

Country Name	Production Improvement and Extension of Shellfish Aquaculture Project
Republic of El Salvador	

I. Project Outline

Background	<p>Fisheries and aquaculture play an important role in the economy and society of El Salvador. Approximately 270,000 people were engaged in the fishery industry, including fisheries, aquaculture, fish processing and distribution. Particularly, shellfish harvesting has been an important activity for the economy of the coastal area and was considered as the main income source of most residents there. However, due to excessive extraction of shellfish in the coastal area, the size became smaller and the fishing ground became farther. JICA implemented the “Project for Shellfish Aquaculture Development” (2005-2010) with the Center for Fishery and Aquaculture Development (CENDEPESCA) and established the system for seeds production and aquaculture of Curil and Pacific Oysters, and there were needs for diffusion of the established system to more fishermen.</p>																
Objectives of the Project	<p>Through massive production of Curil and Pacific Oysters seeds and strengthened marketing extension system of shellfish aquaculture, the project aimed at consolidating the extension system of shellfish aquaculture, thereby contributing to the extension of shellfish aquaculture to the small-scale fishermen in the eastern part of El Salvador.</p> <p>Overall Goal: Shellfish aquaculture is extended to the small-scale fishermen in the eastern part of El Salvador. Project Purpose: Extension system of shellfish aquaculture is consolidated.</p>																
Activities of the project	<p>1. Project site: Coastal zone of the eastern part of El Salvador (Bahia de Jiquilisco, Bahia de La Union de Golfo de Fonseca).</p> <p>2. Main activities: research for improvement for seeds production, training on the improved aquaculture technology and marketing for CENDEPESCA personnel and fishermen, manual development, linkage establishment with the market, etc.</p> <p>3. Inputs (to carry out above activities)</p> <table border="0"> <tr> <td>Japanese Side</td> <td>Salvadorian Side</td> </tr> <tr> <td>1) Experts from Japan: 3 persons</td> <td>1) Staff allocated: 13 persons</td> </tr> <tr> <td>2) Experts from the third country (Chile): 1 person</td> <td>2) Land and facilities: Office space, lodge for JICA experts, facility for seeds production, etc.</td> </tr> <tr> <td>3) Trainees received: 4 persons</td> <td>3) Local cost for fuels, hiring security guards, electricity bills, etc.</td> </tr> <tr> <td>4) Training in the third country: 4 persons (Chile)</td> <td></td> </tr> <tr> <td>5) Equipment: Vehicle, experimental tools, equipment for seeds production, etc.</td> <td></td> </tr> <tr> <td>6) Local cost: Cost for travel, training, hiring local consultants, training, facility renovation etc.</td> <td></td> </tr> </table>			Japanese Side	Salvadorian Side	1) Experts from Japan: 3 persons	1) Staff allocated: 13 persons	2) Experts from the third country (Chile): 1 person	2) Land and facilities: Office space, lodge for JICA experts, facility for seeds production, etc.	3) Trainees received: 4 persons	3) Local cost for fuels, hiring security guards, electricity bills, etc.	4) Training in the third country: 4 persons (Chile)		5) Equipment: Vehicle, experimental tools, equipment for seeds production, etc.		6) Local cost: Cost for travel, training, hiring local consultants, training, facility renovation etc.	
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Project Period	June 2012 to June 2015	Project Cost	(ex-ante) 192 million yen, (actual) 201 million yen														
Implementing Agency	Department of the Fishery and the Aquaculture (CENDEPESCA), Ministry of Agriculture and Livestock (MAG)																
Cooperation Agency in Japan	None.																

II. Result of the Evaluation

< Special perspectives considered at the ex-post evaluation >

- Achievement of the Overall Goal had been expected five years after the project completion (2020). As the ex-post evaluation survey was conducted in 2019 (four years after the project completion), its achievement was verified based on the data available as of the ex-post evaluation.
- In El Salvador, the security situations became deteriorated toward the last stage of the project period. The number of homicides per 100,000 persons in the country increased to 39.6 in 2013, 61.3 in 2014 and 103.0 in 2015. The eastern region, where the project target sites were covered, also had a large number of homicides (in 2015, more than 150 in Jiquilisco and more than 100 in La Union). About three million Salvadorans, equivalent to about half of the country's 6.4 million population have emigrate to the United States and other countries, with about 40,000 leaving the country each year¹. It has been noted that these migrations are not only for economic reasons, but also for security reasons in many cases. The issues of insecurity and immigration had been beyond expectations of the project and it was considered that these largely affected continuity of the project effects. Evaluation judgement was made also by considering these factors.

1 Relevance

<Consistency with the Development Policy of El Salvador at the time of ex-ante evaluation and project completion>

The project was consistent with the development policy of El Salvador at the time of both ex-ante evaluation and project completion, as the “Five-year Development Plan” (2009-2014) included a priority area of economic growth and building of development infrastructure and the “Five-year Development Plan” (2014-2019) had a priority area of promotion of employment for improvement of the productivity through the sustainable economic growth model.

<Consistency with the Development Needs of El Salvador at the time of ex-ante evaluation and project completion>

Shellfish production was the main income source of most residents in the coastal area. However, due to excessive extraction of shellfish in the coastal area, the size of shellfish became smaller and the fishing ground became farther. As the fishermen had needs for improvement of shellfish aquaculture technology and marketing, the project was consistent with such needs at the time of both ex-ante evaluation and project completion.

<Consistency with Japan’s ODA Policy at the time of ex-ante evaluation>

One of the priority areas of the “Country Assistance Policy for El Salvador” (2012) was activation of the economy and expansion of

¹ <https://www.infosegura.org/perfiles/el-salvador/>, <https://issuu.com/lpglaprensagrafica/docs/infonac13022017homics> (accessed on May 1st, 2020).

employment, which included promotion of the local industry in the eastern region. Thus, the project was consistent with Japan's ODA policy.

<Appropriateness of the Project Design/Approach>

More fishermen than planned were trained on the aquaculture technology for production of Curil and Pacific Oysters by the project. However, since the project completion, most fishermen have discontinued aquaculture activities and a limited number of fishermen have newly started aquaculture activities. Discontinuity of aquaculture activities has mainly depended on security issues at the target sites. Although the project approach for improving and diffusing the extension system of shellfish aquaculture based on the achievement of the preceding project was appropriate for the fishermen who depended on shellfish aquaculture as income sources, the project effects have been hindered by the security issues. They had not been expected at the project formulation stage, and they became deteriorated especially in the last stage of the project period. The country became very insecure after the project completion, recording the worst murder rate in the world in 2015 and 2016.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved by the project completion. Technical training was given to 258 fishermen of 11 groups on Curil aquaculture technology and to 162 fishermen of 8 groups on Pacific Oyster aquaculture (Indicator 1), exceeding the target. More than 15 fishermen obtained knowledge about how to access the market. More than 15 fishermen participated in training on organizational strengthening and marketing in 2013 and 2014 (Indicator 2). Besides, workshops for fishermen on marketing and branding were conducted twice in 2012, and thus, it was possible that more than 15 fishermen had acquired knowledge of marketing.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued until the time of ex-post evaluation. Five fishermen out of 258 and 15 out of 162 have continued aquaculture of Curil and Pacific Oyster, respectively. Out of 19 groups supported by the project, three groups have continued activities related to aquaculture. The reason why 16 groups have not continued is mainly because delinquency groups became active in the target sites approximately in 2014, which was not expected in the beginning of the Project. In fact, all the 16 groups who could not continue aquaculture activities had confronted crimes and/or direct attacks to the workplaces by the delinquency groups. As a result, most of the fishermen had to emigrate to other countries for escaping from dangers and seeking a better life. The three groups have resided and worked in areas at relatively small risks and therefore continued aquaculture activities. Thus, it can be said that the deteriorating security have enormously affected the continuation of the project effects, not only interrupting aquaculture activities but also forcing migration.

Regarding seed production, the quantity of production and distribution of Curil have increased (distribution: 825,000 in 2015 to 1,116,875 in 2017), exceeding the annual plan. On the other hand, that of Pacific Oyster have decreased (distribution: 2,226,000 in 2015 to 423,332 in 2017) because there were not many Pacific Oyster seeds left from the previous years.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

It is judged that the Overall Goal has been partially achieved. There have been approximately 100 new fishermen who adopted the aquaculture technology introduced by the project, against the target 1,400 because not many fishermen were willing to begin aquaculture knowing the possible risk of insecurity. However, despite the deterioration of the security situation and the resulting dissolution of cooperative groups, these 100 fishermen have continued to use the aquaculture technology.

<Other Impacts at the time of Ex-post Evaluation>

First, women have got more active in aquaculture activities. During the project, their participation was encouraged, and they became the group president or took other important positions. There have been three new groups including a women's group that produce Curil and Pacific Oyster in cooperation with the Station of Puerto El Triunfo of CENDEPESCA (CPT). Second, the aquaculture technology of Casco de Burro which had been started during the project period was completed, and its seed has been produced and distributed since 2017. A new group has been working for its production and sales in the local market. Third, the aquaculture technology developed by the project has been diffused to neighbor countries, by receiving trainees from the University of Honduras and the University of San Carlos of Guatemala. Also, CENDEPESCA has discussed on possibility of a regional project for developing the shellfish production technology with the Central American Fisheries and Aquaculture Organization (OSPESCA).

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Extension system of shellfish aquaculture is consolidated.	1. 400 small scale fishermen have adopted the improved shellfish aquaculture technology.	<u>Status of achievement: Achieved (Partially continued).</u> (Project Completion) - Technology transfer was done to 258 fishermen on Curil aquaculture and 162 fishermen on Pacific Oyster aquaculture. (Ex-post Evaluation) - Among the 11 fishermen's groups, five fishermen of one group have continued aquaculture of Curil. - Among the eight fishermen's groups, 15 fishermen of two groups have continued aquaculture of Pacific Oyster.
	2. 48 fishermen in the target area of the Project have obtained knowledge to access market.	<u>Status of achievement: Partially achieved (Partially continued).</u> (Project Completion) - 15 fishermen were trained on organizational strengthening and marketing. (Ex-post Evaluation) - At least one fisherman trained by the project on access to the market has partially continued marketing activities, and new fishermen are doing marketing activities with the support of the fisherman trained by the project.
(Overall goal) Shellfish aquaculture is extended to the small-scale fishermen in the eastern part of	1. After 5 years from the end of the Project, the transferred shellfish cultivation technology is adopted by 1,400 small scale fishermen.	<u>Status of achievement: Partially achieved.</u> (Ex-post Evaluation) - After the project completion, the shellfish cultivation technology has been transferred to approximately 100 fishermen.

El Salvador.		
Source: Project Completion Report and information provided by CENDEPESCA.		
3 Efficiency		
Although the project period was as planned (ratio against the plan: 100%), the project cost slightly exceeded the plan (ratio against the plan: 105%). Outputs were produced as planned except seeds production. Therefore, the project efficiency is fair.		
4 Sustainability		
<Policy Aspect>		
Promotion of aquaculture as a whole is prioritized in the “Plan Cuscatlan,” the proposed plan by the Bukele administration when he was elected, and seed production and shellfish aquaculture in Jiquilisco Gulf are included in the “Annual Operational Plan of CENDEPESCA” (2015-2019).		
<Institutional Aspect>		
The number of technicians at CPT has been limited, as two technicians and five assistants have been assigned for seed production, and one in charge of extension planning, seed distribution, support for fishermen, product delivery, links for commercialization and breeder selection. After the technicians were moved to other stations in 2016, no more have been recruited due to budget shortages of CENDEPESCA. The committee for sales of Pacific Oysters trained by the project has not been functioning due to disintegration of fishermen groups, lack of technical support from CPT, and lack of production of Pacific Oysters. Despite the situation given before, however, the authorities of CENDEPESCA have shown willingness to continue the project achievements and improve the conditions of CPT in terms of support for production technicians as well as of the fishermen. CENDEPESCA has planned to restock shellfish especially in La Union as stated in their annual operation plan for the year 2020. The Aquaculture Department of CENDEPESCA has been headed by the project C/P personnel as of the time of ex-post evaluation.		
The facility for seed production has been functioning. However, the facility for purification of Pacific Oysters at Meanguera has not been utilized, because no fishermen have worked there anymore. The operation of the purification facility at Conchaguita has been limited, too, as fishermen do not have sufficient Pacific Oysters. According to the leader of a group, some equipment has been damaged due to the saltpeter and needs to be repaired, although they still can work.		
<Technical Aspect>		
Technicians who have remained at CPT have sustained sufficient knowledge and skills for production and dissemination of Curil and Pacific Oysters, as they worked on the project and got training in Japan and Chile. Training of new personnel is conducted through on-the-job training on conditioning of breeders, seed selection, feeding, change of water, data gathering and management, seed distribution, etc. When a group newly start aquaculture activities, fishermen receive training on biology of the species, reproduction, and selection of growing site and farming method from CPT, where the training materials developed by the project are used. For marketing, they receive advice from the production technician of CPT or technician of CENDEPESCA who is in charge of the area.		
<Financial Aspect>		
Since the time of project completion, annually 55,000 US dollars (USD) have been allocated and disbursed at CENDEPESCA. There has been no revenue from selling seed. The budgets have been for personnel salaries and administrative expenditures, and thus the budget for seed production, extension services, and operation and maintenance of the related facilities is limited.		
<Evaluation Result>		
In the light above, there have been issues in the institutional and financial aspects. Therefore, the sustainability of the effects is fair.		
5 Summary of the Evaluation		
The Project Purpose was partially achieved. More fishermen than planned were trained on the aquaculture technology for production of Curil and Pacific Oysters, though training for marketing was limited. The Overall Goal has been partially achieved, as approximately 100 new fishermen have adopted the aquaculture technology introduced by the Project, despite the security issues. Regarding sustainability, the limitation on personnel and budgets have been obstacles for continuing and extending the aquaculture technology improved by the Project. However, it is in accordance with the plan of the government, and technicians at CPT have sufficient knowledge and skills, and they can conduct trainings to new personnel and fishermen. As for efficiency, the project cost slightly exceeded the plan.		
Considering all of the above points, this project is evaluated to be partially satisfactory.		

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- It is recommended to CENDEPESCA to allocate budgets to CPT for conducting aquaculture activities and maintenance of the related facilities. CPT's technicians have sustained skills and efforts to execute activities with limited budgets, and if budgets and a marketing technician are assigned, they could expand their seed production especially for Pacific Oysters and marketing support.
- It is recommended to CENDEPESCA to increase the number of fishermen for aquaculture of Curil and Pacific Oysters, by approaching local NGOs or organizations and training as facilitators, so that the project experience could be replicated.

Lessons Learned:

- In many areas in El Salvador, there are insecurity issues that could affect the development of activities during their execution or after the project completion. In such countries, it is important to have a strong relationship with the local security authorities (municipal police and National Civilian Police) to monitor the situations and avoid incidents with the beneficiaries, counterpart personnel and Japanese experts. It is necessary to identify security issues at the project formulation stage, if any security is supposed, and to include mitigation measures in the project activities.



Curil produced with support of CPT.



Equipment provided by the project at CPT for production of Pacific Oyster and Curil.