

Mineral Processing Plant Operation Technology

Project Sites

Chihuahua



1. Background of Project

Mexico was promoting modernization in the mining sector through its national development plan in order to generate employment opportunities and encourage foreign investment. The Comision de Fomento Minero (CFM) was the authority responsible for providing financing and technological assistance to small-and medium-sized mines, and managing mineral processing plants for those mines. However, in recent years, the market price of silver, Mexico's main mineral resource, had decreased, and low productivity of small-and medium-sized mineral processing plants caused by inadequate mining technologies and a lack of instrumentation facilities had become an issue.

In order to resolve this problem, the CFM announced a plan to modernize 17 directly-managed mineral processing plants and requested a development study from Japan. The study was completed in 1990, and based on its recommendations, the CFM requested project-type technical cooperation from Japan for the Parral plant, as part of its plan to modernize directly-managed mineral processing plants.

2. Project Overview

(1) Period of Cooperation

17 August 1992-16 August 1996

(2) Type of Cooperation

Project-type technical cooperation

(3) Partner Country's Implementing Organization

Consejo de Recursos Minerales (CRM)

(4) Narrative Summary

1) Overall Goal

To stimulate Mexico's mining industry.

2) Project Purpose

To modernize the CRM Parral mineral processing plant.

3) Outputs

- a) To cultivate human resources in the maintenance and operation of mineral processing plants.
- b) To improve facilities pertaining to management and operating technologies of mineral processing plants at

the CRM Parral Metallurgical Experimental Center.

- c) To foster the human resources development program (technology transfer to outsiders) at the CRM Parral Metallurgical Experimental Center.

4) Inputs

Japanese Side

Long-term experts	5
Short-term experts	28
Trainees received	16
Equipment	402 million yen
Local cost	862 million yen

Mexican Side

Counterparts	9
Improvements to buildings and facilities	2.9 million pesos (approx. 37 million yen)
Local cost	7.79 million pesos (approx. 98 million yen)

3. Members of Evaluation Team

JICA Mexico Office
(Commissioned to Mr. Yasumasa ITO)

4. Period of Evaluation

15 October 1998-15 February 1999

5. Results of Evaluation

(1) Efficiency

The number of experts dispatched and the dispatch period went according to plan, and the content and amount of the equipment provided were appropriate. However, through the new mining law announced immediately before the start of this project, the CFM was dissolved and the implementing organization was replaced by the CRM. As a result, the securing and placement of counterparts were delayed and progress conditions of the project did not improve until the third year of cooperation.

(2) Effectiveness

At the Parral plant, the transfer of technology involving operation and management of a mineral processing plant and

instrumentation of processing equipment was performed satisfactorily, and the repair of equipment and the training program for outsiders were also implemented as planned. Major modernizations have been made: Japanese mineral processing technology was introduced and the plant was equipped with modern instrumentation devices, following which, the extraction ratio of the Parral mineral processing plant exceeded the Mexican average by 8 to 10%, and the quality of concentrate has also drastically improved.

(3) Impact

As a result of the improvement in the extraction ratio through the introduction of new technology, the use of reagents in beneficiation and the amount of heavy metals dumped in the dam have been reduced, so negative effects on the environment have been mitigated.

As operation results from the Parral plant are good, it can be expected that these results will spread to neighboring small-and medium-sized mines. Transferred technology is also being disseminated throughout Mexico by the human resources who cultivated their skills through this project. In the future, should the Mexican side make additional improvements through its own efforts, it would further contribute to the advancement of Mexican mining.

(4) Relevance

Immediately before the start of cooperation, the CRM made a commitment to require training of workers at the Parral mineral processing plant as a condition for financing of small-and medium-sized mines. At the same time, because the need for training was great under the background of active activities of small-and medium-sized mines in the Parral area, the contents of this project were relevant.

However, as the new mining law is more advantageous to mines that are medium-sized and larger, smaller-scale mines have been merging or combining into larger mines. Additionally, under the new, liberal measures taken by the Ministry of Commerce and Industry, the place of commissioned mineral processing plants and technical training centers for small-and medium-sized mines like the Parral processing plant is falling.

(5) Sustainability

Currently, the CRM is taking budgetary measures to secure mineral processing facilities and equipment for the Parral plants, not only for its operation but also for the repair of facilities and provision of machinery. Maintenance for the provided equipment is perfect, and in technical aspect, results from the Japanese cooperation are sustaining.

However, because it has been difficult for the Parral processing plant to secure the amounts of ore that are necessary in order to maintain profitability, it has been forced to operate in the red. If this situation continues, it will be difficult for the Parral processing plant to secure sustainability in the future.

worth of equipment, carries the risk that the Japanese side's involvement would end the instant the project's objective is attained. For example, in cases where results of the cooperation do not take root because the partner country is undergoing political changes, it is recommended that a system be established to solidify the fruits of the cooperation into a structure by conducting follow-up cooperation with individual experts after the project-type technical cooperation is over.

6. Lessons Learned and Recommendations

(1) Lessons Learned

In general, a project which was supplied 400 million yen