Terminal Evaluation

Latin America and the Caribbean

1. Outline of the Project

Country:
Columbia

Project title:
The Project on the Improvement of Mineral Processing Technology Concerning Medium and Small-scale Mines

Issue/Sector:
Mining/Environment

Cooperation scheme:
Project-type Technical Cooperation

Division in charge:
Second Technical Cooperation Division, Mining and Industrial Development Study Department

Total cost:
553 Million Yen

Period of Cooperation
1 June 1999-31 May 2002

Partner Country's Implementing Organization:
Instituto de Investigacion e Informacion Geocientifica, Minero Ambiental y Nuclear, Ministerio de Minas y Energia (INGEOMINAS)

Supporting Organization in Japan:

Related Cooperation:
Project-type Technical Cooperation; "The Project on the Recovery of Precious Metals from Vein-Type Complex Ores"

1-1 Background of the Project

In order to depart from an economic structure heavily dependent on the coffee industry, in the late 1970s, Columbia started to promote the Mining Industry as the most important industry for national development and conducted various mineral resources development studies. As a result, the existence of a difficult-to-mine ore deposits and valuable metals was confirmed. However, because conventional technology was unsuitable for the difficult-to-mine new deposits, the Government of Columbia planned to organize "Research Institute for Geology and Mining" under INGEOMINAS to study efficient and cost-effective methods of mining the new technology. The Government of Columbia then requested Project-type Technical Cooperation from the Government of Japan.

Based on the request, the "The Project on the Recovery of Precious Metals from Vein-Type Complex Ores" on the mining of precious and accompanying metals at laboratory level was implemented from 1992 to 1996.

However, further technical development through ongoing testing at ore processing facilities, was necessary for those techniques to be applied to raise the concentration rate of valuable metals and control mining pollution at local mine sites, because the above project only transferred techniques at the laboratory level. This is why the Government of Columbia again requested Project-type Technical Cooperation.

1-2 Project Overview

Aimed at fostering instructors in the field of advanced ore pressing and the small and medium scale mines in gold mining regions, the necessary techniques to prepare portable ore dressing testing facilities and to develop the design engineers of the facilities are transferred to the technicians of INGOEMINAS and MINERCOL.

(1) Overall Goal

Medium, small and very-small scale mining operations in the regional gold mining areas are improved.

(2) Project Purpose

Counterpart Personnel of INGEOMINAS are able to provide instruction in improved mill operation at medium and small scale mines in the gold mining area.

(3) Outputs

1) Project operation unit will be established.
2) Mobile mining test facilities will be installed and maintained.
3) Engineers in charge of designing mills including environmental control will be trained.
4) The guidelines on the improvement of mill operation including environmental control will be proposed to the target mines and mills.

(4) Inputs

Japanese side:

Long-term Experts	5	Equipment	210 Million Yen
Short-term Experts	10	Local Cost	54 Million Yen
Trainees received	10		

Colombian side:

Counterparts	Total of 15 (including executives)
Land and Facilities	
Local Cost	1,276,639 thousand Pesos (75 Million Yen)

2. Evaluation Team

Members of Evaluation

Leader:Kazuo TANIGAWA, Special Technical Advisor, JICA
Technical Cooperation:Kenji TOMITA, Member of Supporting Committee
Technical Transfer:Masanori, DOI, Japan Mining Engineering Center for International Cooperation (JMEC)
Project Management:Toru YOHIDA, Second Technical Cooperation Division, Mining and Industrial Development Study Department, JICA
Consultant:Masayuki TAKAZAWA, RECS International Inc.

Period of Evaluation

3 March 2002 - 21 March 2002

Type of Evaluation:

Terminal Evaluation

3. Results of Evaluation

3-1 Summary of Evaluation Results

(1) Relevance

The National Planning Department designated the mining industry as an important sector of its national development because of the industry's potential for earning foreign exchange. This was pointed out in the policy "Changes to Building Peace". In addition, the small and medium size mining industries have long needed effective ore processing methods in order to increase production, quantity and earnings. The Project meets these needs, and therefore is relevant.

(2) Effectiveness

The counterpart personnel are able to determine the most appropriate conditions for effective ore mill facility operation. The counterparts have also reached to the level where they can give instruction at small and medium mines in the gold mining

areas. A manual for ore dressing, refining and wastewater disposal, and a proposal for the improvement of ore processing were also compiled.

From the indicators described above, it can be evaluated that the project purpose has been achieved to an appropriate level. However, the INGEOMINAS side believes that the achievement level of counterparts is not yet sufficient for providing training at the mines in the field of advanced ore processing. Self-help efforts on the Columbian side are inevitable from now on.

(3) Efficiency

There was a delay in the arrival of the Long-term Experts due to the deterioration in public safety. Moreover, the delayed arrival of the portable ore pressing testing facility set the Project back by about seven months. However, owing to the efforts of project member's, technical transfer proceeded at a good speed after the delay. In the second half of the cooperation period, the conversion of Inputs into Outputs improved. Therefore, the efficiency can be highly evaluated.

(4) Impact

Although the Project Purpose was attained to an appropriate level, the instruction in operations improvement using the transferable ore mill facility had not yet been conducted by the counterparts at the point of evaluation. Therefore, the impact of the Project on the mining industry cannot be confirmed. Furthermore, information on technical transfer and its promotion was avoided to ensure the safety of the Japanese experts in the gold mining region, so the Impact from the achievement of the Project's Overall Goal, "The operational situation of the medium, small scale mining activities at the regional gold mining areas will improve" is not yet visible. In terms of a social aspect, on account of the Project team's direct and indirect relationship with the Japanese immigrant community (1,000 people), the existence of the community became widely known.

(5) Sustainability

Regarding the organization, because of the leadership of the INGEOMINAS Director General, there is a strong organization structure. For this reason, the turnover rate of the counterparts has been low. In terms of their finances, the budget is expected to be allocated from the national budget and the National Royalty Fund as before. Accordingly, there are no problems regarding organizational and financial sustainability.

However, the level of the counterparts remains to be a problem. The technical transfer has progressed without any problems. There are no problems regarding the transferable ore processing equipment operation, or maintenance and management. The operation experience with the transferable ore dressing equipment is still in the early stage, and the counterparts have not yet reached the level of being able to independently make proposals on ore processing technology improvement customized to the specific problems of small and medium scale mines.

3-2 Factors that promoted the actualization of the effect

(1) Factors concerning the planning

N/A

(2) Factors concerning the Implementation Process

N/A

3-3 Factors that impeded the actualization of the effect

(1) Factors concerning the planning

N/A

(2) Factors concerning the Implementation Process

1) On account of the deterioration of Columbia's public safety during the cooperation period, Japanese experts were not allowed to set foot in the mine regions nor transfer the portable ore processing equipment. Therefore, on site research could not be taken place. The Project Purpose was attained to an appropriate level, but it left the problem regarding the lack of practical experience of the counterparts.
2) The delay of inputs such as the Japanese experts and the equipment led to the Project's inefficiency.

3-4 Conclusion

Counterparts can decide on the most appropriate condition of the effective ore mill facility operation, as well as instruct small and medium scale mines in the gold mining regions. Because the level of the counterparts has been improved, it can be said

that the Project Purpose has been achieved to an appropriate level. However, for public safety reasons, operation improvement training was not been implemented in the mines. Therefore, in order to achieve the Overall Goal which is improving the operation methods in small and medium scale mines, public information and technical training activities by counterpart self-help efforts are necessary in each region.

3-5 Recommendations

Counterparts must have more research experience so that they are able to further transfer the techniques in the future.

3-6 Lessons Learned

Due to the misunderstanding regarding the Overall Goal and the Super Goal of the PDM, the indirect and long-term effects, the Colombian side had overly high expectations that these goals would be achieved by the end of the Project period. In future cooperation, a project should be implemented after the due clarification of the contents of the Project Purpose, Overall Goal, and Super Goal to ensure the understanding of both involved parties.

3-7 Follow-up Situation

N/A