Brazil

Vegetable Crops Production

Project Sites

Brasilia

1. Background of Project

Japan implemented project-type technical cooperation from 1987-1994 and instructed the Brazilian Agricultural Research Corporation, National Vegetable Research Center on vegetable production technology. The Government of Brazil requested the implementation of third country training program from Japan in order to spread these results to various countries in Central and South America and Portuguese-speaking African countries.

2. Project Overview

(1) Period of Cooperation

FY1995-FY1999

(2) Type of Cooperation

Third country training program

(3) Partner Country's Implementing Organization

Brazilian Agricultural Research Corporation (EMBRAPA), National Vegetable Research Center (CNPH)

(4) Narrative Summary

1) Overall Goal

To improve vegetable production technology in Latin American countries and in Portuguese-speaking African countries.

2) Project Purpose

For trainees from Latin American countries and Portuguese-speaking African countries to acquire knowledge and skills in vegetable production.

3) Outputs

a) For trainees to understand the specialized information related to vegetable cultivation.

b) For trainees to understand the varieties and characteristics of staple vegetables.

c) For trainees to understand the theory and methods to fight and protect staple vegetables from disease-carrying pests.

d) For trainees to understand practical vegetable production technology.

4) Inputs

Japanese Side

Trainees received 2

Training expenses

Brazilian Side

Instructors 56

Training facilities and materials

Training expenses

3. Members of Evaluation Team

JICA Brazil Office

(Commissioned to Mr. Jairo Ribeiro da Silva)

4. Period of Evaluation

1 September 1998-2 September 1998

5. Results of Evaluation

(1) Efficiency

For this training, Japan paid the implementation costs for the training and the costs to receive counterparts in Japan while the Brazilian side supplied training facilities and instructors. Of the 56 members of the research and development technical team at CNPH, the implementing organization for this training, 25 of the staff members hold doctorates, 26 hold masters degrees and five hold bachelor degrees. The staff there is fully capable of serving as training instructors and the trainees held good opinions of the instructors' capabilities.

For this training, after each session of the course, the trainees were questioned for their opinions and the feedback was reflected in the next year's training contents, rendering it possible to implement, though hesitantly as times, training curricula that were relevant to the trainees' needs. However, excluding the year 1998, because the knowledge and technical level of the trainees were very dispersed, it was necessary to respond to a wide range of training needs.

(2) Effectiveness

In the four-year period between FY1995 and FY1998, 48 people attended this training. The trainees held good opinions of the training's balance between lectures and practical work, the number of hours spent visiting sites and the technical content of the training. Through this training program, the trainees acquired enough specialized knowledge about vegetable

cultivation, characteristics and the varieties of staple vegetables and the theory behind combating disease-carrying pests. Many of the trainees expressed that because their technical skill and knowledge had improved, they had matured as experts.

(3) Impact

The technical skills and knowledge that the trainees obtained through this training were applicable in their respective countries. The result of the questionnaire that the trainees responded to revealed that they had been retransferring the technology to colleagues at their affiliated organizations and to vegetable producers since they returned home. Some of the trainees had applied their training achievements to settling national vegetable projects in their home countries.

The trainees' affiliated organizations held good opinions of the training, saying that the training was very effective for the work performance of the trainees and that the organizations themselves had benefited a great deal from the training.

(4) Relevance

This training had a total of 224 applicants in the past four years with a competition rate for acceptance of 22 percent. The needs for the training are still high and it can be said that the relevance of this training is high.

(5) Sustainability

CNPH has sufficient implementation capabilities in the technical, institutional and management aspects for the training to become sustainable. However, because there still remains a large financial burden on CNPH, it will probably be difficult for the Brazilian side to continue this training program on its own from here on.

6. Lessons Learned and Recommendations

(1) Lessons Learned

After the training period ends, it will be ideal if the training instructors could visit the participating countries and give technical support by holding seminars. At that time, if the instructors also inspect the local situation of the concerned field and give feedback for the next training session, then it is expected that a training program, which is more effective and relevant to the local circumstances, will be implemented.

(2) Recommendations

Because the needs for this training still remain high, in order to give more people the opportunity to participate in training, an extension of the cooperation period is desired.

7. Follow-up Situations

It has been decided that the current training schemes will be extended for a further five year period to FY2004.

Visiting farmhouses (study tour)

Self-instruction of farming machinery

Brazil

Forest Watershed Management

Project Sites

Sao Paulo

1. Background of Project

Having accepted individual experts in 1976 and implementing project-type technical cooperation for seven years since April 1979, the Forestry Institute of the State of Sao Paulo (IFSP) had become a famous research institute in Latin America through accumulating forest management technology such as forest hydrology and remote sensing.

In order to transfer this accumulated technology to neighboring countries, Japan implemented a third country training program at the IFSP from FY1990 through FY1994, supporting the development of human resources involved in the prevention of land erosion and devastation, forest watershed management and investigative techniques. Recognizing the high evaluation from participating countries and their need for similar training when the training program ended in FY1994, Japan expanded the target countries and implemented a further five years of training.

2. Project Overview

(1) Period of Cooperation

FY1995-FY1999

(2) Type of Cooperation

Third country training program

(3) Partner Country's Implementing Organization

Forestry Institute, Secretariat of Environment of Sao Paulo State

(4) Narrative Summary

1) Overall Goal

To enable appropriate forestry management in participating countries.

2) Project Purpose

To enable trainees from Latin American and Portuguese-speaking African countries to acquire the latest knowledge and technology for forest watershed management.

3) Outputs

a) For trainees to study geomorphology, forest meteorology and forest hydrology.

b) For trainees to acquire knowledge and technology on botanical research and soil research.

c) For trainees to study reforestation methods.

4) Inputs

Japanese Side

Short-term experts	7
Trainees received in Japan	1
Training expenses	

Brazilian Side

Instructors

Training expenses

Training facilities, equipment, educational materials

3. Members of Evaluation Team

JICA Brazil Office:
(Commissioned to Professor Walter de Paula Lima of the Forestry Department, University of Sao Paulo)

4. Period of Evaluation

February 1999-March 1999

5. Results of Evaluation

(1) Efficiency

With the help of Japanese cooperation over a number of years, the IFSP has developed an abundance of human resources, offered advanced technological prowess and provided study forests that can be utilized for practical training. In this training program, the IFSP's resources were utilized to the full. Administration of the training program also proceeded smoothly, with high praise coming from trainees for the ardent efforts of the IFSP as a whole. An effective training program was implemented, in particular thanks to ITS training implementation experience from FY1990 through FY1994 and consistency in curricula.

(2) Effectiveness

On four occasions until FY1998, a total of 54 researchers, technicians and extension workers involved in forest watershed management from 12 Latin American and Portuguese-speaking African countries participated in the training program. Of these, ten ex-trainees, who answered a questionnaire conducted as part

of this evaluation, all responded that they were satisfied with the training program. There were also many comments from trainees expressing a high level of satisfaction with the training program in questionnaires conducted after the training program had ended each year.

Every trainee produced a high-quality report owing to the fact that the training program was developed striking a good balance between theory, fieldwork, experiments and observation. The development of a curriculum that included case studies based on practical observation and in which trainees participated to a high degree, has contributed to the effective acquisition of knowledge and technology.

(3) Impact

The majority of trainees participating in the training program met the conditions for qualification. As such, it is believed that the training results are widely applied upon trainees returning home. Ex-trainees who answered the questionnaire responded that they were applying the results of their training to projects within their own institutions and experiments on reforestation and agroforestry systems.

(4) Relevance

In developing countries, the expansion of arable land, rise in illegal logging and other environmental issues resulting from population increases have brought to light issues of deforestation, soil erosion and water shortages. Given this situation, there is an overwhelming need for knowledge and technology on forest watershed management from the perspective of ecosystem protection and sustainable development. The number of applicants for the training program was tremendous-nearly quadruple the figure that could be accepted-demonstrating the considerable need for the program and, accordingly, its high relevance.

(5) Sustainability

In spite of the excellent capacity of the IFSP to implement the training program, the Sao Paulo State's budget reductions do not offer much hope for continuation of the program using only the budget of the Brazilian side.

6. Lessons Learned and Recommendations

(1) Recommendations

In addition to the wishes of the IFSP to continue the training program, countries participating in the program also have many needs. As such, it would be desirable to continue the program, if necessary making improvements, such as curriculum reorganization and restructuring of training subjects.

Observing seedbeds to be used in afforestation

Observing seedlings before afforestation

Brazil

Improvement of Livestock Parasitosis Synthetic Diagnosis

Project Sites

Salvador

1. Background of Project

In the state of Bahia in the northeast of Brazil, the livestock industry is developing on a large scale and over a wide area, but, due to the outbreak of disease caused by poor sanitary management, the productivity rate is low. Therefore, the Brazilian government requested technical cooperation from Japan in which general diagnosis methods of the diseases of livestock have been developed for the promotion of research at the Veterinary Medicine School of Federal University of Bahia, which plays a role in providing information about livestock diseases within the state.

2. Project Overview

(1) Period of Cooperation

1 December 1995-30 November 1998

(2) Type of Cooperation

Expert team dispatch program

(3) Partner Country's Implementing Organization

Federal University of Bahia

(4) Narrative Summary

1) Overall Goal

To improve the productivity of livestock in Bahia.

2) Project Purpose

To establish a foundation to improve diagnostic technology of parasitic diseases at the Veterinary Medicine School of Federal University of Bahia.

3) Outputs

a) To correctly grasp the situation of parasite outbreaks in Bahia.

b) For the staff members of the Veterinary Medicine School of Federal University of Bahia to acquire skill in diagnosing parasitic diseases by studying parasitology, biochemistry, and immunology.

c) To conduct livestock disease research that uses introduced diagnostic technology at the Veterinary Medicine School of Federal University of Bahia.

4) Inputs

Japanese Side

Long-term experts	1
Short-term experts	5
Trainees received	9

Equipment for research (microscopes, facilities for raising goats) and medicines

Brazilian Side

Counterparts

Research facility and machinery

Local cost

3. Members of Evaluation Team

JICA Brazil Office

(Commissioned to Ms. Thelma Maria Saueressing)

4. Period of Evaluation

29 October 1998-30 October 1998

5. Results of Evaluation

(1) Efficiency

There were comments from the Bahia Federal University side that the dispatch period of the short-term experts was too short, but otherwise it was thought that the content, quantity, and timing of the dispatch of experts, the provision grant of machinery, and the counterpart training in Japan were all generally appropriate. The enthusiastic and able Brazilian counterparts, the appropriate curriculum and teaching materials, and the leadership of the long-term expert all contributed to the achievement of this project's objectives.

(2) Effectiveness

Through the implementation of this project, the Veterinary Medicine School of Federal University of Bahia was established as a high-standard reference laboratory for the diagnosis of parasitic diseases. Also, the counterparts have acquired the newest knowledge and technology for diagnosis of parasitic livestock diseases, and have thus improved their capabilities.

As a result of the establishment of a laboratory and the cultivation of human resources, more precise diagnosis technology of parasitic diseases applying have been applied in parasitology, biochemistry, and immunology was established,

having fulfilled the project purpose.

(3) Impact

In addition to the transfer of technology from the experts, the encouragement of the counterparts to acquire advanced degrees has spurred development in each field of research. As a result of the establishment of a superior laboratory and the cultivation of professors enacted through this project, the Veterinary Medicine School began receiving aid from the state government, and its position is being constructed as the core research institute for animal health. Also, through the school striving to present degrees and reactivate a Masters course focusing on animal health, educational activities have been energized.

Using the diagnostic technology established by this project, the Veterinary Medicine School is providing guidance for livestock breeders and a disease diagnostic service in the laboratory. By aiding in the diagnosis of infectious diseases, it is helping reduce the risk of contamination.

(4) Relevance

As this project contributes to the long-term increase in productivity of livestock, which is the major industry of Bahia, it responds to the needs of Bahia's economic development and is therefore thought to be relevant.

(5) Sustainability

Bahia Federal University's organization and facilities have been enriched by observing human resources cultivated, and the maintenance and practical use of equipment at the Veterinary Medicine School, sustainability of this project appears to be extremely high. Financially, not only has the university received a budget from the Brazilian federal government, but has also collected resources from other groups involved in the livestock industry. The university is currently building an experimental animal breeding center and expanding its activities in this field.

6. Lessons Learned and Recommendations

(1) Recommendations

Although the project purpose was accomplished, continuous cooperation is desirable in order to support research concerning the application of established and disseminated diagnosis technology.

7. Follow-up Situations

In order to disseminate the results of this project to neighboring countries, a third country training program is scheduled to be launched in FY2000.

Technical guidance in the parasitic livestock disease laboratory

Expert Ueno is awarded a letter of appreciation from the head of the School of Veterinary Medicine

Brazil

Occupational Health

Project Sites

Rio de Janeiro

1. Background of Project

As a result of sudden industrialization, problems with sanitary conditions at the workplace for Brazil's labor workers became worse, which in turn caused a social problem. Under these conditions, and in order to maintain the health of the workers, the Center for Studies of Workers' Health and Human Ecology (CESTEH) was established in 1990 as a place to address work environment measures, request official approval of protective supplies, treat medical poisoning and prevent diseases contracted at work, such as pollution-induced lung disease.

On the bright side, however, soon after CESTEH was established modern equipment was introduced. Unfortunately, expert knowledge and skills were very backward. As a result, Brazil asked Japan to introduce equipment and technology through this project, with the goal of establishing a comprehensive research and guidance facility with regard to labor sanitation.

2. Project Overview

(1) Period of Cooperation

1 September 1995-31 August 1998

(2) Type of Cooperation

Expert team dispatch program

(3) Partner Country's Implementing Organization

Center for Studies of Worker's Health and Human Ecology (CESTEH)

(4) Narrative Summary

1) Overall Goal

Legal system for labor sanitation is improved in Brazil.
The labor sanitation environment is improved in Brazil.

2) Project Purpose

CESTEH as a comprehensive research and guidance facility in relation to labor sanitation is established.

3) Outputs

a) The technology for work environment techniques is transferred.

b) The technology for medical examination methods is transferred.

c) The technology for improving work environment techniques is transferred.

4) Inputs

Japanese Side

Long-term experts	2
Short-term experts	13
Trainees received	6
Equipment	44 million yen
Local cost	9 million yen

Brazilian Side

Counterparts	22
Land and buildings	
Local cost	2.39 million Real (approx. 164 million yen)

3. Members of Evaluation Team

Team Leader:

Mr. Shigemaro AOKI, Development Specialist, JICA

Evaluation Analysis:

Mr. Toshihiko KAKUMOTO, Department of Industrial Safety and Health, Labor Standard Bureau

Follow-up:

Mr. Kenichi YAMADA, Japan Industrial Safety and health Association

Technical cooperation:

Mr. Naotaka YAMAGUCHI, Second Training Division, Training Affairs Department, JICA

4. Period of Evaluation

10 April 1999-25 April 1999

5. Results of Evaluation

(1) Efficiency

The two long-term experts and 13 short-term experts were dispatched in a timely manner. The long-term experts and CESTEH executives, besides having regular monthly meetings, held a meeting every time a short-term expert was dispatched, which allowed the project to progress very efficiently. This

was very useful to counterpart's acquiring of the latest technology. Unfortunately, because the most recent equipment was selected, the equipment was late in arriving to the site.

(2) Effectiveness

While the cooperation period of three years was a relatively short time, the standards of the CESTEH's technology improved, and the initial project purpose has been nearly accomplished. However, because the CESTEH was inexperienced in the field of improving the work environment, the technological progress made in this particular field remains as a section that has not assimilated compared to the other fields.

(3) Impact

The technology transferred was disseminated in many different ways, ranging from research seminars at the local offices to academic meeting presentations. Also, through this project, the CESTEH has strengthened its functions and can now cooperate with the committee of labor relations, an administrative organization.

In regard to the methods for improving the work environment, as stated above, there are still unresolved portions that have been left behind. However, introduction of new methods have had a great influence, and the CESTEH has led to the acceleration of different business' adherence to the problem. Also, as new equipment was introduced, two new divisions that conducted assessments were established at the center: one post on evaluating the location of the device for exhausting gasses, and another post to evaluate fine particles and fiber materials.

(4) Relevance

At the Health Ministry, with which CESTEH is affiliated, notifications offering guidance with regard to labor sanitation were sent out twice last year to health departments in provinces and cities, and the labor sanitation problem is being treated as matter of great importance.

The technology transferred in this project has the ability to solve problems beyond the detection and prevention of work-related diseases and labor sanitation, and the importance and relevance of the project at present is very high.

(5) Sustainability

Most of the project's counterparts are still working at the CESTEH. Furthermore, in financial respects, because it is receiving financial support from the Health Ministry's affiliate (the Oswald Cruz Foundation (FIOCRUZ)) the CESTEH is very sustainable.

In the future, the enrichment of CESTEH's active role as a state facility can be expected. Also, its satisfactory activity as an educational organization for federal government personnel and researchers can be expected.

6. Lessons Learned and Recommendations

(1) Lessons Learned

With regard to the methods of improving the work environment, the transfer of basic technology was completed. However, because there are still parts that have not been fully digested, some type of follow-up needs to be considered for the strengthening of our counterpart's application capability.

7. Follow-up Situations

In order to disseminate the results of this project to neighboring islands, a third country training program group training course is scheduled to be launched in FY2000.

Brazil

The Project of Sustainable Agricultural Development and Natural Resources Conservation in Cerrados

Project Sites

Planaltina

1. Background of Project

In the Cerrados, which comprises approximately 25% of Brazil's national land area (roughly 200 million hectares), 170 million hectares are suitable for agricultural use and hold an important place in Brazil's agricultural development policies. Agricultural development began in the Cerrado region in the 1970s, and full-scale research into expanding productivity was augmented with the establishment of the Cerrados Agricultural Research Center (CPAC) in 1975. In the 1980s, a drastic increase in productivity was facilitated by enlarging the amount of cultivated area, particularly of cereal crops such as rice and soybeans.

On the other hand, because there was very inadequate consideration afforded to the environmental stress caused by rapid agricultural development, issues such as the adverse effects on plant and animal ecosystems and the soil environment, the compacting and hardening of the undersoil due to repetitive cultivation, and new types of blight have appeared.

Under these conditions, the Government of Brazil requested project-type technical cooperation from Japan for the purpose of sustainable agricultural development, placing importance on the management and conservation of natural resources in the Cerrados.

2. Project Overview

(1) Period of Cooperation

1 August 1994-31 July 1999

(2) Type of Cooperation

Project-type technical cooperation

(3) Partner Country's Implementing Organization

Brazilian Agricultural Research Corporation (EMBRAPA), Cerrados Agricultural Research Center (CPAC)

(4) Narrative Summary

1) Overall Goal

Basic food resources and exportable materials are substantially produced in the Cerrados.

2) Project Purpose

Comprehensive agriculture development technologies to be used in the Cerrados ecosystem are established.

3) Outputs

a) To evaluate agro-environmental resources in the Cerrados.
b) To analyze the causes of soil depletion and develop technologies in response.
c) To improve crop protection technology.
d) To develop a sustainable crop production system.

4) Inputs

Japanese Side

Long-term experts	10
Short-term experts	20
Trainees received	23
Equipment	247 million yen
Local cost	44 million yen

Brazilian Side

Counterparts	46
Land and facilities	(research laboratory and fields)
Equipment and local cost	1.2 million dollars (approx. 144 million yen)

3. Members of Evaluation Team

Team Leader/Soil Fertility:
Dr. Norio NAKAYA, Researcher, Coordinator General, National Agriculture Research Center, Ministry of Agriculture, Forestry and Fisheries

Cropping Systems:
Dr. Yoshiaki WATANABE, Chief of Crop System Laboratory, Department of Upland Farming, Tohoku National Agricultural Experiment Station-Ministry of Agriculture, Forestry and Fisheries

Plant Protection:
Dr. Shigeo NAITO, Chief of Plant Pathology Laboratory, Department of Agro-Environment Sciences, Hokkaido National Agricultural Experiment Station, Ministry of Agriculture, Forestry and Fisheries

Effect on Cooperation:
Mr. Hideyuki TAKUMA, Senior Technical Officier, Technical

Cooperation Division, International Affairs Department, Economic Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries

Evaluation:

Mr. Kenji KANEKO, Deputy Director, Agricultural Technical Cooperation Division, Agricultural Development Cooperation Department, JICA

Evaluation Analysis:

Dr. Yasutaka UCHIYAMA, International Development Associates, Ltd.

4. Period of Evaluation

10 April 1999-25 April 1999

5. Results of Evaluation

(1) Efficiency

Inputs from both the Japanese and the Brazilian sides were made according to the initial plan, and this project was smoothly operated. As a result, the research achieved results commensurate with the inputs in the four areas of agricultural environmental resource evaluations, improvement in soil degradation, comprehensive crop protection, and soil improvement through sustainable production technologies.

(2) Effectiveness

Through joint research between the Japanese side and the Brazilian side, technology transfer has progressed smoothly and effectively, and technology for sustainable use of ecosystems in agricultural development in the Cerrados has been established. As the research and management capabilities of CPAC have improved, and the Brazilian side will have continued to achieve results independently following the end of the cooperation, this project has completely achieved its objective.

(3) Impact

This project has increased the opportunities for strengthening of cooperation between CPAC and each province's various agricultural research and dissemination institutions, and the technology developed by this project has begun to spread to farmers in the Cerrados. This project has prompted both the stable increase in Cerrados' agriculturally developed areas and regional economic development, and has also contributed to the succession of the culture and family farming of indigenous people.

Cerrados' agricultural development, which began in 1970, has transformed it into a major agricultural region. In particular, Cerrados' soybean production is equivalent to 5% of global production, and contributes enormously to global food security. The role this project played in creating sustainable food production in the Cerrados region is significant.

The results of this project can be applied not only in the Cerrados, but to the entire South America soybean-producing region, and it is expected to make an important contribution to resolving the issue of world food supply in the 21st century.

An explanation is given in a field used for crop rotation

(4) Relevance

Because the activities of this project meet the objectives of Brazil's agricultural development plan, the basic plan of EMBRAPA, the federal government's chief agricultural research organization, and that of CPAC, this project's implementing organization, the relevance of this project is high.

(5) Sustainability

Because the quality of the researchers at CPAC is high and the counterparts have almost all continued to work at CPAC, the management and organizational system is strong, and thusly CPAC's sustainability on technical and organization fronts is high. However, because many of the researchers are expected to retire en masse in the near future, the cultivation of young researchers will become an urgent issue. Additionally, due to Brazil's severe economic situation and the Government's strained financial circumstances, increasing a research budget will be a difficult problem.

6. Lessons Learned and Recommendations

(1) Recommendations

In order to encourage the introduction of sustainable agriculture systems in all of Cerrados, it will be necessary to further strengthen cooperation between CPAC and the various agricultural research and dissemination institutions of the provinces in the Cerrados, and to work to consolidate and spread the technologies developed by this project. Although an extension of the cooperation period or a follow-up is not necessary, in order to support the application of the technologies developed by this project as on-site responses, assignment of individual experts and others will be desirable.

7. Follow-up Situations

In light of the above recommendations, through the "Project to Transfer Sustainable Agricultural Technological Development from Cerrados, Brazil," which was requested as a new proposal for FY2000, JICA is considering developing the results of past cooperation in the form of practical skills that can be adapted to regions on the front line of development in Cerrados (the north), and planning to demonstrate and exhibit these through alliances formed with promotional organizations.

Chile

Mineral Processing and Metallurgy

Project Sites

Santiago

1. Background of Project

Productivity in Chile, one of the world's leading copper producers, was struggling owing to the lag in the modernization of metallurgy technology. As a result, in response to a request by the Government of Chile, Japan carried out project-type technical cooperation for copper refining at the Mining and Metallurgical Research Center (CIMM) for a little over eight years since November 1976. Moreover, in the four years since June 1987, Japan implemented project-type technical cooperation for the prevention of pollution in the mining industry at CIMM.

In light of such background, with a view to transferring the mineral processing and refinement techniques gained through Japanese cooperation to Latin American countries, the Chilean side requested the implementation a third country training program from Japan.

2. Project Overview

(1) Period of Cooperation

FY1995-FY1999

(2) Type of Cooperation

Third country training program

(3) Partner Country's Implementing Organization

International Cooperation Agency, Mining and Metallurgical Investigation Research Center (CIMM)

(4) Narrative Summary

1) Overall Goal

To improve the technical level of mineral processing and metallurgy in countries participating in the training.

2) Project Purpose

For trainees from Central and South American countries to acquire mineral processing and metallurgy expertise.

3) Outputs

a) To study basic theories of mineral processing and metallurgy.

b) To study practical techniques for mineral processing and metallurgy.

4) Inputs

Japanese Side

Short-term experts	8
Training expenses	58 million yen

Chilean Side

Instructors

Training facilities, equipment and teaching materials

Training expenses

3. Members of Evaluation Team

JICA Chile Office

(Commissioned to SENES Chile S.A.)

4. Period of Evaluation

September 1998-December 1998

5. Results of Evaluation

(1) Efficiency

The content and the management of the training were appropriate because CIMM possessed adequate expertise and facilities necessary to implement the training. Basic theories and practical techniques of mineral processing and metallurgy were taught along with the training curriculum which was adjusted each year based on feedback of trainees' opinions. However, since the program relied upon human resources other than those at the CIMM for 75% of its lecturers, the application of human resources from the training implementing organization was reasonably low. As for the training period, approximately 70% of trainees responded that a training period of two months was appropriate.

(2) Effectiveness

In the four sessions this program was implemented up until FY1998, 51 people from 13 countries in Latin America, including the host nation Chile, have completed this training. Those participating in the training were employees from public and private sector organizations with more than two years work experience in research and development, surveys, education and production of mining and metallurgy.

Almost all those that replied to the questionnaire, 33 trainees, answered that the content of the training was consistent with their aims and expectations regarding the training. It could be said that the project purpose of having them acquire expertise and techniques in mineral processing and metallurgy had been accomplished.

(3) Impact

Thirty-two of the 33 ex-trainees having answered the questionnaire responded that the techniques they had learned through the training were practical and had been putting them to use since their return home. Moreover, 30 (approximately 60% of the total ex-trainees) have been promoted since their return home. The trainees' affiliate organizations are also highly evaluating the training and commenting that the technical competitiveness and productivity of their organizations have improved.

However, at present, because not a great deal of time has elapsed following participation in the training sessions, at some point it would be desirable to implement a follow-up survey on the spread of the training results by ex-trainees and the contribution to the mining industry in participating countries.

(4) Relevance

Almost all of the affiliate organizations of those trainees who responded to the questionnaire are hoping that the training be extended. However, the number of applicants for this training has been experiencing a gradual decline from the first time it was implemented to the fourth. This is because owing to a lack of suitable human resources, applications for participating in this training are no longer being received from those countries in which the mining industry has not been positioned as a national key industry.

(5) Sustainability

Since the CIMM, the organization implementing the training, has been privatized, there are currently strong calls for the profitability of projects. As regards the implementation of the training, since the CIMM relies upon external human resources for many of its lecturers, it will find it difficult to manage the training without assistance seeing as there are limitations to cutting expenditure.

6. Lessons Learned and Recommendations

(1) Lessons Learned

Since privatization of a training implementing organization has significant repercussions, including those affecting the sustainability of the training, it is essential to grasp the possibilities of privatization when selecting an implementing organization for the training in the planning of a third country training program.

As far as this training is concerned, as with almost all of Japan's other third country training programs, the various cost of trainees from countries other than Chile, the host country of the training, was shouldered entirely by the Japanese and Chilean sides. In order to motivate the dispatch of trainees from their affiliated organizations and to promote the organizational application of training results, all trainees should be obliged to foot a fixed sum of money. It is considered that this will not only alleviate the burden of the host country, but will also facilitate promotion of South-South cooperation carried out independently by the country.

Giving a lecture given by Expert Abe

Inspection of Chukikamata Mine in Northern Chile

(2) Recommendations

Since the training implementing organization has been privatized, it would be appropriate that this training, which has been implemented under the cooperation between governments, concludes in FY1999 according to the initial plan.

Chile

Improvement of Operation at Copper Oxide Leaching Plant

Project Sites

Copiapo

1. Background of Project

Chile is one of the largest copper producing countries in the world. Chile has been promoting the development and modernization of their small and medium-scale mines while also working on environmental measures through the construction of a factory to be used for the disposal of the mines' waste water. However, in the waste water after the copper had been mined, many copper and iron ions remains stored in a water waste dam or were simply expelled naturally.

The National Mining Enterprise (ENAMI) was operating copper oxide leaching plants at four different locations, but the administration of these copper oxide leaching plants has low profitability and there had been growing concerns in terms of environmental conservation. Therefore, in order to improve productivity through increasing the metal extraction rate and to reduce the burden on the environment, the Government of Chile requested a expert term dispatch program with the intended goal of transferring the technology that Japan possessed for processing oxides using iron-oxidizing bacteria.

2. Project Overview

(1) Period of Cooperation

1 January 1996-31 December 1998

(2) Type of Cooperation

Expert team dispatch program

(3) Partner Country's Implementing Organization

National Mining Enterprise (ENAMI)

(4) Narrative Summary

1) Overall Goal

The operational conditions of acidic waste water treatment circuit at copper oxide leaching plants will be improved by application of results of the practical experiments concerning the Process[1)].

2) Project Purpose

The application of the Process to the treatment of acidic waste water from copper oxide leaching plants will be realized as the results of the preparation of bio-chemical experimental facilities and the enhancement of the technologies concerned.

3) Outputs

a) Project operation unit will be established at the Project site.

b) Laboratory facilities necessary for research and development in the field of biological leaching technology will be arranged at the Project site.

c) Human resources in the field of biological leaching technology will be cultivated at ENAMI.

d) Basic data and information concerning the Process will be acquired by ENAMI.

4) Inputs

Japanese Side

Long-term experts	2
Short-term experts	7
Trainees received	6
Equipment	38 million yen
Local cost	11 million yen

Chilean Side

Counterparts	4
Support personnel	3
Equipment	6.46 million pesos (approx. 2 million yen)
Local cost	126.650 million pesos (approx. 31 million yen)
Construction of facilities	(biochemical laboratory, small-scale leaching facility)

3. Members of Evaluation Team

Team Leader:

Dr. Kenji TOMITA, Special Technical Advisor, Japan Mining Engineering Center for International Cooperation

4. Period of Evaluation

29 October 1998-13 November 1998

5. Results of Evaluation

(1) Efficiency

Two long-term experts and seven short-term experts were

dispatched as planned. Though the equipment arrived on-site late, after the equipment was set up, it was utilized and maintained well. The construction of the biochemical laboratory was implemented appropriately as planned by the Chilean side, and overall, the level of efficiency was high.

(2) Effectiveness

As a result of this project, the counterparts acquired the knowledge and skills for how to utilize iron-oxidizing bacteria. Furthermore, the processing technology at the copper oxide leaching plants for the oxidated waste water has been transferred adequately.

(3) Impact

The processing method that makes use of the iron-oxidizing bacteria transferred under this project has certainly contributed to improving the waste water disposal process in copper oxide leaching plants located at various sites in Chile. In the future, through the accumulation of operational examinations at the small-scale leaching plant developed by this project, ENAMI is expected to corroborate the effectiveness of the processing method using iron-oxidizing bacteria and apply the transferred technology to all of its copper oxide leaching plants, and make efforts to improve the operational status of and reduce the burden on the environment by these plants.

Furthermore, research and technological development of broad-ranging subjects at the biochemical laboratory provided under this project are also expected to be applied to the extraction of environmental pollutants originating from the mining and ore dressing of copper and the processing of cyanide solutions, as well as other processes.

(4) Relevance

In Chile, following the enforcement of legislation and bylaws concerning environmental conservation in the mining sector, this project is highly relevant owing to the fact that the relevant authorities strongly desire that the fruits of the project be adapted to the copper oxide leaching plants.

(5) Sustainability

As legislation relating to the environment is developed, strict controls for the processing of wastewater at copper oxide plants have become necessary in Chile, and from technological, economical and environmental standpoints also, the advantageous processing method using iron-oxidizing bacteria is highly sustainable with a possibility of further development.

6. Lessons Learned and Recommendations

(1) Recommendations

In the future, if the effectiveness of the processing method using iron-oxidizing bacteria can be demonstrated through the pilot-plant scale operations, the sustainability of this project will no doubt be clarified further.

A scene of a bench unit (provided equipment) being used by counterparts for continuous oxidation.

[1)] The oxidizing process using iron-oxidizing bacteria

Chile

The Mine Safety and Environment Training Center Project

Project Sites

Santiago

1. Background of Project

Environmental conservation was an important issue in Chile brought about by the economic development of recent years. There was a pressing social need to formulate appropriate measures to deal with environmental destruction resulting from development of mines, especially since mining was Chile's principal industry. At the same time, because conservation measures had been insufficient, there had been frequent outbreaks of disasters in small and medium sized mines, and securing the safety of working environments had also become an issue.

In light of such circumstances, the Government of Chile decided to establish the Mine Safety and Environment Training Center as a subsidiary of the Ministry of Mining as a training center for the prevention of mining pollution and safety, and requested project-type technical cooperation from Japan to improve the center's training implementation capacity.

2. Project Overview

(1) Period of Cooperation

1 July 1994-30 June 1999

(2) Type of Cooperation

Project-type technical cooperation

(3) Partner Country's Implementing Organization

National Geological and Mining Service (SERNAGEOMIN), Ministry of Mining

(4) Narrative Summary

1) Overall Goal

Mining disaster conditions and pollution conditions in the metal and nonmetal mining industries are improved in Chile.

2) Project Purpose

The Mine Safety and Environment Training Center becomes able to carry out appropriate training in mining safety and mining pollution prevention for those engaged in mining work.

3) Outputs

a) Training equipment and materials are developed.

b) Counterparts acquire mining related technology (mining safety, mining prevention and chemical analysis).

c) A training curriculum is produced.

4) Inputs

Japanese Side

Long-term experts	10
Short-term experts	12
Trainees received	13
Equipment	144 million yen
Local cost	33 million yen

Chilean Side

Counterparts	14
Facilities (office, training rooms, laboratories and storage)	
Local cost	US$182,000 (approx. 22 million yen)

3. Members of Evaluation Team

Team Leader:

Mr. Toshinori ISOGAI, Deputy Director, Second Technical Cooperation Division, Mining and Industrial Development Cooperation Department, JICA

Technical Cooperation Planning:

Mr. Izumi TAJIRI, Deputy Director, Economic Cooperation Division, Economic Cooperation Department, International Trade Policy Bureau, Ministry of International Trade and Industry

Mining Safety:

Mr. Toshimi SATO, Mine Affairs Inspector, Petroleum Safety Division, Hokkaido Regional Mine Safety and Inspection Department, Ministry of International trade and Industry

Evaluation Planning:

Ms. Yukari SAITO, Second Technical Cooperation Division, Mining and Industrial Development Cooperation Department, JICA

Evaluation Analysis:

Mr. Wataru TAKADA, CRC Overseas Cooperation, Inc.

4. Period of Evaluation

8 March 1999-27 March 1999

5. Results of Evaluation

(1) Efficiency

Although the construction of facilities by the Chilean side was delayed, the scale and the timing of the cooperation were appropriate for the most part, and inputs from the Japanese and Chilean sides were respectively linked to efficient outputs. Continued policy assistance from related organizations in Chile, including provincial government, as well as tie-ups between all related personnel, in particular close communication between experts and their counterparts, have contributed to the efficient implementation of the project.

(2) Effectiveness

Training facilities, equipment and materials have been installed and highly capable lecturers assigned to the Mine Safety and Environment Training Center. Thus a training system has been established there for mining safety and the field of mining pollution prevention. The counterparts have acquired expertise in mining safety, pollution prevention and chemical analysis. They have been continually implementing training courses outside of the center, besides those which they have run at the center, at locations such as mining companies and small-scale mines.

There are also different types of policy assistance, such as subsidy payments for people engaged in work at small, medium and micro-sized mines for when they participate in training. By the time of this evaluation, more than 3,700 people have taken part in the training courses and seminars held by the center. The fact that there were close relations between SERNAGEOMIN and the private sector was also particularly valuable in terms of the center developing effective activities that met private sector needs.

As such, the project's purpose has been achieved for the most part and is expected to be fully realized by the end of the period of cooperation.

(3) Impact

The project has heightened the awareness of many people working in mining with respect to safety and pollution in the mining industry. A look at the statistics on Chile reveals that the frequency index of disasters has fallen from 23.7 in 1994 to 9.5 in 1998, and further falls are expected in the future through the sustained implementation of training by the center.

(4) Relevance

This project was implemented at an appropriate time in order to deal with the mounting need to train people in the fields of mine security and mining pollution prevention in Chile. The purpose and overall goal of the project were also appropriately established to reflect the true state of the mining industry in Chile. The project is highly relevant.

(5) Sustainability

The Mine Safety and Environment Training Center has been designated a department within SERNAGEOMIN and receives institutional and financial assistance from the Government of Chile. Also in terms of technology, technology transfer has enabled the counterparts to independently hold continuous training courses, and when viewed from organizational, financial and technological aspects, the Mine Safety and Environment Training Center is highly sustainable on all accounts.

A scene of experts and counterparts performing a chemical analysis experiment

A scene of experts measuring pH outdoors for the "Basic Environmental Education for Miners" course held at the Center targeting small-scale mines

6. Lessons Learned and Recommendations

(1) Recommendations

It is predicted that the project's purpose will be accomplished according to plan within the period of cooperation. Neither extension of the product period nor follow-up cooperation is necessary. In the future, it is desirable that both JICA and SERNAGEOMIN utilize the Mine Safety and Environment Training Center to disseminate technology and knowledge to third countries.

Colombia

The Development of the Disinfestation Method by Vapor Heat Treatment

Project Sites

Mosquera

1. Background of Project

Colombia is a world-famous producer of coffee, but the stagnation in international coffee prices in the 1980s had a great impact on coffee producers, coffee exporters, and the national economy. Therefore, in order for Colombia to diversify its exported products, the export of tropical fruits such as pitaya, mango, and papaya as cash crops to replace coffee has been promoted.

As a part of its efforts to promote the export of tropical fruits, the Colombian government placed great expectations on the establishment of pest control techniques in tropical fruit, and requested a project with the objective of transferring vapor heat treatment techniques for pitaya.

2. Project Overview

(1) Period of Cooperation

1 May 1996-30 April 1998

(2) Type of Cooperation

Expert team dispatch program

(3) Partner Country's Implementing Organization

Instituto Colombiano Agropecuario (ICA)

(4) Narrative Summary

1) Overall Goal

To establish pest control technology for tropical fruits excluding pitaya and to promote the export of tropical fruits.

2) Project Purpose

To establish vapor heat treatment methods for pitaya.

3) Outputs

a) The technology for the large-scale breeding of the Mediterranean fruit fly is transferred.
b) The vapor heat treatment technique is transferred.
c) Operating techniques for vapor heat treatment devices are transferred.
d) Inspection methods for fruit blight are established.
e) Maintenance techniques for vapor heat treatment devices are transferred.

4) Inputs

Japanese Side

Short-term experts	6
Trainees received	5
Equipment	84 million yen

Colombian side

Counterparts	6

Land and buildings (expansion of research facilities)
Local cost (operating expenses for research facilities)

3. Members of Evaluation Team

JICA Colombia Office
(Commissioned to Grupo Verde Ltda.)

4. Period of Evaluation

15 January 1999-16 February 1999

5. Results of Evaluation

(1) Efficiency

The capability and willingness of the Columbian counterparts were high and inputs from the Japanese side were generally implemented appropriately. The counterparts satisfactorily acquired breeding techniques for the fruit fly, vapor heat treatment techniques, techniques for operating vapor heat treatment devices, and fruit blight inspection methods.

However, at the beginning of cooperation, there were obstacles to the smooth transfer of technology, such as occurrences of water stoppages, contamination, and rotten test fruit samples due to the delay in the expansion of research facilities and the poor equipment. Also, an expert in the field of operation and maintenance of equipment was dispatched, but the contents of training were limited due to the short dispatch period of one week. The fact that the counterparts had to perform while constantly worrying if the equipment worked properly. Some of the equipment came with no manual and was very difficult to operate.

(2) Effectiveness

Through this project, the Colombian side was able to

supply 100,000 fruit fly eggs per day and completely exterminated 45,000 fruit flies through tests of the vapor heat treatment.

Because this extermination technique, in which all of the insects were exterminated at a temperature of 46℃ while the pitayas were able to retain more than 95% of their moisture, was transferred to the ICA, this project has achieved the project purpose.

(3) Impact

With the vapor heat treatment technology transferred through this project, the counterparts conducted vapor heat tests on fruit other than pitaya. One counterpart was also invited to Venezuela's International Plant Quarantine Seminar as a lecturer and announced the results of their research in this project, expecting the spread of cooperation effects to neighboring countries.

However, in order to apply the results of this project to the promotion of the export of tropical fruit, technology transfer from counterparts to producers and exporters will be necessary.

(4) Relevance

Because working towards establishing pest control in tropical fruit and promoting the export of tropical fruit had been an important issue for the Colombian government since the 1980s, this project was highly relevant.

Immediately after the cooperation began, it was discovered that not only the Mediterranean fruit fly, which was the original subject of tests, but also the South American fruit fly was damaging pitaya, and the latter was added as a subject of the tests. Thus, local needs were responded to flexibly.

In addition, since following the end of the cooperation period, there was strong interest in the movement towards cancellation of the embargo on the importation into Japan of pitaya (as evidenced, for example in the frequent inquiries from the producing and exporting industries to the ICA), the relevance of the project remains high.

(5) Sustainability

The counterparts are currently applying the transferred vapor heat treatment technology to test on mangoes. The ICA is appropriately managing the maintenance of the equipment by assigning outside firms. It is not thought that sustainability will be a particular issue.

6. Lessons Learned and Recommendations

(1) Lessons Learned

After the beginning of this project's cooperation, it was discovered that the South American fruit fly was also causing damage to pitaya. Fortunately, because the South American fruit fly's resistance to heat is lower than that of the Mediterranean fruit fly, the problem was successfully dealt with by including it as a subject in the cooperation. Were the reverse true however, this project's plan would have to be fundamentally changed. Precise investigations into pitaya-damaging insects should have been performed before the beginning of the cooperation, such as by requesting investigations from the Colombian side.

Expert Mr. Makiguchi and counterparts observing a pitaya following the vapor heat treatment

Expert Mr. Yoneda explaining the operation of the vapor heat treatment machine

In order for a smooth transfer of technology and appropriate maintenance, the provided equipment must always be accompanied by an English manual. In the case of specialized equipment without an English manual, budgeting for translation fees in order to create one must be considered.

(2) Recommendations

In order for the cancellation of the embargo on the importation of pitaya into Japan establishment of the synthetic system covering from production to distribution, as well as investigations into the possibility of implementation in the commercial base and the transfer of disinfestation technology to industries are necessary, but it is thought appropriate to entrust these matters to the efforts of the Colombian side.

Honduras

The Technology Development Project on Irrigation and Drainage

Project Sites

Comayagua

1. Background of Project

The agenda of the National Development Plan (1990-1994) of Honduras prioritized the diversification of crop varieties and the establishment of a stable food supply. However, Honduras had only supplied a small percentage of its own major crops. It became a pressing issue to establish agricultural production technology for the dry season and to disseminate irrigation agriculture.

For this purpose, the Government of Honduras opened a new research department at Agricultural Development Training Center (CEDA) aimed at formulating irrigation and drainage standards in 1992, and requested that Japan implement project-type technical cooperation to set irrigation and drainage standards that would suit Honduras' situation.

2. Project Overview

(1) Period of Cooperation

1 October 1994-30 September 1999

(2) Type of Cooperation

Project-type technical cooperation

(3) Partner Country's Implementing Organization

Bureau of Irrigation and Drainage (DGRD) of the Ministry of Agriculture and Livestock, Agricultural Development Training Center

(4) Narrative Summary

1) Overall Goal

Irrigation projects will be operated and maintained efficiently and effectively according to the formulated technical standards.

2) Project Purpose

The technical standards based on research of local parameters in Honduras, of small scale irrigation and drainage systems will be formulated.

3) Outputs

a) Capability and knowledge of CEDA technical staff for processing hydrological and meteorological data will be enhanced.

b) Capability and knowledge of CEDA technical staff on the proper design, construction and management of irrigation and drainage systems will be enhanced.

c) CEDA technical staff will be able to formulate the technical standards based on local parameters.

d) CEDA technical staff will be able to formulate the technical manuals for improvement of irrigated cultivation technology.

e) Several preliminary technical standards for irrigation and drainage systems in Comayagua Valley will be formulated.

f) Irrigation engineers will get to understand the technical standards based on local parameters.

4) Inputs

Japanese Side

Long-term experts	9
Short-term experts	18
Trainees received	19
Equipment	119 million yen
Local cost	94 million yen

Honduran Side

Counterparts	17
Buildings, facilities, farms, etc.	
Local cost	7.73 million lempiras (approx. 66 million yen)

3. Members of Evaluation Team

Team Leader:

Mr. Narihide NAGAYO, Development Specialist, JICA

Irrigation and Drainage/Hydraulic:

Mr. Takashi KATO, Design Division, Construction Department, Agricultural Structure Improvement Bureau, Ministry of Agriculture, Forestry and Fisheries

Cultivation:

Mr. Tomio KOBAYASHI, Promotion Section, Vegetable Division, Agricultural Production and Marketing Department, Kanto Regional Agricultural Administration Office, Ministry of Agriculture, Forestry and Fisheries

Evaluation Planning:

Mr. Kazutoshi YAMAGUCHI, Agricultural Technical Cooperation Division, Agricultural Development Cooperation Department, JICA

Evaluation Analysis:
Mr. Masanobu SAKURAI, Naigai Engineering Co., Ltd

4. Period of Evaluation

10 April 1999-23 April 1999

5. Results of Evaluation

(1) Efficiency

During the first two years, when the Water Resources Bureau of the Ministry of Natural Resources was supervising CEDA, very little budget was secured on the Honduran side. However, after the DGRD took over this job through structural reform in May 1997, administrative matters, including budgetary measures, improved. In 1998, three experiment buildings (for concrete, soil and hydraulic tests) were transferred to the DGRD's control and it became easier to implement experiments in this project.

Although, technology was transferred efficiently for the most part, many of the counterparts were contract workers whose period of service was short. Consequently, it was inevitable that the technology was transferred in fragments. The simultaneous replacement of four long-term experts in 1996 also had the effect of somewhat slowing the speed of technology transfer.

(2) Effectiveness

Counterparts have gained knowledge and technical skills pertaining to irrigation and drainage planning, hydraulic facilities and irrigation agriculture. Drafts of technical standards and manuals for all three fields are scheduled for completion by the end of the project. During the process of technology transfer, the project constructed small-scale irrigation facilities in the demonstration areas while using the drafts of the technical standards. This was very effective in helping the counterparts gain technology at each level of investigation, survey, design and construction of the facilities.

(3) Impact

The introduction of a stable supply of agricultural water and vegetable cultivation in the exhibition farms had a stimulating effect on local farmers. Although there was much changing of counterparts, even most of the counterparts who left their positions are contributing to the dissemination of irrigation systems by utilizing the irrigation agriculture technologies they acquired through the project in work with related organizations and as private consultants.

In the future, if technological standards adapted to localities are created and utilized, then significant economic impact is expected in forms such as reductions in irrigation drainage construction costs and maintenance costs.

(4) Relevance

Creating technological standards adapted to current conditions is extremely important for the agricultural policies of Honduras, which is advancing small-scale irrigation facilities development projects. The types of standards being prepared under this project are considered the first draft of a set of national standards, and therefore this project is highly relevant.

(5) Sustainability

The official status of this project is that of a sub-bureau of the DGRD and there will be no problem maintaining the organizational structure beyond the project's completion. However, it will be necessary to assign an appropriate number of full-time employees and secure a continuous budget in order to support sustainable development of this project.

6. Lessons Learned and Recommendations

(1) Lessons Learned

Incorporating as many demonstration activities as possible in a project which aims to prepare standards, is effective transfer of technology.

(2) Recommendations

There is no need to extend the cooperation period. However, to encourage the government of Honduras to approve the proposed draft of technological support from individual experts and the JICA office will be necessary.

Honduras

Project to Improve the Metropolitan Hospital Network

Project Sites

Tegucigalpa

1. Background of Project

In Honduras, after the transition to completely civilian rule in 1982, the country worked hard to hammer out economic reconstruction policies. However, the economy was in a continually serious state of recession. Therefore, the improvement of social services for low-income people, who were affected the most by these conditions, became an urgent task.

In the Tegucigalpa Metropolitan Area, because there is no regional hospital, the San Felipe Hospital, a tertiary medical institution, and the Hospital Escuela were forced to shoulder the burden of secondary medical services. The hospital with emergency and obstetrics departments affliliated with the Ministry of Health was the only Hospital Escuela in the area. Therefore, mostly low-income patients were concentrated at the Hospital Escuela and the hospital could not completely function in its primary capacity as a tertiary medical institution.

Under these circumstances, Japan implemented a development study from 1995 to 1996 and drew up a master plan for comprehensively improving health services in Honduras. In the Master Plan, the expansion of the health services network and the revitalization of facilities and equipment were considered as priority policies.

The Government of Honduras received the recommendations in the Master Plan and requested grant aid from Japan for the purpose of enhancing health services of emergency and obstetrics departments in the Tegucigalpa metropolitan area.

2. Project Overview

(1) Period of Cooperation

FY1996

(2) Type of Cooperation

Grant aid

(3) Partner Country's Implementing Organization

Ministry of Health

(4) Narrative Summary

1) Overall Goal

To relieve confusion at Hospital Escuela and enable it to fulfill its role as a tertiary medical institution.

2) Project Purpose

Health services of the emergency and obstetrics departments in the Tegucigalpa metropolitan area are enhanced.

3) Outputs

a) An obstetrics ward is added to San Felipe Hospital.

b) Three new emergency clinics are established.

4) Inputs

Japanese Side

Gtant — total 998 million yen (E/N amount)

Honduran Side

Local cost

3. Members of Evaluation Team

Operating Conditions Evaluation:

Mr. Yukio OKAMOTO, Follow-up Division, Grant Aid Project Management Department, JICA

Procurement Conditions Evaluation:

Ms. Reiko HAYASHI, Japan International Cooperation System

Interpreter:

Ms. Sachiyo SAKURAI, Japan International Cooperation Center

4. Period of Evaluation

16 March 1999-25 March 1999

5. Results of Evaluation

(1) Efficiency

The construction of an obstetrics ward at San Felipe Hospital and three emergency clinics, and the provision of medical equipment were completed as planned by the Japanese side. Construction borne by the Honduran side was partially delayed in the case of the installation of telephone lines for the San Felipe Hospital obstetrics ward.

Although design was for the most part appropriate in terms of content and scale of facilities and equipment, there were also a number of items needing future improvement, including San Felipe Hospital's poor rainwater drainage facilities and the situation for the procurement of medical equipment which involved an inability to procure expendable supplies domestically.

(2) Effectiveness

Through the construction of an obstetrics ward at San Felipe Hospital and three emergency clinics and also the provision of medical equipment under this project, the health services in the field of emergency and obstetrics in the Tegucigalpa metropolitan area have expanded considerably and this project's purpose has been achieved. Patients at San Felipe Hospital's obstetrics department number about 950 per month, which greatly exceeds the figure predicted at the planning stage, 619 per month.

Regarding number of births, complicated births are sometimes transferred to Hospital Escuela (San Felipe Hospital's obstetrics ward is considered a secondary medical treatment institution belonging to the category of Hospital Escuela).

There were only 320 births per month at the obstetrics ward out of a predicted 721 births per month. However, now that San Felipe Hospital's level of facilities and equipment is superior, it is desirable that in the future San Felipe Hospital will be able to handle complicated births as well.

The three emergency clinics operate on a 24-hour per day system. Each clinic has a different number of patients. The total number of patients at all three clinics in January 1999 was 2,318, which exceeded the predicted number of 2,297 per month.

(3) Impact

A slight decrease can be seen in the number of patients at emergency and obstetrics departments at Hospital Escuela, which is a tertiary medical institution. However, conditions of crowding remain and the impact of this project is not clear at the present time.

(4) Relevance

This project is part of the Medium- and long-term health plan of the Government of Honduras and is consistent with its policy. In addition, this project is a support for medical institutions, which offer great benefit to local people, and since the actual number of patients is rising as predicted, this project is deemed to be highly relevant.

(5) Sustainability

At present, the Government of Honduras is setting aside part of its budget for restoration measures aimed at damage caused by Hurricane Mitch in October 1998. Therefore, budgetary measures for medical institutions constructed under this project are not always sufficient. However, from now on these conditions are expected to improve.

Also, because spare parts for some of the medical equipment cannot be procured in Honduras, it will be necessary for the hospital to exert further efforts to secure supply routes.

The obstetrics ward at San Felipe Hospital. Because high-quality services are demanded, the number of nurses on the ward is increasing

6. Lessons Learned and Recommendations

(1) Lessons Learned

In order to ensure that the provided equipment is continuously used by the partner country side, it is necessary to consider the availability of consumables and spare parts when choosing equipment to be supplied.

(2) Recommendations

At some emergency clinics, hinterland landslides have occurred due to Hurricane Mitch in October 1998, and prompt countermeasures are necessary.

7. Follow-up Situations

As follow-up cooperation towards the damage caused by Hurricane Mitch, emergency construction work was performed in FY1999.

Mexico

Hydrotreating of Heavy Oil Fraction for the Ecological Plan

Project Sites

Mexico City

1. Background of Project

In Mexico, large-scale air pollution in metropolitan areas was becoming a major problem, and countermeasures were needed urgently. To improve the environment, it was absolutely necessary that a source of low sulfur fuel oil be secured. However, because more than 50% of the crude oil produced by Mexico was super heavy oil that was high in sulfur, desulfurization through hydrogen processing was necessary.

At the same time, due to the high price of catalysts used in hydro-desulfurization, this project was requested by the Instituto Mexicano del Petroleo (IMP) to improve research capabilities for the development, regeneration and efficiency evaluation of high efficiency catalysts and to contribute to the development of the oil refining business and environment improvement.

2. Project Overview

(1) Period of Cooperation

9 October 1995-8 October 1998

(2) Type of Cooperation

Research Cooperation

(3) Partner Country's Implementing Organization

Instituto Mexicano del Petroleo (IMP)

(4) Narrative Summary

1) Overall Goal

To develop high efficiency catalysts for hydro-desulfurization.

To develop the oil refining business in Mexico.

2) Project Purpose

To improve the IMP's research capability for development, regeneration and efficiency evaluation of high efficiency catalysts.

3) Outputs

a) Provision of research equipment.

b) Researchers become able to carry out R&D into catalysts.

c) Researchers become able to carry out efficiency evaluation of developed catalysts.

d) Researchers become able to carry out research on catalyst regeneration.

4) Inputs

Japanese Side

Long-term experts	3
Short-term experts	2
Trainees received	7
Equipment	51 million yen

Mexican Side

Counterparts	10
Research facilities and equipment	

3. Members of Evaluation Team

JICA Mexico Office
(Commissioned to Y.I.T. Associados S.C.)

4. Period of Evaluation

10 December 1998-10 March 1999

5. Results of Evaluation

(1) Efficiency

The dispatch of experts, reception of counterpart trainees and supply of equipment on the Japanese side were carried out appropriately according to plan. On the Mexican side, provision of facilities and equipment and bearing of local cost were also carried out according to plan. However, due to the effects of structural reform at IMP, the assignment of Mexican counterparts was delayed. Moreover, two of the counterparts who were trained in Japan were transferred to departments unrelated to this project after returning home. In the end, IMP's implementation mechanism was not established until the latter half of the project. Until then, activities were of necessity limited to basic research on catalysts.

(2) Effectiveness

Through this project a system has been established whereby it is possible to conduct research and development on a high-efficiency catalyst, from basic research to efficiency evaluation. In particular, the research capabilities of IMP have largely improved especially with regard to basic research into catalysts,

development of high-efficiency catalysts and the regeneration of these catalysts. However, technology transfer regarding catalyst efficiency evaluation, which started late because of reassignment of counterparts described above, has not yet been completed due to time limitations.

(3) Impact

At present, full-fledged efforts toward research on heavy petroleum processing have started at IMP with the enthusiastic cooperation of oil company Petroleos Mexicanos (PEMEX), and the development of research utilizing the technology transferred in this project can be expected.

Moreover, through this project a system was established wherein not only the department in charge but also the organization as a whole tackles research issues. The confidence and experience acquired through this system should form a foundation supporting future research activities at IMP.

(4) Relevance

Because the fuel used in thermal electric power plants in the metropolitan area was switched from heavy oil to natural gas, the status of hydro-desulfurized heavy oil in the area dropped. However, since the manufacture of heavy oil itself is increasing, the importance of hydro-desulfurized heavy oil on the national level has not changed. Therefore, this project remains relevant.

(5) Sustainability

IMP has no sustainability problems in systemic, financial and technological areas. In essence, IMP is in a situation similar to that of a research institute affiliated with PEMEX. Therefore, IMP's organizational stability is assured as long as PEMEX's management is sound. However, there is difficulty regarding research themes of no interest to PEMEX and IMP's establishment of its own independent course of research.

6. Lessons Learned and Recommendations

(1) Recommendations

Due to the problem of the reassignment of counterparts, it took over a year before full-fledged activities under this project got started. As a result, sufficient activities regarding catalyst efficiency evaluation were not carried out. To apply the results of this project on a practical level and industrialization, and in order to contribute to the oil refining business and the improvement of the environment, a follow-up will be necessary through such aid schemes as dispatch of individual experts.

An expert carries out technology transfer using supplied equipment

An expert talks about analysis results with a counterpart

Mexico

Effective Use of Waste Water for Agricultural Purposes

Project Sites

Jiutepec

1. Background of Project

In Mexico, the shortage of water resources and deterioration of water quality led by the improvement in living standards had become a problem. Especially in rural areas, domestic waste had contaminated the water resources for agricultural purposes, causing very serious problems. In the agricultural development, which was an integral part of Mexico's national development plan, the efficient use of the limited amounts of water resources was an urgent issue.

Although the Mexican Institute of Water Technology (IMTA) had been developing the technology for waste water treatment in order to improve water quality for agricultural purposes, a satisfactory level of the appropriate technology for water quality improvement in the rural areas was not achieved. Taking into consideration the urgency and importance of the problem, this joint study was requested of Japan.

2. Project Overview

(1) Period of Cooperation

1 December 1995 - 30 November 1998

(2) Type of Cooperation

Research Cooperation

(3) Partner Country's Implementing Organization

Mexican Institute of Water Technology (IMTA)

(4) Narrative Summary

1) Overall Goal

The quality of water in rivers and lakes improves and the contamination of agricultural products caused by agricultural water decreases accordingly.

2) Project Purpose

IMTA's research capabilities in waste water treatment technology targeting rural areas improves.

3) Outputs

a) To measure the level of contamination of waste water.
b) To establish a system for the operation and control of waste water treatment facilities.
c) To establish the disinfection technology for treated water.
d) To study the behavior of disease-causing bacteria.
e) To examine the development of crops grown using treated water.

4) Inputs

Japanese Side

Long-term experts	2
Short-term experts	8
Trainees received	5
Equipment	100 million yen
Local cost	18 million yen

Mexican Side

Counterparts	10
Land and facilities (aeration treatment facilities, research laboratories, greenhouses for experiments)	
Equipment	100,000 pesos (approx. 2 million yen)

3. Members of Evaluation Team

Team Leader:
Dr. Kenji HATA, Head, Laboratory of Rural Sewage System, National Research Institute of Agricultural Engineering, Ministry of Agriculture, Forestry and Fisheries, Agricultural Engineering Research Center

Technical Advisor:
Mr. Noriaki ITOI, The Japanese Association of Rural Sewage

Evaluation Analysis:
Mr. Shinya OGATA, Nishihara Environmental Sanitation Research Corporation Ltd.

Technical Cooperation:
Ms. Rieko SAKAI, Second Training Division, Training Affairs Department, JICA

4. Period of Evaluation

1 March 1999-10 March 1999

5. Results of Evaluation

(1) Efficiency

Because of limitations on Mexico's budget, the completion of a waste water treatment facility was delayed by over a year and the number of allocated counterparts was not sufficient.

Though these had somewhat of an effect on the implementation of the project, since Japan dispatched two long-term experts, eight short-term experts and supplied appropriate equipment, the latest technology related to waste water treatment, such as measuring the level of contamination of the waste water, establishing a system for the operation and control of the waste water treatment facilities, establishing the disinfection technology for treated water, studying the behavior of disease-causing bacteria and examining the development of crops grown using treated water, was transferred to IMTA. These research results were announced in seminars to domestic and foreign researchers.

(2) Effectiveness

Through this research cooperation, the waste water treatment technology at IMTA was improved. However, due to restrictions on budget and time, there are still some unresolved issues. For example, comparative experiments related to disinfection methods for treated water and research of the growth of tomatoes and strawberries in the greenhouses using treated water will be continued by IMTA from here on.

(3) Impact

The latest knowledge and technology concerning waste water treatment was transferred to the researchers and consequently IMTA's capabilities in research activities improved. In the future, it is necessary to build a waste water treatment plant in the rural areas to substantiate the research results achieved during this research cooperation. However, since it is financially difficult to spread the waste water treatment technology needed for the construction of such a facility in rural areas of Mexico, it is necessary for IMTA to cooperate with the government to develop, on the basis of the achievements of this research cooperation, the technology that can be applied practically in such rural areas.

(4) Relevance

In Mexico, because the water for irrigation is becoming more contaminated, the production of agricultural produce is facing a very dangerous situation. For this reason, the Government of Mexico has adopted a policy that emphasizes the environmental aspects in order to encourage sustainable agricultural developments. The Government of Mexico is also showing interest in the research results from this research cooperation. In addition, because there is a growing social need in Mexico to respond to the constant shortage of water and to prevent eutrophication of water sources, this research cooperation has a high level of relevance.

For financial and technical reasons, "lagoon" method[1)] waste water treatment is the general method in Mexico. However, since it was difficult to secure Japanese experts in lagoon method waste water treatment, this research cooperation adopted "active mud" method[2)] which required the plant construction. As a result, in order to develop the technology widely applicable in rural areas of Mexico, it is necessary to carry out more continuous research at IMTA after the cooperation period.

(5) Sustainability

The transferred technology and the materials and machinery provided during this joint study are being used effectively, and

An expert and counterparts examining the results of water quality analysis

the maintenance of the experimental facilities is made adequately. The tight financial situation has made it difficult to secure enough funds for research activities, but there is a strong social demand for the dissemination of the research cooperation results. It is anticipated that IMTA and the Government of Mexico will cooperate to implement high-quality research and training through the effective use of the experimental facilities.

6. Lessons Learned and Recommendations

(1) Lessons Learned

It is important at the planning stage of the cooperation for both sides to talk extensively about technology that is in accordance with the present circumstances and level of the partner country and which will give research results applicable to the actual community after the cooperation ends.

(2) Recommendations

IMTA has the potential to transfer the knowledge and technology acquired through this joint study to neighboring countries by conducting training. In the future, while keeping an eye on the sustainability of IMTA, follow-up cooperation should be considered, if the circumstances find it necessary.

1) A method of draining wastewater into a pond like area and filtering it into the natural environment.

2) A method of proceeding with wastewater processing via oxygenating by setting up an aeration tank and regular stirring using a mixer.

Mexico

The National Actualization Center for the Teachers of the General Directorate for the Industrial Technological Education Project

Project Sites

Mexico City

1. Background of Project

From the mid-1980s in Mexico, traditionally protectionist industry policies underwent a sea change toward trade liberalization and acceptance of foreign investment, and the development as an industrial power that is competitive in the international market became a pressing need.

Under these circumstances, and against the backdrop of the North American Free Trade Agreement (NAFTA), the Ministry of Public Education embarked upon the improvement and modernization of technical education at the high school level to respond to the technical revolution in industrial circles. As part of this effort, the Government of Mexico requested project-type technical cooperation from Japan regarding teacher training necessary for higher technical education at the National Actualization Center for Teachers (CNAD), in order to cultivate mid-level technicians in the cutting-edge technology field of mechatronics.

2. Project Overview

(1) Period of Cooperation

1 September 1994-31 August 1999

(2) Type of Cooperation

Project-type technical cooperation

(3) Partner Country's Implementing Organization

Ministry of Public Education, National Actualization Center for Teachers (CNAD)

(4) Narrative Summary

1) Overall Goal

To enable schools under the jurisdiction of the General Directorate for the Industrial Technology Education (DGETI) of the Ministry of Public Education to supply technicians in the mechatronics field.

2) Project Purpose

To enable CNAD to re-educate teachers of DGETI schools which provide human resources for mechatronizaton in the industry.

3) Outputs

a) Appropriate machinery and equipment for the training courses are to be secured.

b) Sufficient number of Mexican instructors are to be trained.

c) Training courses consisting of machine and control fields for the teachers of DGETI schools are to be implemented.

4) Inputs

Japanese Side

Long-term experts	14
Short-term experts	20
Trainees received	24
Equipment	565 million yen
Local cost	35 million yen

Mexican Side

Counterparts	22
Facilities	
Equipment	11.32 million pesos (approx. 142 million yen)
Local cost	4.52 million pesos (approx. 57 million yen)

3. Members of Evaluation Team

Team Leader:
Mr. Moriaki NAGAE, Director, Overseas Cooperation Division, Human Resources Development Bureau, Ministry of Labour

Machinery:
Mr. Hideki FUJITA, Assistant Professor, Oyama Polytechnic College, Employment Promotion Corporation

Control:
Mr. Takashi NAKAJIMA, Senior Staff, Overseas Vocational Training Association

Evaluation Planning:
Mr. Toshiro UTSUMI, First Technical Cooperation Division, Social Development Cooperation Department, JICA

Evaluation Analysis:
Mr. Atau KISHINAMI, PADECO Co., Ltd.

4. Period of Evaluation

14 March 1999-26 March 1999

5. Results of Evaluation

(1) Efficiency

The 14 long-term experts and 20 short-term experts were dispatched according to plan and the quality, amount, and timing of the equipment provided were also appropriate, with everything being effectively utilized. The training of Mexican counterparts in Japan was also effective for promoting the project, as it was specialized according to each trainee's area of expertise. Assignment of counterparts, budgeting, construction of facilities and purchase of equipment on the Mexican side were also carried out according to the original plan, and technology transfer was efficiently implemented.

(2) Effectiveness

Mexican counterparts are now able to correct and revise curricula, and compile their own teaching materials and texts needed for implementing training of teachers in the mechatronics field. Moreover, these materials are being actively used in training as independent educational materials. Eleven-month training courses in machinery and control engineering accommodating each of 12 trainees were introduced in November 1996. As of February 1999, five courses had been administered and completed by a total of 118 people. The sixth and seventh terms are currently underway, and the purpose of the project is being met.

(3) Impact

Teachers who complete the training course return to their schols and are active in all disciplines, including the various fields of mechatronics, such as electricity/electronics and machinery. They are involved in the cultivation of mid-level technicians who possess related skills.

Teachers who complete the training course having acquired a prescribed number of credits and pass a graduation presentation are granted a public certification equivalent to that of a master's degree. Starting with the course's fourth term, virtually all trainees have acquired this certification, and it can be said that CNAD's role is growing steadily larger. In the future, this project is expected to contribute to the qualitative improvement of higher technical education for mechatronics in Mexico.

(4) Relevance

The Government of Mexico is making a great transition from traditionally protectionist industry policies toward trade liberalization and acceptance of foreign investment, and the development of industrial power that is competitive in the international market is a pressing need. This project is aimed at the cultivation of mid-level technicians in the cutting-edge technology fields through the improvement of the quality of higher technical education adapted to the technical revolution in industrial circles. This project is consistent with the government's industrial policies, and is therefore highly relevant.

(5) Sustainability

The Government of Mexico fully recognizes the importance of CNAD. In addition to placing human resources who possess management and administration capabilities, it continues to raise its budget each year despite severe financial conditions.

An expert teaches robot programming

Experts carry out technology transfer of numeric control

Furthermore, the counterparts themselves can teach all of the training courses. Therefore, the institutional, financial and technical aspects of this project are all highly sustainable.

6. Lessons Learned and Recommendations

(1) Recommendations

The Mexican side is requesting the dispatch of individual experts, reception of trainees in Japan and the implementation of a third country training program after the conclusion of the cooperation period. To firm up results of Japan's cooperation to date, and in order to further disseminate these results to neighboring countries in the region, it is desired that cooperation be realized to the fullest extent possible.

Panama

The Panama Nautical School Up-Grading Project

Project Sites

Panama City

1. Background of Project

Panama has many ships sailing under flags of convenience, and sea transport is the lifeblood of the country's economy. In addition, the administration of the Panama Canal reverted to Panama in 2000, so an important task for Panama is to cultivate and secure human resources who possess advanced sea transport skills and expertise.

Accordingly, the Panamanian government requested project-type technical cooperation from Japan in order to implement training that conforms with the 1978 International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) Convention at the Panama Nautical School (ENP), the country's only national training institute for seafarers.

2. Project Overview

(1) Period of Cooperation

1 October 1993-30 September 1998

(2) Type of Cooperation

Project-type technical cooperation

(3) Partner Country's Implementing Organization

Ministry of Education, Panama Maritime Authority

(4) Narrative Summary

1) Overall Goal

The number of Panamanian seafarers with higher qualification increases

2) Project Purpose

The ENP should become capable of conducting training courses which are in compliance with STCW Convention of 1978

3) Outputs

a) The ENP becomes capable of conducting trainings which are in compliance with STCW Convention of 1978

b) The ENP becomes capable of improving the quality of theoretical training so that they could be in full compliance with STCW convention of 1978

4) Inputs

Japanese Side

Long-term experts	9
Short-term experts	22
Trainees received	18
Equipment	669 million yen
Local cost	35 million yen

Panamanian Side

Counterparts	6
Facilities and installation of equipment	
Local cost	175,260 US dollars (approx. 21 million yen)

3. Members of Evaluation Team

Team Leader:
Mr. Hideo EGUCHI, Deputy Director, Second Technical Cooperation Division, Social Development Cooperation Department

Navigation:
Mr. Kenichi YONEHARA, Director, Research Division, Research and Investigation Bureau, Institute for Sea Training, Ministry of Transport

Maritime Engineering:
Mr. Katsumi OKUDA, Special Assistant to the Director, Education Division, Seafarer Development, Maritime Technology and Safety Bureau, Ministry of Transport

Evaluation Planning:
Mr. Hisashi MATSUI, Second Technical Cooperation Division, Social Development Cooperation Department, JICA

Evaluation Analysis:
Mr. Atau KISHINAMI, Padeco Co., Ltd.

4. Period of Evaluation

16 May 1998-30 May 1998

5. Results of Evaluation

(1) Efficiency

The dispatch of experts and the provision of equipment went largely according to plan, and were appropriately implemented both qualitatively and quantitatively. The

counterpart training in Japan was also meaningful in content, time, and period for the development of the project.

However, during the period of cooperation, ENP changed locations, and therefore the equipment that was provided could not be installed until the relocation was completed. Because of this, installation of some of the equipment was delayed, and accordingly some experts could not be dispatched on schedule There is even some equipment that has not yet been used.

(2) Effectiveness

This project provided equipment that was necessary in order to implement seafarer education that conformed with STCW standards. Educational activities, such as the revision of the syllabus to include the new equipment, the production of manuals, and the transfer of operation and maintenance technology, have largely been completed.

However, due to the delay in the installation of equipment caused by ENP's relocation, the counterparts are not yet at the stage where they can fully utilize some of the equipment in practical training. Also since the STCW Convention was revised in 1995, some items need to be reinforced.

(3) Impact

After four years of lectures, ENP students spend one year on a practice voyage, and then, after graduating, acquire second-mate licenses and second-class organization licenses.

Panama, which has not only the Canal but also many ships sailing under flags of convenience, needs well-trained human resources who possess a high level of skills to act as Panama Canal Commission (PCC) staff and ship inspection engineers. It is hoped that ENP, as the country's only national training institute for seafarers, will produce human resources to respond to this demand.

(4) Relevance

As sea transport is the lifeblood of Panama's economy, this project that contributes to an improvement in the quality of seafarer education meets the needs of Panamanian governmental policy. Also, as PCC, shipping companies, and the marine transport industry demand the increasing number of well-trained human resources through an increase in the content of seafarer education, the existence of ENP is very meaningful and thus this project's relevance is high.

In addition, this project is implementing appropriate technology transfer to respond to the revised 1995 STCW convention.

(5) Sustainability

As ENP was shifted from the supervision under the Ministry of Education to that of the Panama Maritime Authority in February 1998, its status as well as its organizational structure is expected to be improved. Also, due to the enactment of a law alotting 3% of education taxes to seafarer education, and the expectation of revenue accrued by ENP holding independent seminars, ENP's financial situation is expected to improve.

Counterparts, through receiving technology transfer, became able to implement practical training that met international standards utilizing the prepared manuals and provided equipment. Sustainability of this project will be expected.

Counterparts receive instruction from expert Negi on navigation techniques

6. Lessons Learned and Recommendations

(1) Recommendations

Because some items of technology transfer are not completed due to the late installation of machines, it will be necessary to implement follow-up cooperation.

7. Follow-up Situations

According to the recommendation above, follow-up cooperation for one year and five months was implemented until February 2000.

Panama

The Forest Conservation Technical Development Project

Project Sites

Rio Hato

1. Background of Project

In recent years in Panama, the destruction of forests had continued due to excessive logging and disorderly cut-and-burn cultivation, and concerns had been raised over deteriorating land quality, the exhaustion of forest resources, and a negative influence on the environment and the Panama Canal. Under these conditions, the Panamanian government requested project-type technical cooperation from Japan with the objective of improving the implementation capabilities of training in forest conservation and restration at the Training Center for the Management of Renewable Natural Resources (CEMARE).

2. Project Overview

(1) Period of Cooperation

1 April 1994-31 March 1999

(2) Type of Cooperation

Project-type technical cooperation

(3) Partner Country's Implementing Organization

National Authority of Environment (ANAM)

(4) Narrative Summary

1) Overall Goal

Extension activities are promoted by ANAM staff and others who were trained at CEMARE.

2) Project Purpose

ANAM establishes at CEMARE the basis of a training system in order to efficiently bring up human resources such as ANAM staff members.

3) Outputs

a) CEMARE is equipped with sufficient facilities, equipment, machinery and materials for continuous implementation of training.

b) Appropriate training programs and teaching materials are developed in four fields such as Nursery, Silviculture, Agroforestry[1)] and Natural Forest Management.

c) CEMARE obtains own ability to manage implementation of training course. To establish an appropriate training program and create high-quality educational materials.

d) Model plots and facilities are appropriately prepared in four fields.

e) Effective technologies are developed in four fields.

4) Inputs

Japanese Side

Long-term experts	10
Short-term experts	13
Trainees received	14
Equipment	156 million yen
Local cost	80 million yen

Panamanian Side

Counterparts	55
Facilities, Land	
Local cost	1.82 million US dollars (approx. 218 million yen)

3. Members of Evaluation Team

Team Leader:

Mr. Umeo KOGANEMARU, Development Specialist, JICA

Cooperation Policy:

Mr. Masayuki TACHIBANA, Associate Director, Technical Cooperation Division, Economic Cooperation Bureau, Ministry of Foreign Affairs

Training:

Mr. Tomomi HIROTA, Planning Division, Private Forest Department, Forestry Agency, Ministry of Agriculture, Forestry and Fisheries

Technology Development:

Mr. Akira SATO, Director, Research Cooperation Division, Forestry and Forest Products Research Institute,Ministry of Agriculture, Forestry and Fisheries

Planning Evaluation:

Mr. Katsuya TAKI, Forestry Cooperation Division, Forestry and Fishery Development Cooperation Department, JICA

Evaluation Analysis:

Mr. Wataru TAKADA, CRC Overseas Cooperation Inc.

4. Period of Evaluation

14 November 1998-29 November 1998

5. Results of Evaluation

(1) Efficiency

Immediately after the start of cooperation, it became clear that the land originally planned for could not be secured. Because the project site then had to be changed, the actual start of cooperation was delayed two years, and the placement of counterparts was also delayed. Due to problems of public security, Japanese experts were not able to conduct a survey with Panamanian counterparts in the Darien region.

However, the project was helped by the close communication between Japanese experts and capable Panamanian counterparts, their energetic working together, the collaboration with other institutions, the political and financial assistance given by the Panamanian government, and the rich social infrastructure. Thus, after the project gained momentum it was enacted very efficiently in a short period of time.

(2) Effectiveness

During this project, many survey research themes in each field of technical development were established, and many model plots were prepared for the exhibit. In terms of the training for ANAM staff, many training courses became available through the establishment of research facilities and machinery, as well as the preparations of training program and teaching materials, and the invitation of instructors from the external Smithsonian Research Institute.

In this manner, a series of training implementation systems, including survey research, preparation of teaching materials, and the implementation of training, was enacted at CEMARE. At present, 75 training courses have been enacted, and 1,157 individuals have received training through those courses. The project purpose has been accomplished to a very high degree.

(3) Impact

The establishment of the first natural resources management training center in Panama has had many effects on the environmental field. Each type of data collected through the activities of this project has not only been used in training at CEMARE but also in university lectures and domestic and international events, seminars, conferences, and forums. Also, CEMARE not only conducts training for ANAM's staff, but also serves as a training location for farmers and private reforestation companies. The training participants retransferred the effects of the training to their colleagues and to agriculture producers.

It is expected that in the future, CEMARE, through the implementation of surveys and examinations, the development of appropriate technology, and the holding of training courses, will contribute to sustainable forestry management in Panama.

(4) Relevance

Due to overgrazing and intensive shifting cultivation, the area of forests is decreasing in Panama, so forest preservation is crucial. Forest restoration is also important in order to preserve the water level in the Panama Canal basin. The government is in the midst of enacting policy to protect forest resources and prevent their degradation; therefore, this project, which responds to the government's needs, is extremely timely and relevant.

(5) Sustainability

CEMARE holds the position of being the only forestry training center in Panama. In addition to the fact that the budget necessary for its management is allocated by the government, it receives independent income by lending the training facilities to other organizations; therefore, its sustainability is high. However, since the expenditure such as trainees' traveling expenses and maintenance cost of experimental plots has been borne mostly by the Japanese side in this project. They need to charge fees for their courses in order to sustainablly implement training activities.

6. Lessons Learned and Recommendations

(1) Lessons Learned

In cases when it is necessary to secure new land in order to implement a project, it is necessary to make careful preparations prior to the start of the project.

(2) Recommendations

Although CEMARE's training implementation mechanism has been by-and-large established, the development of sustainable farming technology for farmers, and improvement of the curriculum to meet the needs of the targeted trainees are remained issues. It will be necessary to implement a one-and-a-half year follow-up coooperation.

7. Follow-up Situations

Based on the recommendation above, follow-up cooperation was carried out until September 2000.

[1)] Land utilization method for growing crops, livestock and trees in combination on the same land

Paraguay

The Rural Development Project in the Region South of Pilar

Project Sites

Region south of Pilar

1. Background of Project

Since the great flood of 1983, the region south of Pilar in Neembucu Province, located at the junction of the Paraguay River and the Parana River, had suffered chronic flood damage due to the decline of natural drainage functions. The land in this area was primarily used for grazing, but because approximately 70% of those engaged in agriculture and stock raising were small farmers who grow cotton for cash income and other crops for food, many farmers had suffered from a decrease in productivity and worsening living conditions.

Based on these circumstances, the Government of Paraguay requested project-type technical cooperation from Japan for the establishment of agricultural infrastructure (farm roads, irrigation/drainage canals, etc.) and technical guidance for farm operation (water management techniques; cultivation techniques for the diversification of crops, including cotton; fertilizer, pest control and soil management techniques; etc.).

2. Project Overview

(1) Period of Cooperation

1 July 1994-30 June 1999

(2) Type of Cooperation

Project-type technical cooperation

(3) Partner Country's Implementing Organization

Ministry of Agriculture and Livestock

(4) Narrative Summary

1) Overall Goal

Living standard of small-scale farmers in South Pilar is improved.

2) Project Purpose

To conduct sustainable agriculture development and improve agricultural productivity in the region south of Pilar.

3) Outputs

a) To formulate a drainage management plan.
b) To construct model drainage control facilities.
c) To develop maintenance methods of drainage control facilities with beneficiaries' participation.
d) To conduct a technical examination on diversification of farming patterns, cultivation techniques, and soil-improvement measures.
e) To strengthen and develop extension activities to introduce diversified farming patterns and improved agricultural techniques.
f) To strengthen institutional set-up for agricultural development.

4) Inputs

Japanese Side

Long-term experts	7
Short-term experts	11
Third-country short-term experts of Japanese descent	3
Trainees received	14
Dispatch to third country training program	1
Equipment	340 million yen
Local cost	approx. 100 million yen

Paraguayan Side

Counterparts	18
Land and facilities	
Local cost	1.9329 billion guarani (approx. 84 million yen)

3. Members of Evaluation Team

Team Leader:

Mr. Hitoshi MIYAMOTO, First Director, Technical Research Division, Japan Environment Technical Support Center for Agricultural and Rural Communities

Water Drainage Management and Construction Management:

Mr. Sumihiko MASAKI, Deputy Managing Director, Project Management Department, Japan Agricultural Land Development Agency

Agronomy and Agricultural Extenuation:

Mr. Shigenori KUSABA, Chief of Flower Production, Flower Office, Fruit and Flower Division, Agricultural Production Bureau, Ministry of Agriculture, Forestry and Fisheries

Technical Cooperation:

Mr. Motoharu WAKABAYASHI, Agricultural Technical Cooperation Division, Agricultural Development Cooperation Department, JICA

Evaluation Analysis:
Mr. Hajime SONODA, IC Net Ltd.

4. Period of Evaluation

14 November 1998-29 November 1998

5. Results of Evaluation

(1) Efficiency

The dispatch of experts and the assignment of counterparts went smoothly according to plan. In particular, the fact that the long-term experts and the counterparts were not changed during the period of cooperation contributed to the close and continual implementation of technology transfer. Although the equipment provided required some time to pass through customs in Paraguay, facilities and test sites were provided in a timely manner. Also, because the selection of equipment was appropriate, it was utilized effectively after its provision.

(2) Effectiveness

Technology was successfully transferred from the experts to the counterparts largely as planned. The project set up sustainable agricultural development infrastructure in the region south of Pilar through the implementation of approximately 40,000 hectares of improved drainage basins, 63.8km of drainage routes, 20km of roads, 47 bridges, approximately five hectares of cultivation test fields and two model exhibit farms.

However, regarding the maintenance of drainage routes, although a sufficient number of heavy equipment technicians were trained, the activities of the Drainage Management Association are still in the trial-and-error stage, and further efforts will be necessary in order to strengthen the organization and establish cooperation with relevant organizations.

(3) Impact

Through the improvement of drainage facilities and roads at the model area, accessibility to market was increased, the agricultural products delivery cost was decreased, and middlemen's visits were increased. Due to these concrete results at the model area, the interest in and expectations of this project from residents in neighboring areas increased.

Also, the transfer of drainage technology for wetlands areas to the Paraguayan side was extremely meaningful, and this technology had a positive impact on various projects implemented by the Ministry of Public Works.

(4) Relevance

The goal of this project accords with the Paraguayan Government's aid policies to small farmers, and it is relevant in that respect

However, small farmers do not have enough resources to use for the project's activities. From the perspective of improving results and sustainability of the entire development project, cooperation must not be limited only to small-scale farmers but it is necessary to consider strategies to also include large-and medium-scale farmers.

Residents' Assembly To acquire the agreement of the residents on the digging of drainage routes to improve drainage, residents in relevant areas were gathered

(5) Sustainability

Currently, there are movements towards establishing an organization of representatives of the local people in an attempt to coordinate with relevant organizations and diversify financial resources. It is thought that these developments will be conducive to improvements in the project's sustainability, but it will be necessary to observe these trends closely.

6. Lessons Learned and Recommendations

(1) Lessons Learned

As a means for agricultural development, because small farmers generally do not have sufficient resources and their level of education is not very high, it will be necessary to investigate a project which involves large- and medium-scale farmers in order to ensure cooperation results from the viewpoint of agricultural development in the current form of cooperation.

Also, the communication of the effects of the technology to residents of surrounding regions is important in order to further spread the project's results.

(2) Recommendations

In order to achieve tasks such as the establishment of a maintenance and management system for drainage facilities, it will be necessary to implement follow-up cooperation for a period of 21 months.

7. Follow-up Situations

Immediately following the end of the initial cooperation period, a follow-up cooperation of 21 months is currently being implemented until March 2001. This follow-up cooperation is conducting activities such as the cultivation of a residents' organization to continue the project, the continuation of drainage improvements, and cultivation testing and the diversification of farming.

Paraguay

Project for Water Supply in the Rural Oriental Sector

Project Sites

Department of Itapua

1. Background of Project

In Paraguay, public water supply service in rural areas was lagging behind, with the regional water supply diffusion rate in 1995 remaining as low as 11 percent. Furthermore, in the eastern region, where 90 percent of the population resides, most of the sources of water supply were from hand-dug shallow wells, springs and river water. During the dry season, not only did water shortage conditions and droughts continue throughout, but also the water sources were vulnerable to the polluted water from the ground surface.

For this reason, the Government of Paraguay, with the goal of improving the eastern rural region's water supply situation, requested grant aid from Japan in order to dig deep wells and construct water supply facilities in four districts in Itapua.

2. Project Overview

(1) Period of Cooperation

FY1995 and FY1996

(2) Type of Cooperation

Grant aid

(3) Partner Country's Implementing Organization

National Environmental Sanitation Service (SENASA)

(4) Narrative Summary

1) Overall Goal

For Paraguay's regional water supply diffusion rate to increase.

2) Project Purpose

For the residents of the four target districts in Itapua Prefecture to be able to obtain sanitary water.

3) Outputs

a) To excavate deep wells in the 4 target districts of Itapua.

b) To construct water supply facilities in the 4 target districts of Itapua Prefecture.

c) To establish a maintenance system for the water facilities.

4) Inputs

Japanese Side

Grant 944 million yen (E/N amount)

Paraguayan Side

Land

Staff for maintenance

Local cost (for the set-up of electrical lines and the construction)

3. Member of Evaluation Team

JICA Paraguay Office
(Commissioned to Ms. Kumi Contreras)

4. Period of Evaluation

September 1998-November 1998

5. Results of Evaluation

(1) Efficiency

During the first year of this project, the materials and machinery for the well excavation were provided and operations training was held for SENASA's technicians. The following year, the actual construction of the water supply facilities was carried out.

The machinery and construction materials were supplied locally as much as possible, taking into consideration the technical level of the Paraguayan side. Because, the quality of the supplied materials and machinery was appropriate and the SENASA technicians had sufficient knowledge and experience in underground water development, technology transfer to SENASA's technicians was carried out very smoothly.

(2) Effectiveness

Through the construction of water supply facilities, the residents of the four target regions were able to obtain sanitary tap water. The water supply facilities that were constructed became a small-scale water supply model facility for the rural regions.

(3) Impact

Many residents are now supplied with tap water and the standard of living has improved accordingly. In the future, it is expected that the incidence of illnesses will also drop. A comfortable and sanitary lifestyle leads to better health and motivation to work, which in turn, will hopefully result in increased agricultural output in the target regions.

(4) Relevance

The summer/dry seasons are very long in Paraguay. Therefore, the securing of drinking water is a central issue for living. In addition, since this project reflects the requests of the local residents and since the constructed water supply facilities serve as a small-scale water supply model facility in the rural regions, it can be said that the relevance of this project is very high.

(5) Sustainability

The sites for the wells were chosen carefully according to the results of surveys carried out in advance. The site had abundant sources of underground water without the risk of the water sources becoming depleted. Maintenance of the water supply facilities is covered by the water charges collected from the local residents by the Sanitation Committee. Because the requests of the local residents were heard in detail during the project's planning stage and the project had fully gained the understanding of the residents, the Sanitation Committee has been able to exercise its functions to the fullest.

After the excavation work was completed in the four target districts, the machinery and materials used for the excavation of the wells were recycled effectively during a project funded by the World Bank, involving the construction of the water supply facilities in Itapua. Moreover, as these materials and machinery are maintained periodically by the SENASA maintenance team, they are kept in good condition.

In this way, regarding the maintenance of the constructed water supply facilities, there are no large problems and the level of self-sustainability is high. However, in terms of Paraguay expanding and spreading the construction of water supply facilities from here on, foreign aid is necessary since the budget of SENASA is insufficient.

6. Lessons Learned and Recommendations

(1) Lessons Learned

It is easy to win the active cooperation of the local residents for projects in the water supply field because water is so indispensable to their living and because the results of the project will directly benefit them. In order to heighten the sustainability of a project after the cooperation period ends, it is important to gain the understanding of the local residents in advance on issues like establishing a framework for the maintenance of the facilities and fee collection.

Parent and child using a water conduit that has been laid. The hygiene committee collects water rates from residents and manages the maintenance of the facilities.

Parent and child delighted that they now have running water in their house.

Peru

Earthquake Engineering and Disaster Mitigation Planning

Project Sites

Lima

1. Background of Project

Through seven years of project-type technical cooperation since June 1986, Japan established the Japan-Peru Center for Earthquake Engineering Research and Disaster Mitigation (CISMID) at the National University of Engineering. In order to spread the technology that was transferred and accumulated through this project throughout Latin American countries, where earthquake damage is severe, the Peruvian government requested a third country training program from Japan.

In response to the request, Japan implemented the training program from FY1989 to FY1993, and, as the demand for a continuation of the training from the participating countries was great, extended the period of cooperation for five years.

2. Project Overview

(1) Period of Cooperation

FY1994-FY1998

(2) Type of Cooperation

Third country training program

(3) Partner Country's Implementing Organization

Japan-Peru Center for Earthquake Engineering Research and Disaster Mitigation (CISMID)

(4) Narrative Summary

1) Overall Goal

To improve earthquake measures in the participating countries

2) Project Purpose

For the trainees from Latin American countries to gain expertise and skills in earthquake engineering and disaster mitigation planning

3) Outputs

a) To study basic knowledge about earthquake engineering and examples of earthquake damage

b) To study basic knowledge and examples of disaster mitigation planning

4) Inputs

Japanese Side

Short-term experts	4
Trainees received in Japan	3
Training expenses	US$580,000 (approx. 69 million yen)

Peruvian Side

Instructors

Training facility, equipment and teaching materials

Training expenses

3. Members of Evaluation Team

JICA Peru Office

(Commissioned to Mr. Rafael Torres)

4. Period of Evaluation

15 January 1999-15 March 1999

5. Results of Evaluation

(1) Efficiency

Because CISMID's facilities and equipment were satisfactorily established by JICA project-type technical cooperation from 1986 to 1993, the training was implemented smoothly.

(2) Effectiveness

In the five years since FY1994, 148 trainees from 12 countries have completed this training and have gained expertise and skills in earthquake engineering and disaster mitigation planning. According to a questionnaire survey of the ex-trainees, almost all of the ex-trainees responded that this training met their own personal training objectives, and that they were satisfied with the content of the training; therefore, it can be said that the goal of this training program was accomplished.

(3) Impact

According to the questionnaire survey results, about 70% of the ex-trainees stated that they had used the expertise and skills received by the training in their work, and about 30% responded that their working conditions had improved. As for the organizations to which the trainees belong, about 70% said that their work or their organization had benefited by sending the employee to the training program.

(4) Relevance

According to a questionnaire survey taken in FY1998 at the end of the training, almost all of the trainees responded that the content and the level of the training was appropriate and relevant to their needs. However, some responded that they would have liked more time for discussion and practice, so that they would be able to use the expertise and skills gained through the training immediately after returning to their home country.

Because the region of Latin America has time and time again experienced the tragedy incurred by major earthquakes, the need for disaster mitigation planning is strong. Within those associated with this field in Latin America, this training has been established as a so-called "old-shop brand" style of evaluation. Actually, in FY1998, 74 applications were received for 30 available trainee spaces, therefore, this training has relevance.

(5) Sustainability

In the ten times this training has taken place, a training pattern has become established. Also, in questionnaire surveys of the trainees, management of the training has received a high evaluation as well as content of the training; therefore, it is thought that sustainability of this training is high.

6. Lessons Learned and Recommendations

(1) Recommendations

Because there is a sizable need for this type of training in Central and South American countries, it is desirable that the project continue. However, because a third country training program "Earthquake-resistant Design and Construction of Structures" was initiated in Mexico in FY1997, it is desirable that the content of this training be broadened to include proposals for disaster prevention planning for the development of safe areas, and natural disasters other than earthquake. Also, so that the expertise and skills gained in the training will be useful upon repatriation, it is necessary to increase the amount of time devoted to discussion and practice, and have a curriculum that particularly emphasizes case study.

7. Follow-up Situations

JICA decided to restart from FY2000 the Third Country Training Course on Mitigation Measures for Natural Disaster Reduction, which also widely incorporates planning of disaster mitigation toward safe regional development and natural disasters besides earthquake disasters.

Furthermore, JICA made the decision to address the renewal of equipment and materials through aftercare cooperation in the FY2000 project-type technical cooperation.