Mexico

Earthquake-Resistant Design and Construction of Structure

Project Sites Mexico City

1. Background of Project

Latin America and the Caribbean region is of high seismic activity. In these areas, there are many small-scale residential buildings that lack resistance to earthquakes, and it is necessary to regulate the construction of the building by the appropriate Construction Standard Law and to diffuse low-priced and safe structures. However, due to the lack of financial resources, the number of the experts in earthquake-resistant design and construction is not sufficient.

After the major earthquake in 1985, the Government of Mexico requested Japan to cooperate in the research, training and diffusion of the technology related to disaster prevention, since Japan has vast experience in this field. Receiving this request, the Grant Aid had been implemented and "National Disaster Prevention Center (CENAPRED)" was constructed. Following the Grant Aid, the Project-Type Technical Cooperation, the "National Disaster Prevention Center Project", was executed for seven years from April 1990. After the Project was completed, new cooperation was requested by CENAPRED, and technical transfer in the fields of earthquake-resistance due the fact that earthquake engineering to the neighboring countries was also desired. Thus, it was decided to implement a Third Country Group Training.

2. Project Overview

(1) Period of Cooperation

FY1997 − FY2001

(2) Type of Cooperation

Third-country Group Training

(3) Partner Country's Implementing Organization

NationalDisaster Prevention Center (CENAPRED)

(4) Narrative Summary

1) Overall Goal

The earthquake-resistant design and construction technology for decreasing earthquake damage is improved and contributes to the social and economic development of the participant countries by training construction engineers in the countries of Latin America and the Caribbean.

2) Project Purpose

To enhance the earthquake emergency capacity of the Latin America and Caribbean countries by transferring the technology and knowledge of the earthquake-resistant design and construction transferred to CENAPRED through the Project-type Technical Cooperation by Japan.

3) Outputs

Trainees learn the following knowledge.

a) Preliminary knowledge of seismology and application to earthquake-resistant design.
b) Earthquake-resistant design technology and structure analysis method.
c) Earthquake-resistant design and construction according to building structure, and evaluation method of the degree of resistance to earthquakes of existing buildings.
d) Implementation of earthquake-resistant design and construction and the legal aspects.

4) Inputs

Japanese Side

Short-term experts	6 (1998 − 2001)
Training expenses	36 million yen (1997 − 2000)

Mexican Side

Training expenses	9 million yen (1997 − 2000)

(5) Participant Countries

Argentina, Belize, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominica, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Peru, Dominican Republic, Venezuela, and Mexico.

3. Members of Evaluation Team

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

4. Period of Evaluation

17 November 2000 − 23 March 2001

5. Results of Evaluation

(1) Relevance

The level of knowledge and technology of CENAPRED as a training institution was high, and the researchers of CENAPRED appropriately grasped the seismic character and the needs of the surrounding countries. Thus, delivering knowledge related to earthquake-resistant design through Third-country Group Training was relevant.

(2) Effectiveness

In the questionnaire survey, more than 80% of the participants in each training answered either "extremely so" or "very much so" to the question: "Have you obtained knowledge and technology through the training", which led to the high evaluation of the trainings.

However, according to the instructors, there were differences in trainee's understanding depending on the contents of the training and the organization to which they belonged (governmental organization, private companies, universities). For example, the level of understanding of the following course, "The Earthquake-Resistant Design , Construction and Law, and the Method of the Evaluation for the Resistance to Earthquake of the Existing Building" (especially concrete structures), was as low as 5 out of 10 points, and as for the difference in the level of understanding, the participants dispatched from governmental institutions received low evaluations.

(3) Efficiency

In the questionnaire survey carried out by CENAPRED at the end of the training, 40-80% of the participants that responded gave marks of 5 out of 5 (very good) about the management of the training, and it was concluded that the evaluation was high. On the other hand, regarding the contents of the training, there were differences in the level of their understanding as well as the satisfaction depending on their countries, needs, technology level, and whether they were structure design engineers or the designers. There were requests for the lecture time to be extended for some subjects and for the textbooks to be upgraded.

Regarding the 4th training, it was implemented during the transition of the Mexican administration and the reorganization of CENAPRED. It became difficult for CENAPRED to execute the training along with the R/D (the record of discussions) due to the transition, so the Training was not smoothly executed. Besides that, the introduction of the computer program for structure analysis was delayed and could not be used in the Training due to late application of CENAPRED as well as the time required for the approval by JICA.

(4) Impact

With regard to the questionnaire, 26 participants out of 47 (57%) answered that "The knowledge and technique learned through the Training could be utilized in the workplace."

(5) Sustainability

CENAPRED carries out domestic training using almost the same contents as those of this training, and the materials left by the Japanese short-term and long-term experts are also utilized. It is said that transferred techniquies are gaining ground in CENAPRED. Based on this, it is concluded that CENAPRED has the ability to implement training from the technical point of view. However, from the financial point of view, CENAPRED is in difficult conditions to prepare the budget to invite the trainees from overseas on their own. This can be a factor inhibiting the continuation of the training independently.

6. Lessons Learned and Recommendations

(1) Lessons Learned

During the "National Disaster Prevention Center Project " which was implemented prior to the Third Country Training, the researchers of CENAPRED properly grasped the seismic character of the surrounding countries and their needs. The construction circumstances of the neighboring countries were investigated, and these factors led to the high reputation of the Training and caused the increase in the number of applicants.

Seismography and volcano monitoring laboratory

The report prepared by the Japanese long-term expert contains extremely useful information regarding the standards and guidance for existing buildings. However, printing to meet the demand has not been finished due to a shortage of budget. It would be preferable that JICA keeps the report and provides it directly to organizations or individual persons, so that the results of expert's efforts can be transmitted securely.

(2) Recommendations

During this training, computers for large experiments and the seismometers were not well maintained due to the lack of budget of CENAPRED, but no serious troubles were caused on the Training itself. It will be necessary, however, to maintain these machines to continue with similar trainings.

With regard to the sustainability for the Training, it would be expected to secure the enough budget for invitation of the trainees within the budget of the South-South Cooperation of the Ministry of Foreign Affairs of Mexico.

As for the contents of the training, it seems effective to implement short-term training on earthquake-resistance diagnosis and reinforcement of existing buildings in accordance with the needs of each country.

7. Follow-up Situation

It is expected that Phase 2 of the Third Country Group Training will be requested. at the time of investigation request in fiscal 2003, after the management system of CENAPRED and the contents of the courses are revised.

Mexico

Integrated Production of Educational Television

Project Sites Mexico City

1. Background of Project

In Mexico, school education, pre-school education, adult education, and vocational education using TV broadcasting were considered important, in order to mitigate the decline of education quality caused by the regional disparities in education and by the chronic shortage of teachers.

Japan dispatched an expert to the Education Television Training Center of the Ministry of Education with the aim of improving the program production technology and the broadcasting technology and implemented Project-type Technical Cooperation (1991 − 1996) for the purpose of the establishment of the Educational Television Training Center (CETE). As a result of this project, CETE was able to have its own training center for the production of the educational TV programs, and could come to provide training for a wide range of related persons on educational programs in Mexico.

Mexico declared that it would provide the opportunity to improve the knowledge and technology of the technicians of Latin America and Caribbean countries in the field of production of educational TV programs in accordance with the joint declaration "Tuxtla II" at the conference by the leaders of Caribbean governments or countries. Mexico requested Japan to implement the Third-Country Training to spread the technology and knowledge transferred to CETE in the field of the production of the integrated educational TV program production to these countries.

2. Project Overview

(1) Period of Cooperation

FY1997 − FY2001

(2) Type of Cooperation

Third-country Group Training

(3) Partner Country's Implementing Organization

Ministry of Education, Educational Television Training Center(CETE)

(4) Narrative Summary

1) Overall Goal

Through educational TV programs, the quality of education in Latin America and Caribbean countries is improved.

2) Project Purpose

Educational TV program production capability of trainees from Latin America and Caribbean countries is improved.

3) Outputs

a) The trainees complete the practical training process from the planning to the production of high-quality educational TV programs

b) The trainees (TV producers) gain knowledge of the production process of educational TV programs through learning the basics in pedagogy, program planning, and production system.

c) The trainees (technical staff) gain the technical ability for working as part of a team through the production processes.

d) The trainees (technical staff) learn to attain efficient communication methods through vivid images by the operation of the production machines.

e) The trainees learn the integrated process of high-quality educational TV program production by a combination of both contents and the engineering sides of production.

4) Inputs

Japanese Side

Training expenses	40 million yen

Mexican Side

Instructors	19 people (1997-2000)
Training expenses	16 million yen
Facility maintenance cost	2 million yen
Equipment maintenance cost	5 million yen

(5) Participant Countries

Colombia, Costa Rica, Cuba, Dominica, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, and Venezuela.

3. Members of Evaluation Team

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

4. Period of Evaluation

17 November 2000 − 23 March 2001

5. Results of Evaluation

(1) Relevance

Under the present situation in which educational TV programs and TV programs for culture are confused in many of the countries participating in the training, the relevance of the project purpose depends on how the situation develops at the related agencies of the countries participating in the training. Also, some of the trainees requested themes related to digital technology, and this reflects the fact that analogue based training machines installed in CETE are becoming obsolete in terms of the needs of the trainees.

(2) Effectiveness

The final works of the trainees that clearly indicated that the acquired knowledge and techniques. According to interviews with the persons concerned with CETE training and the lecturers, these final works have reached the level that had been anticipated at the beginning and evaluated the trainees' achievement highly. The knowledge and the technology of the trainees for program production improved drastically, and it can be assumed that the results will be useful for their actual work after returning to their countries.

(3) Efficiency

Since no problems were pointed out by the trainees with any areas of the contents of the lectures and the practices, the quality of the lecturers, the training machines and facilities, and the management of the training, CETE's ability to the implement and manage the training are highly evaluated. However, at the beginning of the training, due to a delay in the administrative work, enough information was not sent to the countries participating in the training, and sometimes the application documents were not delivered until just before the start of the training.

(4) Impact

In terms of the actual situation of the participating countries-educational TV programs and TV programs for culture are confused − it is difficult for the trainees to directly apply the techniques learned on returning to their countries. According to the questionnaire [1)] about the opportunity and the possibility of making use of the knowledge learned, many answered as favorable. However, a considerable number of negative answers were also given (out of a top mark of 5, 16 participants gave 5, 6 participants gave 4, 5 participants gave 3, and 3 participants gave 2 respectively). In the interviews conducted in Nicaragua and Panama, the shortage of machines and the lack of vision among the leading members of the organization to which the trainees belong are cited as the barriers.

(5) Sustainability

Technology transfer has taken root in CETE, and their ability to implement training is high. Therefore, if the Educational Television Department of the Ministry of Education provides complete financial support, the same type of training can be implemented. However, the awareness of the current leading members about the training in terms of financial sustainability seems to be weak. Therefore, the limits of the budget system in the Government of Mexico can be said to lead to factors limiting sustainability.

Interview for the ex-trainees (Panama educational radio and television station)

6. Lessons Learned and Recommendations

(1) Recommendations

Regarding the problem about the delay on the Mexican side in carrying out administrative work, it is necessary to develop the application procedure by establishing contact networks between trainees returning to their countries along with the official procedure.

In order to raise the sustainability of the Third-Country Training, the system "South-South cooperation" that is implemented by the Mexican side, or the scholarship system of international organizations should be considered from the stage of planning.

When the second phase of this project is considered, it will be necessary to pay attention to the digitization of the machines.

7. Follow-up Situation

Seminars and forums have already been planned by the independent efforts on the Mexican side. In order to properly evaluate the results of the sustainability of the Mexican side, it is planned to dispatch a short-term expert related to the evaluation of educational TV programs in 2002.

1) The questionnaire covered ex-participants of the 1st to the 4th year. The response rate was 58.1%.

Mexico

Casing Technology at the Material Engineering Qualification Center

Project Sites San Luis Potosí

1. Background of Project

The mining industry and other important metal casting and manufacturing industries are concentrated in the State of San Luis Potosí, which is located in the central part of Mexico. The improvement of metal-related technology and the strengthening of the small and medium industries that have weakened since the early 1990's were indispensable to the development of these industries.

Autonomous University of San Luis Potosí has been providing technical consultants for those enterprises along with the state government. The University decided to establish a special institution for education, research and technical consulting in areas that were of interest to the industry. For the field of casting technology, the Government of Mexico requested technical cooperation from Japan.

2. Project Overview

(1) Period of Cooperation

1 June 1998 − 31 May 2001

(2) Type of Cooperation

Experts Team Dispatch Program

(3) Partner Country's Implementing Organization

Autonomous University of San Luis Potos_, Faculty of Engineering, Material Engineering Qualification Center

(4) Narrative Summary

1) Overall Goal

The Material Engineering Qualification Center plays a leading role in the development of the casting industry in San Luis Potosí state and its surrounding areas.

2) Project Purpose

Human resources capable of training small and medium-sized enterprises in the casting industry of the project area are secured by the Material Engineering Qualification Center.

3) Outputs

Counterparts are able to collect data by using the experiment equipment of the following 1) to 4)

a) The optimization of the casting design by computer simulations.
   2) The mechanism of the casting defective phenomenon and its countermeasure.
   3) Examination of a quality evaluation method for casting.
   4) Examination of a quality control method in the manufacturing process of casting.

b) Counterparts are able to give lectures for seminars related to the casting technology based on items 1) to 4) above.

c) The center builds the capacity to offer consultation to small and medium-sized enterprises in San Luis Potosí state by using the acquired data when they receive requests for casting examinations.

4) Inputs

Japanese Side

Long-term experts	1
Short-term experts	7
Trainees received	6
Equipment	30 million yen

Mexican Side

Counterparts	12
Land, facilities construction and equipment	Approx. 43 million yen
Local cost	6 million yen

3. Members of Evaluation Team

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

4. Period of Evaluation

17 November 2000 − 23 March 2001

5. Results of Evaluation

(1) Relevance

The present Mexican casting industry consists of small and medium-sized enterprises. Although there are some exceptions, the innovation of new casting products and the reduction of defect rate are not dealt spontaneously. The goal of this project was that the center would play the leading role in casting product development and in quality control of the surrounding area. This top-down objective was adequate in this case.

Regarding the working plan for the technological transfer of this project, it was difficult to complete within the project period. One long-term expert had to handle both administrative and management duties, and counterparts lacked the basic knowledge required in this field since casting engineering was a new field for San Luis Potosí University. The reasons for this delay were that the plan was conducted without satisfactory reflection of the predicted obstacles identified by the preliminary study, and Mexico did not have an adequate base for receiving the cooperation. They underestimated the contents of a technical cooperation in the form of dispatching a team of individual experts.

(2) Effectiveness

This center organized seminars on casting two or more times per year. Six seminars were held between 1999 and 2000, and three seminars and two training sessions were scheduled in 2001. The center also executed 62 examinations, which were commissioned from local enterprises between 1998 and 2000. Therefore, in the medium run, it is possible to achive the project purpose of securing human resources.

However, preparing examination reports, which is regarded as very important in the industry, has been taking twice as much time as it supposed to be. Therefore, the actual needs of the enterprises have not been fulfilled. Based on this situation, the achievement level of the technology transfer is a little insufficient.

(3) Efficiency

Dispatching experts, providing equipment , and training counterparts have taken place without any problems. The university was very cooperative in preparing the land and facilities, but hindered the execution of the project by its insufficient response in terms of the selection and installation of equipment and local costs.

(4) Impact

Regarding the contribution to the casting industry, the center's performance has been limited only in the areas of executing commissioned examinations and preparing its report. Therefore, it would be difficult to say that the center plays a leading role in developing casting technology at the moment. However, according to the local casting industry, the establishment of the center has been recognized by the great impact given by the existence of Japanese experts in Mexico.

Facilities of the Autonomous University Faculty of Engineering. (Material Engineering Qualification Center at the second building from the left)

(5) Sustainability

Presently, the center gains attention because of the technical training provided by the Japanese experts. However, there is concern that the industry will lose interest in the center once the project has been completed

On the other hand, a group of small and medium-sized enterprises in Guadalajara, which has established the Institution for Casting Machine, is very interested in an interchange with the center. They show strong commitment to cooperating in strengthening the capacity of the center.

6. Lessons Learned and Recommendations

(1) Lessons Learned

In cases where only one long-term expert is dispatched, plans should be carefully made not to burden the expert considering the multiple tasks expected of experts. There will be work for both technical transfer and management as either a chief advisor or coordinator.

(2) Recommendations

It is assumed that a follow-up by Japanese experts is necessary for further developing the center. It is important to execute interactive training with private companies. Experts who support such activity should have coordination skills and be familiar with the overall casting technology rather than a specific area.

7. Follow-up Situation

A follow-up started in May 2001 by a dispatch of a short-term expert for six months. In April 2002, a Senior Overseas Volunteer was dispatched.

Mexico

Project on Improvement Techniques for the Production of Vegetables in Morelos State

Project Sites Zacatepec

1. Background of Project

In Mexico's National Development Plan (1989 − 1994), modernization of agriculture is listed as an important goal, towards improving the agricultural productivity hence living standards of farmers.

Although Morelos State is a typical semi-savanna agriculture region and produces mainly corn, sugar cane and rice. Other vegetables such as onions, tomatoes, husk tomatoes, etc. are also produced in an area of approximately 20 thousand hectares. In recent years, while rice production has decreased, the importance of vegetable production has been increasing due to its proximity to the capital, Mexico City.

Under these circumstances, the Government of the United Mexican States requested project-type technical cooperation to Japan in March 1993 to improve production technologies and to diversify farm products in order to enhance competitiveness in commerce.

2. Project Overview

(1) Period of Cooperation

1 March 1996 − 28 February 2001

(2) Type of Cooperation

Project-type Technical Cooperation

(3) Partner Country's Implementing Organization

Secretariat of Agriculture, Livestock and Rural Development (SAGAR)
National Forestry, Agriculture and Livestock Industrial Research Institute (INIFAP)
Zacatepec Experimental Station (CEZACA)

(4) Narrative Summary

1) Overall Goal

Applicable and practical vegetable cultivation techniques are extended to key small scale farmers in Morelos State.

2) Project Purpose

Practical techniques for cultivation of vegetables in CEZACA, INFAP, and the techniques and knowledge of counterparts are improved. Improved techniques are verified and transferred to extension officers and key farmers.

3) Outputs

(a) Suitable crops and varieties of vegetables are selected and introduced.
(b) Disease and pest control techniques for vegetables are improved.
(c) Breeding techniques and seed and seedling production techniques for favorable varieties of vegetables are improved.
(d) Cultivation techniques of commercial vegetables are improved.
(e) Verification, training and extension materials for the above-mentioned cultivation techniques are improved.

4) Inputs

Japanese Side

Long-term experts	10
Short-term experts	17
Trainees received	16
Equipment	137 million yen
Local cost	57 million yen

Mexican Side

Counterparts	14
Land and facilities	
Local cost	181 million yen

3. Members of Evaluation Team

Team Leader/Plant Protection:
Yoichi SEKIGUCHI, Vice President, Japan Agricultural Aviation Association

Agricultural Administration/Breeding and Seed Production:
Tomoyasu SASAKI, Chief, Project Management Section,

Technical Cooperation Division, International Affairs Department, Economic Affairs Bureau, MAFF

Vegetable Cultivation Techniques/Extension System:
Masafumi WATANABE, Chief, Fruit Marketing Section, Horticulture Division, Agricultural Production and Marketing Department, Kyushu Regional Agricultural Administration Office, MAFF

Evaluation Analysis:
Kazuo TORII, Chief Engineer, Overseas Activities Department, Taiyo Consultants Co., Ltd.

Plan Evaluation:
Kenji KANEKO, Deputy Director, Agricultural Technical Cooperation Division, Agricultural Development Cooperation Department, JICA

4. Period of Evaluation

17 September 2000 − 30 September 2000

5. Results of Evaluation

(1) Relevance

The project purpose is consistent with the agricultural development plan of Mexico and Morelos State. It can also be determined that the project was relevant through the fact that it coincided with the research policy of INIFAP, which was to improve practical agricultural techniques for betterment of agricultural management.

(2) Effectiveness

In the beginning of the project it required some time to begin the joint research, due to delay in maintenance of testing fields and miscommunication between experts and counterparts.

Afterwards, through the cooperation between the two parties, improvement of technology such as disease and pest control and breeding progressed. Also selection of suitable crops such as tomatoes, onions and husk tomatoes and selection of new crops such as cabbage, broccoli and cauliflower were made. Technical manuals of these crops were also created. Although further cooperation with related facilities for extension of these technical improvements is required, it can be concluded that the results of the project achieved the goals of the project.

(3) Efficiency

Due to lean budget measures from Mexico and vacancy of a counterpart in the field of soil and fertilizers, some activities were delayed, but generally operation as first planned was smoothly enforced including the inputs from Japan, triggering achievement of the expected results.

(4) Impact

Through field observations of CEZCA and training for extension officers and key farmers, the vegetable-cultivating technology developed in this project was introduced to farmers, and is beginning to be used by them. By continuing these activities in the future the project impact would be extended throughout Morelos State.


Box packing at the demonstration field of Tomatoes

(5) Sustainability

The research enforcement system has been strengthened on the Mexican side, and research capability of vegetable cultivation of the counterparts has improved through the program. If training of young researchers and financial grounds are strengthened, sustainability can be expected.

6. Lessons Learned and Recommendations

(1) Recommendations

Extension of the project or follow-up cooperation is not necessary due to the considerable technical improvements made in the area of vegetable cultivation.

However, in order to further extend the achievements obtained from this project to small-scale farmers, cooperation with the extension facilities is required and follow-up from the Japanese side in extension fields are considered necessary.

7. Follow-up Situation

As a response to the above mentioned recommendation and also by the strong request of technical extension of the Mexican side, a long-term expert will be dispatched for one year as a follow-up expert for the extension of project achievements.