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MINERAL RESOURCES

Small-scale mining prospects in developing countries

Report of the Secretary-General

Addendum

Summary of information submitted by Governments

SUMMARY

This addendum summarizes the information provided by Governments on small-scale mining in their countries. It is based on the replies received in response to a letter sent by the Department of Technical Co-operation for Development on 3 June 1988 to all Permanent Missions to the United Nations.

* E/C.7/1989/1..

1. In a letter dated 3 June 1988 addressed to all Permanent Missions, the Department of Technical Co-operation for Development reminded all Member States of Economic and Social Council resolution 1985/47, operative paragraph 4 of which urged Governments to submit to the Secretary-General at an early date information and reports on small-scale mining in their countries. This action was taken as by that date no information had been received despite the fact that almost three years had passed since the adoption of the resolution.

2. In that letter, reference was also made to operative paragraph 3, in which the Council requested the Secretary-General to examine whether there existed small-scale mining operations that could serve as demonstration projects for training and for developing new approaches to small-scale mining, in accordance with national development plans and priorities, and to report thereon to the Committee at its eleventh session.

3. As of 12 December 1988, 17 replies had been received; two replies acknowledged the letter and informed the Secretary-General that the request had been forwarded to the relevant national authorities. No further reply has been received from these countries. One informed the Department that no mining activity took place in its country. Of the remaining 14 replies, only two referred to the subject mentioned in operative paragraph 3. One country offered to co-operate with the Department of Technical Co-operation for Development in the selection of a demonstration project (Iran). Another country reported that there were no special technical features to serve as demonstration projects for developing new approaches to smaller scale mining (Australia). One country provided no information but forwarded two reports prepared by a national of that country for the World Bank (Australia).

4. Of the 11 replies containing at least some substantive information, most provided certain statistical facts on small-scale mining in their countries; some included references to government policies and measures to promote small-scale mining, while others reported on specific programmes.

5. Some replies mentioned the difficulty of arriving at a satisfactory definition of small-scale mining. For the purposes of a major promotion project funded in part by the World Bank, one country considered small mines to be those with a daily ore production of 200 tons or less (metallic ores) or a maximum of 300 tons (non-metallic substances), in both cases with not more than \$3 million in annual revenue. A developed country, probably representative also of other similar situations, reported that there was no universally accepted definition of small-scale mining, although for the purposes of making global comparisons, an upper annual limit of about 100,000 tonnes of run-of-mine output had been suggested, and that the figure had been adopted, although not rigidly. However, that figure was spurious, and a number of other factors should also be considered, including the value of production, capitalization, degree of mechanization and the number of workers employed. Small-scale mining operations in industrialized nations may well be quite different from their counterparts in developing countries. They would almost certainly have to conform to more stringent health and safety regulations and environmental controls, and they may also work more complex orebodies utilizing a higher degree of new technology and mechanization.

Associated mineral processing plants also were usually relatively sophisticated. In addition, small-scale mines in industrialized countries may often be owned and operated by quite large companies who may expect a higher margin of profit than smaller independent companies.

6. Some countries referred to major problems presently facing small mines, such as:

- (a) Lack of sufficient basic installations and transportation networks;
- (b) Problems of competition with similar mass-producing large mines;
- (c) Lack of investments for development of sufficient foundation installations and housing facilities for exploration of large mines;
- (d) Problems of marketing and sales;
- (e) Inaccessibility of machinery and maintenance facilities;
- (f) Non-availability of sufficient expertise.

7. Nevertheless, the development of existing small mines and the exploration of new ones enjoyed certain advantages over large mine operations because:

- (a) There was no need for large investment funds;
- (b) There was no need for extensive resources and enormous exploration costs;
- (c) There was no need for costly basic installations;
- (d) There was no need for provision of housing, as such facilities already exist in the surrounding areas;
- (e) There was no need for sophisticated, mechanized systems;
- (f) Management was easier;
- (g) Owing to the seasonal nature of some of the mines, the labour force was transferrable.

8. Certain metals and minerals as well as types of mineral deposits were mentioned as particularly conducive to small-scale mining. One example was placer mining, which could be considered the epitome of small-scale mining. The material was readily accessible, seldom required fragmentation (blasting, crushing, grinding) and could generally be recovered by simple gravity separation. Beyond simple mining operations, placer mining could be broken down into several mining methods, such as the gravel pumping method, in which a high pressure water jet is generated to break down and deslime material. The slurry was then pumped to a pre-concentration unit, sluices or palongs.

9. Secondary deposits of colluvial or eluvial type could be exploited by ground sluicing methods. A high pressure water jet is obtained from a water pump, preferably of the multi-stage type, owing to great difference in elevation. The material is broken down and deslimed. Heavy equipment sometimes assists in removing and loosening the material. The slurry flows by gravity force down to the processing plant.

10. It is obvious that mining methods for small-scale mines employ simple technology and equipment due to the lack of technical skills or financial assistance. However, by introducing appropriate technology available in local areas, local miners are able to adopt and modify operations for each topographical and geological circumstance and thus operate efficiently.

11. One reply reported that small-scale mining was the mainstay of the mining industry. Even though large-scale operations account for the greater portion of mineral production, it continues to be evident that small and locally owned mines allow more flexibility with regard to economic fluctuations and hence can play a very useful role in assisting the development of the local community as well as the national economy as a whole. However, in order to avoid unnecessary waste of non-renewable resources, appropriate technologies for improving productivity and efficiency must be developed and introduced to small-scale miners. To ensure continued growth and contribution from small-scale mining, it is therefore strongly recommended that the Government issue well-established policies and programmes to support and promote small-scale mining in the country.

12. Some countries have established programmes for the promotion of small-scale mining; Governments provide credits, in part at subsidized interest rates, technical assistance, marketing facilities, in particular in the case of precious metals, and simple procedures to acquire concessions and reporting on production. In several countries environmental protection at present is not always enforced but will be dealt with more strictly in the future, thus possibly increasing production costs and perhaps even closing down certain operations. For example, it is being reported that small-scale activities have direct and indirect implications for the environment. These activities have resulted in the rampant destruction of vegetation, the increased rate of siltation and erosion and the scarification of the land. Indirect implications related more to environmental health hazards result from squatting and inadequate water supply and sanitary facilities.

13. It is important to note that some of those who practise small-scale mining are subsistence farmers whose livelihood depends on agriculture, an activity which is unable to sustain them. Thus, in most cases, these mining activities are seasonal and only concentrated during the dry season, when the locals are trying to supplement their meagre returns from farming. With the increase in population in the rural areas and the increase in use of marginal lands, it is quite possible that the unprecedented rate of growth will continue unabated. Concerted effort is needed to periodically assess and monitor these activities before they reach crisis proportions. It is necessary to establish and strengthen the legal framework which deals with small-scale mining and, most importantly, alternative and appropriate methods of mining must be found to minimize and avoid unnecessary environmental degradation.

14. Finally, one country (Jamaica) referred to a technical co-operation project jointly undertaken by the Government, through its Geological Survey, and the Department of Technical Co-operation for Development. The project deals with non-metallic minerals, in particular construction materials and ornamental stones. While not aiming at small-scale mining specifically, it nevertheless is concerned mostly with small operations, as all private sector activities in this field are at a rather small scale, that is, with some 5 or at best 10 employees.

15. Generally, United Nations assistance in the development of the small-scale mining sector was mentioned in some of the replies received, confirming the indications of interest on the part of developing countries received through other channels, such as technical and interregional advisers during advisory missions undertaken upon the request of developing countries.
