to undertake Fair Trade. Likewise, the State should support among its public policies the growth of this opportunity, which is feasible and real.

IV. SUMMARY OF TANZANIA CASE STUDY

1. Introduction

i. General characterization of ASGM in Tanzania

In recent years, the artisanal and small-scale gold mining (ASGM) sector has been increasingly important for poverty alleviation in Tanzania. Tanzania is currently Africa's fourth largest producer of gold, and the ASGM sector encompasses diverse types of non-mechanized, mechanized, and semi-mechanized gold extraction practices, often using very simple technologies with little or no economic capital.[xv] Gold rushes have taken place in multiple regions of the country, particularly in the North near Lake Victoria. Numerous studies emphasize 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.[xvi]

The number of artisanal and small-scale miners in Tanzania is estimated to range from 500,000 to 1.5 million.[xvii] The government has also estimated that small-scale mining generates at least three jobs for each individual directly involved.[xviii] Gold and gemstones are the most widely extracted minerals by artisanal and small-scale miners; the artisanal diamond mining sector has also been a growing sector 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 and small-scale mining) and estimates indicate that ASGM may account for approximately 10% of Tanzanian gold production, though most of the small-scale mining activities are currently informal (i.e., not licensed).

ii. Short history of ASGM legalization process in Tanzania

This report summarizes some of the major issues of concern in the formalization of ASGM activities in Tanzania and the evolving policy needs in the sector. With support from the World Bank, the government of Tanzania introduced the Tanzanian Mining Policy of 1997 and the Mining Act of 1998 with the aim of legalizing and formalizing small-scale mining by establishing a suite of basic environmental and safety standards along with a new permitting system. At the same time as passing the 1998 Mining Act, though, the government prioritized the development of large and medium-scale mining as an economic strategy, leading to numerous 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, the government's poverty reduction papers in 2005 began to emphasize that, "the livelihoods of artisanal miners need to be balanced with commercial mining."[xix] Since then, the Ministry of Energy and Minerals formulated various 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. 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,[xx] which concluded that policies need to be strengthened to support opportunities for licensing ASGM. This in turn led to a new Mining Law being passed in 2010, the implications of which are discussed below in the context of the evolving challenges in the sector.

2. Mercury in ASGM

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

Many perspectives exist when it comes to understanding what artisanal and small-scale mining entails as well as which issues should be prioritized in Tanzanian regulation strategies. While studies emphasize the contribution this sector can make to poverty alleviation, they also note that problems of labour exploitation, smuggling, and land use conflicts need to be addressed as part of policy measures to license and regulate miners.[xxi] ASGM also poses environmental and health risks arising from mercury use in gold extraction.[xxii] Since the application of mercury amalgamation is a simple and inexpensive way to extract gold, it is the most commonly used method.[xxiii] Although studies suggest that retorts can capture 95% of the emissions and enable the mercury to be re-used,[xxiv] only in some cases are retorts used. Many miners have not had access to education or training programs. Although environmental legislation dictates that mercury-contaminated mineral concentrates and tailings should be stored in settling ponds with lined structures, only some miners comply. [xxv]

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). While studies have examined mercury use and the need for tackling mercury-related risks, many have stressed that the most effective way to address risk in Tanzania is to license ASGM and regulate practices in accordance with a set of clear, reasonable, and enforceable standards.[xxvi]

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 and local communities with a longstanding history of mining, and people from all walks of life.[xxvii] There are rich diversities of labour practices and population demographics in Tanzania's ASGM sector.

ii. National and international programs

In 2006, the government partnered with the United Nations Industrial Development Organization (UNIDO) to develop a "Manual for Training Artisanal Miners"[xxviii] and create training programs in the Geita District to improve ASGM practices. The program used a "train-the-trainer" approach[xxix] 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 in the Geita District with local leaders. The government's collaboration with UNIDO led to the development of a "Transportable Demonstration Unit" model where mobile groups of trainers travelled to multiple mining sites and demonstrated technologies to improve mining and gold processing practices. There have been other instances of mercury reduction, including examples arising from university projects. For example, a participatory "action research" project by Jønsson et al. (2009) introduced retorts to miners in two ASGM sites in Tanzania (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."[xxx] Also in 2010, a World Bank partnership program with the government, called "Sustainable Management of Mineral Resources Project" (SMMRP), was put into place, aiming to provide training on issues in mining such as "processing technology, environment, and health, community consultation, training, and organization."[xxxi]

iii. Legal framework and other measures to control the use of mercury

Key lessons learned from past initiatives highlight that 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 also to take into account and meet other community priorities, specifically to ensure that marginalized groups' locally defined priorities are addressed. The best way to do so is to promote 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.[xxxii] Improving access to social services, to credit, and to mining permits so that miners' labour is legally recognized (i.e., 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.)

3. Key Issues in the ASGM Legal Framework

i. Mining framework that applies to ASGM

In policy literature in Tanzania, the terms "artisanal" and "small-scale" mining refer to mining activities carried out by individuals, families, or groups from 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).

Mining 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 eight mining zones. A PML was granted for 5 years and provided the licence holder the right to mine an area of up to 10 hectares. A PML could be mortgaged, renewed, or transferred to another holder. The 2010 Mining Act changed the PML to include prospecting activities for small-scale miners and extended its term to a period of 7 years. The 2010 Mining Act, by extending the period to 7 years, makes it only marginally easier for licence holders to conduct long-term operational planning. Licence renewal is not guaranteed, and some analysts have suggested that the period of validity for PMLs should be extended to 10 years if the miners' application can show the merits of this.

In some cases, recognizing the conflicts between small-scale and large-scale miners, the government has designated small-scale mining sites. However, as the Bomani 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." The report notes, "A good example is 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."[xxxiii] This concern is shared by researchers who have shown that Primary Mining Licences have been difficult for many artisanal and small-scale miners to obtain.[xxxiv]

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, "a primary mining licence means a licence for small scale mining operations, whose capital investment is less than US $100,000." The PML system is open to Tanzanians only.

The study by Fisher (2007)[xxxv] 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 miners. She concludes, "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" (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.[xxxvi] Some of these barriers have been addressed through recent reforms in the licensing process. 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.

However, it is widely known that "informal" leasing and transferring of mining titles is a common practice in many of Tanzania's ASGM areas. Concerns have been raised that some legal holders of PMLs are dissociated from the mining activities on the ground. A 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, "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.... Formal contractual obligations between the PML owners, pit holders, and workers are exceptionally rare." Various studies[xxxvii] 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 making sure that the licensing system is more connected to the on-the-ground activities.

ii. Environmental legal framework

Large mining companies must complete an environmental impact assessment (EIA), but owners of PMLs do not. A more streamlined and 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. Some analysts have suggested that a set of complementary guidelines (or additional regulatory clauses) should be developed to clarify specific measures in the requirements, for example, providing suggested distances from water bodies, construction standards, etc.

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."[xxxviii] 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.

iii. Relationship between small-scale and large-scale gold 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 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 by the government in some cases 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."[xxxix] In many cases, areas where artisanal and small-scale miners have worked for years overlap with areas where large companies have acquired licences. While no national policy framework is in place for governing relations between small-scale and large-scale mining, it takes diverse forms in different districts.

In 2006, the government began negotiations with some of the foreign exploration companies operating in the country to identify viable areas for small miners. According to the Bomani Commission Report, misunderstandings between small-scale and large-scale miners are common, necessitating clearer policy commitment towards long-term opportunities for small-scale miners in the agreements and the development of policies for – and more active government involvement in – mediation.

Existing policies stipulate measures for relinquishing concession areas and limitations on exploration (by limiting the area and duration of licences). These policies could improve opportunities for ASGM legalization in the future. It is important to note that an increasing 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 licensed areas by LSM."[xl]

4. Key Issues of Institutional Aspects and Lessons Learned

i. State function and initiatives in the formalization process

In recent documents, the government appears to be considering the possibility of giving legal recognition to "artisanal miners." 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), though it is not yet clear what developments there may be in the licensing system and how the PML system might be adapted.

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. Their organizational capacities in working together to address environmental health, safety, and well-being are vital for the success of the community. Knowledge-exchange between miners' organizations is an important strategy in generating lessons and sharing insights about organizational development, technologies, business practices, and livelihood challenges and solutions.

In 1983, the government directed small-scale miners in each region to establish associations to link miners and government institutions. Regional 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 significant roles, including training miners to abide by the mining laws and helping miners to acquire good markets for their gold.

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 into legal reforms and providing a platform for networking and information and knowledge exchange.

5. Economic Instruments in the Formalization of the ASGM Sector

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

A PML may be acquired with the payment of application and preparation fees of approximately US $6.3 each plus an annual rent of approximately US $63. 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 levies. The Bomani Report suggests that the taxation system needs to be revised, noting that various exemptions on duties and taxes in the large-scale mining sector have weakened the country's tax base and that future amendments could help to increase government tax revenues. 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.

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.[xli] 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*, recent efforts to encourage banks, companies, and microfinance

institutions to assist mineworkers could lead to enabling mineworkers to access working capital that will support the transfer to improved, cleaner technology.

According to the Ministry of Energy and Minerals, approximately US $215,876 has been given out recently in soft loans to small-scale mining companies to improve extraction ability; this is part of a US $3.13 million fund for small-scale mining, specifically.[xlii] The government has developed a grant 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.[xliii] 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 for the acquisition of credit. 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 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 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).[xliv] 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 "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 global certification models can be antithetical to the interests of marginalized groups in the artisanal mining sector.[xlv] 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 certification process. This system would offer small-scale miners a premium for gold output, conditional on established standards[xlvi] though it has not yet been implemented in Africa.

ARM's initial phase of scoping out potential pilot project mining communities focused on Africa Precious Metals Ltd. It was licensed to establish buying centres in Geita District, after having invested in gold refinery plants to add value to gold exports from small-scale miners. Bank representatives indicate that the refinery caters 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 to 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.[xlvii] 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."[xlviii]

Experiences to date indicate that carefully thought out partnership models between private sector institutions, ASGM groups, and government policymakers are needed to develop a certification system that can respond to the diverse needs and goals of mining communities themselves. As only a small percentage of ASGM activities in Tanzania are formalized, it needs to be recognized that ethical certification models are 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 Regulation 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. Whereby 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 roles 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).
- *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 decentralization of the institutional process for issuing PMLs 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 in 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 with 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. The government has achieved some successes in pilot projects working with unlicensed mineworkers (as well as licensed miners) on capacity-building initiatives to date, for instance through the positive experiences of the UNIDO-supported education and capacity-building program in Geita District.
- 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 development 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.

V. SUMMARY OF UGANDA CASE STUDY

1. Introduction

i. General characterization of ASGM in Uganda

Artisanal and small scale mining (ASM) in Uganda provides a source of livelihood for almost 200,000 women and men, over half of which are engaged in production of industrial minerals to serve the construction demands of the country's rapidly growing population (3.3% per annum). In 2008, it was estimated that approximately 20,000 of these miners were engaged in artisanal and small scale mining of gold (ASGM), most predominantly in the regions of Busia and Karamoja in the East and Northeast and in the Kigezi and Buhweju goldfields across the West and Southwest of the country. Women's participation is most pronounced in highly impoverished regions (up to 90% at some sites) and declines to 10-25% in more agriculturally productive areas.

ii. Short history of ASGM legalization process in Uganda

Most ASGM is on the "artisanal" end of the spectrum, employing the most basic, manual technologies, and only approximately 5% operate within the legal framework, yet informal economic contributions can be substantial. Specifically, in 2008, ASM production of gold, tin, coltan and tungsten was estimated to be the third largest foreign exchange earner in the country after coffee and fish products, directly injecting over US $35 million into local economies with lost royalties amounting to over US $2.6 million in that year alone. Given current commodity prices and the growth of ASM over the past 3 years, such contributions may now be 25-40% higher than earlier estimates.

Major losses in ASM royalties and revenues have recently caught the attention of the Government of Uganda (GOU). The Department of Geological Survey and Mines (DGSM) in the Ministry of Energy and Mineral Development (MEMD) has, over the past 3 years begun to engage in regional initiatives with the Uganda Bureau of Statistics and improve information sharing with the Uganda Revenue Authority while incorporation of estimates of informal ASM production in its reporting, has served to increase the priority afforded to ASM and the minerals sector in general. Plans have also been vetted to increase budgetary support to DGSM to help fulfil its ASM regulation and extension service mandates.

While these and other efforts hold promise for much needed sectoral improvements, a number of additional gaps have been identified. In addition to those related to the legal and fiscal frameworks, lack of a clear legal mandate of ASM authorities has been cited as a key factor in exacerbating the low priority afforded to the sector and constraint to institutional accountability for effective regulation and support to ASM. This report summarizes these issues and highlights entry points for formalization of ASGM in Uganda.

2. Mercury in ASGM

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

In most of Uganda, few miners are aware of mercury and/or beliefs concerning its effects on fertility and general health have precluded its adoption. The exception is about 600-1000 miners in Busia and Bugiri in Eastern Uganda, where mercury emissions are estimated at approximately 150 kg per year. Furthermore, there is some risk of proliferation of cyanide use in conjunction with mercury amalgamation in Busia, potentially increasing both mercury mobility and methylation potential, due to introduction of a stamp mill and whole ore amalgamation on copper plates followed by cyanide vat leaching of tailings at the formal Busitema Gold Mine.

With the exception of the occasional rush, the majority of Ugandan gold miners work in small groups of less than 6-10 manual panners and diggers. Only in a few sites does the number of gold miners in a group exceed 15-20. The total number of miners in a given area is often spread relatively widely. As such, the main environmental impacts largely relate to siltation of rivers and wildcat pitting causing localized degradation of soil and vegetation. Although activities are sporadic, concerns of cumulative effects of ASGM in Bwindi Impenetrable Forest or Kashoya-Kitomi Central Forest Reserve also exist. Fatalities and serious injuries due to collapse of pit walls or underground tunnels present an immediate concern in *all* ASGM areas and between 1-5 deaths are reported annually while many more are likely to go unreported.

Most miners are indigenous or long-time residents of the communities where they live and work and "migration" is typically only within a subcounty or, at most, a district. As such, effects on cultural values and inter-cultural conflict seem far less pronounced than in other countries. A significant proportion of ASGM in Uganda is seasonal, and miners often use revenues to invest in farming and meet basic needs, such as school fees, health care, and home improvements. Cumulatively, this economic contribution can be substantial and is visibly evident in the form of shops, restaurants and goods available in trading centres close to many of the larger ASGM areas. Although "community mining" is the status quo, issues related to alcoholism, HIV/AIDS, and poor service delivery to ASM areas are nevertheless significant.

ii. National and international programs

Recent attention to ASGM in Uganda has mainly been catalysed by the Sustainable Management of Mineral Resources Project (SMMRP), funded by the World Bank, African Development Bank, Nordic Development and GOU. A component of the SMMRP addressed community development and small-scale mining, where activities were undertaken by the interdisciplinary, interagency ASM Training and Awareness Campaign Committee (TACC). With representation from government, mining, environment, health, and labour agencies as well as academia and private sector organizations, TACC's achievements in 2007-2009 included: co-authorship of the "Small Scale Mining Handbook"; co-development of curriculum and training of more than 180 trainers; community-based training of over 1,000 miners from 17 ASM areas; sensitization of 200 local government officers; and development of a National Strategy for ASM in Uganda and National Guidance Strategy for Promotion of Gender Equity in Mining.

With increased awareness and a reasonably strong network of key persons in government and civil society, potential for intervention has increased substantially. Scoping studies to assess potential ASGM pilot project sites have been conducted by the Alliance for Responsible Mining (ARM) for Fairtrade and Fairmined Gold and the German Government's Federal Institute for Geosciences and Natural Resources (BGR) under its program for Certification of Mineral Trading Chains (CTC). In 2007, UNIDO assessed the potential to include Uganda in the Global Mercury Project with strong endorsement from MEMD. Recently, Irish Aid has funded a baseline assessment of ASM in Northeastern Uganda's Karamoja Region and is likely to move towards intervention in 2011-12. DGSM/MEMD is further engaged in regional initiatives, such as the International Conference on the Great Lakes Region (ICGLR) and *Africa's Mining Vision 2050*, an initiative from African Union (AU) and the United Nations Economic Commission for Africa (UNECA).

iii. Legal framework and other measures to control the use of mercury

With respect to ASGM, under the Mineral Policy (2001), the Department of Geological Survey and Mines (DGSM) is mandated to: "Regularize and improve artisanal and small scale mining through light-handed application of regulations, provision of information on production and marketing, provision of extension services through miners associations and implementation of awareness campaigns targeting artisanal and small scale miners."

While a policy mandate to support formalization exists, these institutional roles are not captured in legislation. Part IV of the Mining Act (2003) and Part VI of the Mining Regulations (2004) refer only to aspects related licensing and maintenance of "Location Licences" for small scale operations. Related sections address powers of the Commissioner of DGSM and outline measures for environmental protection, mineral dealing and financial provisions, among others. In addition to minerals specific legislation, regulation of ASGM falls within various sectoral laws and regulations, including that derived from national fiscal, environmental and labour policy.

3. Key Issues in the ASGM Legal Framework

i. Mining framework that applies to ASGM

Mining titles/licences, obligations, and rights

Ugandan legislation does not distinguish between "artisanal" and "small scale" mining but ASGM licensing is provided for by way of "Location Licences". These apply to "*small scale operations*" or "*prospecting or mining operations which do not involve expenditure in excess of five hundred currency points* (approximately US $5,000) *or the use of specialized technology* (e.g., cyanidation, flotation)" (Mining Act, 2003). The licence is exclusive, easily transferrable and is granted (and renewable) for two-year periods. For hard rock gold deposits it can cover an area of 500m by 300m (Class I Licence) and alluvial gold deposits up to 16 hectares (Class IV). Location licence applicants must be individuals or association members that hold Ugandan citizenship or companies that are more than 50% Ugandan-owned. Companies or community based organizations (CBOs) in the form of cooperatives or associations are acceptable for application.

Procedures for licensing ASGM are difficult for most miners while barriers in language, literacy and official and unofficial costs also exist. These challenges seem to be more pronounced for women miners and their associations who face additional constraints in autonomy, confidence dealing with authorities, literacy and savings capacity, among others. As a consequence, most Location Licences are held by small, better capacitated Kampala-based companies, many of which also hold exploration licences.

For activities exceeding capital cost investment of five hundred currency points (approximately US $5,000) and/or employs specialized technology (e.g., cyanidation, flotation), a Mining Lease must be obtained or Location Licence upgraded. This requires a feasibility study, detailed Mine Development Plan, and full Environmental Impact Assessment (EIA) as well as compliance, monitoring and reporting requirements in-line with those required of large scale mines. Major challenges therefore exist for operations seeking to progressively improve ASGM operations.

Negotiation and Consultation with Communities

Under a Location Licence, a simple 5-10 page Project Brief is accepted in lieu of a full EIA (and its requisite public consultation requirements). In reality, the scale of ASGM typically precludes any resettlement and access/use agreements are more likely to be made with landowners via informal profit sharing arrangements and/or simple handshake agreements. Nevertheless, legislation does require the holder of a mineral right to pay the owner or lawful occupier of private land "*fair and reasonable compensation for any disturbance of the rights of the owner or occupier"* for damage done to crops, structures or other assets of the owner/occupier[xlix].

Labour Conditions

While the Mining Act (2003) prohibits child labour, most labour conditions are technically regulated under the Occupational Safety and Health in Mines Act (1964), Employment Act (2006) and Workers Compensation Act (2000), which cover safety and health, working conditions and employer obligations. While the latter is not particularly relevant in most ASGM scenarios, increased

accountability of largely exploration licence holders who buy from ASGM producers are needed. ASM-specific regulations would add significant value also.

Profit Sharing

No requirements specific to profit sharing *within* ASGM producer groups are specified in the legal framework. On the ground, profits are typically shared within producer groups equally (e.g., if ASGM is conducted in "teams" of 5-15 miners) or retained by individual panners or family units. In the case of the latter, women often turn over gold or earnings to their husbands[l].

ii. Environmental legal framework

Working in coordination with the National Environmental Management Authority (NEMA), MEMD is defined as a "Lead Agency" for environmental management of the minerals sector, mainly vis-à-vis its technical and administrative arm, the DGSM. To the credit of the Mining Act (2003), provisions for ASGM are fairly simple. Location Licence applicants require a 5-10 page Project Brief (in lieu of a full EIA) describing how the environment will be affected and mitigation measures and, for mine closure, completion of simple reclamation and rehabilitation activities. Despite the simplicity of requirements, preparing and understanding the Project Brief presents a challenge for most artisans.

While a plethora of environmental legislation exists, the Mining Policy (2001) specifically refers to "*light-handed application of regulations"* with respect to ASM. At present, no specific provisions address the use of mercury and cyanide by ASGM (and cyanide use would require a Mining Lease) while generic regulations for chemical handling, waste and water discharge and other standards apply. Obtaining a permit under the Explosives Act, Chapter 29, is a costly and complex venture but, as most ASGM is alluvial, only a few, more advanced hard rock operations need to obtain such permission. Procedures for obtaining a Water Extraction Permit are far simpler yet few sites hold them.

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

Since adoption of the new Minerals Policy (2001), Mining Act (2003) and Regulations (2004) and subsequent rise in commodity prices, Uganda has experienced a veritable "exploration boom" spanning almost all ASGM areas in the country. Exploration licence holders fall within three categories: (i) small Ugandan companies who intend to establish joint ventures or sell licences to investors; (ii) companies who buy from artisanal miners via agents on their site; and (iii) active gold exploration, most of which is at a greenfields stage. In almost all cases, relationships between licence holders and ASGM are based on a "live and let live" principle or are mutually beneficial. The main exception is the Busitema Gold Mine in Eastern Uganda, where a decade-long conflict has prompted engagement by MEMD and designation of ASGM areas.

Other than the exclusivity afforded to mineral rights (i.e., no overlapping licences are permitted), legislation does not explicitly address partnerships between ASGM and other sector players although it provides a mandate to DGSM to engage in resolution of related disputes. Given the reality of ASGM, DGSM has expressed willingness to accept agreements between ASGM and exploration companies (e.g., via some form of memorandum of understanding) as a means to recognize ASGM on others' concessions and address liability issues.

4. Key Issues of Institutional Aspects and Lessons Learned

i. State function and initiatives in the formalization process

The Constitution of Uganda (1995) does not explicitly refer to ASM, yet its overarching objectives concerning sustainable development give a mandate to government institutions responsible for regulation, enforcement and management of the ASGM sector.

Ministries of Mining, Environment and Corresponding Executive Government Institutions

MEMD is charged with providing policy direction of the minerals sector, engaging in arbitration of disputes, developing relevant statutory instruments and overseeing DGSM. Among other functions, DGSM is responsible for implementation of the mining legislation, granting licences and monitoring performance, compiling and disseminating mineral statistics, and, although no ASM Unit exists, providing ASM extension services.

Other key agencies include NEMA, the National Forest Authority (NFA) (when activities are within a forest reserve), and the Ministry of Finance, Planning and Economic Development (MFPED), particularly with respect to fiscal provisions and allocation of resources to DGSM and other agencies. Other institutions have complimentary objectives yet now play a limited role in ASGM, including: the Ministry of Gender, Labour and Social Development, Ministry of Health, Uganda Revenue Authority, Uganda Police Forces (e.g., in illicit minerals trade) and others.

Distribution of Responsibilities at Regional and District Levels

Three Regional DGSM Offices are located in Mbarara, Kabale and Tororo Towns although they are constrained by lack of human and financial resources and most activities are undertaken via the central DGSM office in Entebbe.

Many central bodies have decentralized offices at district government levels and, simply by virtue of their proximity to ASM areas, these offices are in some respects better positioned to deal with many issues at a grassroots level. Although District Environment Officers (DEOs) have a mandate to coordinate with NEMA and DGSM in oversight of the minerals sector, this role is only sporadically fulfilled. Many other technical officers could fill gaps needed to improve ASGM activities including community development officers, health officers and labour officers. Currently, the main District Government role is in receipt and review of licence applications (including EIAs for Mining Lease applicants) and arbitration of disputes.

ii. Role of miners' organizations in the formalization process

More than 20 local ASM associations, three regional associations and the National Artisanal and Small Scale Miners Association (NASMA) are formed yet require substantial organizational strengthening to improve effectiveness. The Uganda Chamber of Mines and Petroleum (UCMP) have expressed interest in including ASM associations, yet fees are prohibitive and UCMP interests are largely geared towards larger sector players.

iii. Role and major initiatives of academic, research, and technology centres

The Faculty of Technology at Makerere University is engaged in a Commonwealth Fund project to develop clusters (one of which relates to mining) in Uganda. Working with local metal fabricators, efforts have commenced to identify technical needs of ASGM and develop some technology. Recently, Mining Engineering programs have been established at Busitema and Mbarara Universities and time will tell whether ASM becomes part of the curriculum.

5. Economic Instruments in the Formalization of the ASGM Sector

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

The Mining Policy (2001) refers to fiscal incentives via "*provision of information on production and marketing"* to small-scale miners by the DGSM but this is not institutionalized in DGSM work plans and budgets. The most significant economic instruments affecting ASGM formalization relate to formal and informal costs of licensing and royalties paid on production.

Fiscal Regimes, Royalties and Fees

Licence acquisition procedures are a bureaucratic constraint, but official and unofficial costs at each step further increase barriers. Fees for a Location Licence officially total about US $340 for one year or US $450 for two years but when other official and unofficial fees are included this can range from US $515 to US $1045 *excluding* transport, accommodation, and day to day expenses needed to complete the process. Holders of Location Licences must pay 3% of royalties on gold production. Currently, the GOU is considering raising royalties and fees in an effort to increase revenues, which is expected to be a further disincentive to formalization of ASGM.

Royalties are to be shared between Central Government (80%), Local Government (17%) and owners/lawful occupiers of the land (3%). Challenges include collection of royalty transfer payments from the Consolidated Fund by local government and landowners and translating returned royalties to local development[li]. MEMD has expressed intentions to institute requirements for Local Government to use royalties for local development activities but guidelines and procedures will be needed to ensure transparent and effective implementation[lii].

Selling Requirements and Taxes

Holders of a Location Licence can sell and export minerals produced on their concessions with an export permit from DGSM. Other gold traders must obtain a Mineral Dealers Licence (MDL) at a cost of approximately US $1000 per year. Prior to export, proof of payment of import taxes (0.5%) or the 3% royalty on production is required. Lack of harmonization between import-export taxes and royalties seems to have prompted many Mineral Dealers to declare out-of-Uganda origin (typically South Sudan or Tanzania) for gold actually produced in-country by extralegal miners.

ii. Role of credit mechanisms

No specific ASGM credit-support programs have been initiated but many banks and micro-finance institutions are willing to lend to miners with the same terms and conditions as any other loan. Most artisanal miners do not have bank accounts, production reports (let alone feasibility studies), sufficient collateral or credit records needed to obtain bigger loans.

iii. Role of ethical market initiatives

Scoping studies of ASGM pilot projects sites have been conducted by ARM for Fairtrade and Fairmined Gold, who is planning pilot projects in 2012, and Germany's BGR under its Certification of Mineral Trading Chains (CTC). Many miners are enthusiastic to engage in these activities and legalize operations but formalization of the ASM extension services mandate of DGSM is needed for longer-term viability.

6. Conclusions and Recommendations

While the legal framework provides for licensing ASGM vis-à-vis Location Licences for small scale operations, formalization of ASGM is constrained by a number of factors:

- Procedures and costs of obtaining a Location Licences are prohibitively difficult for the majority of artisanal miners. Furthermore, women face greater economic and socio-cultural barriers to licensing, yet gender is inadequately captured in the legislation.
- For small-scale operations, the "step-up" from a Location Licence to a Mining Lease is substantial in terms of technical and financial requirements and most are consigned to working quasi-legally in a Location Licence category.
- Almost all ASGM areas are covered under Exploration Licences which can cover up to a 500km^2 at relatively low cost (about US $350 plus about US $5 /km^2 rent). A lucrative exploration licence can be sold for US $100-250,000 and "free" areas are therefore readily snapped up by companies as areas are relinquished, leaving little recourse for ASGM.
- Licensed ASGM must theoretically comply with a plethora of environmental regulations while, to its credit, the Mining Policy (2001) recognizes ASGM's limitations via "*light-handed application of regulations*". Related requirements for application, working, and closure are reasonable, yet sector-specific regulations are needed for mercury and other pollution control measures as well as appropriate health, safety, and labour conditions.
- While a policy mandate exists, institutional roles in ASM formalization are not defined in the Mining Act (2003) and Regulations (2004) and DGSM does not house an ASM Unit (i.e. the legal mandate is lacking). Consequently, ASM extension services are excluded from work plans or are the first to go when DGSM finances are constrained. Additional issues relate to lack of formal communication between and limited commitment of other ASGM relevant institutions, government-wide constraints on financial and human resources and lack of accountability mechanisms concerning fulfillment of ASGM related mandates.
- Lack of harmonization between import-export taxes and royalties, high costs of obtaining a Mineral Dealers Licence, limited outreach to dealers, and (until recently) limited engagement between DGSM and customs officials at Uganda Revenue Authority has seen limited success in countering the illicit mineral trade.
- The GOU is proposing to increase royalties and fees in the minerals sector, a move which is expected to create greater disincentives to formalization of ASGM in the country.

GOU plans to reform mining policy and laws (inclusive of developing ASM specific regulations) commencing in 2011-2012 with support from the Commonwealth Fund. Many formalization constraints ideally will be addressed via these reforms, with recommendations including:

- Creating separate licensing categories for artisanal, small, medium and large-scale mining with appropriate costs, procedures and requirements for each. Use of simple, checklist style forms and procedures (in English and local language) covering technical, economic, environmental, health, safety, and labour issues would help artisans.
- Gender mainstreaming within the policy and legislation, particularly with respect to requirements for licensing of "artisanal" alluvial miners and provision of extension services and outreach to ASGM sites. Potential to establish locally administered permitting systems for "artisanal" alluvial miners (via the well established, decentralized local government system at least at district level) should be explored.
- Lowering costs of mineral dealers' licences or creating a low-cost category for local buying agents, harmonizing import-export taxes with royalties, and maintaining low tax rates.
- Strengthening capacity and accountability of regional DGSM offices to fulfil ASM extension service and regulation mandates, inclusive of appointment of ASM Focal Points in each.

- Clearly defining institutional roles in the Mining Act and Regulations related to ASM extension services, outreach, and mediating ASM-LSM/exploration agreements as well as establishing an ASM Unit in the DGSM. Legally enshrined mechanisms to increase transparency and establish DGSM monitoring and evaluation frameworks are needed to hold management, departments, and their officers accountable to fulfil legally defined mandates and reduce *ad hoc* planning and execution of work programs related to ASM [liii].
- Increasing awareness, commitment, and capacity of other key agencies including Ministry of Local Government in ASM oversight, monitoring, and extension services.
- Addressing ASGM on existing exploration licences via explicit requirements for consultation with ASGM in EIA processes, increasing accountability of licence holders to miners from whom they buy gold, increasing the cost of mineral rent for exploration licences, reducing discretionary powers in cancelling licences for non-work and giving reasonable preference to pre-existing ASGM for licensing of relinquished areas.

Finally, the GOU is currently seeking to increase revenues from the minerals sector and now recognizes the potential of the informal ASM sector. However, as demonstrated in numerous countries around the world, ASM is unlikely to become formal unless miners have the capacity to become legal *and* there is clear benefit in doing so[liv].

An unbalanced emphasis on regulation and enforcement combined with increased taxes and fees is likely to simply drive miners deeper underground and widen the gap between government and ASM. "*Informality begets informality. Unless ASM support is formally enshrined in* (mining authorities') *work programs and budgets, ASM is unlikely to make much progress towards formalization.*[lv]" For each of the issues described herein, a policy mandate provides the vision but a clear legal mandate is needed to help ensure that objectives of well-meaning policy are actually achieved.

VI. SUMMARY OF MONGOLIA CASE STUDY

1. Introduction

Rural Mongolians traditionally have relied on livestock husbandry as an economic activity to support their nomadic lifestyle. In the early 1990s, due to the collapse of the socialist system Mongolia's GDP fell by about 20%[lvi] and many industries closed resulting in high unemployment and a dramatic increase in poverty. Additionally, recurrent drought and severe winters between 1997 and 2002 led to the death of many livestock. It is estimated that 7 million head of cattle and other livestock[lvii] died, pushing rural communities into extreme poverty and economic desperation. Some Mongolians found an alternative livelihood in the country's vast, easily accessible, and rich near-surface mineral deposits, tailings from former Soviet era mines, and abandoned underground mines. As a result, a large rural population became engaged in artisanal mining pioneered by experienced former mine employees who knew the location of various potential deposits. With, this a new phenomenon called "ninja mining[lviii]" emerged.

i. General characterization of ASGM in Mongolia

Within a decade, from the early 1990s to 2003, the number of artisanal miners rose from zero to 100,000[lix] creating a serious challenge to both policy makers and the public, neither of whom had previous experience with ASGM. To the miners ASGM was an alternative source of income and a way to survive, whilst to policy makers and the general public ASGM was illegal and a nuisance to be stopped. However, attempts to force ASGM to stop did not succeed and programs to regulate it were put in place.

Currently, the number of artisanal miners is estimated to be 100,000 which represents about 20% of the rural workforce[lx]. Statistics from the Mineral Resources Authority of Mongolia (2010) suggest that ASGM occurs in over 100 "soums", or counties, in 18 provinces (out of 21) with about 61,000 artisanal miners extracting up to 10 different types of minerals, mainly gold, fluorspar, coal, semi-precious stones, tungsten, and petrified wood. Ninety percent of the artisanal miners are engaged in gold mining, both primary and placer.

A survey from the Sustainable Artisanal Mining Project of SDC (SAM) indicates that miners earn an average of US $176 per month, which is about 57% above the Mongolian minimum wage. Miners from registered primary gold mining sites can earn up to US $360 per month. These are some of the immediate impacts of formalization, whereby miners can access satisfactory deposits from which to derive a secure source of income.

2. Mercury in ASGM

Mongolia, like many countries with ASGM, was not spared from widespread mercury use for gold recovery during processing. Amalgamation was rampant in the processing of primary gold ore. Mercury was mainly used for whole ore amalgamation in Chilean type mills and mortar and pestle concentrates with significant losses to the environment. In alluvial gold mining artisanal miners do not use mercury.

Mercury use in mining was banned by the Mongolian government in 2008 but clandestine amalgamation still goes on in different parts of the country, especially where there are no centralized processing plants.

High levels of mercury use in ASGM led the Mongolian government and International organizations to conduct various surveys and research and mitigation programs in 2005.[lxi] A 2006 UN Environment Programme (UNEP) report suggested that 44,790 cubic meters of soil and 1,192 tons of tailings had been contaminated in Khongor soum with 1,427 persons showing various levels of mercury

intoxication.[lxii] In 2007, a report by the National Emergency Management Agency, the Ministry of Nature and Environment, and the State Specialized Inspection Agency indicated evidence of mercury and cyanide contamination in nine provinces of the Central and the Gobi regions. The government further reported that a total of 53 hectares of land and dozens of wells were polluted by mercury and cyanide and that 200,000 tons of contaminated slime and waste materials were present in 120 sites in 10 provinces.

Eventually, in 2008, the government banned the use of mercury in mining and closed down 145 mercury amalgamation mills. By then, an estimated 10 tons of mercury were smuggled into the country annually and sold to buyers who were largely ignorant of the human and environmental health risks.[lxiii] The mercury ban negatively affected the livelihood of about 25,000 primary gold miners. Whilst the ban was a responsible move by the government to contain an impending environmental and health disaster, it threw miners into yet another livelihood crisis. Some miners resorted to clandestine mercury amalgamation inside their homes, thus creating an even worse situation for their families and children.

To manage processing activities the government decided to allow not more than four centralized processing plants to operate in the whole country. This tends to encourage rather than limit illegal mercury use. Most miners need cash frequently and may not be able to wait long enough to accumulate the minimum amount of ore required to bring to a distant processing plant which could be as far as 200km away from the mining site. **The issue of the number and location of processing plants should be influenced by supply and demand variables and availability of entrepreneurs (miners or non miners) willing to invest in the business.**

A complete mercury ban may not work for artisanal level miners who expect daily cash income and use mortar and pestle for high grade ores. Experience the world over shows that miners normally finance their operations by daily grading a few selected high grade ores from which they recover gold to sell at the end of the day. It is economical and efficient to use mercury to recover such small quantities. If the miner does not use mercury, the buyer will use it himself for the same pieces of fine gold. If the miner decides to wait to accumulate enough ore for processing at the plant, then the miner is tied to middlemen and sponsors, keeping the miner in a vicious circle of poverty and dependence.

Faced with this situation the Bornuur miners decided on a "Mercury free life" and sought solutions for mercury-free gold processing. Bornuur presents a success story of miners investing in their entrepreneurship capability with a "never say die" commitment to a solution for their own livelihood. The government of Mongolia supported their initiative with a soft loan and the Swiss Agency of Development Corporation provided technical guidance towards fulfillment of the miners' vision. The processing plant, which has been very successful, is being replicated in two other areas.

i. Environmental and social impacts

The emergence of ASGM in Mongolia has had both positive and negative impacts on Mongolian society. Some of the unique impacts are listed in Table 2.

One miner, when asked why he turned to ASGM, had this testimonial:

> ***"I lost everything to Zud (natural disaster of harsh winter combined with heavy snow). It was 2002. I used to have 600 animals, but after Zud I was left with 18 goats. That's when I started "panning earth". Asked if he had found enough. "Well it's okay. I have 300 animals now."*** [lxiv]
> *Interview with Mr. L Damba, Builsan Mining site, Bumbugur soum.*

Table 2: ASGM Impacts in Mongolia

ASGM Impacts in Mongolia	
Positive	**Negative**
Highest employer in the Mining sector (100,000 compared to 46,500[lxv] in the LSM sector).	Environmental degradation. 53 hectares of land contaminated with mercury.
Tangible[lxvi] economic contribution in rural areas.[lxvii] The Bornuur processing plant produces gold worth US $5 million.	Pastureland degradation.
Supports about 400,000 Mongolians (13% of the population) with livelihood.	Resource use conflicts with private mining companies and local authorities.
Pioneered the practice of mercury-free gold processing techniques for both placer and primary deposits.[lxviii]	Limited access to social services.[lxix]
Reduction of rural urban migration.[lxx]	Increased rural-rural migration, instability of communities.

3. ASGM Legalization Process

Since its emergence, ASGM has been characterized negatively and as a temporary phenomenon. However, as early as 2002 a few policy makers pushed proposals for its regulation and legalization. Overall the Government of Mongolia and Parliament had been working towards establishing a regulatory, organizational, and institutional framework for artisanal gold mining though continuing to view it as a temporary phenomenon. The government appreciated that it could not provide alternatives and ASGM was playing a key role in rural economic development, employment creation, and poverty reduction.

Various proposals were discussed at the Parliamentary and government levels, the most significant milestone being the enactment by the government in 2008 of the "Temporary Regulation on Artisanal Mining Operations", and the "Sub-Programme for Development of Small-Scale Mining up to 2015". The Sub-Programme was a positive indication that the government was committed to regulating the development of ASGM. It also established a Small Scale Mining Unit within the Mineral Resources and Petroleum Authority of Mongolia (MRPAM).

The Temporary Regulation was to become a building block for the further development of an ASGM legal framework in Mongolia. Though well intended it lacked some key instruments to support and promote the development of ASGM.

The regulation did not provide impetus or incentives for formalization but reflected an attitude of controlling and reduction of ASGM activities and had no legal instrument with which to directly allocate land to artisanal miners. Some of the limitations of the Temporary Regulation regarded its provisions on the type of organization to engage in ASGM[lxxi] (defining the type of organization as unregistered partnerships), access to mining land, restricting miners to tailings of large companies, size of mining area per local area available for miners, restrictions on equipment, limitation of processing plants, prohibiting the use of explosives in primary mining, and promoting middlemen in the gold marketing chain. An instance of contradiction in the regulation was the prohibition of explosives in ASGM while providing for centralized primary mining processing plants.

In 2009, an assessment of the implementation of the Temporary Regulation concluded that access to mining land was the main constraint in the Regulation hence it had not been widely implemented. A task force was then set up by the order of the Minister of Minerals and Energy to develop appropriate recommendations for creating an ASGM legal framework based on lessons learned from the Temporary Regulation.

This opportunity was well timed with the presence of the SDC funded SAM Project which played a vital role in facilitating international and local experiences and stakeholder consultations to provide inputs into the development of an appropriate regulatory framework. After several consultations it was concluded that ASGM operations were to be regulated through a permanent regulation[lxxii] rather than a law. As the regulation would be approved by government it would be easier to make adjustments and changes based on implementation feedback compared to changes to a law which would require parliamentary debates.

In 2010, the Mongolian Parliament approved the amendments to the Law on Minerals, Law on Land, and Law on Taxation of Personal Income Derived from Private Business and Service to include provisions for ASGM. This was a giant step in recognizing ASGM as a legal, alternative form of employment and the role it plays in rural economic development. For the miners, it signalled the genesis of a transition from "wild ninjas" to responsible citizens of Mongolian society.

The law amendments define ASGM as small-scale mining (SSM). They specify its definition, the type of organization to engage in ASGM, provide for miners' access to mining land, and income tax levels. Further to the amendments, the Regulation on the Extraction of Minerals from Small Scale Mines (permanent regulation) was developed and approved by government in December of 2010, followed by approval of guidelines for Occupational safety and Health, Rehabilitation, Tripartite agreement between ASGM, private companies and local government and application forms for mining land. The SAM Project, in Partnership with MMRE and MRAM, have been promoting a rights based empowerment approach to raise awareness of both miners and local authorities on their rights and obligations with regards to the recently approved ASGM legal framework.

i. Lessons learned in the development of the ASGM legal framework in Mongolia

- Policy makers delayed developing a suitable legal framework assuming that ASGM was a temporary phenomenon. During that time ASGM did not stop but continued in an unsafe and environmentally unfriendly manner. Policy makers should not shy away from ASGM realities but provide an enabling environment to regulate it. Unless there are other income generation and livelihood possibilities ASGM remains a viable alternative for poverty reduction and rural livelihoods. The connection between formalized miners and responsible mining is evident.
- ASGM has a huge development potential in rural economies. The Bornuur processing plant produces gold worth US $5 million annually.[lxxiii] This revenue is injected directly into local economies with local citizens directly benefiting from otherwise non-economic deposits (by LSM standards). This can only be realized when ASGM is formalized and given chance to show its socio-economic benefits.
- A combination of political will and facilitation of international cooperation projects has played a major role in the development of the ASGM regulatory framework in Mongolia.
- Local and international experiences have to be integrated for the development of good policies and regulatory frameworks for ASGM. ASGM challenges are similar in different countries and Mongolia benefited immensely from international study tours and engagement of external experts.
- A good regulatory framework has to empower miners through mineral rights or mining land access. The Temporary regulation failed because it did not provide a legal basis for miners to have access to mining land.

- Regulations and laws should have sufficient stakeholder consultation to be more representative and have a better chance for implementation. The Regulation on the Extraction of Minerals from Small Scale Mines had more consultation than the Temporary Regulation, which was mainly developed by government officers using a top-down approach.

ii. Limitations of the current ASGM legal framework

- The unregistered partnership defined by the Law is a non commercial entity under the Civil Code. This is a limitation to ASGM development and does not allow ASGM to evolve into other entities, such as private companies, or cooperatives, within the existing legal framework. If ASGM partnerships decide to form into commercial entities, they cease to be ASGM and fall under the Law on Minerals which has high demands specially suited for large mining investment.
- The income tax levied on miners is very high at US $45 per month. Experience shows that the higher the formalization costs the less formalization occurs. Experiences on the ground already indicate resistance from both the local authorities and miners to formalize in some localities. In some locations, government officials even deny the existence of artisanal miners, as the central government now requires them to collect the income tax for their local budget needs. Miners in turn are not willing to register as they will be "officially known" and required to pay taxes. However some innovative localities have agreed with miners to pay tax levels according to the minimum wage (about US $12).
- Equipment sizes used by ASGM are restricted to 500cm3 engine capacity. Restricting equipment sizes to such low levels slows ASGM development leading to unsafe and unproductive processes.
- There is still bureaucracy in the establishment and running of processing plants. This leads to clandestine activities and proliferation of illegal mercury plants.
- Artisanal miners are required to conduct underground mining only under tri-partite agreements with LSM companies. However, in reality this is not always possible.

4. Role of Stakeholders in ASGM Regulatory Framework Development

To develop an integrated policy on ASGM and a harmonized legal framework several consultations were undertaken in 2009-2010 with more than 400 stakeholders, including MPs, central and local government officials, ASGM representatives, NGOs, and artisanal miners. The miners and local government officers provided feedback and proposals for a better ASGM regulatory framework. Miners, through their Associations or NGOs, provided useful insights to the task force and local Parliament members. Other international organizations working in Mongolia such as the Asia Foundation, ILO, and World Bank contributed to the regulation development process. A team of international ASGM policy experts brought international experience to the table and with meticulous adaptation to the local context produced a stakeholder friendly permanent regulation. Improved provisions included in the Regulation on the Extraction of Minerals from Small Scale Mines reflect on environment and rehabilitation, increased access to mining land, provisions on explosives and blasting, mineral commercialization, rights and responsibilities of the government parties, and the role of the Mineral Resource Authority of Mongolia to provide technical support to miners.

To date Mongolian ASGM boasts a strong level of support by the Sustainable Artisanal Mining Project of the Swiss Agency for Development and Cooperation. This project, in partnership with the Ministry of Minerals and Energy, supports development of responsible artisanal mining with a goal of recognizing it as a formal sub-sector and contributor to Mongolia's economic development. It has been implemented since 2005 and is currently in its third phase until 2014.

There has been remarkable progress in formalization with 7 soums/counties already having mining land contracts with 121 unregistered partnerships; representing 1,868 miners (79% male and 21%

female).[lxxiv] Miners in different sites have deposited approximately US $10,000 to the local rehabilitation fund for environmental management after mining. The Regulation requires each partnership to rehabilitate the mined out area before the local governor approves a new working site. About 35% of registered miners have enrolled for social insurance and 50% for health insurance. The Mongolian Government Agency for Social Insurance is conducting a nationwide awareness program for its officers to enrol and provide services to artisanal miners as legally self-employed persons. The Mining Rescue Services of Mongolia provides safety and mine rescue training for artisanal miners. Six ASGM sites have established their own site safety and rescue teams.

> ***"Appropriate and enabling legal frameworks that support formalization are building blocks for responsible artisanal mining and to that end some miners in Mongolia are demonstrating that responsible ASGM is indeed possible."***[lxxv]

Miners' Associations and NGOs are engaging stakeholders such as local government, social security service providers, mining companies, civil groups, and international organizations. These Associations are at the early stage of providing services to their members. The weakness in the Minerals Law ASGM amendments is that it recognizes unregistered partnerships but not Associations. The level of mining rights are with the partnerships, and these have limitations such as local government administrative burden, challenges to negotiate with stakeholders at individual capacity, challenges to conduct organized mining activities and compliance to developmental initiatives such as Fairtrade and Fairmined which emphasize community/ Association-based mining initiatives. A service provider or organizer in the form of an Association would be required.

5. Economic Instruments in the Formalization of the ASGM Sector

With the ASGM legal framework in place, it has become important to link Mongolian artisanal miners to markets that will pay a premium for responsible ASGM mining practices. Mongolian miners have recently been introduced to the Fairtrade and Fairmined initiative and some sites are beginning to work towards compliance with the Fairtrade and Fairmined standards. Mongolian miners realize the immense potential for growth, economic development, and sustainability of their operations under the Fairtrade and Fairmined scheme.

As a result of formalization, the largest commercial bank in Mongolia, which has a very strong presence in rural areas, has approved a program to provide loans to legal miners for equipment purchases. The loans have discounted interest rates and are guaranteed by a development project. However, the miners will only receive the loans after satisfying the bank verification process and undergoing financial management training and will provide some collateral which matches the loan amount. The maximum loan to a registered miner is US $2,400.

6. Conclusions

Overall the development of the ASGM legal framework process has shifted from shock and denial to a realization of its strong contribution to rural economic development and employment creation supported by a timely political will. The implementation of a project committed to support artisanal mining helped to pioneer best practices in pilot sites in improving miners' organizations, technologies, safety, and environment which helped as advocacy cases for what a properly regulated and organized ASGM sector can do.

With a legal framework, the Mongolian ASGM sector is on the move towards formalization with more government agencies getting actively involved in the sector.

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[lxx] Since the collapse of socialism there has been an influx of rural Mongolians to the capital city looking for employment. ASGM has helped contain rural-urban migration.

[lxxi] The type of organization is unregistered partnerships. These are informal groups covered under the Civil Code and have no legal title and cannot engage in formal business. This type of organization limits the development of ASGM.

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ANNEX 1: TERMS OF REFERENCE OF THE CASE STUDIES

ANALYSIS FOR STAKEHOLDERS ON FORMALIZATION IN ARTISANAL AND SMALL-SCALE GOLD MINING SECTOR BASED ON EXPERIENCES IN LATIN AMERICA, AFRICA, AND ASIA

TERMS OF REFERENCE OF THE CASE STUDIES

The purpose of the case studies is to identify similarities among countries as well as ASGM challenges and opportunities in each country in a way that supports the process of identifying appropriate policy responses.

1. Introduction

i. General characterization of ASGM in the country
- Overview of the sector
- Positive and negative impacts of the activity

ii. Short history of ASGM legalization processes in the country

2. Mercury in ASGM

i. Brief assessment of mercury use and related environmental and social impacts
ii. National and international programs
iii. Legal framework and other measures to control the use of mercury

3. Key Issues in the ASGM Legal Framework and Lessons Learned

i. Mining framework that applies to ASGM
- Mining titles/licences and related obligations and rights
- Requirements for mining titles attribution
- Type of business entities to perform ASGM operations
- Transfer of rights and mining titles upgrade
- Negotiation with land owners and consultation with communities
- Other relevant regulatory requirements

ii. Environmental legal framework
- Environmental assessment instruments
- Environmental licenses
- Pollution control regulations (cyanide regulations, rehabilitation and mine closure, mining in riverbeds, sedimentation, others)
- Protected areas and ASGM
- Other relevant requirements

iii. Relationship between small-scale and large-scale gold mining
- Legal framework to promote partnerships
- Lessons learned from the experiences

4. Key Issues of Institutional Aspects and Lessons Learned

i. State function and initiatives in the formalization process

- Parliament
- Ministries of Mining and Environment or corresponding executive government institutions
- Provincial and Municipalities level/local
- Monitoring agency

ii. Role and major initiatives of miners' organizations in the formalization process

- Syndicates
- Associations

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

- Universities
- Research Centres

5. Economic Instruments in the Formalization of the ASGM Sector and Lessons Learned

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

- Fiscal regimes
- Royalties
- Fees
- Selling requirements and taxes
- Tax incentives to aggregate value

ii. The role of credit mechanisms

- Descriptions of experiences and lessons learned

iii. The role of ethical market initiatives and brief analysis of the current major initiatives

6. Conclusions and Recommendations

7. References