MMSD

Mining, Minerals and Sustainable Development

September 2001

No. 83

Country Case Study on Artisanal and Small-scale Mining: Philippines

Edmund Bugnosen

This report was commissioned by the MMSD project of IIED. It remains the sole responsibility of the author(s) and does not necessarily reflect the views of the MMSD project, Assurance Group or Sponsors Group, or those of IIED or WBCSD. The Report has been edited by an MMSD editor.

Mining, Minerals and Sustainable Development is a project of the International Institute for Environment and Development (IIED). The project was made possible by the support of the World Business Council for Sustainable Development (WBCSD). IIED is a company limited by guarantee and incorporated in England. Reg. No. 2188452. VAT Reg. No. GB 440 4948 50. Registered Charity No. 800066

iied

International Institute for Environment and Development

World Business Council for Sustainable Development

Contents

Edmund M. Bugnosen
73 Devonshire Road
London E17 8QH
UK
fax (44) 208 925 7974
email: AYBAN@aol.com

Introduction

A general assessment of the Philippine small-scale mining sector according to issued terms of reference (Annex 1) was undertaken during the July 2001 on behalf of Mines, Minerals and Sustainable Development (MMSD). This report covers the various findings and observations during this brief assessment period.

The assessment work was carried out by going over existing records from various sources and interviewing knowledgeable persons available by chance. Visits to small-scale mining sites and discussions with the miners was also undertaken, but owing to time and accessibility constraints, such visits were limited to gold mining and sand and gravel operations in the central and northern part of Luzon — the biggest island in the Philippines.

The results are summarised in the succeeding paragraphs. Otherwise, some details are also shown in the various attachments based on the common templates provided by MMSD for use in the study.

Findings, Observations and Remarks

Government Policy

The Philippine government fully supports the development of its small-scale mining industry. This is clearly manifested by the following developments:

- Enactment of specific small-scale mining laws and regulations, including a separate set of safety rules.
- Establishment of small-scale mining unit within the Mines and Geoscience Bureau to support and regulate the sector.
- Decentralization of the issue and control of small-scale mining permits and licences through local government units.

Status, Role and Importance of Small-scale Mining in the Country

Despite the efforts of the Mines and Geoscience Bureau to collect all related information on small-scale mining operations, reliable statistical information is still lacking. Therefore figures, data and other information could only be generated through estimates.

An attempt to generate a summary of information (Annex 6) on the country's small-scale mining sector indicates that it provides direct and indirect employment and means of livelihood to nearly 200,000 people. Based on this figure, it is estimated that the same sector supports at least one million of the country's population, or one in every 70 Filipinos. It is also estimated that the small-scale mining sector generates or supports at least 20,000 formal and informal small enterprises and businesses.

In addition to the information provided in Annex 6, some of the general features of the small-scale mining sector of the Philippines include the following:

- Small-scale miners in the country include individuals and family groups doing mining at subsistence level or as a business and established mining companies. It is estimated that 75 per cent are in subsistence mining, 15 per cent are small individual or family businesses and the remaining 10 per cent are established commercial mining firms.
- Most of the subsistence miners are involved in gold mining and sand and gravel extraction while individual or family mining businesses are in aggregates and industrial minerals (feldspar, silica, limestone). Established mining companies are not limited to specific mineral products.
- The small-scale mining sector is known to have contributed 40–50 per cent of the Country's total gold production during the period from 1990 to 1999. This percentage is believed to have been a major factor in recent closures of large gold-mining operations.
- Because of existing legislation, the level of investment for small-scale mining operations is limited to 10 million pesos (about US$200,000). At the bottom end of the sector, the miners may have limited or no monetary investment at all apart from their own labour.
- Technology employed include traditional pick-and-shovel concerns to mechanised and sophisticated operations which use the same methods as large mining companies, as in the case of gold processing and extraction.

Operating Practices

Mining practices of small-scale miners are mostly open-cast or quarrying operations. Underground mining (stoping) methods are also commonly practised in the gold mines.

Processing methods applied by small-scale miners in sand and gravel operations as well as in industrial mineral (feldspar, silica and lime) productions are generally limited to screening (sizing) and sorting, which include both manual and mechanized units of operations.

Gold-processing techniques include the more sophisticated gold-recovery methods involving cyanide digestion followed by precipitation with zinc dust or with activated carbon. Otherwise the general method of gold recovery is by a gravity-concentration process using pans and sluice boxes. An amalgamation process is also applied particularly in gold-rush areas. A typical gold operation by small-scale gold miners is reflected in Table 1.

Support Schemes

Apart from government intervention through the Mines and Geosciences Bureau, there are no other established and sustained support programmes on small-scale mining in the country. The limited external programmes and projects (Annex 7) that were identified were done by UNIDO and the British Geological Survey with DFID funding. Intervention by a few existing large companies was also noted.

Under prevailing circumstances, most of the support mechanisms within the sector are generated by the small-scale miners themselves. This is manifested in the numerous highly localised associations or organisations (Annex 8) of small-scale miners. In some gold-mining regions, local associations of miners have federated into bigger groups. It was also noted that a national organisation of small-scale miners exists but efforts to contact its office proved unsuccessful.

The UNIDO project deals with the mercury pollution caused by small-scale gold-mining operations in a particular gold-rush area in the southern Philippines. The first phase of the project ended in the year 2000, and proposals for a second phase are being prepared. The BGS project is basically a research initiative (which also includes other countries) on gold processing with the aim of developing and introducing low-cost and effective sluice boxes. Both projects are considered ongoing activities. Consequently, evaluation reports are not yet available where project impacts and lessons learned could be identified.

The Mines and Geosciences Bureau has established its own Small-scale Mining units that are replicated in its regional offices. Unfortunately these specific units lack resources to provide meaningful technical assistance to the target clientele of small-scale miners.

The bureau has its own laboratories where miners could have their samples analysed and tested, but like everybody else, small-scale miners have to pay for these services (Annex 9).

After realising the rather high-grade values of the tailings of small-scale gold miners, a number of larger gold-mining companies have embarked on tailings-buying programmes to buy and reprocess these from smaller mining companies. Initially tailings buying were done through middlemen but in the case of one mining company (Benguet Corporation), the volume of the tailings has been so considerable that a specific operational unit was formed to handle these activities.

Some small-scale mining entrepreneurs also started setting up small cyanidation plants and also started buying tailings from the miners for reprocessing. This has evidently stimulated competition and to some extent improved the prices of tailings.

Looking back, I now also realise the negative effect of the tailings-buying activities to the traditional Igorot small-scale gold miners (which include my family and relatives). In the past traditional Igorot miners (at least from where I come from) actually process their ore in stages to help ensure a continuous supply of cash income. Ores with visible gold are either manually processed immediately or kept for future use. High-grade ores (with no visible gold grains) were processed in ball mills, and the gold values are recovered by sluicing and panning. Both tailings derived from these operations are accumulated in some kind of a tailings pond, and at times when the family has no ores to process (especially during rainy season when mining is not possible) these accumulated tailings are reprocessed to recover any gold values left. Even then the resultant tailings during reprocessing are also kept for future reworking. The general practice, therefore, involves the continuous cycle of storing and reprocessing of tailings. Perhaps herein lies the 'sustainability' of the mining activities of the traditional Igorot miners. Unfortunately, with the tailings-buying programme, 'tailings stockpiles' are seldom seen.

Small-scale Miners' Initiatives

Cultural traditions of support also exist among the miners. An example of this is the 'sagaok' practice of Igorot gold miners in the northern part of the country. This particular tradition involves the sharing or gold ores and workings among the miners as a means whereby better-off miners help the less fortunate ones. Apart from the genuine spirit of helping other miners, there is also a common belief that miners who extend help to others will be blessed with more rich finds.

Interaction between Small-scale Miners and Large Mining Companies

The present assessment has not realised any written information on this particular theme. However, the author is aware (and has been actually involved in the past) in negotiating with large mining companies to allow small-scale gold miners to operate within the mining claims of the large companies. There was very little success on these negotiations due to the unwillingness of mining companies to accommodate the miners by providing the necessary written consents so that the appropriate small-scale mining permits could then be issued. There are two notable exceptions:

- Cooperation between Benguet Corporation and a group of small-scale gold miners, which enables them to operate legally on a certain part of the company's mining property. This was made possible partly by the intervention of local politicians and the fact that most of the miners involved are former employees of the company. The company also benefited from the arrangement by having the exclusive rights to buy the tailings (from gravity concentration) of the small-scale miners.
- Consent given by Philex Mining Corporation to allow landowners within its mining claims to sluice and pan their mill tailings to recover gold values.

Legislation

The Philippines has two specific legislative codes (Annex 2 and 3) on small-scale mining and separate safety rules and regulations (Annex 4) which was promulgated mainly to address small-scale mining operations. The general mining law of the country (Philippine Mining Act of 1991) also provides provisions for other mining activities such as quarries and sand and gravel extraction, which are generally classified as small-scale mining operations. Annex-5 provides general features and implementing rules of these laws as well as other related legislations, which affects the small-scale mining industry as a whole.

Because there are two separate sets small-scale mining laws, the country thus has two separate legal definitions of small-scale mining. First, small-scale mining refers to mining activities which rely heavily on manual labour using simple tools and methods, and do not use explosives or heavy equipment (per RA No 7076). Second, (according to PD 1899) small-scale mining refers to any single unit of mining operation having an annual production of not more than 50,000 metric tons of ore and satisfying the following conditions: working is artisanal, either open-cast or shallow underground mining without the use of sophisticated mining equipment; minimal investment on infrastructure and

processing plant; heavy reliance on manual labour; and owned managed or controlled by an individual or entity qualified under existing mining laws, rules and regulations.

PD 1899 was the initial legislation to legalise small-scale mining. It provides a licensing system, which includes provision for issuing small-scale mining permits within existing mining claims subject to the consent of the claim holders. On the contrary, RA 7076, which was enacted in 1991, grants mining rights in the form of joint venture or mineral production sharing agreement between the government and the small-scale miner.

The most recent legislation in relation to small-scale mining in the Philippines is the promulgation of the small-scale safety rules and regulations in 1997; and the Philippines is perhaps the only country to have such a separate and distinct safety rules on small-scale mining. Another recent development in the administration of the small-scale mining sector is the establishment of Small-scale Mining Units within the organisational set-up of the Mines and Geoscience Bureau.

General Comments

There is a growing awareness and interest in the potential of small-scale mining industry as a poverty-alleviation strategy by many developing countries. However, to optimise the benefits that the sector offers, past practice and experience needs to be reviewed and analysed. The Philippines offers a good case study that needs further and more detailed assessment to be able to learn and benefit from its experience and lessons learned thus far.

Published Works on Small-scale Mining

Despite the long history of small-scale mining in the country, particularly in the extraction and production of gold, there is very little published information pertaining the sector. The initial findings are shown in Annex 10. Some of the few and relevant contributions of this author to the list include the following:

- An Introductory Manual on Gold Processing, 1988; an unpublished compilation meant as a guide for miners which was prepared at the request of small-scale gold- miners' associations.
- Women are Active in Small-scale Mining in Northern Philippines, 1998; a paper prepared for the UNI/INRA Workshop on Constraints Faced by Women in the Mining Industry, Lusaka, Zambia, October 27–9, 1998.
- Workshop Report – UNIDO Phase 1: Assistance in Reducing Mercury Emissions in Highly Contaminated Gold-mining Areas in Mindanao, Philippines, 1999; an account of the training component of the project.
- Kias Gold Mine, Small-scale Gold Mining: Examples from Bolivia, Philippines and Zambia, 1999; ILO working paper.

The Small-scale Mining Unit of the Mines and Geoscience Bureau at its head office in Manila is working hard to compile relevant information but is faced with logistical

constraints. The easiest means of collecting information regarding the sector, therefore, is through the individuals who are involved in the very sector. In addition to this author the other key contact people who can be readily contacted for information on the subject are shown in Annex 11. Most of them work at the Mines and Geoscience Bureau.

Acknowledgements

The important assistance and help provided by J Calvez (division chief, Metallurgical Laboratory), E Santilices (metallurgist) and L Ramos (section chief, Small-Scale Mining Unit) of the Mines and Geosciences Bureau in preparing this report is hereby acknowledged.

A Selection of Local Small-Scale Mining Organizations in the Philippines

Mt Diwata Small Ore Mill Operators Association
Diwalwal, Monkayo, ComVal
Imelda Calabio, president

Monkayo Integrated SSM Association (MISSMA)
MISSMA Mining and Settlement Area
Mt Diwata, Monkayo ComVal
Jose Sala, president

Davao Ore Processors Association (DOPA)
Tagum City, Davao del Norte
M Juanillo, president

Mindanao Federation of SSM Association
Tagum City, Davao del Norte
R Buniales, president

Tribal Mining Development Association, Inc
T'boli, South Cotabato
Fludi Tuan, president

Igorot Small-scale Miners and Panners Foundation, Inc
Ucab, Itogon, Benguet
Lomino Kaniteng, president