Terminal Evaluation

Latin America and the Caribbean

1. Outline of the Project

Country:
Chile

Project title:
The Development of Benthonic Resources Aquaculture Project in Chile

Issue/Sector:
Fisheries

Cooperation scheme:
Project-type Technical Cooperation

Division in charge:
Fisheries and Environment Division, Forestry and Natural Environment Department

Total cost:
795 Million Yen

Period of Cooperation 1 July 1997 - 30 June 2002

Partner Country's Implementing Organization:
Chinquihue Foundation

Supporting Organization in Japan:
Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries
Ministry of Education, Culture, Sports, Science and Technology

Related Cooperation:

1-1 Background of the Project

The fishing industries in Chile were facing problems such as scant marine resources due to over-fishing, chronic poverty among fishermen and a dwindling population in fishing villages. The local government of the tenth region of Chile aimed at a transition from "Capture Fisheries" to "resource propagation" by introducing resources management-based fisheries. It also aimed at increasing the income of fishery households as a part of its policy to develop small-scale fishery households to lift them out of poverty. Under the circumstances and considering Japan wide-ranging experience in establishing fishing communities, the central government of Chile requested Japan to provide Project-type Technical Cooperation to establish fishing communities and develop the benthonic aquaculture technique including seed production of shellfish and urchins.

1-2 Project Overview

In order to disseminate the resources management-based fisheries, the Project developed aquaculture technology for benthonic Pacific Oysters and Chilean Scallops suited to the natural, social and economical conditions of the local area and economically valuable, and transferred the technology to the staff of the Chinquihue Foundation.

(1) Overall Goal

Aquaculture of valuable benthonic species will be disseminated among mainly small scale fishermen's organizations and other beneficiaries such as small scale individual fishermen and small-scale and medium-scale enterprises in the 10th Region of the Republic of Chile.

(2) Project Purpose

Aquaculture technology of valuable benthonic species that adjusted to local natural and social conditions is developed.

(3) Outputs

1) The seed production technology of pacific oyster and Chilean scallop, which is used in the world, is transferred and developed to be adapted to the conditions of 10th region, and the planned production system of the seed is established.
2) The seed production basic technology of other important benthonic organisms is transferred.

3) The culture technology of pacific oyster and Chilean scallop which can spread to the fishermen's organization is established.
4) The useful social-economic information for extension's activity to the small fisherman is accumulated.
5) Extension ability of the Foundation will be improved.

(4) Inputs

Japanese side:

Long-term Experts	8	Equipments	157 Million Yen
Short-term Experts	14	Local Cost	61 Million Yen
Trainees received	14		

Chilean side:

Counterparts	24
Local Cost	435, 575 Chile Pesos (86 Thousand Yen)

2. Evaluation Team

Members of Evaluation Team

Team Leader: Hajime KAWAMURA, Director of Fisheries and Environment Division, JICA
Benthic Seed Production: Sizuo AKABOSHI, Molluscan Culture Expert
Benthic Aquaculture: Masanori AZETA, Marino-Forum 21
Planning Evaluation: Makiko OKUMURA, Project Officer of Fisheries and Environment Division, JICA
Evaluation Analysis: Hiroei ISHIHARA, Nippon Giken Inc.

Period of Evaluation

14 January 2001 - 2 February 2001

Type of Evaluation:

Terminal Evaluation

3. Results of Evaluation

3-1 Summary of Evaluation Results

(1) Relevance

The small-scale fishermen in the tenth region suffer from chronic poverty and a declining village population because of a decline in the price of GracilariaSP, dwindling marine resources, and few work opportunities. The Government of the tenth region had been promoting aquaculture to diversify farming species and solve these issues. The Project was implemented as one of the development programs (1993-) of the Chinquihue Foundation, a regional organization promoting cultivation. Hence, the Project was evaluated as highly Relevant.

(2) Effectiveness

The seed production, the key to culturing shellfish, is divided into seven steps: (1) maturation inducement inducing of the broodstock culture, (2) spawning inducement, (3) collecting spawns, (4) larval culture, and (5) collecting seeds, (6) intermediate culture, and (7) aquaculture. In the Project for Pacific Oysters, all of these steps were covered and the technologies were transferred. On the other hand, as for Chilean Scallops, steps (6) and (7) have not been completed yet. It is highly likely that they will be accomplished in the future, if technology development is continued. The development of a manual of techniques will be completed by the end of the Project. The Project Purpose to develop aquaculture technology has been almost achieved, except for part of the technology for Chilean Scallops. Moreover, the basic experimental techniques for sea urchins and red abalone were transferred, though they were not on the activity plan at the planning stage.

(3) Efficiency

The dispatch of Japanese experts and the training in Japan were carried out on schedule. However, arrival timing of some equipment purchased in Japan in the 1st year of the Project was delayed, which hindered Project activities. Also the launch of development of seed production technology for Pacific Oysters and Chilean Scallop was delayed due to sea pollution from the

materials used for the salmon aquiculture at sites in front of the Chinquihue Foundation. Moreover, the activities were delayed, because the Foundation adhered to producing Chilean Scallop seeds using its own broodstock, and it took time to acquire license for aquaculture. As the result, the Project could not finish developing technique for (6) intermediate culture and (7) aquaculture Chilean Scallops. The inputs, such as the dispatch of the experts and training of counterparts, were conducted properly in terms of their quality and quantity. Maintenance of equipment for the Project was also conducted efficiently.

(4) Impact

As for the Overall Goal ("Aquaculture of valuable benthonic species will be disseminated among mainly small scale fishermen's organizations and other beneficiaries such as small scale individual fishermen and small-scale and medium-scale enterprises in the 10th Region of the Republic of Chile"), the Chinquihue Foundation was steadily supplied with Pacific Oyster seeds. It has provided the seeds to 43 fishermen's organizations (39 of which are in the tenth region), and 22 private aquaculture, universities and public institutions. The Foundation also established an extension section, which consists of five counterparts who acquired culture techniques.

(5) Sustainability

Headed by the Governor of the 10th region, the Foundation has a firm organization with its own purpose, strategy, and favorable management. It has sufficient human resources as the counterparts. These facts indicate sustainability after the Project period.

The Foundation has its own revenue from harbor rental fees and so on, and has applied for financial support from Innovation Development Fund (FDI). The Foundation has also applied to the Japan Fund of Inter-American Development Bank and the National Fund for Regional Development of the 10th Region Government in order to develop and disseminate aquaculture technology. In disseminating the technologies, the system and funds to assist small scale fishermen were also developed. Hence, there are few financial problems.

Regarding technical aspects, counterparts acquired the capacity to sustain activities using the technologies by themselves. However, it is necessary to continue support regarding the intermediate culture and cultivation of Chilean Scallops.

3-2 Factors that promoted realization of effects

(1) Factors concerning Planning

The Project activities were in line with the needs of the Chilean side, especially that the needs of the final beneficiaries. Hence, there have been no changes in Chilean policy and the position of the implementing organization from the planning stage. The Foundation contributed a large amount of their human resources and equipments, and played an active role in the Project.

(2) Factors concerning the Implementation Process

1) Although there was a delay in installing equipment, inputs were appropriate.
2) Because the Japanese experts could carry out their tasks in Spanish, the official language of the area, they could communicate with their counterparts smoothly.

3-3 Factors that impeded realization of effects

(1) Factors concerning Planning

At the planning stage, because the PCM method had not been introduced, the plan itself was insufficient and there was a lack of a consensus between the Japanese side and the Foundation. As a result, the Foundation started promoting the technology for fishermen before it was developed enough. This placed a physical and psychological burden on some fishermen.

(2) Factors concerning the Implementation Process

At the early stage of the development of the technology for Pacific Oysters, the seawater, which is necessary for seed production, was contaminated by the fishnet detergent used at the salmon farm. This delayed the whole Project programs and the beginning of developing techniques for Chilean Scallops seeds. The studies on Aquacultures were also delayed, because the Foundation adhered to using its own seeds. Moreover, the launch of cultivation testing was delayed due to the delay in acquiring an aquiculture license of for the test sea area. Therefore, the stable production of Chilean Scallops had not been established.

3-4 Conclusion

Although the Project was relatively successful, there were some problems at the planning stage, such as the lack of a consensus between the Foundation and the Project management side, the contamination, and the delayed acquisition of a

license, which caused incomplete implementation of some of the Project activities and the pending status of achievement of the Project Purpose. As for Pacific Oysters, the technology transfer was completed on schedule. As a result, the prospect of sustainability of the Project can be evaluated to be relatively high, if continued support is provided for the technology development of (6) intermediate culture and (7) aquaculture of Chilean Scallops.

3-5 Recommendations

(1) It is difficult to complete the development of technologies for (6) intermediate culture and (7) culture of Chilean Scallops within the remaining period. To complete this development requires approximately two years more. It is necessary for the Government of Japan to support the Foundation on these points. It is essential to dispatch one Long-term expert who is able to supervise these fields and provide advice on aquaculture activities on a regular basis.

(2) In order to achieve the Overall Goal, the Chilean authorities concerned should continue to provide financial support.

(3) It took quite a long time to acquire the license to begin the aquaculture in the Project. This may cause same problems for starting the aquaculture activities by small scale fishermen. The Chilean authorities concerned should take necessary measures to solve this problem.

3-6 Lessons Learned

(1) In this Project, it was insufficient to plan the order of activities and assume a consensus with the Foundation at the planning stage; these caused some failures, delays and losses in terms of money, materials and determination. For efficient implementation, a detailed plan of operations, including the order in which activities are implemented, should be considered and discussed at the planning stage.

(2) Also, for efficiency, it should be required that C/Ps or local consultants mainly implement the socioeconomic surveys that lead to dissemination or marketing at the planning stage of a project.

3-7 Follow-up Situation

Based on the aforementioned recommendations, JICA has allocated one follow-up-expert from August 2002 to August 2004 in order to complete the technology transfer in the field of aquaculture of Chilean Scallops, which was not achieved at the end of the Project.