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

Mongolia Case Study

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

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

- 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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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%[i] 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[ii] 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[iii]" 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[iv] 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[v]. 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.[vi] 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.[vii] 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.[viii] 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."*** [ix]
> *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[x] in the LSM sector).	Environmental degradation. 53 hectares of land contaminated with mercury.
Tangible[xi] economic contribution in rural areas.[xii] 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.[xiii]	Limited access to social services.[xiv]
Reduction of rural urban migration.[xv]	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[xvi] (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[xvii] 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