Ex-Post Project Evaluation 2011: Package III-6 (Philippines, Indonesia, Peru, Saint Vincent)

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JAPAN INTERNATIONAL COOPERATION AGENCY

ICONS Inc.

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Preface

Ex-post evaluation of ODA projects has been in place since 1975 and since then the coverage of evaluation has expanded. Japan's ODA charter revised in 2003 shows Japan's commitment to ODA evaluation, clearly stating under the section "Enhancement of Evaluation" that in order to measure, analyze and objectively evaluate the outcome of ODA, third-party evaluations conducted by experts will be enhanced.

This volume shows the results of the ex-post evaluation of ODA Loan projects that were mainly completed in fiscal year 2009, and Technical Cooperation projects and Grant Aid projects, most of which project cost exceeds 1 billion JPY, that were mainly completed in fiscal year 2008. The ex-post evaluation was entrusted to external evaluators to ensure objective analysis of the projects' effects and to draw lessons and recommendations to be utilized in similar projects.

The lessons and recommendations drawn from these evaluations will be shared with JICA's stakeholders in order to improve the quality of ODA projects.

Lastly, deep appreciation is given to those who have cooperated and supported the creation of this volume of evaluations.

January 2013
Masato WATANABE
Vice President
Japan International Cooperation Agency (JICA)

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JICA's comments may be added at the end of each report when the views held by the operations departments do not match those of the external evaluator.

Philippines

Ex-Post Evaluation of Japanese ODA Loan

Social Reform Related Feeder Ports Development Project

External Evaluator: Satoshi Nagashima, ICONS Inc.

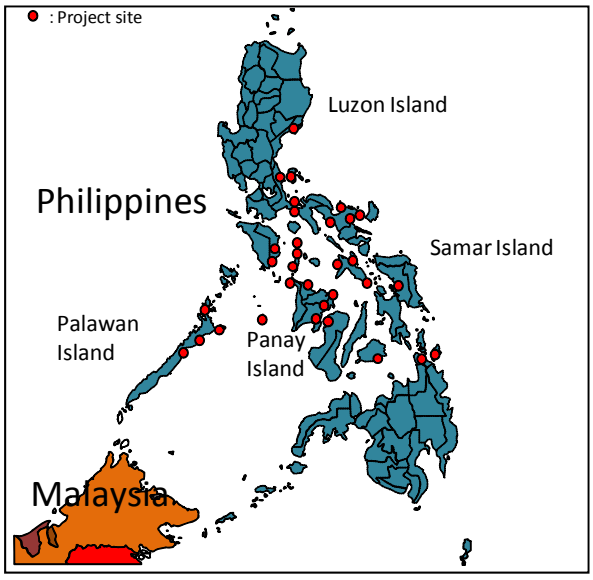
0. Summary

This project had been implemented to activate rural economic activities by constructing 34 ports and related facilities like access roads in the Philippines, thereby contributing to eliminate poverty among impoverished people (farmers, fishermen, etc.).

This project is in accordance with the policies and the development needs of the Philippines, and aid policies of Japan, thus the relevance is high. Since additional investment by the government of the Philippines has been seen for some ports and income classification of some of the municipalities which are the location of the ports was improved, the impact by the implementation of this project has been observed for some sites. However, the situation of the effect of the project differs according to the ports and the statistical information to prove the effect isn't sufficient. For that reason, overall evaluation of the effectiveness and the impact is fair. Moreover, as the project period was extended to a large extent because of the reselection of the project sites and the delay of selection of the contractors, the efficiency is fair. Many ports are managed and maintained properly by local governments because of adequate scale of the facilities and equipment, the ownership of local governments is high, most of the ports are maintained and managed by their own efforts, and the sustainability is high.

In light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project Locations

Roxas Port constructed by the Project

1.1 Background

In the Philippines, an archipelago country which consists of more than 7,100 islands, the role of maritime transport is important. 35% / 115 million tons of cargo transport (domestic cargo was 56%) and 8% / 36 million of passenger transport shared the transportation sector in 1993. Looking at the history of the growth rate of the amount of marine transportation, after a period of stagnation in the first half of the 1980s, growth began from 1987 and it showed about 15% growth per year in 1986-1990. The Government of the Philippines had expected that the number of passengers and the volume of cargo handling would increase by average 5% per year in the marine transport sector by 2010[1]. By constructing the ports, it was expected that sale of local agricultural and fishery products are activated by activating the distribution of man and commodity. After that, poverty reduction was also expected by increasing the volume of sales and the sales price, creating employment around the ports etc.

In the public ports, the development of regional port system was initiated by the Department of Public Works and Highways in 1982. Feasibility studies were conducted by urgency of development for over 141 ports across the country, and assistance for development was requested to Japan (ODA Loan), the Asian Development Bank and USAID, etc. ODA Loan from Japan was requested for the development of 56 ports out of 141 ports and construction of 27 ports and detailed designs for 31 ports were conducted in the "Nationwide Feeder Ports Development Program (herein after referred to as NFPDP) Package I ", and its implementation and supervision were transferred to the Department of Transportation and Communications (hereinafter referred to as DOTC) through the Project Management Office for Ports (hereinafter referred to as PMO-Ports).

After that, because the development needs of the local ports were continuously high and the necessity of poverty eradication was growing, the government of the Philippines requested this project.

1.2 Project Outline

The objective of this project is to vitalize the economic activities by improving ports and related infrastructures such as buildings, utilities and access roads to the ports, in isolated areas where the main means of access with other regions was only shipping, thereby contributing to eradication of poverty among impoverished people (farmers and fishermen, etc.).

[1] Material provided by JICA

Loan Approved Amount/ Disbursed Amount	5,746 million yen / 4,286 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March, 1997 / March, 1997
Terms and Conditions	Interest Rate: 2.7% Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General untied （Procurement of the consultants is general untied）
Borrower/Executing Agency	DOTC / Ditto Guarantor: Government of the Philippines
Final Disbursement Date	December, 2008
Main Contractor (Over 1 billion yen)	Golden City Engineering and Construction (Philippines) ／ Home Construction Inc. (Philippines)・J.E. Manalo Co., Inc (Philippines) (JV)／Marra Construction (Philippines)・C.S. Santiago Construction Co., (Philippines) (JV)／Equi-Parco Construction (Philippines)・Sunwest Construction & Development Corp. (Philippines)・Atlantic Erectors Inc. (Philippines) (JV)
Main Consultant (Over 100 million yen)	Nippon Koei Co., LTD (Japan)・The Overseas Coastal Area Development Institute of Japan (Japan)・Basic Technology and Management Corporation (Philippines)・BCEOM Societe Française D'ingénierie (France)・PKII (Philippines)・Schema Konsult Inc. (Philippines)
Feasibility Studies, etc.	National Economic and Development Authority (herein after referred to as NEDA)
Related Projects	Nationwide Feeder Ports Development Project (NFPDP) Package I (1988) Infrastructure Program for Municipal Ports (1992-1994, ADB) Palawan Integrated Area Development Project (ADB) Port Projects for Small island Province (KFW) Rural Infrastructure Fund Project (USAID)

2. Outline of the Evaluation Study

2.1 External Evaluator

Satoshi Nagashima (ICONS Inc.)

2.2 Duration of Evaluation Study

Duration of the Study: December, 2011 – January, 2013

Duration of the Field Study: January 15th – February 2nd 2012, May 19th – June 2nd, 2012

2.3 Constraints during the Evaluation Study

In this project, 34 ports were constructed throughout the Philippines. From the resources and time constraints, it was impossible to conduct a site survey for all target ports. Therefore, site survey was carried out for 15 ports (direct management by the external evaluator and referral to a local consultant) and a questionnaire survey was also conducted for the rest (11 ports out of 19 ports had responded). Finally, information on 26 ports in total was collected and the project was evaluated[2].

The local ports which were targeted in this project are mainly managed by Local Government Units (hereinafter referred to as LGU), and the situation regarding collection of the statistics before and after implementation of this project is different by each LGU. Therefore, it was difficult to make cross-sectional comparison of statistics on the ports that were obtained through questionnaires and site surveys. In addition, the DOTC which is the executing agency collected statistical information on the ports constructed in the project by submission through the internet on a voluntary basis, and the acquisition of continuous statistical information from the beginning of the project to the present was also difficult. For these reasons, the statistical information of the impact assessment survey which was conducted within the framework of this project in 2008 was used for the evaluation of the effectiveness of the project.

3. Result of the Evaluation (Overall Rating: B[3])

3.1 Relevance (Rating: ③[4])

3.1.1 Relevance with the Development Plans of the Philippines

[2] For the site survey, eight ports which weren't covered in the impact assessment survey after completion of the project were selected. In addition, seven ports which several ports locate in near area to carry out the survey efficiently during the limited period were also selected. Therefore total 15 ports were surveyed.

[3] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[4] ③: High, ②: Fair, ①: Low

Then President Ramos aimed at equitable growth and announced Medium-Term Development Plan in 1993 and the Social Reform Agenda (hereinafter referred to as SRA) in the following year (in 1994), and worked for the eradication of poverty as a top priority. About two-thirds of these poor were landless farmers, small-scale farmers, fishermen, etc., and raising their income was the main purpose of the SRA.

After the SRA was completed, there were several presidential elections in 1998, in 2001, in 2004 and in 2010, and not only were new policies formulated, but also the organization of DOTC which had implemented these policies changed greatly. However, reducing the poverty by economic revitalization thorough the construction of ports was aimed for in succeeding policies such as “the Strong Republic Nautical Highway” in 2003 by former President Arroyo. In addition, the current policy “Philippine Development Plan 2011-2016” is also aiming to activate the local economy by establishment of maritime routes and to improve the situation of food security and income in rural areas by development of agriculture and fisheries. Therefore, “poverty reduction through the construction of the ports” has been passed down by succeeding policies, and the basic policy hasn’t changed.

3.1.2 Relevance with Development Needs of the Philippines

The Philippines is an archipelago country and means of transport were limited to seaway in the areas where the road condition was inadequate. Human and goods exchanges were limited because the means of transportation were limited. Though agriculture and fisheries were important income sources in the rural area, the poor distribution of agricultural and fishery products was a big bottleneck for rural development in the Philippines.

At the timing of the ex-post evaluation, the situation continues as access roads were inadequate and means of transport in remote islands were limited only to maritime transport, and this situation has prevented the development of the agriculture and fisheries. Therefore the project, which aims to eliminate poverty by constructing ports in the areas where the means of the transportation are limited to only maritime transportation and activating the flow of goods, is consistent with the development needs.

3.1.3 Relevance with Japan’s ODA Policy

According to the survey and the study conducted by Japan on the actual situation and the agenda for development and the development plans in the Philippines, and Country Assistance Program for the Republic of the Philippines based on the policy dialogue with the Philippines by the economic cooperation study team, etc. dispatched in March

1999, priority goals were mentioned as (1) Strengthening the economy and overcoming growth constraints toward sustained economic growth, (c) Improving economic infrastructure (energy, transportation etc.): “overcoming the underdeveloped economic base which could be a bottleneck for economic development (especially, considering the balance between urban and rural areas and strengthening the industrial base)“, and (2) Rectification of disparities (alleviating poverty and redressing regional disparities), (a) agriculture and rural development: “improvement of basic social and economic infrastructure in the rural area”. Hence, this project is consistent with Japan’s ODA policy.

This project has been highly relevant with the country’s development plans and development needs as well as Japan’s ODA policy, therefore its relevance is high.

3.2 Effectiveness[5]（Rating: ②）

3.2.1 Quantitative Effects (Operation and Effect Indicators)

In the project, construction and rehabilitation of 34 ports were divided into five packages as Package A to Package E and were implemented as shown in Table 1 below[6].

Table 1 Name of the ports from Package A to Package E

	Name of ports
Package A	Caramoan port, San Jose port, Tamban port, Pasacao port, Real port, Polillo port
Package B	Looc port, Said port, Liminangcong port, Roxas port, Araceli port, Estancia port, Culasi port, Conception port
Package C	Banton port, Corcuera port, Alabat port, Atimonan port, Dumangas port
Package D	San Jacinto port, Aroroy port, Cataingan port, Mangingisda port, Cuyo port, San Sebastian port, Placer port
Package E	Dingalan port, Pitogo port, Sabtang port, Recode port, Alegria port, Victorias port, Ivana port, Soccoro port

Source: Material provided by JICA

As mentioned in “2.3 Constraints during the Evaluation Study”, due to the constraints

[5] Sub-rating for Effectiveness is to be put with consideration of Impact

[6] In the previous project NFPDP, two model ports were packaged separately and 25 ports were packaged as one, and it was divided into three packages. Therefore it took extra 30 months for preparation due to the scattered distribution of 25 ports, lack of machineries and manpower, and damage of natural disasters, etc. Because of the lessons learned from the previous project, it seems that the project was divided into five packages. However, for the package E, the target ports were changed after commencement of the project, the target ports weren’t located in a region and it was scattered.

of statistical information, comparison was made between before and after completion of the ports by using the statistics of the impact assessment survey for the evaluation of the quantitative effects[7]. About the operation and effect indicators for the ports of package A-D, Table 2 below shows a summary of the results.

Table 2 Number of ports of Package A to D which have more than 120% of growth rate from 1998 (before the implementation) to 2007(after completion)[8]

Indicators	Number of ports which have more than 120% growth rate / Number of all ports
Volume of cargo handling	18 ports / 26 ports (69.2%)
Number of passenger transportation	17 ports / 26 ports (65.3%)
Number of ship calls	8 ports / 26 ports (30.8%)
Volume of fish catch	8 ports / 17 ports (47.1%)[9]

Source: Impact assessment survey

On the other hand, site survey was carried out for all eight ports of the Package E, because the ports of package E weren't included in the target in the impact assessment survey and additional information was necessary. However, there was no LGU that had kept previous statistics, and there were also no statistics of the pre-construction in the feasibility study report. Therefore, quantitative evaluation of the effectiveness was attempted by using the predicted value in the feasibility study[10]. As a result, the value of statistics of six out of eight ports (except Soccoro port and Sabtang port) was found to be less than the predicted value of feasibility study.

From this result, on the trends of number of passenger transportation and volume of cargo handling, the number of ports where the value after the project completion exceeds the value before the project isn't enough and the effect is distant. For the package E, there was delay in generating the effect of the project for the following

[7] In this evaluation, there was no choice but to use only the information in 1998 and in 2007 mentioned in the report of the impact assessment survey from the constraints of available information. However, the value of statistics such as number of passenger transportation and volume of cargo handling has large annual variation and it is difficult to evaluate the project only by those results.

[8] As the growth rate of maritime sector in the Philippines is about 2% per year, and if there is a growth rate of more than 120% for ten years, it is presumably by the result of the project. However, Corcuera port wasn't operated in January 2012 because it was damaged by the typhoon (the restoration plan is in progress).

[9] Three ports which are difficult to compare the situation before and after are not included.

[10] In the feasibility study, future number of passenger transport and volume of cargo were estimated based on the plan. By comparing the value with actual value of statistic, the effectiveness was evaluated whether the ports were utilized as planned.

reasons: 1) the development needs were changed because of the delay in completion time; 2) there was a problem on the accuracy of the feasibility study; and 3) there wasn't sufficient follow-up by the DOTC (such as training) to place the operations in orbit after the completion of the construction.

In addition, it was also revealed that the number of ship calls tends to decrease after completion of the construction of the ports. As this factor, according to interviews with DOTC, it was explained that larger vessels were able to call at more ports than before because of the construction of the pier and RO-RO ramp[11], and transporting large volume of cargo and number of passengers has been possible at a time.

3.2.2 Qualitative Effects

Among the ports constructed under the project, Pasacao port, Estancia port and Roxas port have been operating smoothly because awareness of the LGU is high, and the revenue of these ports is one of the important sources for the LGU. The fact that the income of the port becomes an important source of revenue of LGU means that the revenue becomes source for conducting the public works and it is important from the viewpoint of redistributing the economic effect of the port to local population.

In this ex-post evaluation, beneficiary survey[12] was conducted to verify the benefit after the completion of the project at four ports out of the 34 ports. The result is shown in Table 3 below. According to the results of this survey, the benefits were: reduction of travel time (the percentage of beneficiaries who answered "there was a benefit" was 48.7%), reduction of loading and unloading time for cargo (the percentage of beneficiaries who answered "there was a benefit" was 41.1%), reduction of damaged cargo (the percentage of beneficiaries who answered "there was a benefit" was 23.2%), increase the volume of transportation of cargo (the percentage of beneficiaries who answered "there was a benefit" was 21.4%), and increase of volume of fish catch (the percentage of beneficiaries who answered "there was a benefit" was 19.5%). For the reduction of travel time and reduction of loading and unloading time for cargo, half of the beneficiaries feel that there were some benefits. However, for reduction of damaged cargo and increase in the volume of transportation of cargo, 80% of the beneficiaries didn't recognize a significant change after the project. These benefits are mainly for the business operators of cargo and passenger boats, and it seems that it

[11] RO-RO ship (roll-on/roll-off ship) is a kind of cargo boat which is installed a ramp as a ferry and has a deck boat for cars to store cargo trucks etc.

[12] Beneficiary survey was conducted by a questionnaire for the users of Pasacao port, Tamban port, Estancia port and Alegria port at the survey time and samples were randomly selected.

isn't reflected in the results of the beneficiary survey.

Table 3 Result of the beneficiary survey at 4 ports

	Yes	No
Reduction of travel time	48.7%	51.3%
Reduction of loading and unloading time for cargo	41.1%	58.9%
Reduction of damaged cargo	23.2%	76.8%
Increasing volume of transportation of cargo	21.4%	78.6%

Source: Beneficiary survey

3.3 Impact

3.3.1 Intended Impacts

(1) Economic revitalization of the surrounding area

In the ports visited in this survey, Pasacao port, Tamban port, Estancia port, Dumangas port, Mangingisda port and Roxas port, ten years have passed since the completion of construction and the access roads to neighboring areas have been constructed. Because of this, these ports are functioning as the hub ports to transport cargos and passengers between the markets and surrounding islands and barangays[13] for which the means of transport are limited to only maritime transport. In addition, job creation such as porters and new openings of restaurant have been seen in the many of the ports constructed in this project, and it thus contributes to activate the peripheral economy.

Photo: Transshipment of fish in Estancia port

Photo: Passenger boat from surrounding barangay to Tamban port

On the other hand, though the operation of a passenger and cargo boat was planned in Alegria port, the operation of the boat was stopped after one month of the opening of

[13] Smallest local governing unit of cities and towns in the Philippines

the port because the boat couldn't be anchored safely for rough waves. For that reason, it is considered that the aim of the project to development rural economy by increasing number of passengers and cargo handling with other ports hasn't been achieved adequately.

(2) Additional investment by self-help efforts of the Government of the Philippines

In Dumangas port and Aroroy port which are operated by PPA, PPA constructed a RO-RO ramp, pier, etc. under its own funding. In particular in Aroroy port, EIRR[14] was 18.32% in the feasibility study, but it had become 52.78% when it was recalculated in 2007. This is because Aroroy port becomes part of the nautical highway of the RO-RO ferries and the economic effect is high compared with other ports. These ports have re-invested in the port facilities based on this project and utilized them effectively, and the impact of the project has been high.

Photo: Re-invested part of the Dumangas port

3.3.2 Other Impact

3.3.2.1 Impacts on the natural environment

By the result of the interview survey in DOTC and each port, no major negative impact on environment has been seen in the project.

3.3.2.2 Land Acquisition and Resettlement

According to the interview survey in DOTC, all land of the project sites was the property of the Philippines government and no problem occurred in the land acquisition and resettlement.

3.3.2.3 Unintended Positive/Negative Impact

According to the transition of LGU's population and revenue classification[15] in the target LGU of the project, the ports from package A to package D where the revenue classification of LGU increased by more than one step from 1995 to 2012 were 23

[14] Economic Internal Rate of Return

[15] In Philippine, LGU is classified by the level of the income from 1st class (more than 50 million php) to 6th class (Less than 10 million php).

ports out of 26 ports. Among them, there were 14 ports where the revenue clarification of LGU increased by two or more steps. For Dumangas LGU, it increased three. There were only two ports in package E where it was possible to compare the revenue classification data before and after the project, and both of them rose by one step. For the port where revenue classification of the LGU increased two steps, it seems that the project contributed to increase the revenue of the LGU by the economic impact[16] of increasing the number of transported passengers and the volume of cargo after the construction of the port because the timing of the increase matched the timing of the construction period.

By the analysis above, even though there are lots of ports where the tendency of increase on volume of cargo or number of passengers after the project cannot be seen, the income of the ports accounts for substantial fraction of income source for some LGUs, and LGUs regard the existence of the ports as important, and it seems that the ports have contributed to 70% of LGUs increasing the level of the revenue classification. In addition, in the port managed by PPA, additional investment was made to construct piers, etc. and the ports were utilized more effectively. For that reason, the impact of the project has been seen.

This project has somewhat achieved its objectives, therefore its effectiveness is fair.

[16] For the income of LGU in 2010, the percentage of the income of Pasacao port was approximately 2% and the income of Estancia port was approximately 7% in the total income including revenue share from the central government. In addition, on the percentage of the income locally collected except revenue share, the percentage of the income of Pasacao port was approximately 11% and that of Estancia port was approximately 21%.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

34 ports were constructed or rehabilitated in the project. The plan and the actual results are shown in the Table 4 below.

Table 4 Target ports in the project (the plan and the actual result)

Planned	Actual result	Main port facilities and support facilities
1) Caramoan port 2) San Jose port 3) Tamban port 4) Pasacao port 5) Real port 6) Polillo port 7) Looc port 8) Said port 9) Liminancong port 10) Roxas port 11) Araceli port 12) Estancia port 13) Culasi port 14) Conception port 15) Banton port 16) Corcuera port 17) Alabat port 18) Atimonan port 19) Dumangas port 20) San Jacinto port 21) Aroroy port 22) Cataingan port 23) Mangingisda port 24) Cuyo port 25) San Sebastian port 26) Placer port 27) Baler port 28) Aguining port 29) Casiguran port 30) Daan Banwa port 31) Poblacion port 32) Milagros port 33) Tangub port 34) E.B. Magalona port 35) Sabtang port	1) ～26) No change 27) Dingalan port 28) Pitogo port 29) Sabtang port 30) Recodo port 31) Alegria port 32) Victorias port 33) Ivana port 34) Soccoro port	Main port facilities constructed in the project - Pier - Causeway (including renovation) - Reclamation - Breakwater - Stair landing - Navigation - RO-RO ramp - Dredging Main support facilities constructed in the project -Access road - Multi-Purpose shed (with port office and waiting room) - Ice storage - Toilet - Water supply and sewerage system - Electricity supply system - Yard lighting - Guard house - Fence and gate Others - Technical assistance for strengthening the operation and the maintenance

Source: Material provided by JICA

In the beginning, the project targeted 12 ports which had already finished the detailed design in the previous project, NFPDP and 23 ports which had not yet finished the detailed design were selected. However, even for 12 ports which had already finished

the detailed design, review and revision of the target port and the target component were carried out by the consultant again after the beginning of the project. For the revision of the target components, it was reasonable that the main reasons to change were for more effective use as changes in the natural environment (such as changes in water depth by siltation) or expansion of the target area after the feasibility study. In addition, for changes in the target ports, it was also reasonable that the main reason of the changes was decreasing the importance of the port because of improvement of the roads in their partner ports[17] or low EIRR at the target ports.

According to DOTC, it is essential to review the scope of works of the project after loan approval, and difficult to eliminate the review works. Therefore it is necessary to improve as 1) the Philippines government includes extra period in the project schedule to carry out the review of the feasibility study result after commencement of the project, and 2) the Philippines government simplifies and integrates the procedure such as having approval each time from NEDA when part of the contents of the project changes.

3.4.2 Project Inputs

3.4.2.1 Project Cost

On the cost of the project, total cost in the plan was estimated as 7,661 million JY (the part of ODA Loan had been 5,746 million JY) and the actual total cost was 5,529 million JY (the part of ODA Loan had been 4,286 million JY), and it is lower than planned (72% by comparing with the plan).

On the total cost, the difference of estimated and actual cost was 2,132 million JY. It is considered that is because the exchange rate of Yen against Peso was approximately 4 JY in the planning stage (in 1996), but it decreased to approximately 2.34 JY[18] in 2008.

3.4.2.2 Project Period

On the project period, L/A signing was planned in March 1997 and the beginning of the civil works was planned after one year and nine months, and completion of the works estimated four years and four months, and the total period was planned for six years and one month (73 months). The actual project period was between September 1997 and December 2008, and the total period was for eleven years and three months (135 months). As a result, the actual project period was longer than planned (185% compared to the plan).

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[17] The definition of partner ports in Philippines is the port of other party which mainly transports the cargo and passengers. In case of constructing cargo and passenger ports, impact of the development will be higher if a port and the partner ports are constructed at once.

[18] The average has been calculated based on the annual data of 2008 from OANDA.

In the project, the project period was extended five years and ten months by the procedure of change of the scope of works of the facility and change of the target ports in the Philippines government. According to the interviews survey in DOTC and documents provided by JICA, the major reasons for this are as follows.

(1) Regarding ports which change the contents of the facilities, it was necessary to re-evaluate the feasibility study as requirement of NEDA, and procurement of the consultant and the contractors was delayed.

(2) Because of increased project costs of packages A-D, target ports for the package E were changed after the beginning of the project and it took more time for the process for obtaining the additional allocation of the budget from the Department of Budget Management for package E.

(3) Postponement of the meetings for the selection of the ports for package E due to the change of high-ranking officials of DOTC, prolonged the procedure of selection of target ports of package E.

Because of the delay of the process above, the packages A-D of the project were delayed 16-20 months and it took approximately five extra years to complete the pre-construction and construction activities package E. Thus, for the project period, it can be cited that the factors causing the planned project period to be exceeded were the change of target ports in the package E and the long procedure of its change. In addition, the experience under the NFPDP, the project sites of the packages A-D were grouped in the neighboring regions but the project sites of the package E had to be scattered about because the selection of the target ports was started after the start of the project. As seen above, the effectiveness was decreased on the side of the construction.

3.4.3 Results of Calculations of Internal Rate of Return (IRR)

In the project, the ports in the packages A-D had already been completed and started operation in 2003 and the impact assessment survey was carried out by DOTC in 2008. The result of the EIRR is compiled as shown in Table 5 below.

Table 5 Revised value of EIRR on Package A-D

	Package A-D
Number of ports where the EIRR at the time of impact assessment survey (in 2007) was higher than the one at the feasibility study (in 1998)	21 ports / 26 ports[19]
Number of ports where the EIRR was over 15% (baseline set by NEDA) at the time of impact assessment survey (in 2007)	26 ports / 26 ports

Source: The data in the impact assessment survey is assembled by the writer

According to the impact assessment survey, the EIRR of all ports in packages A-D exceeded more than 15% which the value was set by NEDA, and the EIRR after the completion of the project was higher than the EIRR calculated before the project at approximately 80% of ports. In addition, the EIRRs of Dumangas port and Arroy port were greatly improved (from 21.59 % to 86.36 % for Dumangas port and from 18.32 % to 52.78 % for Aroroy port). The reason for the difference can be considered that the number of transported passengers and volume of cargo handling increased largely compared with the plan.

For the ports of package E, revision of the EIRR was done at each port during this ex-post evaluation study. The result was assembled as shown in Table 6 below.

Table 6 Revision of EIRR for Package E

	Package E
Number of ports which the EIRR at the ex-post evaluation study (in 2012) is higher than the one at the feasibility study (in 2000)	1 port / 8 ports (Note)
Number of ports where the EIRR is over 15% (baseline set by NEDA)	3 ports / 8 ports (Note)

Source: Result of site survey

(Note) To evaluate the whole picture of the project, 1) some ports where hadn't started, 2) some ports where had just started the operation, and it was impossible to calculate the EIRR, are also included in the Figure.

On the ports of the package E, three ports out of eight ports exceeded the 15% EIRR set by NEDA and the result was lower than in packages A-D because all ports exceeded 15% of the EIRR in packages A-D. However, for the package E, the operation and the management of four ports hadn't started or had just started and it

[19] However, Corcuera port was damaged by typhoon and currently not used. Repairing is being implemented as of January, 2012.

was impossible to calculate. This was one of the factors in lowering the result of EIRR for the package E.

Although the project cost was within the plan, the project period was significantly exceeded, therefore efficiency of the project was fair.

3.5 Sustainability (Rating: ③)

3.5.1 Structural Aspects of Operation and Maintenance

The 34 ports constructed in the project were different in terms of the scale and the function. Four of middle scale passenger and cargo ports had been transferred to PPA after completion of the project and directly managed by PPA now. The operation of the other 30 small scale passenger and cargo ports and fish ports had been transferred to LGU, and these ports are still managed by LGU.

For the ports managed by LGU, Port Management Unit (hereinafter referred to as PMU) organized by LGU is the management body. Though all LGU ports are run by PMU, the structure of the PMU is varied. For example in the LGU ports visited in the site survey, full-time LGU employees are working as the port managers in Tamban port, Estancia port and Roxas port, the port manager in Pasacao port has another post in the LGU, and in Mangingisda port, a port manager (LGU employee) in the central fish port manages not only the Mangingisda port but other satellite ports.

According to the interview survey and the questionnaire survey, lack of professional staffs is seen in the ports run by LGU. However the management of most of the LGU ports in the project is just to collect utilization fees and no critical problem has been seen in the management by the LGU. However, according to the interview survey with DOTC, some LGU change the port managers every three years at the timing of mayors' terms, and it causes the problems in continuity of port management of the LGU ports.

On the other hand, in the middle scale passenger and cargo ports managed by PPA; Dumangas port, Aroroy port, Cuyo port and Liminangcong port, the port managers are PPA staffs and the management itself is normally entrusted to the private cargo handling companies. In the case of Dumangas port, a PPA staff who had professional training on port management was a port manager and there was no problem in the management.

The project management was done by PMO-Ports. After the completion of the project in 2008, PMO-Ports ceased its activities but a web site "dotcfeederports.asia" is being operated by DOTC to collect the statistics on the operation and the project effect,

and to measure the capacity of the LGU. DOTC is collecting information of each ports through the website; however, 1) submission of the statistics is on a voluntary basis, 2) there are some ports which don't have internet connection, and 3) after renewal of the website, some port managers don't know how to fill in or login, and there are only seven ports out of 34 ports which submit the statistics every month as of January, 2012. In addition, there is another reason for the low submission rate in that DOTC doesn't show them how DOTC utilizes the collected data. In this manner, the monitoring body of the project has been unclear after the project completion.

To deal with this situation, DOTC has prepared a department order and is requesting the monitoring and technical assistance to PPA and Philippines Fisheries Development Authority (hereinafter referred to as PFDA).

For the monitoring activities of ten ports which are categorized as the fish ports, a Minute of Agreement (hereinafter referred to as MOA) was signed with DOTC and PFDA in 2010 and PFDA is currently trying to have MOA with each LGU of the ports (LGUs of Dingalan port and Recode port have signed the MOA at the timing until June 2012). When LGUs sign the MOA, LGUs can receive technical assistance from PFDA as participating training courses but there is also duty to pay equivalent to 10 % of net income to PFDA. For that reason, some LGUs like Estancia and Pasacao refuse to sign the MOA because there isn't necessity for the technical assistance and it is unreasonable to pay 10 % of net income to PFDA. In addition, PFDA also doesn't have any budget for site visits and the conclusion works of MOA haven't progressed smoothly.

On the other hand, though DOTC is moving forward with the procedure for MOA with PPA on the monitoring activities for the ports which were categorized as cargo and passenger ports (22 port of NFPDP and 21 ports of the project), PPA hadn't signed yet as of June 2012. According to the interview survey, the reason for the delay is; 1) some fish ports were included in the list for target ports, 2) MOA hasn't approved yet because of replacement of high officials such as the Department Secretary after change of the President. After the signing of MOA, PPA will start the procedure to have an MOA with LGU. Though LGU can receive technical assistance such as introducing a reporting system and training opportunities after sighing MOA, LGU has to pay 10 % of net income to PPA as in the case of PFDA. For that reason, as in the example of PFDA, there is a possibility that some LGU won't sign the MOA.

In this way, there are some problems on the actual monitoring system of DOTC and future monitoring system by PPA and PFDA. However, the main operation and management bodies of the ports are LGU and PPA, and it is confirmed from interview

and questionnaire survey that currently there is no problem on collecting utilization fee and management of the budget, etc. by LGU's self-help effort. In addition, high ownership of LGU was seen for the constructed ports as the ports were repaired or expanded by LGU's proprietary budget in eight ports visited in the site survey. Therefore, the little problem of the monitoring system seems not to be a big bottleneck for the project.

3.5.2 Technical Aspects of Operation and Maintenance

Except for the ports which are managed by PPA, an organization which has special technique for the port operation, the management of the LGU ports is carried out by the municipal officers who don't have any expertise on the port management. In the LGU ports, there are no permanent staffs of the port operation specialists or civil work specialists and lack of the technique is seen. To reinforce the lack of the technique of LGU, the training shown in Table 7 was conducted for LGU and PMU in the framework of the project. In addition, ten ports out of 34 ports were selected between 2009 and 2010, and additional training was conducted for the organization reinforcement by the local consultant.

Table 7 Trainings which have already been carried out

Name of training	Implemented year
Training for the operation and maintenance	1999 - 2000
OJT	- 2005
Training for Web base record, report and the monitoring system	2008
Additional training	2007 - 2008

Source: Document provided by JICA, Inception Report of "Institutional Strengthening Assistance for the Social Reform Related Feeder Ports Development Project"

Some LGU ports such as Roxas port, where the third party evaluator visited in the site survey, regarded the contents of the training such as visiting other ports to be useful. However, there were some cases where the contents of the training weren't passed over to the successor when the port manager was shifted. On the other hand, there were also some cases where new port managers learned the port operation through the Feeder Port Operation Manual (prepared by DOTC in this Project) which was took over from their predecessors. For that reason, considering the current situation, it's more effective to send the port operation manuals, etc. to the port managers regularly once in several years rather than organizing a training which is more expensive.

As seen above, it's seen that technical capacity is lacking in the LGU ports. However, most of the ports haven't installed some equipment such as an ice making plant or a refrigerator which is necessary for the regular maintenance. In addition, the operation of the port is just collecting utilization fees from users and it's simple. For that reason, the operation and the management of the ports are possible even if LGU officers don't have special expertise.

3.5.3 Financial Aspects of Operation and Maintenance

On the financial aspect, in seven out of eight LGU managing ports that the external evaluator visited in the site survey, it was confirmed that utilization fees were collected based on the municipal ordinance or port code and were entirely deposited to LGU municipal treasurer (municipal ordinance wasn't yet approved in San Sebastian LGU at the time of June 2012 and the port hadn't collected the utilization fees yet). On the expenditure, it is recorded by the municipal treasurer and some PMU didn't know the amount of the expenditure.

For the case of the PPA ports, PPA entrusts the operation to cargo handling companies and the income is collected by the company.

The information of financial aspect collected through site survey and questionnaire survey are written up as shown in Table 8 below.

Table 8 Financial situation of the 18 ports in the project

	Number of ports
Positive figure in last three years	12
Negative figure once in last three years	2
Negative figure twice in last three years	3
Negative figure in last three years	1

Source: Results of site survey and questionnaire survey

In consequence of interview surveys at the site and questionnaire surveys, 18 ports submitted the financial data and 12 ports showed positive figures in the last three years. On the other ports, there were negative figure once or twice in last year except Cuyo port. For Cuyo port, negative figure continued in last three years but LGU filled in gaps. For the LGU ports, the salary of the port managers is paid by LGU and LGU allocates the budget for repairing the facilities of port. For that reason, it is regarded that the financial situation of LGU ports is in good condition.

As a result of site survey at Alegria port, the balance was negative in 2009 and 2010.

However, the LGU explained that this is because the causeway had collapsed in the typhoon in 2008 and a large amount of budget was necessary for repairing. However, the LGU (Buruanga) allocates 50,000 php every year for the operation of Alegria port and it was also confirmed that they were also intending to manage the port and even let the negative balance continue for the aspect of the social service.

Interview and questionnaire surveys were carried out for LGU ports about the usage of the income and 15 ports responded. It was confirmed that only two ports, Conception port and Dingaran port, had special account only for maintenance of ports. For the other ports, the income used as a general account. However, even at the LGU ports which only have a general account, part of the income is used for repair of the ports as necessary.

On the PPA ports, the system is different from the LGU ports. The income is collected and deposited at PPA central office through PPA branch offices, and when money is necessary to repair the ports, budget is distributed from the PPA central office.

In this way, the short term cash flow is good in many ports. Even some ports, such as Alegria port where the balance is negative, the LGU offered support by allocating the budget every year and there was no negative effect for the management.

In addition, according to the survey results of income and expenditure of LGUs which have managed each port from 2009 to 2011[20], more than 80% of LGUs have available capacity in balance such as one million php which is expected to be spent on repairing minor civil works. Therefore, it is expected that LGUs assist the operation and the maintenance of the facilities even though the income of the ports hasn't been in the special account. Furthermore, it was confirmed during the interview survey at PPA that the financial base of PPA has already been established, and it is expected that PPA will continuously assist the PPA ports in the future.

3.5.4 Current Status of Operation and Maintenance

For the ports of packages A-D, most of the ports are managed properly. For the ports of package E, four ports haven't started the operation or just started the operation and it is too early to evaluate the status of the operation and the maintenance.

According to the interview and questionnaire surveys, the external evaluator confirmed plans to repair or renew the facilities and the equipment of Pasacao port, Polillo port, Looc port, Roxas port, Estancia port, Corcuera port, Dumangas port and

[20] The data has been procured form the homepage of Department of the Interior and Local Government

Dingalan port. In addition, it was also confirmed that at Estancia port, Dumangas port, Real port, Alabat port, Arroy port, Placer port, Recodo port, Alegria port, Roxas port and Caramoan port, LGUs have repaired or renewed the facilities and the equipment.

Photo: Repaired part of causeway (Alegria port)

Photo: Repaired part of the ports (Estancia port)

In the preceding projects of the NFPDP, which was carried out by Japanese ODA Loan in the Philippines, several problems were seen;

(1) Though PPA had the ownership of the ports, the details about the operation had not been determined, and the operation and maintenance structure had not been established. Therefore, only three ports out of 27 ports requested to transfer the management from PPA to LGU. As a result, the port management unit had not collected the utility fee and the budget system for the operation and the maintenance of the project was also not established.

(2) The training in operation and maintenance skills for LGU was supposed to be implemented when the PPA relegated the management to LGU.

By the lesson learned from NFPDP, four ports out of 34 ports are directly operated by PPA, and the operation of 30 ports has been already transferred to the LGUs under this project.

In this way, based on the experience in the works of NFPDP, the project implementation and the operation and maintenance have been improved.

Because of the analysis above, no problem is seen for the PPA ports in the operation structure, the operation technique and the financial aspect.

For the ports managed by LGU, minor problems are seen for monitoring structure for the operation by DOTC but no severe problems have been seen. In addition, the operation of

the LGU port is just collecting utilization fees, and it isn't so complicated and no special technique for the operation is required. The equipment which requires the regular maintenance was rarely introduced and high technical skills for hardware side aren't required, and there isn't big problem in the technical aspect. Furthermore, big problem hasn't seen for short term cash flow in the financial situation of LGUs and financial capacity of LGU was adequate to support the operation. Lastly, concerning the situation of the operation and the maintenance, the many cases of own effort by LGU have been seen to fix damaged facilities and the equipment, and the assistance by the government of the Philippines was also seen.

No major problems have been observed in the operation and maintenance system, therefore sustainability of the project effect is high.

Column　Detailed Analysis for Fish Ports

Infrastructure construction for fisheries sector is underway by using fisheries grant in our ODA. In the future, in order to carry out the efficient formation of similar projects, it is important to know what kinds of factors the fishing port projects that are utilized properly and efficiently had.

In this ex-post evaluation survey, four fishing ports in the project were targeted and a more detailed analysis was carried out to extract good practices for port management, the livelihoods improving for fishermen, and some factors between fishing ports used and fishing ports not used from the viewpoint of the user. The following is a summary of the results of that analysis.

(1) Factors for successful operation and management of the port

According to the analysis on the appropriate operation and the management structure, all port managers didn't have any expertise for the port operations in 4 target ports and there was no significant difference. However, there is a significant difference depending on whether they are allocated full-time staffs for the port operation following the port manager. Problem was pointed out from DOTC that the experienced port manager sometime shifts after the election of the mayor. For that reason, it is important to allocate full-time staffs because the port operation won't be affected by the change of the mayor.

In addition, in the case of Estancia port and Pasacao port, the mayor was directly and eagerly involved in the port operation and was actively involved in solving the problems of conflict with the PPA port. For that reason, mayor's dedication to the operation and the leadership are also important factors.

Regarding the operation and the management technique, there was no significant

difference among four ports. Even Estancia port, where the situation of the operation and the maintenance goes smoothly, the record of the maintenance wasn't kept and no spare parts were stocked. One of the key factors concerning why the operation and the maintenance were working except Alegria port is that the operation itself is simple. In these ports, there are no facilities and equipment such as an ice making plant or a refrigerator that require regular maintenance, and the ports aren't involved in the transaction of fish or sale of ice, and PMU just collects the utilization fees such as fish landing fee and parking fee, etc. For that reason, it could be better to enhance the sustainability if the functions of the ports are demarcated so that the government side just supports the basic facilities of the ports as the causeway or the pier, and the private sector invests additional facilities such as ice making plants and refrigerators by their effort.

Regarding the financial aspect of the operation and the maintenance, a system to collect fees, such as fish landing fee and parking fee in accordance with the municipal ordinance has been established, and there was no significant difference in all four ports visited. However, for the Estancia port, enough personnel is working for fee collection and passenger and cargo boats always use the ports. Therefore, there is a sufficient income. Normally, balance of fish ports isn't stable because the fishing activities depend on the season and the climate, and the income is unstable. For that reason, it is important factor to diversify the income sources to stabilize the balance of the ports.

(2) Factors of fishing port contributing to the enhancement of the livelihood of fishermen
Regarding the marketing system, in Estancia port, the middlemen are coming to purchase regularly from the outside because roads to major cities have been already connected, and stable landings can be expected. Therefore, it can be seen that purchase price of fish has been rising by competition principle among the middlemen, and that is the reason that Estancia port is being used well. There is also a local market next to the port, and it is connected directly to seafood demand in the region.
On the other hand, at the four ports including Estancia port, it was confirmed that the activities of the fishermen's association aren't so active. For this reason, it is considered that fishermen haven't realized the benefits.

Regarding improvement of the productivity of the fishing activities, the dominant point in Estancia port compared to others is that it is easy to access the fuel, fishing gear, spare parts, etc. around the fishing port. Because of this factor, it is speculated that the productivity of the fishing activities is enhanced and Estancia port is widely used.
On the other hand, at the four ports including Estancia port, it was found out that there are

few opportunities for financial and technical assistance on the national level or LGU level, and there is room for improvement on the areas.

For activities other than fishing, there are many cargo and passenger boats in Estancia port, Pasacao port and Tamban port even though these ports are classified into fishing ports. Because many users use the port, employment was created, restaurants and grocery stores lined around the port, a market was constructed, and the place around the port is developing. It creates a local demand for marine products and a synergistic effect has been seen.

Photo: A market constructed near fishing port (Pasacao)

(3) Factors of utilized fishing port at the view point of fishermen

As the results of the beneficiary survey, at Estancia port, which is the most used port among the 4 ports, “fuel, fishing gear, spare parts are available near the port” and “easy access to ice making plants and refrigerators” are the most factors unlike the other ports. Fishermen consider that an infrastructure development around the fishing port has been the most important factor and if these factors are added, it may contribute to the improvement of productivity of the fishermen and it might become an incentive to use the port.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project had been implemented to activate rural economic activities by constructing 34 ports and related facilities like access roads in the Philippines, thereby contributing to eliminate poverty among impoverished people (farmers, fishermen, etc.).

This project is in accordance with the policies and the development needs of the Philippines, and aid policies of Japan, thus the relevance is high. Since additional investment by the government of the Philippines has been seen for some ports and income classification of some of the municipalities which are the location of the ports was improved, the impact by the implementation of this project has been observed for some sites. However, the situation of the effect of the project differs according to the ports and the statistical information to prove the effect isn’t sufficient. For that reason, overall evaluation of the effectiveness and the

impact is fair. Moreover, as the project period was extended to a large extent because of the reselection of the project sites and the delay of selection of the contractors, the efficiency is fair. Many ports are managed and maintained properly by local governments because of adequate scale of the facilities and equipment, the ownership of local governments is high, most of the ports are maintained and managed by their own efforts, and the sustainability is high.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

It was considered that some ports don't have an internet connection and not all ports currently submit the port operation data. However, there is other reason for the situation. It seems that it is unclear how the monitoring body utilizes the collected data and that is why the utilization of the website hasn't increased.

Even after transferring the monitoring function to PPA and PFDA, DOTC desires that PPA and PFDA continue to operate the website "dotcfeederports.asia". DOTC, PPA, and PFDA have to understand the merit of the collection of the statistics, and the utilization of the data should be carefully examined and it is necessary to show the clear objective to collect the data to each port.

The port managers in LGU ports don't have special knowledge on the port management in a lot of cases and they normally don't practice a handover to their successors. An operation manual which had been prepared in the project was used in some ports but it was also found that the manual was lost in some cases. Though the management of the LGU ports is simple, it is recommended to distribute the manual regularly to LGU ports and to assure the sustainability of the management of LGU ports.

For the indicators of the operation and the effect of the project, it seems that four indicators are suitable: "volume of cargo handling", "number of transported passengers", "number of ship calls" and "volume of fish catch". However, the unit of values and items of "volume of cargo handling" and "volume of fish catch" are currently uneven and it is difficult to compare by time and by ports. To utilize collected statistical result effectively, it is necessary to standardize the unit of the statistic "ton" only and record it. In addition, annual variability is high in these statistical indicators and it is necessary to take care about the usage of the statistic (e.g. calculate the average, etc.)

4.2.2 Recommendations to JICA

N/A

4.3 Lessons Learned

- In the project, some target ports had been changed during the review of the feasibility study after the commencement of the project, and the completion of the project was delayed five years because of the factor. For the countermeasure of the situation, it is recommended to prepare the project plan including the review period at the examination stage of the project, and it is possible to minimize the change of the project period as much as possible and progress as planned.

- In the project, quantitative indicators for effectiveness haven't been set. In the project as a lot of ports are constructed at once, it is necessary to set quantitative indicators showing how the effectiveness of the project is evaluated (e.g. rate of the ports which achieve the indicators).

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1.Project Outputs		
Number of target ports	35 ports	34 ports
Port facilities	- Pier - Causeway (including renovation) - Reclamation - Breakwater - Stair landing - Navigation - RO-RO ramp - Dredging	As planned
Support facilities	-Access road - Multi-purpose shed (with port office and waiting room) - Ice storage - Toilet - Water supply and sewage system - Electricity supply system - Yard lighting - Guard house - Fence and gate	As planned
Consulting service	1 unit	As Planned
2.Project Period	March 1997 – May 2003 (73 months)	September 1997 – December 2008 (135 months)
3.Project Cost		
Amount paid in foreign currency	3,357 million yen	3,921.12 million yen
Amount paid in Local currency	4,304 million yen (1,076 million Php)	1607.83 million yen (803.91 million Php)
Total	7,661 million yen	5,528.95 million yen
Japanese ODA loan portion	5,746 million yen	4,286 million yen
Exchange rate	1Php＝ Approx.4 yen (As of 1996)	1Php ＝ 2.42 yen (Average between September, 1997 and December, 2008)

Indonesia

Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for Promotion of Sustainable Coastal Fisheries"

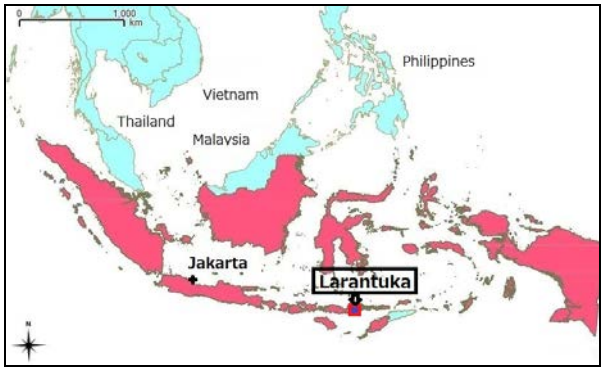
External Evaluator: Takayuki Kurita, ICONS Inc.

0. Summary

This project was implemented for the purpose of activating the whole fisheries industry in Larantuka Sub-district, East Flores District, toward making the fishery efficient and minimizing the post-catch loss, through constructing fishery facilities in the area. This project partly disagreed with the development needs of the target area. Therefore the relevance of this project is judged as fair. It resulted in shortening of times spent on landing and purchase by brokers, but on the contrary, the utilization of the facility by fishermen has been limited, and because the operation and maintenance setup of the facilities constructed in this project has been underdeveloped, the facilities have not fully demonstrated their functions. Therefore, the effectiveness and the impact of this project are judged as low. This project cost and period did not exceed the planned amount and length, thus the efficiency of this project is high. On the other hand, the sustainability of this project is fair, since problems still remain in the structure and technology of operation and maintenance due to unclear policy of administration.

In light of the above, this project is evaluated to be low.

1. Project Description



Project Location

Disposal Building

1.1 Background

The target area of this project, Amagarapati, Larantuka Sub-district is located in East Flores District, Flores Island, Indonesia. East Nusa Tenggara Province, which contains East Flores District, was economically the least developed area in 30 provinces of Indonesia at the planning time of this project, and the development disparity had tended to widen over the past few years. On the other hand, the Government of Indonesia had

designated East Flores District as an area of prioritized development, since this area had great potential for resource development and local supply in the fisheries field thanks to approximately 3,800 square kilometers of ocean area and yearly fish catches of 14,000 tons, although it was regarded to be economically the least developed. The Government of Indonesia had called for the elimination of poverty in the mid-term development strategy, and expected that the implementation of this project would promote fisheries in the target area including improvement in the livelihood of fishermen of low income near the shore, by preparing the environment for fisheries activities involving fishing port, ice manufacture and fuel service facilities. This was the background to this project for constructing fisheries facilities.

1.2 Project Outline

The purpose of this project was to activate the whole fisheries industry in Larantuka Sub-district, East Flores District, toward making the fishery efficient and minimizing the post-catch loss, through constructing a series of fishery facilities for landing, preparing fishing expeditions, conducting distribution, repairing fishing boats and so on.

Grant Limit/Actual Grant Amount		1,070 million yen / 926 million yen
Exchange of Notes Date		July, 2007
Implementing Agency		Ministry of Marine Affairs and Fisheries
Project Completion Date		March, 2009
Main Contractor(s)	Main Contractor	Wakachiku Co., Ltd.
	Consultants	Joint Venture of System Science Consultants Inc. and Nippon Koei Co., Ltd.
Basic Design		August, 2006
Related Projects		Fisheries Management Policy and Planning (Advisor, 1991-2005) Fisheries Infrastructure Support and Coastal Communities Development Plan in Eastern Indonesia (2000-2002)

2. Outline of the Evaluation Study

2.1 External Evaluator

Takayuki Kurita, ICONS Inc.

2.2 Duration of Evaluation Study

For this evaluation, the study was performed as follows.
Duration of the Study: December, 2011 – January, 2013
Duration of the Field Study: January 22, 2012 – February 14, 2012 and
May 20, 2012 – June 2, 2012

2.3 Constraints during the Evaluation Study

None.

3. Results of the Evaluation (Overall Rating: D[1])

3.1 Relevance (Rating: ②[2])

3.1.1 Relevance with the Development Plan of Indonesia

At the time of the basic design study of this project, the Government of Indonesia declared (i) reactivation of fisheries, (ii) improvement of access to marine products in local societies, (iii) sustainable promotion of fisheries and construction of fisheries industry infrastructures, and (iv) promotion of preservation and management of marine resources and environment as basic strategies in the "Mid-term Strategy in Fisheries (2004-2009)", and this project was relevant to these contents. At the time of ex-post evaluation, it declared (i) enforcement in human resources and systems concerning integrated fisheries, (ii) sustainable management of marine resources, (iii) enforcement of productivity and competitiveness, and (iv) expansion of access to international and domestic markets, as strategies in the "Mid-term Strategy in Fisheries (2010-2014)". The Ministry of Marine Affairs and Fisheries promotes the construction of infrastructures such as fishing ports to execute this plan. From above, this project is relevant with Indonesia's development policy, since it tries to promote fisheries through the construction of fishery facilities.

3.1.2 Relevance with the Development Needs of Indonesia

Though Indonesia has rich marine resources, about five million fishermen (about 5% of working population) and foreign currency earnings of about two billion dollars (1999)[3],

[1] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[2] ③: High, ②: Fair, ①: Low
[3] Source: JICA, "The Study on Fisheries Infrastructure Support and Coastal Communities Development Plan in Eastern Indonesia", 2002

their development and utilization were concentrated in the western area around Java and Sumatra and little aid by the government had been given for the development to the eastern area. Especially, East Flores District had the second largest catch (2004, 14,000 tons)[4], next to Kupang District, which contains the capital of East Nusa Tenggara Province. It had future development potential so that its development level of marine resources was about 30%. However, fisheries in this area had been forced to operate inefficiently because of the poor preparation of basic facilities.

At the time of ex-post evaluation, in 2011, the Ministry of Marine Affairs and Fisheries designated East Flores District as a special project area of the fisheries industry called Minapolitan (24 areas in whole Indonesia). Also, concerning the fish trading environment that had not been centralized before, it declared the policy to distribute marine products to the neighboring marine product consuming areas based around this facility (hereinafter referred to as "PPI").

In addition, fisheries are one of the main industries in the target area (East Flores District), accounting for 7% of GDP.

Table 1 Ratio of each industry to GDP in East Flores District
based on the market price of 2000

		2008 ratio to GDP	2009 ratio to GDP	*2008-2009 annual growth*	2010 ratio to GDP	*2009-2010 annual growth*
1	Agriculture and fisheries	34.12%	35.22%	*3.24%*	35.98%	*2.13%*
	Fisheries (out of the above)	**6.41%**	**6.87%**	***7.23%***	**7.17%**	***4.27%***
2	Mining and stone crushing	0.75%	0.74%	*-1.07%*	0.77%	*3.90%*
3	Processing industry	1.13%	1.16%	*3.43%*	1.18%	*1.61%*
4	Electricity, gas and water supply	0.34%	0.35%	*4.00%*	0.39%	*11.77%*
5	Construction	4.34%	3.73%	*-14.11%*	3.86%	*3.32%*
6	Trade, restaurant and hotel	11.47%	12.11%	*5.62%*	12.86%	*6.20%*
7	Transport and communication	10.27%	10.61%	*3.36%*	11.10%	*4.56%*
8	Finance, rent and private service	4.58%	4.79%	*4.51%*	5.11%	*6.75%*
9	Public service	33.01%	34.01%	*3.02%*	36.80%	*8.22%*

(Source) Flores Timur in Figures 2009-2011 (East Flores District Statistics Yearbook 2009-2011)

At the time of basic design, Larantuka Sub-district, East Flores District, which is the target

[4] Source: JICA, "Basic Design Study Report on the Project for the Promotion of Sustainable Coastal Fisheries in the Republic of Indonesia", 2007

area of this project, was reported in the development study "The study on Fisheries Infrastructure Support and Coastal Communities Development Plan in Eastern Indonesia" implemented by Japan in 2000-2002 as follows: (i) working days are limited because of the lack of fishery production facilities, (ii) distribution and processing are limited because of the lack of water for drinking and miscellaneous uses, and (iii) income from fishery and living standards of fishermen near the shore are extremely low. East Flores District had the second largest catch (2004, 14,000 tons) in East Nusa Tenggara Province, next to Kupang District that contains the capital of East Nusa Tenggara Province. It had future development potential so that its development level of marine resources was about 30%. However, there were problems such as (i) loss in work and time because the sea is shallow for a good distance from the whole shore and there is a high and low tide range as large as 3 meters, (ii) loss in opportunities for distributors because there are no ice manufacturing facilities that have enough capacity to deal with the catch in busy seasons, and landing places are dispersed[5]. To solve such problems, the construction of fisheries industry facilities was necessary, in order to increase the income of small-scale fishermen and supply marine products stably.

As fishing methods, there are pole and line fishing for skipjacks, seine fishing for tunas, seine / dragnet fishing, surrounding net fishing, gill net fishing and lift net fishing in and around Larantuka Sub-district. The main fish species are skipjack and tuna, accounting for more than 70% of the entire catch, and they are mainly purchased by private companies and exported to Japan and the United States. There are several such private companies in and around Larantuka Sub-district, and approximately three of these companies have facilities such as piers, processing plants and ice factories and there are some fishermen who enter into contracts with such companies and act without using PPI.

Pole and line fishing, seine fishing and dragnet fishing are used for skipjack and tuna fishing, while in other fishing methods, small pelagic fish that are consumed in and surrounding the Sub-district are caught. This project plan was set up with the primary aim of benefiting small-scale fishermen engaged in catching fish other than tunas and skipjacks, and it entailed construction of facilities and provision of equipment. Meanwhile, although there are differences in fishing methods, fish species and signing or not of contracts with private operators, all the fishermen basically conduct subsistence activities. Depending on season, surrounding net fishermen may be engaged in a skipjacks and tunas fishery by commissioned business. By contraries, the small fishermen who mainly engage in tunas and skipjacks fishing may also engage in pelagic fish and small fishing.

According to the results of beneficiary survey, about 55% of neighboring fishermen land at facilities of private companies, on the sea or at their own houses without using

[5] Source: JICA, "Basic Design Study Report on the Project for the Promotion of she Sustainable Coastal Fisheries in the Republic of Indonesia", 2007

PPI[6]. Some fishermen (especially those in the north of Larantuka Sub-district, East Flores District) directly transport and sell marine products in Maumere[7], a neighboring area of consumption, to cut down on light oil consumed for ship trips to PPI, and some have dealings with brokers at sea. Such styles of distribution based on private relations between fishermen, and brokers and private companies have existed since about 2000, and even now, they mainly have dealings with private companies. In case they perform their fishery activities by entrusting to private companies, ice and light oil are usually advanced by companies. Since such a style is very efficient for small-scale fishermen for whom it is difficult to raise fish expedition funds, there are many of them who do not use ice manufacturing and oil supplying facilities of PPI.

In the plan of this project, it was supposed that (i) eliminating congestion of landing in commercial port, and (ii) eliminating the hard work of landing on foreshore, caused because of the absence of a public exclusive fishery facility; thereby enabling small fishermen, who are placed at a disadvantage due to the above-mentioned business practices, to directly land catches to PPI, have multiple brokers set prices at the disposal facility and appropriate prices could be set. However, due to the influence of traditional business practices, as noted in the "effectiveness", the use of PPI has been limited and the facility has not been fully utilized.

Considering such a situation, as a result of the interviews conducted with the Ministry of Marine Affairs and Fisheries and District Fishery Department, it was found that East Flores District Government plans to impose an obligation on neighboring fishermen to use PPI in order to ensure its efficient use[8]. This might increase the frequency of use of PPI.

It can be said, however, that related organizations such as the Ministry of Marine Affairs and Fisheries and District Fishery Department did not prepare concrete plans and means to develop fisheries by using PPI in advance, since at the time of planning this project, even though there have been such commercial customs, no administration regulations were established. Prior study such as development study (“The Study on

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[6] Beneficiary survey was implemented on total 250 persons, of 220 fishermen and 30 brokers who live in the target area and do not belong to organizations such as private companies, but individually engaged in fishing industry. Three surveyors visited each residence of fishermen and interviewed with them according to questionnaires. The evaluator partly joined in the survey. Residential areas of the respondents are as follows:
Larantuka (154 persons/70.00%), Adorana (24 persons/10.91%), Ile(21persons/9.55％), Solar (8persons/3.64%), Wotan (7persons/3.18％), Others 3 persons
In addition, the fishing methods of the respondents are as follows.
Hook and line: 74.5%, Gillnets: 9.5％, Surrounding net: 7.7%, Lift net: 3.6%, etc.

[7] Maumare is situated 95km west-southwest of Larantuka and about three hours by land.

[8] Imposing an obligation on those who are engaged in fishery to use PPI promotes the use of PPI; on the other hand, it makes a great change in existing commercial customs. It is thought to be necessary to secure adequate understanding from fishermen and private companies, etc..

Fisheries Infrastructure Support and Coastal Communities Development Plan in Eastern Indonesia") investigated the environment surrounding fisheries including facilities and equipment belonging to private companies in the target area, stakeholders' analysis and analysis of commercial customs. Based on the study, this project targeted small-scale fishermen; however, the project was not based on customs of private companies and those who were engaged in fisheries so that most of them use facilities and equipment of private companies. In addition, the main direction of the use of the facility was also changed: the facility was also opened to middle- and large-scale fishermen because of the bad operation after PPI started to operate. From these, it can be said that this project plan was not connected to the solution for needs and problems of fishermen.

In the basic design, "loss in work and time because the sea is shallow for a good distance from the whole shore and there is a high and low tide range as large as three meters" was listed as a problem of fisheries in the target area. Regarding this point, the results of interviews with fishermen and officials of Ministry of Marine Affairs and Fisheries show that the problems such as safety during fish landing are not solved. Specially, small-scale fishermen that are the targets of this project pointed out the problem of the height of the piers.

From above, this project partly disagrees with the development needs.

3.1.3 Relevance with Japan's ODA Policy

Japan promotes the construction of fishery facilities etc., to strengthen friendly relations between Japan and developing countries and ensure fishing grounds for Japanese fishing boats under a long-term vision, through the promotion of fisheries in those countries as a part of ODA. The implementation of this project maintains and strengthens the friendly cooperative relation between Japan and Indonesia in the field of fisheries, where cooperation is important for conducting measures to address IUU (illegal, unregulated and unreported) operations in international tuna fishing grounds.[9]

Considering that agriculture and fisheries are conducted on a subsistence scale and infrastructures such as fishing ports are not prepared enough in rural and fishing villages in Indonesia, JICA settles on "poverty reduction" in its country-separate project implementation plan and implements cooperation projects such as the technical cooperation undertaking "Project for the Promotion of the Sustainable Coastal Fisheries,"

[9] Fisheries grant aid has been established from the viewpoint of maintaining and developing the friendly and cooperative relations with Japan in the fishery based on the fact that many developing countries have strengthened the claim of the right to exclusive use of coastal waters fishery resources from the late 1960s, in response to a request under these developing countries, by conducting grant aid for fisheries related projects. Basically, fishery grant aid is similar to general grant aid; however, selecting the target countries in that friendly relations with Japan are taken into consideration in the field of fisheries. (extracted from the Ministry of Foreign Affairs web site)

etc. From this, this project is judged to agree with Japan's ODA policy at the time of basic design.

This project was partly irrelevant with the country's development needs, therefore its relevance is fair.

3.2 Effectiveness[10] (Rating: ①)

3.2.1 Quantitative Effects

Concerning the point that "PPI will contribute to the activation of the fisheries industry in the target area" which is the purpose of this project, the catch in the target area has increased as shown in Table 2 below. However, at the time of the ex-post evaluation survey, catche landings at PPI are less than 300 tons per year as shown in Table 2. In the basic design of this project, the scale was set as 1,548 tons catch in the disposal of goods facility, and concerning PPI frequency of usage, approximately 200 days per year and 8.5tons/day in the fishing season and 1.2 tons/day in the off-season. Although the annual amount of catch was not shown clearly, it has fallen much lower than the design even when compared to these figures.

Table 2 Changes in catch in the whole target area and at PPI

	2007	2008	2009	2010	2011
Catch landing in the whole target area	11,277 tons	11,755 tons	9,708 tons	13,705 tons	13,755 tons
Catch landing at PPI	No record[11]			291 tons (2.12% of total)	291 tons (2.12% of total)

(Source) Materials furnished by East Flores District Fishery Department

The data on the PPI mooring of ships are as follows. In the basic design study, it was expected that 149 fishing vessels would moor and 23 vessels would anchor at PPI. As there is no data on the number of vessels available, comparison is difficult, but it is calculated that only around four vessels are anchored per day on average in 2011 (assuming operation for roughly 200 days). This average number of anchorage was also confirmed at the site survey.

[10] Sub-rating for effectiveness is to be put with consideration of impact

[11] JICA, "Basic Design Study Report on the Project for the Promotion of she Sustainable Coastal Fisheries in the Republic of Indonesia", 2007 estimated that there are 892 tons of catch at public markets and local societies. It should be noted that the amount of catch was assumed from 10,000 to 15,000 tons in this report.

Table 3 Mooring vessels PPI data

		2010	2011
Moorage	No. of cases	721	893
	Hours	948	1,415
Anchorage	No. of cases	69	57
	Hours	1,753	2,164

(Source) Materials furnished by East Flores District Fishery Department

PPI is not used very frequently, since there exist a strong dealing relation as a commercial custom where private companies loan ice and diesel oil to small-scale fishermen in advance before fishing expeditions. In the beneficiary survey, 45% (100 of 220 persons answered) of fishermen in the target area answered that they use PPI; specifically 23 answered “always use”, 42 “sometimes” and 35 “almost always land at other facilities”. Although there are those who are involved in the commission of private contractors among the respondents of the beneficiary survey, fishermen engaged in tunas and skipjacks fishing are also engaged in small, pelagic fish depending on the season. It is impossible to strictly separate from fishermen who engaged in fishing for tunas and skipjacks and the other fishermen and it is analyzed that this result represents the circumstances pertaining to the use of PPI. Besides, reasons for not using PPI are listed in Table 4. The most common is “long distance to PPI”, which although is not connected to the work commissioned for tuna and skipjack, indicates that these respondents sell their products to neighboring brokers or private companies.

Table 4 Reasons of not using PPI (including multiple answers)

Reasons	Answers	Answer rate
No dealings in demersal fish	4	3.33%
Direct selling to brokers	27	22.50%
Consumption at home	1	0.83%
Selling at other places	21	17.50%
Long distance to PPI	51	42.50%
Expensive charge for use of PPI	1	0.83%
Small dimension of work	37	30.83%

(Source) Results of beneficiary survey

Although frequency of use of PPI is very low, from the results of the beneficiary survey, fishermen who use PPI are highly satisfied; specifically, 69% of them answered “very satisfied” and 27% “slightly satisfied”. Satisfying points are listed in Table 5.

The achievement of indices on quantitative effects posed in the Preliminary Project Plan is shown in Table 6 below. Although there are some indicators that have been achieved, the effects are limited due to the low usage frequency by fishery industry workers, as described above.

Table 5 Satisfying points in this project for fishermen (multiple answer allowed)

Satisfying points	Answers
Reduced landing time	53
Increased dealing price of fish	21
Lowered price of ice	14
Tentative keeping of excess marine products available	12
Ice purchasable at any time	9
Sanitary environment of fish dealings	4
Others	45

(Source) Result of beneficiary survey

(100 persons answered)

Table 6 [Quantitative effects] Achievement of indices

Indices (unit)	Baseline (2006)	Target (2009)	Actual ① (2009)	Actual ② (2012)
(1) Time for catch landing by round haul netters at low tide	About 2 hours/boat	About 1 hour/boat	About 1 hour	About 1 hour
(2) Purchasing price of ice for fishing boats	About Rp 20,000 (per 25kg ice cube equivalent)	About Rp 8,000 per 25kg ice cube	Rp 12,000 per 25kg ice cube	Rp 12,000 per 25kg ice cube
(3) Purchasing price of light oil for fishing boats	About Rp 5,000/L	About Rp 4,500/L	Rp 5,000/L	Rp 4,500/L
(4) Purchasing time for brokers	2-3 hours	1-2 hours	1-2 hours	1-2 hours

(Source) Preliminary Project Plan, data furnished by PPI

Each item where there are differences was analyzed. The contents are described below.

(1) Time for catch landing by round haul netters at low tide

From the results of the beneficiary survey, 66% of fishermen who use PPI answered that their landing time is within one hour (see Table 7). The target is achieved, and this project contributes to making fishermen’s work more efficient. However, the interviews with fishermen often reported that there are many boats at anchor even after finishing

landing, and these boats obstruct their work. There is a plan to station two staff members of PPI (1 person × 2 shifts) at the piers, but it currently does not work. At the time of the survey, there was no staff member of PPI, and there was no comment that staff members were stationed there in the interviews with fishermen, too.

Table 7　Fishermen's landing time

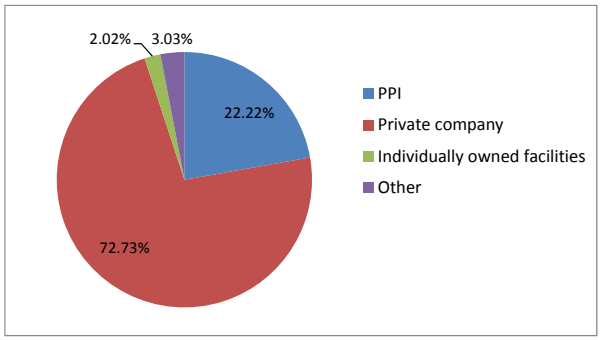
	Answers
Within 30 minutes	35
30 minutes - 1 hour	31
1 - 1.5 hours	7
1.5 - 2 hours	8
Over 2 hours	2
NA	17

(Source) Result of beneficiary survey
(100 persons answered)

Photo Since there are many boats at anchor even after finishing landing, ice is carried through a bridge of boats.

(2)　Purchasing price of ice for fishing boats

According to the result of interviews with staff members of PPI, ice has to be loaned at this price (ice cube: Rp 12,000/25kg, crushed ice: Rp 14,000/25kg) with regard for profit. The market price is Rp 15,000/25kg, which is more expensive than at PPI. Concerning the usage situation of ice facilities by the fishermen, as the place to obtain ice for fishermen shown in Figure 1, there is situation where fishermen do not want to buy ice from PPI, but obtain the ice on loan from private contractors. In the basic design of this project, although fishermen involved in fishing tunas and skipjacks were planning to buy ice from the PPI, in the case of consignment work with private companies, ice is loaned in advance from private companies before fishing, and as a result, fishermen have not purchased ice much from PPI.



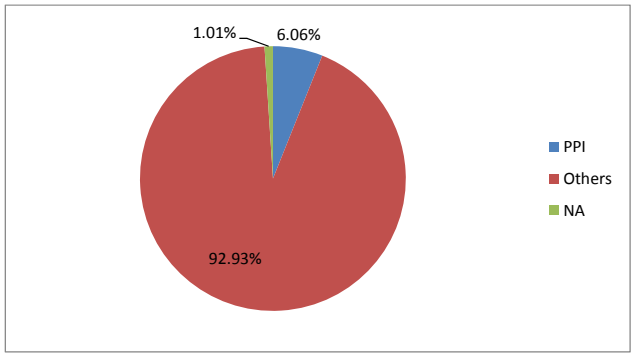
The results are that 22% of fishermen purchase ice at PPI, but 73% of fishermen obtain ice from private companies. Also, in case of fishing based on contract with private contractors, the ice is loaned in advance from the private sector, and in case of purchasing, it is Rp 15,000/25kg.

(Source) Result of beneficiary survey

Figure 1 Purchasing place of ice (99 fishermen answered)

(3) Purchasing price of light oil for fishing boats

Light oil had been sold at the price of Rp 5,000 per liter since PPI started to operate. In February 2012, this price was reduced to Rp 4,500 per liter after tank trucks were stationed and mass transport was enabled. However, as shown in Figure 2 below, the ratio of fishermen who procure light oil at PPI is 6%, while others obtain it from private companies. Therefore, the situation has become clear that fishermen's main activities are commissioned business with private companies, and they do not use PPI.



6% of fishermen purchase light oil through PPI. Others have it loaned in advance by contracting private companies, or they purchase it in market.

From the results of beneficiary survey, the reasons for not purchasing light oil are as follows: "expensive price of fuel" and "others" shares much, and there are many comments in interviews that they purchase from private companies. The answers "expensive price of fuel" are thought to be because of advance payment in case of contract with private companies.

(Source) Result of beneficiary survey

Figure 2 Purchasing place of light oil (99 persons answered)

Table 8 Reasons for not purchasing light oil at PPI

Reasons	Answers
Expensive price of fuel	14
Long distance to PPI	7
Bad service	0
Others	54
NA	18

(Source) Results of beneficiary survey

(4) Purchasing time for brokers

According to the results of beneficiary survey, 89% of fishermen sell marine products to brokers within two hours, and the target is achieved. Also in the interviews with brokers, 53.3% (16 of 30 persons answered) of brokers answered “it has become possible to purchase marine products at once”.

Slipways and docks that were constructed in this project are not often used as well. The reason is there are no boat repair mechanics stationed and no spare parts for boats[12].

3.2.2 Qualitative Effects

The achievement of indices on quantitative effects posed in the Preliminary Project Plan is listed in Table 9 below. Management of fisheries in the target area by PPI does not function very much, since the regulations for the administration of PPI have not been established and its direction has not been decided, and human resources that manage the facility and fishermen have not been trained enough.

Table 9 [Qualitative effects] Achievement of indices

Indices (unit)	Baseline (2006)	Target (2009)	Results ① (2009)	Results ② (2012)
(1) Environment of fish trade	Corners of shores and merchandise ports	Disposal places (unavailable on piers and shore protection works)	In disposal places and on piers and shore protection works	In disposal places and on piers and shore protection works
(2) Tentative keeping of excess marine products	Small cool bags at open stores	Large cool bags at tentative keeping places	Large cool bags at tentative keeping places	Large and medium-sized cool bags at tentative keeping places

[12] Data of 2011 furnished by PPI show the frequency of use of slipways and docks of 95 hours and repair factories of 90 hours per year respectively.

(3) Fishing port leader candidates and personnel members of District Fishery Department learn the knowledge of how to start initial fishing port administration.	Not learnt	Learnt	Not learnt	Not learnt
(4) Regulations for the administration established in the soft component	None	Principles are obeyed	Under examination	Under examination

(Source) Preliminary Project Plan, East Flores District Fishery Department and the results of interviews with PPI staff members

Each item was analyzed where there are differences. Its contents are described below.

(1) Environment of fish trade

In the beneficiary survey for those who are engaged in fisheries and site survey, there are many cases where brokers and fishermen directly trade landed products on piers and trade in disposal places were not confirmed. Though PPI holds briefing sessions for those who are engaged in fisheries to trade fish only in disposal places and pressures them to follow, PPI said that they tend not to obey. On the other hand, in interviews with those who are engaged in fisheries, they said that there is no such a briefing meeting held and they are not aware of such pressure from PPI staff members.

Photo Landed fish are traded not in disposal places but on piers.

(2) Tentative keeping of excess marine products

The large cool bags supplied in this project are used and the target is achieved. If the landed products are many, medium-scale cool bags purchased by PPI are used. According to materials furnished by PPI, the large- and the medium-scale cool bags were used 226 and 98 times respectively in 2011.

(3) Fishing port leader candidates and personnel members of District Fishery Department learn the knowledge of how to start initial fishing port administration.

Concerning the skill, although training was conducted in the soft-component of this

project, it was analyzed that the introduced skill has not particularly been utilized as management of fishermen, activities related to facility management of PPI and accounting procedures related to these activities have not been conducted at the time of ex-post evaluation. Thus the target is not achieved.

(4) Regulations for the administration established in the soft component

In the soft component, proposals were submitted about the establishment of a fishing port committee and the committee regulations. However, at the time of ex-post evaluation, PPI and persons related with the fishermen's cooperative commented in interviews that the establishment of the committee and the committee regulations were under examination, but there is no clear movement for the establishment of the regulations.

3.3 Impact

3.3.1 Intended Impacts

Concerning changes in the income of fishermen by implementing this project, from the results of beneficiary survey, 1% of fishermen using PPI have their income increased[13]. As listed in Table 2, although the amount of catch in the target area increases, it is analyzed that it has not achieved sufficient level for small-scale fishermen using PPI to feel the increase in their income.

Realization of Indicators showing the indirect effects of this project is described below.

(1) Central role of fisheries

Before the construction of PPI, catch landing was done in the commercial port nearby; it is confirmed at the time of exploratory survey that there were no catch landing the port now. However, even in such a situation, reflecting that PPI is not used very often, the District Fishery Department and PPI permitted its use for not only small-scale fishermen but medium-scale and large-scale fishery private companies who are engaged in tunas and skipjacks fishery in 2011, to increase the frequency of use of PPI. According to interviews with those who are engaged in fisheries, after the permission, the use and recognition of PPI has increased and the frequency of use is increasing as well. The regulations are currently planned to state that neighboring people who are engaged in fisheries must use PPI, and the system whereby PPI plays a central role of fisheries in the target area is now under construction[14].

[13] From the result of beneficiary survey, 1 fisherman answered "the income increased", 82 answered "the income remains the same", 12 "decreased" and 5 "unknown" after the implementation of this project respectively.

[14] Private companies concern that this regulation may hinder the operation since business trouble increases etc. However, a merit will appear for District Fishery Department that the management system will be

However, trading of tuna and skipjack, which many fishermen are engaged in, is conducted not by PPI but directly by neighboring private companies, so the frequency of use of PPI is not likely to increase rapidly with the regulations. In the management of fishermen by PPI, private companies as well as those who are engaged in fisheries are also required to report amount of catch to the District Fishery Department and PPI. Since private companies are required to pay charges to PPI corresponding to catch, it might be necessary for PPI to confirm the situation and conduct management in order to appropriately collect charges.

In addition, fishermen's cooperatives in the target area or PPI do not act based on organizing fishermen (management including auctions, calling on the participation in the auctions, collection of trading price information and public relations, etc.), so it cannot be said that they are organized.

By the way, private companies loan ice and light oil to fishermen in advance. In doing so, they create good climate for fishing activities of small-scale fishermen and perform empowerment for the whole villages in that they supply an environment for easy action by small-scale fishermen and make donations to the villages of the fishermen who are engaged in their business. Thus fishermen are organized around private companies and it is analyzed that it is difficult to organize fishermen around PPI, and based on these situation, it is analyzed that it is important to conduct a study with private companies on how to contribute to improvement of the fishery industry using this facility.

(2) Manufacture and supply of ice

Detailed data of manufacture and supply of ice are listed in "Table 10 Data of ice manufacture in PPI". At the time of ex-post evaluation, PPI staff members and those who are engaged in fisheries commented that the ice manufacture facility is quite often used, but sometimes they cannot purchase or sell ice because of short supply. The reason is that water supply pipes to the ice manufacture facility were out of order and the capacity decreased from 168 blocks per day (1 block weighs 25 kilograms) to maximum 112 blocks per day. In addition, medium-scale and large brokers started to purchase ice at PPI. However, the pipes are under repair at the time of survey, and the capacity supposed to be restored to the original level.

The District Fishery Department has conducted examination with a view to limiting the activities of medium and large-scale brokers in PPI. If their activities are limited, the short supply of ice would be solved, while it is forecast that small-scale fishermen who have strong trade relations with private companies are expected to be unlikely to purchase ice at PPI. In order to efficiently use the ice manufacture facility, clear directions should

enforced (on condition that the staff members perform their jobs orderly).

be determined to operate it, e.g. concerning whom to sell ice to.

Table 10 Data of ice manufacture in PPI

	2010	2011	Growth rate
1. Time of manufacturing	546	832	52.38%
2. Amount of production (25kg)	30,576	46,592	52.38%
3. Frequency of purchasing	2,907	2,967	2.06%
Ice cube (25kg)	1,573	1,510	-4.01%
Crushed ice (25kg)	1,512	1,612	6.61%
4. Amount sold (25kg)	30,390	46,488.5	52.97%
Ice cube (25kg)	16,807.5	29,311	74.39%
Crushed ice (25kg)	13,582.5	17,178	26.47%

(Source) Materials furnished by PPI

3.3.2 Other Impacts

(1) Impacts on the natural environment

Since no traffic jams occur on surrounding roads after the implementation of this project, there is no negative impact confirmed in the situation of traffic in the surrounding area. No problem occurs concerning garbage collection since Larantuka Sub-district regularly cleanses the site. According to interviews with PPI staff members and site survey, wastewater from PPI is drained after primary treatment.

(2) Land acquisition and resettlement

For land acquisition, the purchasing prices were decided after the negotiation with habitants. It was confirmed through the District Fishery Department that no problem occurred in the negotiation though there was a meeting hall for local residents, and there was no resettlement. The total expense of land acquisition was about Rp 100 million, and the budget for which was secured without any problem by East Flores District Government.

(3) Other indirect impacts

From the results of the beneficiary survey, 12% of the respondents indicate satisfaction in that temporary storage of excess catch is available thanks to upgrading of ice machine maintenance and introduction of cool boxes, thereby contributing to reduction of post-harvest losses.

Concerning the effectiveness, expression of effectiveness is limited in that fishermen in the targeted area do not actively use PPI and the amount of catch handled was greatly less than planned in the basic design.

It is confirmed that some targets were achieved such as shortened landing time and time for purchasing of marine products from fishermen by brokers who use PPI, and as fishermen who use PPI show a certain degree of satisfaction for the PPI, it is considered that its functions such as improvement of the working environment for the fishermen are exhibited.

On the other hand, impact is limited as the targets on fishing port administration activities are not achieved, PPI does not play a central role of fisheries, and it does not contribute to increasing the income of fishermen in the target area using PPI.

From above, this project has achieved its objectives at a limited level, therefore its effectiveness and impact is low.

3.4 Efficiency (Rating: ③)

3.4.1 Project Outputs

The outputs of this project are summarized in Tables 11 and 12 below. If there are any differences between the plans and the actuals, their contents are described.

Table 11 Outputs of this project (Japanese side)

Items	Contents	Difference analysis
Civil facilities	Landing piers, connecting piers (partly causeway), slipway, premises roads and parking lots, premises rain drains, landing pier safety lamps, reinforcement of existing shore protection	Change in height of landing piers, connecting bridges and causeways
Architectural facilities and equipment	Disposal building, ice factory building, ice manufacturer, ice warehouse, administrative building / kiosk, fuel service building, workshop, electricity and water supply building (elevated water reservoir), water reserve tank, premises toilets, guard building, simple wastewater treatment facilities, waste space, shallow wells, fire prevention water reservoir, emergency generator, external equipment, sprinklers, premises electric furnace, premises water supply and sewage channels, ladling space	No difference
Supplied machinery		
Machinery for supporting landing and disposal	Handcarts, fish boxes, buckets, drum carriers, hand pumps, platform scales (100kg), balances (30kg), cool bags	No difference
Machinery for facility maintenance (Also for repairing fishing boats)	Boring machines, engine welders, mobile lifts, engine compressors	No difference
Machinery for premises safety assurance	Fire extinguishers with casters and small fire extinguishers	No difference
Soft component	Instructions for fishermen's cooperative and fishing	No difference

	port administration	

(Source) Materials furnished by JICA

Table 12 Outputs of this project (Indonesian side)

Items	Difference analysis
Necessary personnel, construction materials and machines, expenses for administration and maintenance	No difference

(Source) Materials furnished by JICA

3.4.2 Project Inputs

3.4.2.1 Project Cost

The planned cost of this project at the time of ex-ante evaluation was 1,070 million yen. The actual project cost was 926 million yen, which was within the planned amount (the ratio to the planned: 87.4%).

3.4.2.2 Project Period

This project period planned at the time of ex-ante evaluation was 20 months, and the actual one was also 20 months[15]. Therefore this project period was as planned (the ratio to the planned: 100%).

From above, both the cost and the period of this project were below the planned values, so the efficiency is high.

3.5 Sustainability (Rating: ②)

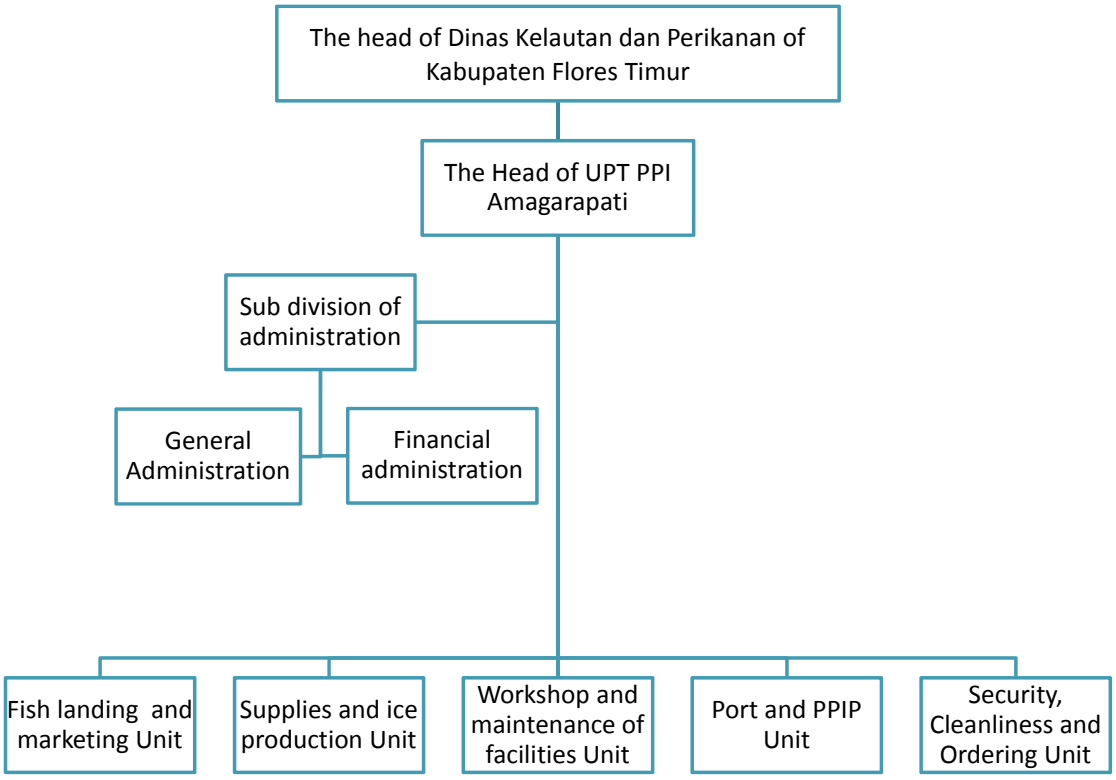
3.5.1 Structural Aspects of Operation and Maintenance

PPI has been under the management of the Ministry of Marine Affairs and Fisheries since it started to operate in July 2009. At the time of ex-post evaluation, the management was being transferred to East Flores District Government, and after the Ministry of Finance of Indonesia approves this issue, it will be under the management of East Flores District Government. The regulations on fishing port administration are still under examination and have not yet been established. After it comes under the management of the East Flores District Government, East Flores District Government will be the main body for the operation and maintenance including regulations and budget planning, thus making it feasible. The Ministry of Marine Affairs and Fisheries recognizes that it will be approved in 2013. Even after the transfer, financing help from the Ministry of Marine Affairs and Fisheries is supposed to be continued and a current structure will be

[15] July 25, 2007 (consultant agreement) - March 20, 2009 (completion of this project)

maintained. On the other hand, the East Flores District Government will operate PPI by itself without the approval of the Ministry of Marine Affairs and Fisheries, and it is expected to enable flexible administration reflecting more of the local status and needs.

PPI is in charge of the operation and maintenance, where 27 staff members (of which two are proper and the others are contract workers) are stationed, as one of the posts of the District Fishery Department within the jurisdiction of the Ministry of Marine Affairs and Fisheries. Division of duties of each staff members are clearly stated and sufficient number of staff is ensured. The District Fishery Department aims at appropriate operation of PPI, dispatching its three staff members to other fishing ports that have already been operated for a long time and make them learn how to operate fishing ports. Figure 3 shows the organization chart of PPI.



(Source) Materials furnished by District Fishery Department

Figure 3 Organization chart of PPI

At the time of basic design, a plan, in which a newly established public company will be in charge of the operation and maintenance of PPI, was examined but not put into practice. The reason was that the purpose of the operation of PPI is not decided: that is, whether it aims for the activation of small-scale fishermen as a public project, or it aims

for a self-supporting accounting system. If it aims for the former, the price of ice and light oil should be cheaper and the environment of activities should be prepared for small-scale fishermen to easily conducted activities other than those contracted by private companies. In this case, the account will not balance and it will be difficult to establish a public company. Therefore, the Ministry of Marine Affairs and Fisheries, District Fishery Department and PPI are aiming for the modification of the environment for fishermen's activities under the current system and to operate PPI as a public service, rather than to establish a public company and to aim for a self-supporting accounting system; the operation will be examined mainly by PPI regarding profit or public nature.

3.5.2 Technical Aspects of Operation and Maintenance

According to interviews with related persons such as staff members of the District Fishery Department and PPI, though there are some results of training courses on fishing port operation such as visits of staff members to other fishing ports, staff members of both the District Fishery Department and PPI are learning skills of fishing port operation and recognize that their skills are not enough. Though fishing port operation is instructed in the training courses of this project, it could have reflected the actual status including dealing with the real problems if the instruction had been performed after the start of operation.

In the technical aspect, both human resources and technology are not enough: currently slipways and docks are not used very often. According to interviews with PPI staff members, the causes for not utilizing the slipway and the dock are attributed to there being no boat repair mechanics and no spare parts for boats. At the time of ex-post evaluation, there are no plans to station boat repair mechanics nor to develop human resources such as training courses. If human resources such as boat repair mechanics are stationed in future, promotion activities for services should be started such as repair of fishing boats and selling of spare parts, and examination should be conducted to build the system to use mechanics and facilities to the maximum extent: consumables and spare parts should be appropriately supplied using subsidies from the Government of Indonesia. Since the jurisdiction of PPI will be transferred to East Flores District, it is expected that the arrangement of human resources and the supply of necessary machinery will be appropriately performed reflecting the needs.

3.5.3 Financial Aspects of Operation and Maintenance

The income of PPI consists of the grant and the charges for the use of facilities and machinery of PPI provided by the regulations of East Flores District. Some of those who are engaged in fisheries commented that PPI staff members have not appropriately

collected the charges since the start of PPI operation in 2009. PPI staff members explained that there are some cases where those who are engaged in fisheries do not agree to pay. Under such circumstances, there was situation that delays in paying PPI staff wage occur, and necessary funds for operation and maintenance are difficult to secure. However, in FY 2011 and 2012, budget of Rp 500 million each year was provided by the Government of Indonesia for the purpose of the operation and maintenance of PPI and there was a comment from PPI staff that lack of funds has been corrected for labor costs, the procurement of materials and equipment. According to interviews with the Ministry of Marine Affairs and Fisheries, the grant will continue. The income in 2011 exceeded the one shown in the basic design study, since the grant from the Government of Indonesia was delivered and the selling of ice and water ended in the black[16].

However, since its opening, the situation has not improved in that PPI fees are still not collected, and 90% of the income has been from ice selling. Since the regulations provide for collecting other charges such as for mooring and anchoring, it is necessary to collect charges from users and administrate appropriately, on condition of supplying proper services. It is also necessary to establish the administration regulations of PPI and to secure the budget properly in order to spend the grant effectively for the promotion of fisheries in the target area.

3.5.4 Current Status of Operation and Maintenance

At the time of ex-post evaluation, ice crushers, the outer moat and lightning equipment supplied in this project had been repaired after they fell out of order. As a result of reconnaissance survey and interviews with related members of PPI, facilities and machinery are not regularly maintained but repaired when they are out of order. The drainage facilities and the radiators are cleaned once a week routinely and interference is not caused.

According to interviews with those who are engaged in fisheries, the work on fishing port operation such as the collection of charges on anchoring of boats, auctions and the management of catch is not performed well, and the sufficient management and service is not conducted or offered.

When this project started, office spaces of PPI were rented to private companies to increase the operating rates, but not at the time of the survey. In this regard, too, it is necessary to define the policy of administration.

From above, for operation and maintenance of this project, required number of personnel is stationed, and the grant is provided by the Government of Indonesia, and the

[16] Financial data (income and expenditures of each year) were requested to PPI, but not furnished.

maintenance of facilities and equipment is performed routinely. The operation and maintenance of the hardware side is properly conducted. However, problems still remain in the software side such as structure and technology of operation and maintenance due to unclear policy of administration, therefore sustainability of the project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented with the objective of activating the whole fisheries industry in Larantuka Sub-district, East Flores District, toward making fisheries efficient and minimizing the post-catch loss, through constructing fishery facilities in the area. This project partly disagreed with the development needs of the target area. Therefore the relevance of this project is judged as low. It resulted in shortening of times spent on landing and purchase by brokers, but on the contrary, the utilization of the facility by fishermen has been limited, and because the operation and maintenance setup of the facilities constructed in this project has been underdeveloped, the facilities have not fully demonstrated their functions. Therefore, the effectiveness and the impact of this project are judged as fair. This project cost and period did not exceed the planned amount and length, thus the efficiency of this project is high. On the other hand, the sustainability of this project is fair, since problems still remain in the structure and technology of operation and maintenance due to unclear policy of administration.

In light of the above, this project is evaluated to be low.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Transfer of PPI control to the east Flores District

At the time of ex-post evaluation, work to transfer the PPI jurisdiction from the Ministry of Maritime Affairs and Fisheries to East Flores District government has been carried out, but as three year have passed since the implementation of this project, jurisdiction transfer needs to be carried out immediately.

(2) Establishment of administration regulations

It is quite clear that the fishery is a very important industry and its promotion is necessary in the target area. However, the regulations for the administration of PPI have not been established, and the direction of the administration of PPI has not been decided. Hence it is necessary to confirm measures for the promotion of fisheries in the target area among related parties, to establish the administration regulations of PPI on those measures, to show its contents not only inside the organizations but to those who are

engaged in fisheries in the area, and to perform each job.

(3) Preparation and enforcement of the organization depending on administration regulations

It is necessary to station and train required personnel following the administration regulations. The Bureau of Marine Affairs and Fisheries is required to support the arrangement of personnel and training courses. It is also necessary to strive for the effective use of PPI and the development of fisheries industry, in conference with some private companies that have continued their business for a long time and have taken root in the area.

(4) Provide of appropriate services

It is necessary to provide appropriate services for smooth fisheries such as the management of piers and trade of fish, repair of boats to those who are engaged in fisheries and to collect charges from them. In addition, it is also necessary to perform the promotion activities of these services more actively by PPI to small-scale fishermen.

(5) Sharing of measures for promoting fisheries among related parties

There is a movement to establish regulations and force those who are engaged in fisheries to use PPI, and limit the activities of brokers such as direct trade. Such regulations are desirable to be enforced after explaining their contents to those who are engaged in fisheries and obtaining their agreement.

4.2.2 Recommendations to JICA

Since low frequency of use of PPI was found, JICA Indonesia Office conducted follow-up by fishery advisor (including guidance in the field by employing consultant) and some improvements to the usage of the facility was seen. In the future it is expected to make the Indonesian side itself establish the policy for the promotion of the fisheries industry reflecting the properties in the target area including commercial customs and the direction of appropriate administration of PPI, and it will be necessary to monitor the activities.

4.3 Lessons Learned

(1) In the target area of this project, fisheries industry was performed where private companies constructed relations with many habitants before implementation of this project. As measures to further develop fisheries industry in the target area, it was necessary to implement this project after obtaining understanding of those who are related

to the fisheries industry, fluently sharing the purpose of this project in common with the related parties, and confirming the administration policy of PPI in Indonesian side, reflecting the results of analyses of stakeholders and commercial customs.

(2) On that basis, it is desirable that guidelines are formulated for the management by Indonesian side in order to contribute to the fishery promotion. It is also desirable that management of personnel, finances and facilities is conducted, and that the situation of execution of Indonesian responsibility including appropriate personnel and budgetary arrangements at the time of this project implementation are reported, and that the policy of Indonesia and the status of operation of the facility are ascertained as needed even during the project implementation.

Indonesia

Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for Water Supply in Gunungkidul Regency of Yogyakarta Special Territory"

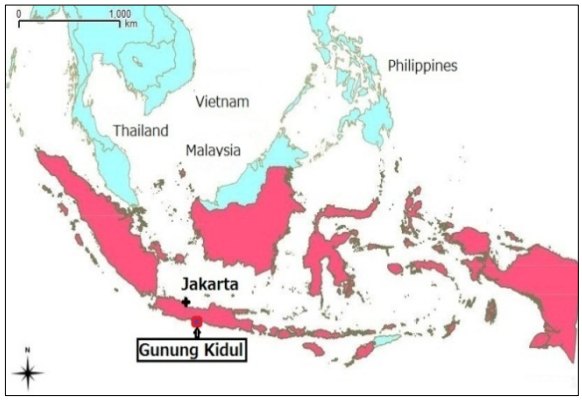
External Evaluator: Takayuki Kurita, ICONS Inc.

0. Summary

Project for Water Supply in Gunungkidul Regency of Yogyakarta Special Territory (hereinafter referred as "this project") was implemented for the purpose of improving water distribution facilities. Relevance of this project is high in terms of the development policy of Indonesia and needs for water supply in the target area. Effectiveness is fair because the targeted water supply population has not been achieved, although Impact is high as this project has contributed to improving the lives of residents in the target area. Effectiveness is high as the project cost was less than planned, in addition in respect of the project period, this project was completed on schedule. Sustainability is fair as, even after the completion of this project, the local government-owned water company (the implementation agency of this project) carries out works in accordance with the plan and properly conducts staff training and technical management; however, although financial status has improved since 2012, there are still concerns in the long term.

Summing up the above points, this project is evaluated to be high.

1. Project Description



Project Location

Baron Atas catchment

1.1 Background

The project site, South area of Gunungkidul Regency, is located in the central part of Jawa.

Gunungkidul Regency is an area of permanent water shortage, and especially the targeted area of this project is karst plateau, therefore before the start of this project, only 30% of the local population in the targeted area of this project[1] could receive safe water. Also, even in case the residents receive provided water, the water supply was cut off for eight out of ten days, most people couldn't obtain

[1] As karst plateau allows easy osmosis water flow in the bedrock, so water-holding capacity is generally low and this causes water shortages.

necessary and enough amount of water for daily living, and residents were forced to use unsanitary water from rivers and shallow wells. Therefore, construction of water supply facilities as well as improvement of hygiene were the most important issues in the targeted area and this led to the implementation of cooperation project for public water supply.

1.2 Project Outline

The objective of this project is to contribute to improving the living environment of the residents through ensuring water supply for the residents and promoting safe and stable water supply by constructing a new water supply system in the south area of Gunungkidul Regency of Yogyakarta Special Territory.

Grant Limit / Actual Grant Amount	525million yen / 472million yen (I/II) 635million yen / 558million yen (II/II)
Exchange of Notes Date (Grant Agreement Date)	January, 2007 (I/II) July, 2007 (II/II)
Implementing Agency	Local Government of Gunungkidul Regency
Project Completion Date	April, 2008 (I/II) January, 2009 (II/II)
Main Contractor(s)	TOA Corporation
Main Consultant(s)	NIPPON KOEI CO., LTD
Basic Design	March 2005
Related Projects (if any)	Germany (GTZ): Underground dam construction

2. Outline of the Evaluation Study

2.1 External Evaluator

Takayuki Kurita, ICONS Inc.

2.2 Duration of Evaluation Study

Duration of the Study: December, 2011 – January, 2013

Duration of the Field Study: January 22, 2012 – February 14, 2012
and May 20, 2012 – June 2, 2012

2.3 Constraints during the Evaluation Study

Nothing Special

3. Results of the Evaluation (Overall Rating: B[2])

3.1 Relevance (Rating: ③[3])

3.1.1 Relevance with the Development Plans of Indonesia

Development projects in Indonesia are implemented under the "National Development Plan" (PROPENAS), which is established every five years. At the time of ex-ante evaluation of this project, "PROPENAS 2000-2004", which declared achievement of healthy living environment and supply of hygienic water in both urban and suburban areas as important goals, was under implementation.

"National Mid-term Development Plan (RPJM) 2010-2014", which was collected at ex-post evaluation, also declares poverty reduction as an important goal. This entails five important fields exist including the preparation of infrastructures, where water should be supplied through making the existing services more efficient and utilizing private sectors.

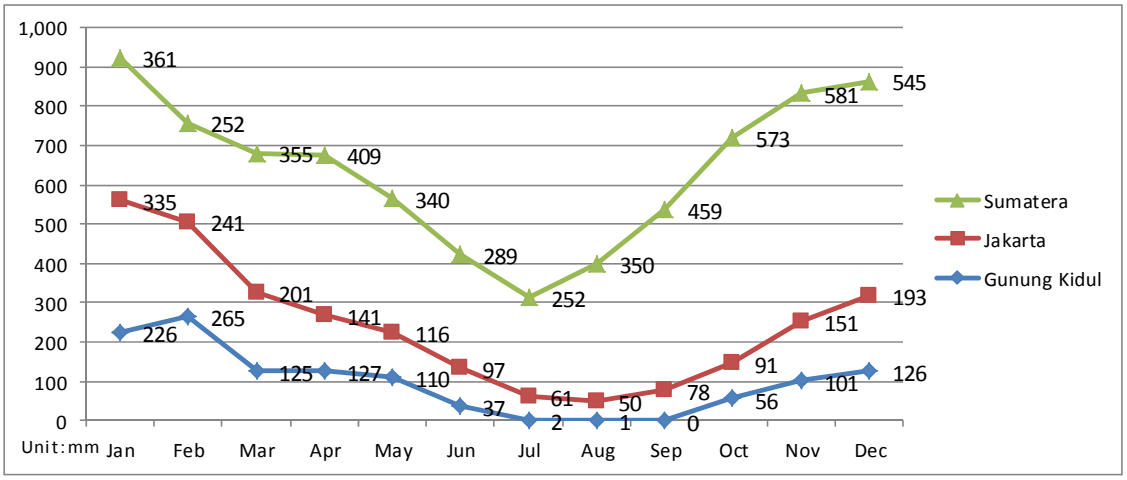
Thus the national development policy of Indonesia has been to keep declaring water supply as an important field from the time of basic design study to ex-post evaluation, and this project has been highly relevant with that development policy.

3.1.2 Relevance with the Development Needs of Indonesia

At the time of basic design study, the target area was very short of water in dry season since it had little rainfall compared to other areas, as shown in Figure 1. Since the target area is a karst plateau, it is very difficult to obtain safe water. About 70,000 inhabitants in this area were supplied with water by the Regency Water Supply Public Company (the organization that implements the operation and maintenance of this project, hereinafter referred to as "PDAM"), while 60,000 other inhabitants depended on water from water-supply trucks or reservoirs. The former, however, were still not supplied with enough drinking water especially in the dry season, when water from the water sources decreased in quantity, and the water supply had to be suspended eight days out of ten, or in some areas the water supply was completely stopped even if water supply pipes had been connected. Therefore, most inhabitants were forced to use unhygienic water such as river water and water from shallow wells, meaning that one sixth of the inhabitants suffered from water-induced diseases such as diarrhea. To improve such a situation, it became necessary to cooperate for the construction of water supply facilities.

[2] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[3] ③: High, ② Fair, ① Low



(Source) Gunungkidul dalam angka 2011 (Gunungkidul Regency Statistics Yearbook, 2011)

Figure 1 Rainfall in Gunungkidul Regency (2010)

On the other hand, there are two water sources in the target area: Ngobaran and Baron, which had facilities such as water collection pipes, etc.[4] At the time of basic design study, the water collection capacities of Ngobaran and Baron water sources were 80 L/sec and 15 L/sec respectively. Because of the earthquake that occurred in Central Java in 2006, there appeared cracks in the bottom of the reservoir of Ngobaran water source, and water flowed out from the reservoir. This caused the capacity of water collection at Ngobaran water source reservoir to drop to 15 - 20 L/sec. This decrease in water collection capacity in Ngobaran water source made it necessary to supply water from Baron Water source to the target area. In such situation, the water supplying facilities in Baron water source and those constructed in this project became much more important than before, since the development needs in the target area did not change from the time of basic design study, while the quantity of water collected in Ngobaran at the time of ex-post evaluation was reduced.

This project consists with the development needs at the time of ex-post evaluation, since it is possible to supply water economically, utilizing water from existing water source and existing facilities.

3.1.3 Relevance with Japan's ODA Policy

At the time of basic design study, the Government of Japan established "Country Assistance Plan for Indonesia" (2004), and listed as important fields "sustainable development by private sectors", "creation of democratic and fair society" and "peace and stability." In "creation of democratic and fair society" fields, improvement of basic services was listed as a concrete content.

[4] The situation of the existing facilities before the implementation of this project were as follows:
Baron System: completed in early 1980's, two 15 L/sec water collecting pumps and three water distributing tanks ($50m^3 \times 2$ and $18m^3$) were installed, water was supplied every two days in usual and every three or four days in case of failure.
Ngobaran System: constructed in 1994-1995, three water collecting pumps and 13 water distributing tanks were installed (Source: JICA "Basic Design Study Report on the Project of the Construction of Water Supplying Systems in Gunungkidul Regency, Republic of Indonesia", 2005).

JICA's country development plan proposes "construction of areal infrastructures" and "construction of suburban infrastructures" considering that in Indonesia, there was a shortage of public properties necessary for the development of areas, and/or public services are insufficient in terms of both quality and quantity because of inadequate systems of operation and maintenance. In consideration of the above points, this project is judged to be consistent with Japan's ODA policy.

This project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness[5] (Rating: ②)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

This project was implemented in order to improve the situation of water supply in the target area. At the time of basic design study, "Population of people who can obtain safe and stable water" was set up as an indicator. In this ex-post evaluation, in addition to the indicator, "Escherichia coli" and "Turbidity" are added as indicators in order to better understand the effectiveness of this project. The situation of their achievement is described below.

Table 1 Achievement of indicators

Indicators	Baseline (2001)	Actual (2001)	Target (2008)	Actual (2012)
Population of people who can obtain safe and stable water	< 40,000	24,382	93,800	≥ 48,860 (estimated as 57,000) ratio of increase: 45.5%[6]
Rate of residences connected to water supplying pipes	45%	18% (estimated)	70%	≥ 35.5%
Escherichia coli	positive	positive	negative	negative
Turbidity (Standard value of Indonesia: equal and less than 5NTU)[7]	-	1 NTU (October 2004)	-	2 NTU (July 2012)

(Source) Data from PDAM

At the time of ex-post evaluation, the population of the target area is 137,596[8], which is an increase of about 3,000 from the time of basic design study (134,000). On the contrary, according to the information from PDAM, 48,860 inhabitants (7,274 households) in this area are supplied with water. This value is the population estimated from the number of families that entered into contracts[9]. In addition, as the result of beneficiary survey[10], there were found some cases of buying water supplied by PDAM from neighbors without entering into contracts with PDAM (17.8% of the respondents sell

5 Sub-rating for Effectiveness is to be put with consideration of Impact
6 Calculated as (result of increment) ÷ (target value - baseline value)
7 NTU: Nephelometric Turbidity Units. Unit indicating the turbidity of the water
8 Source: data from Bureau of Statistics of Indonesia
9 PDAM calculates the number of inhabitants supplied with water, assuming the number of family members per household for each village (5 - 11). This ex-post evaluation also uses those values.
10 The beneficiary survey was implemented to selected 421 general residences in 37 groups in 19 villages, considering accessibility including road condition. In the investigation, four investigators visited each residence and interviewed following a prepared questionnaire.

water to neighboring families[11]). Therefore "the population of people who can obtain safe and stable water" is thought to be larger than the number of people that entered into contracts (estimated to be more than 57,000).

The reasons for the late achievement are the following two.

(1) High target values set up in the ex-ante plan of this project

At the time of ex-ante evaluation, it was assumed that less than 40,000 inhabitants (45%) were supplied with safe and stable water. This value is calculated from baseline survey in the basic design study[12]. According to the information from PDAM, however, only 24,382 inhabitants were supplied with water at that time. It is considered that the result was far from the target value because the baseline value was much higher than the reality.

(2) Electricity conditions in the target area

In 2009, it was difficult to increase the quantity of water supply, since the production cost was beyond the amount of sales due to the higher electricity charge for corporate persons (the details are described in "Sustainability")[13].

To improve this situation, the operating time of the pumps was expanded from 10 hours per day to 18 hours per day in April 2011. As a result, the percentage of fixed cost of personnel expenses and facility expenses decreased and the electricity cost for re-pumping from the water source located in lowland to each village located in highland (200- 300m) was cut down. And the selling revenue went beyond the production cost because of increased income due to increased water supply[14]. PDAM plans to continue the increase in water supply because increase of accounted-for water has so far resulted in the improvement of its financial situation.

As shown in Table 2, the water supply in the target area has been increasing since 2009 when this project was implemented, and the water supply situation is being improved. As shown in Table 3, enough water quantity is ensured and the water supply is possible through expanding the operating time of pumps by about one hour compared to the current situation, even if the population supplied with water becomes 93,000.

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[11] According to PDAM, the reasons people buy water from neighbors without entering into contracts with PDAM are as follows: ① People do not like to pay the initial installation expense (at least Rp. 450,000, depending on the distance from the water supplying pipe to the residence) and ② people do not want to pay the fundamental charge (Rp. 37,000) in rainy season in which they need little water supplied by PDAM, etc.

[12] The baseline survey was implemented on total 312 samples from 26 villages of the area supplied with water in this project, 12 samples per village.

[13] According to the data of 2009 from PDAM, the mean sales price was Rp. 2,937 per m^3, while the mean production cost was Rp. 4,053 per m^3, resulting in a deficit of Rp. 1,116 per m^3.

[14] As the policy of PDAM, it does not charge the basic fee to inhabitants of areas served with less water than the maximum quantity ($10m^3$), such as highlands. According to a staff member of PDAM, however, it became possible to charge due to the increase in water supply in many cases.

Table 2 Water quantity data in the target area (unit: m^3)

	2005	2006	2007	2008	2009	2010	2011
Pumped	7,920,463	6,757,044	6,831,965	6,312,729	7,181,517	7,548,469	9,538,811
Supplied	7,627,251	6,655,689	6,711,194	6,201,435	6,726,151	7,390,218	9,392,920
Accounted-for water	4,204,902	4,192,851	4,505,210	4,706,595	5,151,901	4,871,134	5,343,952
Non-Revenue Water	3,501,237	2,462,829	2,205,984	1,444,840	1,574,322	2,519,084	4,048,968
Non-Revenue Water Ratio	44.20%	36.45%	32.29%	22.89%	21.92%	33.37%	42.45%

(Source) Data from PDAM

Table 3 Water sources and water supply capacity of PDAM

	Water quantity (m^3/day)	a) Water supply capacity (L/sec)[15]	Operating time	b) Water supply capacity (m^3/day)	Before this project (m^3/day)	Water demand (m^3/day)[16]
Ngobaran	5,184	20	18 hours	1,296	3,200	
Baron	432,000	100	18 hours	6,480	Unknown	**7,960**
Total water quantity	**437,184**		**Total water supply capacity**	**7,776***		

* Water supply capacity is calculated under the assumption of the current operating time of 18 hours per day. If it is expanded to 19 hours per day, the capacity is estimated to become 8,208 (m^3/day).

(Source) The author, referring JICA: "The basic design study report on the project for water supply in Gunungkidul Regency of Yogyakarta Special Territory in the Republic of Indonesia"

Though the population supplied with water has not reached the target, the water supply situation has been greatly improved by this project. Before this project, in the target area, the inhabitants were supplied with water no more than once a week, even in areas where water supplying pipes were installed, and were forced to purchase water mainly from water-supply trucks. At the time of ex-post evaluation, however, the inhabitants in the target area get water more and more from PDAM compared to the baseline survey as shown in the following Table 4, the result of beneficiary survey, and about 80% of the investigated inhabitants answered that they use the water supplied by PDAM for both drinking and other living purposes in the dry season.

As shown in Table 5, the water supply situation has improved so that almost all the inhabitants have become capable of getting water at least once per week after the implementation of this project. The percentage of the inhabitants supplied with water every day decreased compared to the result of the baseline survey: this is thought because the baseline survey was a sampling investigation. However, it is thought that this project was effective, since more than 60% of the inhabitants designated that "it became easier to get water" as a benefit of this project (see Table 6).

[15] a) Water supply capacity (L/sec) indicates the capacity of water supplying pumps at each water source, while b) Water supply capacity (m^3/day) indicates the value of each pump multiplied by the operating time.

[16] Source: JICA, "The basic design study report on the project for water supply in Gunungkidul Regency of Yogyakarta Special Territory in the Republic of Indonesia", 2005

Table 4 Source of water obtained by inhabitants in the target area (multiple answers allowed)

(Unit: percentage of answers)

	Drinking water				Water for living purposes			
	Rainy season		Dry season		Rainy season		Dry season	
	BL survey	Ex-post	BL survey	Ex-post	BL survey	Ex-post	BL survey	Ex-post
Personal water supply	N/A	0.46%	N/A	0.38%	N/A	0.00%	N/A	0.00%
Public water tap	1.90%	2.05%	0.00%	0.38%	1.30%	1.97%	0.00%	0.36%
Well	7.40%	0.46%	7.10%	0.19%	8.30%	0.22%	7.10%	0.18%
Groundwater	6.70%	0.00%	4.50%	0.00%	6.10%	0.00%	3.20%	0.00%
Rainwater (reservoir tank)	5.40%	6.39%	74.70%	43.76%	4.50%	8.77%	73.40%	41.79%
River water	0.60%	0.23%	0.00%	0.38%	1.90%	0.88%	0.30%	1.09%
Water-supply truck	50.00%	4.57%	0.30%	0.77%	51.30%	4.17%	0.60%	0.55%
Reservoir	0.00%	0.00%	0.00%	0.00%	4.20%	0.88%	4.80%	0.36%
Purchasing from neighboring inhabitants	3.20%	4.57%	1.30%	0.96%	3.20%	3.51%	1.30%	0.91%
PDAM	24.70%	81.28%	12.20%	52.98%	19.20%	79.61%	9.30%	54.74%

(Source) Result of beneficiary survey

*BL survey: acronym of baseline survey

Table 5 Water supply situation in the target area

(Unit: percentage of answers)

Questions		At time of baseline investigation[17]	At time of ex-post evaluation
How many days is water supplied per month?	Every day	19%	5.19%
	More than once per week	15%	90.65%
	Less than once per week	N/A	4.16%
	More than once per month	16%	0%
	Less than once per month	21%	0%
	No supply	29%	0
How long is water supplied per day?	Anytime	No BL data available	4
	12~18 hours		37
	6~12 hours		150
	Less than 6 hours		191

(Source) Result of beneficiary survey

3.2.2 Qualitative Effects

Since the operation and maintenance system for water supplying systems by the Special Region of Yogyakarta and Gunungkidul Regency was inadequate, technical guidance was performed on

[17] Implemented in September 2004 for 12 samples per village, 26 villages, total 312 samples (households).

maintenance and financial management in this project, and the acquired technology is utilized in the work. Its effectiveness is described in “Sustainability”.

3.3 Impact

3.3.1 Intended Impacts

(1) Economic effects because the inhabitants were able to get water more easily

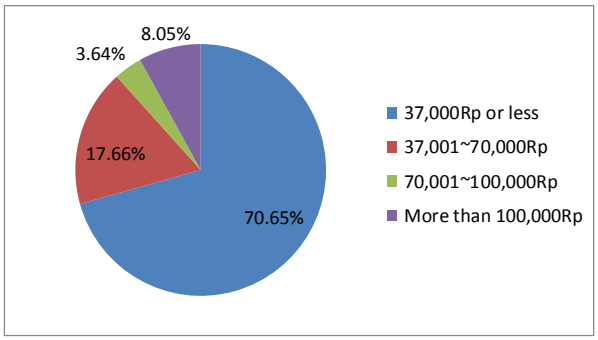
As the result of beneficiary survey, the inhabitants received the following benefits after the implementation of this project.

Table 6 Benefit for the inhabitants due to this project (multiple answers allowed)

Benefit	Number of answers	Answers %
Lower water expenses	267	63.42%
Getting water more easily	257	61.05%
Being able to get enough amount of water	44	10.45%
General improvement in lifestyle	42	9.98%
Clean water available	25	5.94%
Useful for business	7	1.66%
Contribution to health	4	0.95%
Disappearance of water disputes	1	0.24%

(Source) Result of beneficiary survey

Result of interview investigation to the inhabitants shows that they used to get water mostly from water-supply trucks before this project. Water from trucks was sold at the price of 50,000Rp/5m^3 and most residents paid about 100,000Rp (about 860JPY) per month in the dry season. After PDAM started supplying water, however, most residents (about 72% of residents paying charge for water supply to PDAM) pay 37,000Rp (basic charge for consuming 0 - 10m^3 of water) as shown in Figure 2, then the economic burden is lightened.



(Source) Result of beneficiary investigation

Figure 2 Charge for water supply paid by the inhabitants

(2) Reduced time for water collection

As the result of beneficiary survey, no effect regarding “reduced time for water collection” was confirmed, although this effect was expected at the time of basic design. One of the reasons is that there were few cases of water collection, since rainwater and water purchased from water-supply

trucks were mainly used in the target area. It is thought that the effect of "reduced time for water collection" did not have to be assumed at the time of basic design study.

(3) Reduction in water-caused diseases

As the result of site survey, it was found that it was impossible to measure the reduction in water-caused diseases. It was confirmed in the beneficiary survey that in most houses in the target area, people store water in reservoir tanks and mix water from PDAM and rainwater in the tanks, and no households use tap water directly.

It is considered that it is unavoidable for residents to secure enough water by mixing rainwater and tap water even after the completion of this project given living practice and the situation not being supplied water all the time.

Photo: Common reservoir tank used by the inhabitants. Water supplied from PDAM is stored through pipes and rainwater and tap water are mixed there and used.

On the other hand, most of the inhabitants in the target area concern very much that the supplied water is hard. Though there is no scientific proof that drinking hard water affects health, medical facilities in the target area indicate that tap water must not be drunk directly since it contains much potassium. Such activity has been performed since before the start of this project. The inhabitants generally boil water before drinking to remove potassium and purify. A medical facility in the target area said that in 2012 there are no confirmed diseases caused by drinking hard water. The hardness satisfies the water quality criteria of Indonesia[18]. It is desirable that PDAM and medical facilities hold explanatory meetings on the measures to deal with hard water etc. together in order to remove the excess reaction and anxiety of the inhabitants.

3.3.2 Other Impacts

(1) Impacts on the natural environment

On holidays, Baron water source becomes a place of rest and relaxation for people living in the local area and surrounding cities. The staff members of Public Works Bureau of the regency and PDAM were interviewed on the impacts on the natural environment of this project and they answered as follows:

- After the implementation of this project, no complaint was made by the inhabitants on noise, vibration and drainage of dirty water etc. caused by the operation of water collection pumps and water distribution pumps.
- The Waste Treatment Unit of Public Works Bureau of the regency once implemented environmental monitoring when the works of this project started in order to confirm existence and

[18] Water quality tests show not more than 90mg/l, while the criterion of Indonesia is 500mg/l (as of July 2012).

non-existence of influence of construction. Check items were existence and non-existence of modification of the natural environment, the existence and non-existence of influence of the protection of natural resources and natural relics, etc., and there was no designated point. Environmental monitoring was not performed during the period of the work.

- As a problem occurred during the period of the work, there were cases excavated soil became piled up on roads and hindered vehicle traffic. The soil was backfilled during the installation of pipes and caused no problem at the time of ex-post evaluation.

In consideration of the above points, no serious impact is confirmed on natural environment.

(2) Land Acquisition and Resettlement

The Indonesian side acquired 9,412m^2 of land to construct reservoirs at the time of implementation of this project. Such works were performed mainly by the National Land Agency of Gunungkidul Regency. It consisted of the procedure of (1) explanatory meetings to the inhabitants and (2) land acquisition agreements with the inhabitants after price negotiation following the juristic system of Indonesia. The price was basically 150,000Rp (about 1,300JPY) per square meter and some differences occurred due to the conditions of the land (land appropriateness for agriculture, land near a road, etc.) and the contents of the negotiation. A staff member of the National Land Agency of Gunungkidul Regency commented that the necessary land was acquired under the agreement of all landowners and no resettlement of the inhabitants occurred since the land purchased for this project was idle.

In consideration of the above points, no serious impact is confirmed on land acquisition and resettlement as well.

(3) Other Impacts

Many female inhabitants commented that before the implementation of this project, especially in the dry season, they had to spend about three hours for washing their clothes in neighboring ponds etc., but after the completion of this project, the time necessary for washing clothes was reduced to about 30 minutes, thereby helping reduce their workloads.

In the beneficiary survey, there were comments that, thanks to the stable supply of water, they became able to bathe even in the dry season and this project contributed to the activation of businesses such as laundry and fish farming in reservoir ponds (water supplied by PDAM is also used) by the inhabitants in the target area.

In consideration of the above points, regarding “the population served with safe and stable water” compared with actual water supply population in 2001, the water supply population in 2012 has doubled. However as (1) the target value that was set based on the results of the baseline survey at the time of the basic design study was too high, and (2) only around 1,000 PDAM connections were implemented per year, the number was not reached to the target. On the other hand, as a result of beneficiary survey, the improvement of water supply conditions was confirmed in that water can be

obtained more easily and so on. No serious negative impact was found on natural environment, land acquisition and resettlement, while positive impacts such as reduction in economic burden (charge for water supply) of the inhabitants were confirmed. This project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.4 Efficiency (Rating: ③)

3.4.1 Project Outputs

The outputs of this project are listed in Tables 7 and 8 below. There is no difference between the plan and the result.

Table 7 Outputs of this project (Japanese side)

Items	Contents	Difference analysis
Construction of water collecting facilities	2 sites	No difference
Installation of distribution ponds and pumping facilities	7 sites	No difference
Installation of water sending pipes	Total length: 26,600m	No difference
Installation of water distribution pipes	Total length: 13,600m	No difference
Soft component	Instructions on maintenance, execution and finance	No difference

Table 8 Outputs of this project (Indonesian side)

Contents	Difference analysis
Land acquisition, tree felling, land development, fences, gates, electricity generation facilities, various procedures and expenses (total 58 million JPY)	No difference

3.4.2 Project Inputs

3.4.2.1 Project Cost

The project cost planned at the time of ex-ante evaluation and the actual cost are listed in Table 9 below. The actual costs of phases I/II and II/II were both lower than planned.

Table 9 Project Cost

	Project cost at the time of ex-ante evaluation	Actual Project cost	Ratio to the planned
Phase I/II	525 million JPY	472 million JPY	89.9%
Phase II/II	635 million JPY	558 million JPY	87.9%

3.4.2.2 Project Period

The period of this project planned at the time of ex-ante evaluation was 32 months from the detailed design to the completion. However, the target area of this project was affected by the earthquake that occurred in the middle of Java Island in 2006. This project was delayed because of safety confirmation for construction works. Discontinuation period were from July 2006 to January 2007. After the safety was confirmed, implementation review study was performed and the period was planned to be 24 months. After that, the exchange of notes (E/N) on this project was signed by the Government of

Indonesia and the Government of Japan and this project was restarted. Phase I/II was completed on April 4, 2008 after signing the consultant agreement on February 2, 2007, and Phase II/II was completed on January 23, 2009 after signing the consultant agreement on August 9, 2007. The total period of Phase I/II and Phase II/II was 24 months, which was as planned.

In consideration of the above points, both project cost and project period were within the plan, therefore efficiency of this project is high.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

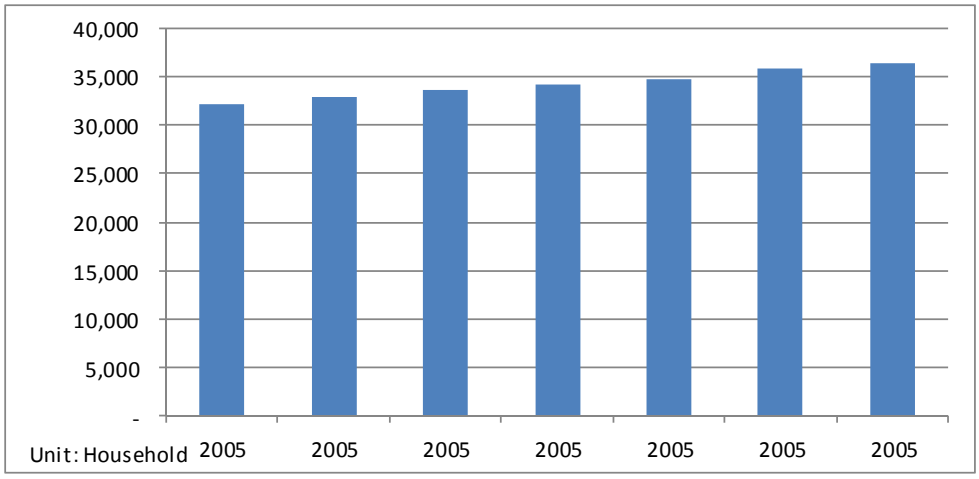
The Gunungkidul Regency Public Works Bureau constructed the pump facilities between the distribution ponds and distribution pumping facilities using the budget of the Department of Public Works, and PDAM is in charge of managing the facilities and operating and maintaining the pipes that connect the distribution pumps to each household. PDAM also possesses the design drawings and completion drawings required for maintenance and conducts repairs of distribution pipes. Incidentally, because PDAM as a public corporation is prohibited under Indonesian law from receiving budget for design and construction work conducted as activities of the Department of Public Works, these activities are the responsibility for Gunungkidul Regency Public Works Bureau.

Gunungkidul Regency PDAM has a permanent workforce of around 155 members and it periodically recruits new staff. In 2011 it recruited six new engineers and in this way appropriately enhances its manpower. Meanwhile, employees of the regency public works bureau are recruited by the head office in Yogyakarta, after which they are either dispatched to Yogyakarta or are directly recruited by the regency public works bureau. Personnel are never assigned from the Department of Public Works or regency public works bureau to PDAM.

According to the interview survey of employees in related agencies, all personnel realize it is their mission to “Provide stable water supply to residents,” indicating that the vision of the organization is clearly permeated among the workers.

3.5.2 Technical Aspects of Operation and Maintenance

After the completion of this project, planning and implementation of water supply expansion by the regency public works bureau and operation of facilities by PDAM have been conducted as planned without mishap, indicating that there are no technical problems. Figure 3 indicates movements in the overall number of pipe connections that have been conducted in Gunungkidul Regency including this project target area.



(Source) Data from PDAM

Figure 3 The number of households connected to the pipe in Gunungkidul overall

Table10 Water supply expansion plans in the target area covered by this project in the future

Year	No. of water supply households	Rate of target achievement
2011	7,274	53%
2012 (plan)	9,695	75%
2013 (plan)	11,634	90%
2014 (plan)	12,927 * Population: approximately 93,000	100%

(Source) Data from PDAM

Concerning future plans, as a result of interviews with PDAM employees and data obtained from PDAM, it is found that PDAM is planned to expand the water supply area and realize a supply population of 93,000 (estimated as 12,927 households) by 2014. As is indicated in Figure 3, PDAM implements the planned connection of water distribution pipes, and both the amount of water supply and the number of supply population are increasing each year. Moreover, according to the interviews with PDAM employees, since pipe repairs have been completed in areas where installed pipes were leaking, it is expected that the number of supply population will increase even more from now on. Meanwhile, as is indicated in Figure 3, since the number of households connected to the pipe in Gunungkidul Regency overall has been increasing by about 1,000 households per year, it will be necessary to secure even more budget and personnel to ensure the realization of future plans.

Concerning the expansion and training of personnel, new employees are recruited at periodic intervals, and training is constantly provided by the Department of Public Works and regency public works bureau. PDAM does not keep training records, however, according to the interviews conducted with related personnel, in addition to OJT (on-the-job training) conducted in regular work, training opportunities are offered to each employee around five to seven times per year[19]. The regency public works bureau determines the contents of training based on requests from PDAM. Moreover, training is constantly implemented at the training center in the head office of the Department of Public Works,

[19] Contents of training include operation and maintenance of regional agencies, sanitary control of water supply, fundraising management and so on.

and the technical management setup is established based on the ministry.

Furthermore, in the soft component, guidance was implemented concerning the preparation and recording of facilities control ledgers, and maintenance and monitoring of facilities and equipment. All PDAM employees who received this training are still working and are engaged in controlling ledgers, cleaning settling basins, checking and maintaining pumps and pipes and conducting sterilization of E. coli utilizing the systems and guidance contents that were provided in the soft component.

3.5.3 Financial Aspects of Operation and Maintenance

The basic water charge is set as 37,000 rupiah (approximately 320 yen)/10m^3 per month, and charges are set according to the amount of water used. There is no data concerning charge collection rates, however, according to the beneficiary survey, it was confirmed that all respondents except for one pay their water bills. Moreover, in the interview survey of PDAM employees, it was found that payment of charges by residents is carried out appropriately based on the readings of water meters in each household.

Concerning collection of charges, an invoice issue system was introduced under the soft component and personnel utilize this upon receiving guidance. A database is maintained with respect to the operation of collections, recording of ledgers, control of payments, and handling of complaints concerning charges. Moreover, as a result of interviews with PDAM employees, there are no problems such as late collection of charges, while customer complaints have stopped arising thanks to the improvement of water supply conditions in this project. Therefore, the effects of this project are recognized.

PDAM finances are managed by the system that was introduced by the BPKP (Financial Development Comptroller: the agency responsible for government internal audit). Depreciation came to be included under the system that was introduced around 2006, and the financial condition of PDAM has been improving in recent years, although it is still in the deficit balance. See Table 11 for detailed data.

Table11 Income and Expenditure Data of PDAM (From 2006 – November, 2011)

(Unit: Million Rupiah)

	2006	2007	2008	2009	2010	As of November 2011
Income	9,866	12,220	12,761	16,253	18,863	18,614
Profit after depreciation	-9,029	-8,451	-5,895	-4,888	-2,956	-58

(Source) Data from PDAM

Since the finances show a deficit following depreciation in recent years, in cases where PDAM needs to upgrade equipment, it is unable to secure the necessary budget under its own finances. However, Yogyakarta Special Territory, to which Gunungkidul Regency belongs, ordinarily offers financial support and allocates budget for the rehabilitation of facilities and upgrade of equipment. Table 12 shows data pertaining to the budget and subsidies offered by the government of Yogyakarta

Special Territory regarding drinking water projects.

Table 12 Budget on drinking water project in Yogyakarta Special Territory

(Unit: Rupiah)

	Budget on drinking water projects in Yogyakarta	Subsidy on other drinking water projects	Total
2006	16,610,000,000	4,960,000,000	21,570,000,000
2007	11,695,778,000	9,850,000,000	21,545,778,000
2008	11,487,536,000	10,346,000,000	21,833,536,000
2009	33,532,000,000	14,667,000,000	48,199,000,000
2010	27,433,000,000	3,100,628,182	30,533,628,182
2011	41,990,800,000	4,409,240,000	46,400,040,000

(Source) Data from Department of Public Works in Yogyakarta Special Territory

The primary reasons for the deficit of recent years have been high production costs mainly caused by high power tariffs, and the high ratio of non-revenue water. Details are given below.

(1) Production costs arising from high power tariffs

PDAM is unable to secure sufficient budget to pay the high corporate power tariffs.

The annual revenue of PDAM is around 18,000 million rupiah, and power charges account for approximately 20% of total income (Table 13 shows the monthly electric bill for the Baron system).

However, concerning production costs, following increase in the operating time of water supply pumps in the Baron system from 10 hours to 18 hours in April 2011, the ratio of fixed costs such as personnel expenses and equipment costs has decreased; moreover, due to reduction in the cost of power for pumping water from sources in lowland areas to villages in highland areas, production costs have been reduced and the amount of water supply has increased, thereby leading to a gradual improvement in the situation. As is shown in Table 14, gross profit of the Baron system alone had been deficit up to 2011, however, it has greatly improved in 2011 and 2012 compared to 2010, and the sale price has come to exceed the production cost since 2012. Judging from the results of the interview survey with PDAM employees too, PDAM reckons that the financial situation can be further improved through extending the operating time of water supply pumps. It will be necessary to strive for further improvements over the long term in future to ensure that water supply can be conducted with such a surplus.

Table13 Monthly electric bill in Baron system (2011)

(Unit : Rupiah)

January	160,380,570
February	116,313,085
March	70,022,245
April	174,459,465
May	111,017,030
June	224,426,231
July	304,238,921
August	361,927,581
September	298,807,014
October	292,326,982
November	321,382,714
December	317,356,245
Total	**2,752,658,083**

(Source) Data from PDAM

Table 14 Income and expenditure situation in Baron system

(Unit: Rupiah)

	Total in 2010	Total in 2011	2012 (Jan- Feb)
A Billed water rate			
1 Water rate	2,099,896,400	3,391,096,450	451,545,000
2 Administration charge	94,636,000	126,992,000	22,308,000
3 Income from maintenance	236,590,000	317,455,000	56,020,000
B Other business income			
1 Income other than water project	1,467,932,900	46,525,000	5,574,000
2 Other income	0	40,757,850	1,307,950
C Administrative cost			
1 Direct expense	3,407,616,261	3,902,869,770	365,911,690
2 Administration overhead	235,530,970	436,376,452	80,974,529
D Gross profit	-1,301,821,931	-416,419,922	89,968,731

(Source) Data from PDAM

(2) Concerning the non-revenue water ratio

The regency public works bureau is also conducting appropriate repair works in order to deal with theft of water and leaks from broken pipes. As is shown in Table 2, both the quantity and ratio of non-revenue water have been increasing since 2010. There are two reasons for this.

① In areas where water distribution pipes had already been installed but water supply was not carried out prior to implementation of this project, water leaks from damaged pipes and so on were discovered for the first time when water supply was started thanks to the greater water intake made possible by this project,.

② The policy of PDAM is to not levy the basic charge from inhabitants in areas (highland areas, etc.) where water supply does not reach the peak capacity ($10m^3$)[20]. Moreover, in interviews conducted with PDAM employees, it was reported that PDAM is not charging inhabitants in those areas where water supply wasn't conducted before this project as a form of promotional campaign.

Meanwhile, as is shown in Table 2, concerning water leaks, the non-revenue water ratio was falling every year until 2009 when this project was commenced. PDAM employees conduct daily visual checks of distribution pipes and immediately respond to failures and accidents by performing confirmations and repairs. Moreover, since PDAM has plans to repair pipes in areas where water supply is newly commenced, it is anticipated that the ratio of non-revenue water will decline further from now on. As for the non-collected water charges indicated in ②, the situation is expected to

[20] Amount of uncollected water charge is unknown although inquiry has been made to PDAM.

improve due to the increase in water supply volume; moreover, if charges can be introduced in the areas where the supply capacity is less than $10m^3$, there is a potential that the amount of collected water charges will increase even more and this will lead to further improvement of the financial situation.

3.5.4 Current Status of Operation and Maintenance

PDAM conducts the following kind of routine maintenance with respect to the facilities and equipment provided in this project, and it is implementing the water supply without any problem.

- Checking of water transmission pipes (implemented daily)
- Daily checking of water quality and transparency in Barn Atas distribution ponds (visual). Turbidity is also checked wherever necessary (30 NTU is set as the post-treatment target).
- Cleaning of filters in three distribution ponds of Baron Atas (once per month)
- Continuous sterilization based on chlorine injection
- The public sanitation section of Gunungkidul Regency conducts water quality inspections at all times (and following heavy rains during the rainy season).

Table 15 below shows the results of water quality tests for Baron as reference. Indonesia national standards are met in all items

Table 15 Water examination results in Baron (as of July 2012)

Test item	Unit	Result	Standard value of Indonesia
Odor	-	Odor free	Odor free
Chromaticity	TCU[21]	3	15
Residue on evaporation	mg/l	190	500
Taste	-	Tasteless	Tasteless
Arsenicum	mg/l	-	0.01
Fluorine	mg/l	0.09	1.5
Total chromium	mg/l	＜0.0126	0.05
Cadmium	mg/l	＜0.0015	0.003
Nitrous acid	mg/l	＜0.0025	3
Nitric acid	mg/l	6.58	50
Cyanogen	mg/l	-	0.07
Selenium	mg/l	-	0.01
Aluminum	mg/l	-	0.02
Iron	mg/l	0.3774	0.3
Hardness	mg/l	89.10	500
Chlorine	mg/l	7	250
Manganese	mg/l	0.0129	0.4
pH	-	7.6	6.5-8.5
Zinc	mg/l	0.5639	3
Sulfuric acid	mg/l	＜2	250
Copper	mg/l	＜0.0098	2
Ammonia	mg/l	0.0106	1.5
Hydrargyrum	mg/l	-	0.001
Antimony	mg/l	-	0.02
Barium	mg/l	-	0.7
Boron	mg/l	-	0.5

[21] TCU: True Color Unit

Molybdenum	mg/l	-	0.07
Nickelic	mg/l	-	0.07
Natrium	mg/l	-	200
Chlorine residual	mg/l	No detected	5
Lead	mg/l	-	0.01
Uranium	mg/l	-	0.015
Organic substance	mg/l	-	10

(Source) Data from PDAM

Concerning spare parts, whereas some of them could not be procured before because they were too expensive or were not available locally, at the time of the ex-post evaluation survey, they were being purchased as required, and the facilities were operating smoothly.

In addition to the routine monitoring carried out by employees, computer maintenance is conducted based on the periodic facilities maintenance alarm system that was introduced and instructed in the soft component. Currently, four computers are being used (in addition to eight office computers) and data is shared by means of centralized management. PDAM maintains the system and, following implementation of the soft component, it has operated the computers while making modifications and so on[22]. As a result, water transmission and distribution facilities are maintained and the water supply is smoothly continued through performing inspections and repairs of equipment and facilities before failures occur. Therefore, this project is deemed to have been effective.

Summing up the above points, while operation and maintenance system for this project is deemed to have no problem in terms of both structural and technical aspects, some problems has been observed in terms of the financial condition. Therefore sustainability of this project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented for the purpose of improving water distribution facilities. Relevance of this project is high in terms of the development policy of Indonesia and needs for water supply in the target area. Effectiveness is fair because the targeted water supply population has not been achieved, although Impact is high as this project has contributed to improving the lives of residents in the targeted area. Effectiveness is high as the project cost was less than planned, and this project was completed on schedule in respect of the project period. Sustainability is fair as, even after the completion of this project, the local government-owned water company (the implementation agency of this project) carries out works in accordance with the plan and properly conducts staff training and technical management; however, although financial status has improved since 2012, there are still concerns in the long term.

Summing up the above points, this project is evaluated to be high.

[22] PDAM adopts a system for automatically notifying the schedule of periodic repairs and inspections of equipment and facilities on PCs to ensure they are definitely implemented. In addition to visual checks, equipment and facilities undergo repairs and inspections based on this system. This system also manages complaints from inhabitants and responds by conducting repairs whenever necessary.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Project management by PDAM

Since residents indicated a high level of satisfaction regarding services provided by PDAM at the time of the ex-post evaluation, it is desirable that it maintains current service levels and tries to further improve profitability through increasing water supply capacity (by extending pump operating times and so on), increasing sales and reviewing water charges if necessary.

(2) Response to hard water

A number of residents in the target area made comments concerning the fact that hard water is supplied. There is no scientific proof that drinking hard water affects health, and public health and medical facilities have no data that points to a health risk. Moreover, the hardness satisfies the water quality criteria of Indonesia; however, it is desirable to stage public meetings in order to allay the concerns of the inhabitants and explain that risks can be eliminated through boiling the water.

4.2.2 Recommendations to JICA

Nothing special

4.3 Lessons Learned

The findings of the baseline survey, which was the basis for the target numerical values indicated in the preliminary planning table, significantly deviated from reality. In view of this, it is desirable to set appropriate target year and values to be configured upon grasping the local conditions.

Republic of Peru

Ex-Post Evaluation of Japanese Grant Aid Project

Project for Expansion and Modernization of Artisanal Fishery Port in Talara

(El Proyecto de Ampliación y Modernización del Desembarcadero Pesquero Artesanal de Talara)

External Evaluator: Satoshi Nagashima, ICONS Inc.

0. Summary

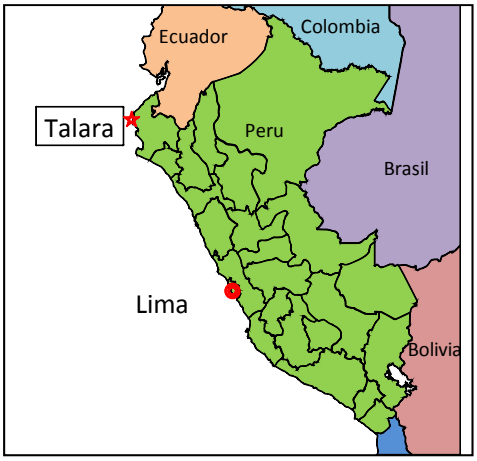
This project was implemented for the purpose of contributing to enhancement of the added value of marine products shipped from the Talara Fishery Port located on the northern coast of Peru. To achieve this purpose, the project improved the fish landing and primary processing facilities, provided a range of necessary equipment and developed the fish storage, and the seawater intake and effluent treatment functions, thereby easing congestion at the pier as well as improving the fishery port function. All of the facilities were developed to comply with the "Sanitary Standard for Fisheries and Fish-culture".[1]

As the project was highly relevant with the development policies and needs of Peru, as well as Japan's ODA policy, its relevance is high. The project has greatly contributed to (i) shortening times required for the primary processing and transporting work of pota (Humboldt squid or *Dosidicus gigas*), (ii) compliance with the sanitary standard during primary processing work and (iii) environmental improvement of the Talara Fishery Port. However, when the landed quantity of pota returned to the normal level in 2010 and 2011 after a bountiful catch in 2008 and 2009, local fishermen still felt that congestion at the pier had not been fully eased. Together with the fact that the ice-making facility is not fully utilised, the effectiveness and impact of the project are judged to be fair. In contrast, the efficiency of the project is high as both the project cost and project period were within those originally planned. Meanwhile, the sustainability of the project effects is judged to be fair because of a minor problem with the maintenance system and continuous loss-making operation for the last three years.

In light of the above, the project is evaluated to be satisfactory.

[1] This standard governs fisheries health in Peru and was introduced in 2001. It is scheduled to be revised by the end of 2012.

1. Project Description



Project Location

Facilities of the Talara Fishery Port seen from the pier

1.1 Background

Traditionally, fisheries in Peru primarily intended the production of non-food marine products with the fish meal industry taking center stage. In recent years, the domestic consumption of marine products in mainly urbanised and coastal areas has been fairly high at some 0.7 million tons a year, suggesting the growing popularity of marine products as food. Therefore, the utilisation of marine products as a source of animal protein for Peruvians had become an important challenge for the government. Fishery activities to supply marine products as food are notable along the northern coast of the country and the Talara Fishery Port in the Piura Region has been contributing to people's lives by supplying such marine products as horse mackerel and other coastal pelagic fish as well as merluza and other demersal fish. The early 1990's saw an increase of the catch of pota in the northern waters in response to the growing resources. As the time of the project planning, the annual catch of pota was as high as some 30,000 tons.

Meanwhile, the landing and primary processing work of pota and other marine products at the Talara Fishery Port which was constructed in 1978 became inefficient because of (i) the severe deterioration of the landing facility (pier) as well as ground facilities, (ii) insufficient facilities to handle the landed marine products, causing serious congestion of the access to the landing and primary processing facilities and (iii) lack of facility development in compliance with the Sanitary Standard for Fisheries and Fish culture, making the landing and primary processing ineffective, and it impossible to properly treat the effluent discharged by the port facilities.

To solve these problems, the Government of Peru formulated the Project for Expansion and Modernization of the Fishery Port in Talara and made a request to the Government of Japan for the provision of grant aid for the implementation of the project.

1.2 Project Outline

The project aimed at positively contributing to enhancement of the added value of marine products

sold from the Talara Fishery Port located on the northern coast of Peru. The planned project components were (i) improvement of the landing and primary processing facilities which were deteriorated, lacked sufficient capacity and failed to meet the relevant sanitary standard, (ii) provision of necessary equipment and (iii) development of fish storage, seawater intake and effluent treatment functions at the port, thereby easing congestion at the pier, improving the overall fishery port functions and developing facilities complying to the Sanitary Standard for Fisheries and Fish-culture.

Grant Limit / Actual Grant Amount	298 million yen / 289 million yen (I/II) 1,022 million yen / 1,018 million yen (II/II)
Exchange of Notes Date	April, 2006 (I/II) August, 2006 (II/II)
Implementing Agency	Ministry of Production / Peru National Fisheries Development Fund (hereinafter referred to as FONDEPES)
Project Completion Date	March, 2008
Main Contractor(s)	Penta-Ocean Construction Co., Ltd.
Main Consultant(s)	OAFIC, Ltd.
Basic Design	June, 2005 – February, 2006
Related Projects	None

2. Outline of the Evaluation Study

2.1 External Evaluator

Satoshi Nagashima, ICONS Inc.

2.2 Duration of Evaluation Study

Duration of the Study: December, 2011 - January, 2013

Duration of the Field Study: March 13th - March 26th, 2012, June 17th – June 29th, 2012

2.3 Constraints during the Evaluation Study

The statistics for January through June, 2012 when the ex-post evaluation was conducted showed the lowest level of the landed quantity of pota at the Talara Fishery Port in recent years. Because this level of the landed quantity did not meet the previously set daily landed quantity as the precondition to evaluate project effectiveness, it was impossible to compare the pre-project and post-project performance using the predetermined indicator. This situation led to the unsatisfactory evaluation of the effectiveness of the pier rehabilitation work.

3. Results of the Evaluation (Overall Rating: B[2])

3.1 Relevance (Rating: ③[3])

3.1.1 Relevance with the Development Plan of Peru

At the time of the ex-ante evaluation, the official fisheries development policy of Peru embraced the following strategies as important development strategies for the sector.

(1) Modernisation of artisanal fishery ports and improvement of the landing system for marine products for food use

(2) Strict application of the Sanitary Standard for Fisheries and Fish-culture at fishing ports

(3) Development of cold storage and ice-making facilities for a qualitative improvement of the fish caught by artisanal fishermen

(4) Proper weighing of the landed fish

(5) Implementation of the Environmental management to prevent pollution extending beyond the fisheries sector at Talara Bay and other places.

At the time of the ex-post evaluation, the Ministerial Strategic Plan 2011 – 2015 (Plan Estrategico Institucional) and the Five Year Strategic Plan for the Production Sector 2011 – 2015 (Plan Estrategico Sectorial Multianual del Sector Production), both prepared by the Ministry of Production, called for (i) creation of a value chain for marine products, (ii) creation of value-added marine products as well as processed marine products and (iii) promotion of artisanal fisheries. As the project aimed at promoting artisanal fisheries through the development of a fishery port, it is still compatible with the policy of the Government of Peru at the time of the ex-post evaluation.

3.1.2 Relevance with the Development Needs of Peru

Although marine products were once primarily used for non-food industries, especially for the fish meal industry, in Peru, some 0.7 million tons of marine products were consumed domestically at the time of the project planning, mostly in urbanised and coastal areas, suggesting the growing popularity of marine products as food. At the same time, the utilisation of marine products as sources of animal protein for Peruvians poses an important challenge for the Government of Peru.

At the Talara Fishery Port, the landed quantity of pota is high. The catch of pota in Peru in 2003 was the second largest at some 150,000 tons after horse mackerel and was one of the most important marine products for Peruvians. As the landed quantity of pota at the Talara Fishery Port was approximately 30,000 tons in 2003 or one-fifth of the nationwide landed quantity, the Talara Fishery Port was considered to be an important base for pota fishery.

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[2] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[3] ③: High, ② Fair, ① Low

The annual landed quantity of pota at the Talara Fishery Port from 2000 to 2011 is shown in Table 1.

Table 1 Annual Landed Quantity of Pota at the Talara Fishery Port from 2000 to 2011 and Its National Share

	Landed Quantity of Pota at Talara Fishery Port（MT）	Share of Talara Fishery Port in Landed Quantity of Pota in Peru (%)	Ratio of Total Quantity of Landed Fish at Talara Fishery Port to Total Quantity of Landed Fish in Peru (%)
2000	7,970.0	3.73	0.19
2001	15,930.0	8.05	0.36
2002	26,770.0	18.97	0.36
2003	27,540.0	22.15	0.48
2004	34,230.0	12.66	0.36
2005	31,495.0	10.82	0.34
2006	39,542.0	9.11	0.57
2007	15,302.5	3.58	0.22
2008	76,972.5	14.43	1.05
2009	89,629.5	21.77	1.35
2010	35,292.9	9.54	0.84
2011	29,492.0	7.44	0.39

Sources: Talara Fishery Port Administration Office and Ministry of Production

The annual total quantity of landed fish at Talara Fishery Port from 2000 through 2011 was rather small as it only represented approximately 1% of the total quantity of landed fish in Peru in the same period. However, the share of 10 – 20% of pota was much higher, illustrating the continuous importance of Talara Fishery Port in Peru. This fishery port enjoys a geographical advantage due to its proximity to Paita[4] where a processing plant for pota for export is situated.

Even though the Talara Fishery Port was important for pota fishery, (i) it suffered from declining efficiency due to deterioration of the port facilities and congestion at the pier and (ii) it caused environmental pollution in the area due to the lack of a proper facility to treat the effluent discharged by the port facilities. These facts indicated the strong development need for the rehabilitation of various facilities at the Talara Fishery Port which was an important base for pota fishery.

3.1.3 Relevance with Japan's ODA Policy

The priority sectors and themes for Japan's ODA for Peru are "poverty reduction", "development

[4] Paita is a fishery port located some 75 km south of Talara.

of economic infrastructure" and "environmental conservation". The project was designed to develop economic infrastructure through improvement of the fishery port and related facilities, thereby contributing to the alleviation of poverty among fishery related port workers and also to environmental conservation by means of the proper treatment of effluent. As such, the project was highly compatible with Japan's ODA policies

Based on this observation, this project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness[5] (Rating: ②)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

Three indicators for the quantitative effects of the project were established. These were "proportion of fishing boats which have to wait for one hour or more to land their catch due to congestion at the pier", "required time to complete the primary processing and shipment of pota" and "BOD[6] in the effluent at the Talara Fishery Port". The evaluation results for these indicators are shown in Table 2.

Table 2 Target Values for Quantitative Effect Indicators and Actual Results

Indicator	Reference Value (2005)	Target Value (2009)	Actual Result (2011)
Proportion of fishing boats which have to wait for one hour or more to land their catch due to congestion at the pier on a day of average landed quantity of pota (approx. 122 tons by some 49 fishing boats)	Approx. 15%	Approx. 4 – 5%	- 40-50% till 2011(interview result with the head of the fishery cooperative) - Although the figure is 0% at the time of the present study in 2012, the preconditions for the viable indicator are not met due to a substantial decline of the landed quantity of pota.
Required time to complete the primary processing and shipment work of pota	Approx. 8 hours	Approx. 6 hours	Approx. 3 - 5 hours
BOD in effluent at Talara Fishery Port	Approx. 300mg/L	Approx. 160mg/L	Drainage ditch: 37.2mg/L Seawater near the drain outlet: 2mg/L or less (Note)

Note: Measured on 27th April, 2012.

[5] Sub-rating for Effectiveness is to be put with consideration of Impact

[6] The BOD (biological oxygen demand) shows the quantity of organic matters, etc. in the water in the form of the quantity of oxygen required by bacteria to carry out the oxidative breakdown of such organic matters, etc. A higher figure indicates a higher level of contamination.

(1) Proportion of Fishing Boats Waiting for One Hour or More to Land Their Catch Due to Congestion at the Pier

The beneficiaries survey[7] found that 62.3% of local fishermen have found the elimination of pier congestion to be the greatest benefit of the project. However, proper assessment of the situation was difficult because of the following reasons.

1) According to the interview result with the head of the fishermen's cooperative, the proportion of fishing boats which have to wait for one hour or longer to land their catch was as high as some 40% – 50% in the post-project period when the landed quantity of pota was quite large. This situation was caused by increase of nubmer of fish boats, which normally based at other fishery ports but now use the Talara Fishery Port because of the high level of pota resources in the sea not far from the Talara Fishery Port. (Compared to the use of the port by 49 fishing boats a day as a precondition for this indicator, at least 150 pota fishing boats and 200 fishing boats for other types of fish, totalling at least 350 fishing boats, used the Talara Fishery Port every day in the immediate aftermath of the opening of the new facilities.)

   As the landed quantity of pota in 2008 and 2009 (Table 1) was double or even higher than that in previous years, it is understandable that the congestion at the pier had not improved much. However, the continued congestion in 2010 and 2011 when the landed quantity of pota returned to its normal level may have been the result of the many extra fishing boats from other areas using the Talara Fishery Port as their base in expectation of an improved catch in the area.

2) No congestion at the pier is observed at the time of the ex-post evaluation in 2012. A possible reason for this is the massive decline of the landed quantity of pota (the Peruvian Marine Research Institute (herein after refferd to as IMARPE) speculates that changing currents are responsible) as shown in Table 3 and Table 4, forcing many fishing boats to relocated to Paita and Bayovar[8] (compared to the 600 fishing boats recorded by the fishermen census at Talara conducted in March, 2012, visual observation at the time of the ex-post evaluation was able to count only some 200 fishing boats).

Photo: Landing of pota

   As the landed quantity was approxiamtely 3,000 – 5,000 tons in February through May in the period from 2009 to 2011 as shown in Table 4, the latest decline is not considered to be the result of seasonal fluctuations.

[7] A questionnaire survey was conducted with 300 fishermen using the Talara Fishery Port as their base.
[8] Bayovar is a fishing port located some 150 km south of Talara.

Table 3 Landed Quantity of Pota at Talara Fishery Port in January through May, 2012

(Unit: tons)

	Monthly Landed Quantity of Pota	Average Landed Quantity per Day[9]
January	590.63	23.63
February	52.31	2.09
March	0.90	0.04
April	248.28	9.93
May	823.96	32.96

Source: Talara Fishery Port Administration Office

Table 4 Monthly Landed Quantity of Pota at Talara Fishery Port in 2009 through 2011

(Unit: tons)

	2009	2010	2011
January	1,169.43	0.00	972.20
February	3,698.41	3,173.73	3,224.15
March	2,979.20	5,567.24	4,642.35
April	4,674.81	7,551.94	3,791.91
May	2,701.86	5,768.06	7,109.75
June	6,453.78	6,935.23	371.17
July	4,262.00	2,180.80	271.96
August	51,740.00	2,991.05	3,375.88
September	5,385.00	85.52	2,208.21
October	4,212.00	374.87	3,415.05
November	2,043.02	107.81	89.01
December	310.00	556.64	20.37

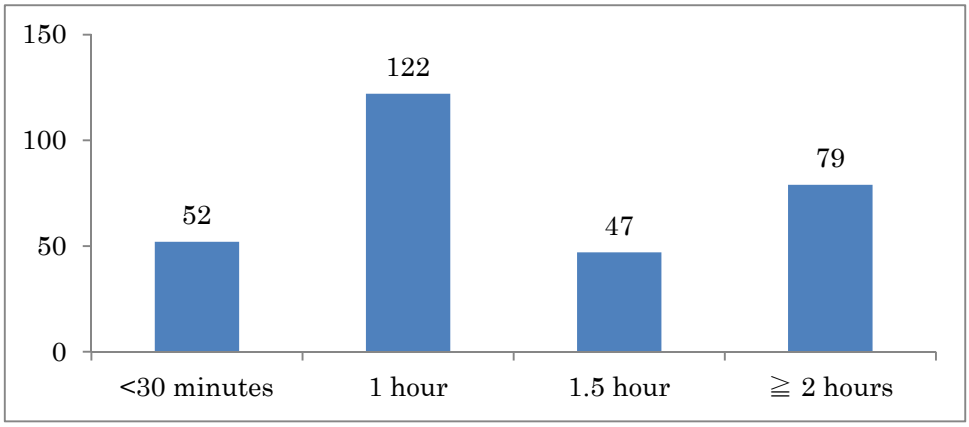
Source: Talara Fishery Port Administration Office

Because of the reasons described above, the conditions at the time of the ex-post evaluation are quite different from the assumed conditions for an average day for the landing of pota, making it impossible to compare the pre-project and post-project performance for this indicator.

While it is found to be difficult to make a valid comparison using the predetermined indicator, the beneficiary survey returned the finding that 248 (82.7%) of the 300 fishermen surveyed state that they wait for their landing turn at the pier for one hour or more. Meanwhile, less than half (120

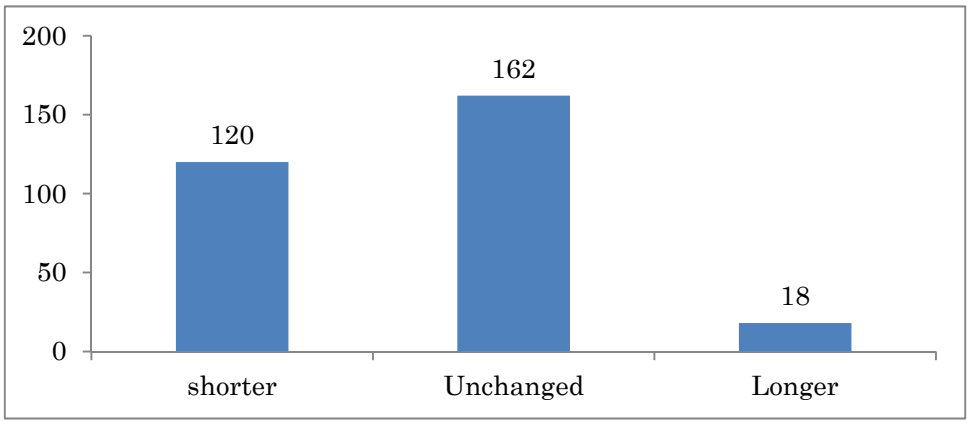
[9] Calculated on the basis of 25 working days per month.

fishermen or 40%) of the fishermen surveyed state that the congestion at the pier has improved, suggesting that the congestion at the pier had not fully improved after the rehabilitation work of the Talara Fishery Port facilities.



Source: Beneficiaries Survey

Fig. 1 Waiting Time for Landing Fish after the Return to the Port



Source: Beneficiaries Survey

Fig.2 Waiting Time at the Pier Before and After Project Implementation as Felt by Fishermen

(2) Required Time to Complete the Primary Processing and Shipment of Pota

The interview with a port official responsible for sanitation found that the average time for the primary processing of pota (five people working) was 3 – 5 hours as gutting was conducted by fishermen prior to landing. The interview with middlemen found that the required time for the primary processing of pota is approximately three hours because of (i) the predetermined work site for each middleman and (ii) the improved flow line after the rehabilitation of port facilities. Based on these interview

Photo: Primary processing of pota

results, the target time for the primary processing of pota is judged to have been achieved.

(3) BOD in Effluent at Talara Fishery Port

A survey conducted by a subcontracted private testing laboratory on effluent at the Talara Fishery Port found that the BOD in the drainage ditch was 37.2 mg/L and that the BOD in the seawater near the drain outlet was 2 mg/L or less. Given the fact that the landed quantity of pota was very low in April, 2012 as shown in Table 3, the usage of the primary processing facility must have been very low, making it practically impossible to compare the pre-project and post-project BOD levels for the same reason as the indicator for eased congestion.

Meanwhile, the interviewee at the IMARPE stated that the water quality at Talara Bay had improved (to be described in more detail in 3.3 – Impacts), mainly because of improvement of the port facilities under the project. It is, therefore, probably safe to assume that the BOD in the effluent at the Talara Fishery Port has improved.

3.2.2 Qualitative Effects

(1) Primary Processing and Shipment in Compliance with the Sanitary Standard for Fisheries and Fish-Farming in Peru

At present, one person is assigned responsibility for sanitation at the Talara Fishery Port whose work is to ensure that the fishery port facilities and people comply with the Sanitation Standard for Fisheries and Fish-Farming. The work of this officer includes checking of the compliance with the dress standard at the primary processing facility and inspection of the quality of the water used at various port facilities.

(2) Implementation of Ice-Making and Cold Storage Services to Maintain Fish Freshness

The beneficiaries survey results show that 92 (30.6%) of the 300 respondents answered “always use the ice-making facility” while 156 (52.0%) answered “occasionally use the said facility”. This means that 82.6% of the local fishermen surveyed use this particular facility. As only 69 (23.0%) of these 300 respondents regularly used another ice-making facility before the rehabilitation work, the majority of the fishermen now using the ice-making facility are new users who commenced the use of the present facility after its rehabilitation.

According to the interview survey results, however, most of the ice used by local fishermen is ice purchased at Sullana[10] and brought to Talara by middlemen, and the use of ice produced by the ice-making machine at the Talara Fishery Port is limited (Table 5). The reasons for the little use of locally produced ice are that the daily production capacity of the local machine of 2.5 tons is too

[10] Sullana is a town located some 75 km southeast of Talara.

small for use by middlemen and that the comparatively fast melting flake ice[11] is unpopular among fishermen whose fishing operation at sea can last for many hours.

Table 5 Monthly Sales Volume of Ice from January, 2011 to May, 2012

Year/Month		Monthly Sales Volume of Ice	Compared to Maximum Production Capacity[12]
2011	January	3.5 tons	4.6%
	February	1.1 tons	1.4%
	March	0.0 tons	0.0%
	April	0.0 tons	0.0%
	May	1.6 tons	2.2%
	June	3.0 tons	4.0%
	July	2.2 tons	2.9%
	August	1.5 tons	1.9%
	September	0.3 tons	0.4%
	October	1.6 tons	2.1%
	November	4.0 tons	5.3%
	December	7.9 tons	10.6%
2012	January	5.4 tons	7.2%
	February	12.4 tons	16.5%
	March	11.7 tons	15.6%
	April	4.6 tons	6.1%
	May	0.2 tons	0.3%

Source: Talara Fishery Port Administration Office

(3) Realisation of Numerical Measurement Control of Landed Marine Products

The interview survey conducted at the Talara Fishery Port found that although landed marine products were measured under the previous port management body, some products were not measured because of the single working shift of eight hours a day. Three working shifts of eight hours each under the new regime[13] established with the acting head of the Port Administration Office in January, 2012 mean that all of the landed products are measured and automatically

[11] Flake ice is a kind of ice produced by an automatic ice-making machine. Because it is light and soft, it is suitable to maintain the freshness of delicate fish body.

[12] The maximum monthly production capacity of 75 tons is based on the assumed capacity of the ice-making machine of 2.5 tons a day and 30 working days per month.

[13] The port management contract between the regional government and the Talara Fishermen's Cooperative is renewed every three years while the contract between the cooperative and the head of the Talara Fishery Port Administration Office is renewed annually (may be extended). In 2012, both the cooperative and the Administration Office had the new management team. However, the head of the latter is actually only the acting head as of June, 2012.

logged.

(4) Strengthening of Organization and Activities of Talara Fishermen's Cooperative Involved in the Management of Talara Fishery Port

The procedure to register fishermen's cooperatives with the Ministry of Production partly changed in 2012, making it compulsory for the board members of a new fishermen's cooperative to possess a fisherman's ID. The new regime of the Talara Artisanal Fishermen's Cooperative has not yet been approved by the Ministry of Production because of its failure to meet this new compulsory requirement.

The interview survey found that the management under the previous regime from 2009 to 2011 was marred by a low level of transparency. There have been great expectations that the new regime will improve the management transparency but the necessary reforms had not made much progress as of the time of the evaluator's visit in June, 2012. Because of this, strengthening of the organization and activities of the fishermen's cooperative is judged to have not progressed far enough.

3.3 Impact

3.3.1 Intended Impacts

(1) Addition of Value to Primary Processed Products

The interview survey with middlemen found that the sales price of primary processed fish at the Talara Fishery Port to processing plants was the same as that at other fishery ports and that there is no verified evidence of added value to locally produced fish due to the improved level of sanitation. However, the same survey found that middlemen highly value the sanitary primary processing facilities at the port made possible by the implementation of the project, suggesting a tangible effect of the project in terms of the qualitative improvement of primary processed products. There is an opinion that the shortened processing time due to the following reasons has become a great incentive for buyers to buy primary processed pota from the Talara Fishery Port.

1) As the space (primary processing room) to be used by each middleman is decided by the administration office, there is no longer any need for middlemen to compete each other to secure space.
2) Proper arrangement of the flow lines at the improved primary processing facility has made the work much easier.

Because of this, the existence of added value as a result of the shorter processing time at the primary processing facility which was improved under the project has been verified.

(2) Increased Income of Fishermen

The beneficiaries survey compared the income of fishermen in the pre-project period to that at the time of the ex-post evaluation. Before the project, the lowest and highest average monthly incomes

were 608.4 N.Sol[14] and 798.9 N.Sol respectively. At the time of the ex-post evaluation, the corresponding figures are 552.6 N.Sol and 744.1 N.Sol, showing a drop of both. The reasons for this drop as confirmed by a number of interviews are (i) a substantial decline of the landed quantity of pota from the pre-project period and (ii) a fall of the purchase price by middlemen. In short, the intended impact of increasing the income of fishermen has not been achieved because of the external factor of a decline of the catch of pota.

(3) Expansion of Facilities Based on Self-Help Efforts

Another measuring equipment which is the same as the one installed under the project has been added with the self-help efforts of the Talara Fishery Port Administration Office and other stakeholders. In addition, a changing room, pump room with three pumps, solid waste storage yard and marine products processing room were constructed in 2009. Such expansion of the port facilities based on self-help efforts is evaluated as a positive additional impact.

Photo: Second scale installed with self-help efforts

Photo: Changing room constructed with self-help efforts

3.3.2 Other Impacts

(1) Impacts on the Natural Environment

Prior to the commencement of the project, primary processed effluent from the old fishery port was released to Talara Bay along with general household waste water, including sewage. Partly because of the short distance of the discharge point from the shoreline, this effluent greatly contributed to the deterioration of the water quality in and around the fishery port. To make matters worse, the ground facility to treat primary processing residue (mainly fish guts) considered to be unfit for human consumption was only capable of treating less than 10% of the some 30 tons of such residue produced every day and the remaining 90% plus residue was simply dumped into the sea.

At present, the effluent is adequately treated and there are no major adverse impacts of effluent on the environment. The water quality in Talara Bay is continually monitored by the IMARPE as well as FONDEPES. A survey by the latter in 2010 found that the BOD in Talara bay in 2010 was

[14] 1 N.Sol = ¥30.25 (March, 2012)

approximately half of that in 2005 (Table 6), indicating a positive improvement of the water quality. However, it must be noted that no direct water quality monitoring of the effluent from the fishery port is conducted.

Table 6　BOD Survey Results at Talara Bay in 2005 and 2010

	Depth (m)	2005 (mg/L)	2010 (mg/L)
Sampling Site E1	0	2.7	1.3
	-2.2	1.3	1.0
Sampling Site E2	0.0	2.2	1.0
	-2.3	5.1	0.7
Sampling Site E3	0.0	2.6	1.4
	-3.2	1.9	0.9

Source：FONDEPES

The latest field survey for this ex-post evaluation study did not come across any residue of primary processing, presumably because of the recent common practice of gutting on fishing boats at sea. Compared to the mass dumping of residue into the sea in the past, dumping by individual fishing boats means the dispersal of dumping in terms of both time and location, reducing the immediate adverse impact of dumping on the environment.
Meanwhile, some residue from smaller giant squid (potilla) and other fish is sold to a fish meal manufacturer.

At the time of the basic design study, many unauthorised stalls serving users of the Talara Fishery Port randomly operated along the access road and at the foot of the pier. It was reported that waste water and waste dumped by these stalls worsened the environment at the port. Because of the tough measure of the Talara Fishery Port Administration Office to remove these stalls on hygiene grounds which led to the removal of most of the stalls in 2011, hardly any adverse impacts on the environment are observed today.

Thanks to the positive outcomes of the project and conscious efforts of the Talara Fishery Port Administration Office in the post-project period, various anticipated negative environmental impacts have not occurred at this fishery port.

(2) Resettlement and Land Acquisition
Neither the relocation of residents nor the acquisition of land was necessary for the implementation of the project which primarily aimed at the rehabilitation of existing facilities.

Regarding the effectiveness of the project, the management of the Talara Fishery Port has considerably

improved due to the hygienic and efficient primary processing of pota through the development of the primary processing facility and the introduction of an efficient weighing system. However, a problem appears to exist in regard to the intended elimination of congestion at the pier (one of the project purposes) because (i) local fishermen felt that congestion at the pier had not improved in 2010 and 2011 when the landed quantity of pota returned to its normal level after the bumper years of 2008 and 2009 and (ii) the new ice-making facility has not been fully used.
In regard to the project impacts, even though such positive impacts as shortening of the primary processing time for pota, expansion of the facilities through self-help efforts and better environmental conditions due to improvement of the drainage system are observed, the income of fishermen has not increased because of the external factor of a decline of the pota catch.

As certain positive effects and impacts of the project have been verified, this project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.4 Efficiency (Rating: ③)

3.4.1 Project Outputs

The project outputs are listed in the following tables.

Table 7 Japanese Outputs

Facility	Planning Stage	Actual Result
Landing Pier	Total length: 135.5 m; steel pipe piles with concrete superstructure	No change
Pier for Small Boats	Total length: 55m; single steel pipe pile structure	No change
Central Building	Primary processing facility with nine rooms; ice-making machine (2.5 tons/day); cold storage (approx.. 0.6 tons); workshop; rest room; port office; toilets; shower room	No change
Cooperative Building	Cooperative office; canteen; fishing gear warehouse; toilets	No change
Pier Administration Building	Fee collection office and others; total floor area: approx. 15 m^2	No change
Fuel Sale Building	Fuel station	No change
Power Room	Power room	No change
Elevated Water Tank	Elevated water tank; pump shed; groundwater tank	No change
Storm Water Ditches	Total length of open ditches: 86 m; total length of culverts: approx. 25 m; discharge port	No change
Drainage Facility	Residue catching cages: 9; grease traps: 9 per each cage; solid	No change

	sedimentation tank x 1; total length of seabed discharge pipe: approx. 300 m	
Exterior Work	Vehicle road paving: approx. 3,317 m^2; footway paving: approx. 1,509 m^2; total length of storm water drainage channel: approx. 252 m	No change
Equipment	Lifting equipment; sorting equipment; primary processing equipment for marine products	No change

Table 8 Peruvian Outputs

Undertaking	Planning Stage	Actual Result
Input of Manpower	Talara Fishery Port Administration Office staff: 9 persons	No change
Construction and Equipment	• Provision of land for the construction of the planned facilities and a water area for the construction of a pier • Demolition and removal of the existing pier, facilities and obstructive structures • Provision of a temporary alternative landing area during the construction period • Work to install the primary terminals for incoming lines for power, water and telephone • Construction of seawalls, external walls and gates; procurement of office equipment and furniture • Others < Total cost: approximately ¥300 million >	No change

3.4.2 Project Inputs

3.4.2.1 Project Cost

At the time of planning, the estimated project cost was 298 million yen for phase I and 1,022 million yen for phase II. The actual cost was 289 million yen for phase I and 1,018 million yen for phase II. The total expenditure was within the plan (99%).

3.4.2.2 Project Period

At the time of planning, the estimated project period, including the design and tender periods, was approximately 24 months (in two phases). The actual result of 24 months from April, 2006 to March, 2008 in two phases was as planned (100%).

Both project cost and project period were as planned, therefore efficiency of the project is high.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

The Talara Fishery Port management system is shown in Fig.3 below.

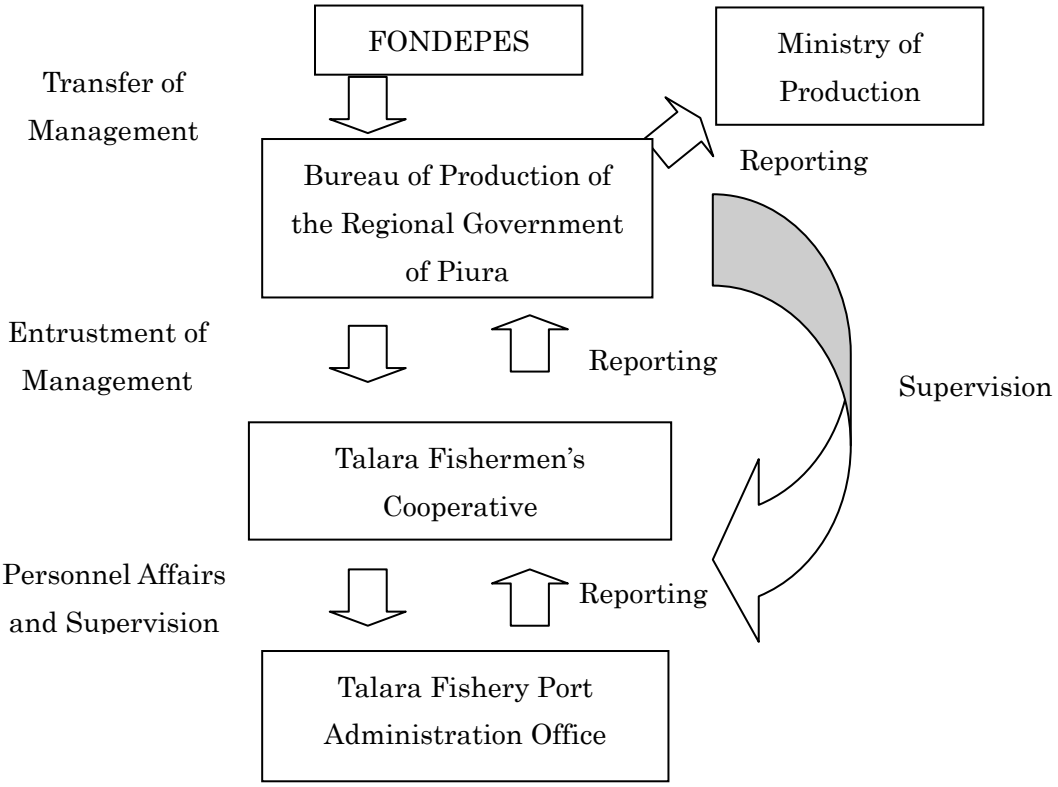


Fig.3 Talara Fishery Port Management System

The actual day to day management of the Talara Fishery Port is conducted by the Talara Fishery Port Administration Office which has nine full-time employees (on either a five year contract or 1 – 2 year contract) and 17 temporary employees (three months contract). These full-time employees are listed below.

1. Accounting officer (also acting manager)
2. Secretary of the Administration Office
3. Secretary of the Fishermen's Cooperative
4. Maintenance technician
5. Security officer
6. Assistant manager
7. Security guard
8. Cleaner

9. Invoicing clerk

Planned position: hygiene officer

The operation and management of the Talara Fishery Port is undertaken by the Administration Office which is staffed by a group of people with professional skills. As many of them have been involved in the management of this port for a long time, no practical problems exist. However, the interview survey discovered that there had been a practice of arbitrary personnel affairs at the Administration Office in an effort to manipulate things to favour the fishermen's cooperative as the Administration Office was actually supervised by the said cooperative and that as a result of such manipulation and questionable spending, the trust of fishermen in the staff of the board members of fishermen's cooperative was lost.[15] As the fishermen's cooperative has the authority for personnel issues of the Administration Office, it is sometimes difficult for the Administration Office to conduct any reform which is adverse to the interests of the fishermen's cooperative.[16]

The Piura regional government (Talara Branch Office of the Bureau of Production) is not sufficiently performing its function of checking the operation of the Talara Fishery Port Administration Office. The interview survey found that although the regional government office is aware of the problems posed by the fishermen's cooperative, it does not take any concrete action.[17]

For the sound operation of the facilities at the Talara Fishery Port, the independence of the Administration Office is essential. It is, therefore, necessary to improve the port management system by means of strengthening the supervisory function of the regional government to regulate the involvement of the fishermen's cooperative in the operation of the Administration Office.

3.5.2 Technical Aspects of Operation and Maintenance

As already mentioned in 3.5.1 above, the Talara Fishery Port is operated by its Administration Office. As many of the long serving staff members at this office possess the necessary skills for accounting, equipment maintenance and other types of work, no specific problems are currently observed.

The FONDEPES provides training opportunities and technical assistance for the regional government. Meanwhile, the Ministry of Production also provides technical assistance in the form of implementing prior training for the purpose of selecting candidates for the position of port office

[15] The new head of the fishermen's cooperative who assumed the position in January, 2012 said in an interview that he is aware of the opaque nature of the management of the Talara Fishery Port Administration Office in the past and is going to improve this.

[16] At the time of the ex-post evaluation, the accounting officer who was also the acting manager of the Administration Office was a candidate for the manager position but the fishermen's cooperative was refusing her assignment to this position, presumably because of the reluctance of the fishermen's cooperative to accept the stance of this acting manager to make competitive bidding compulsory and to refuse the payment of salaries demanded by managerial staff of the fishermen's cooperative.

[17] The regional government is aware of the problem regarding the operation/management of the Talara Fishery Port as well as other fishery ports. The interview survey conducted in June, 2012 found that there has been some regional government activities designed to improve the situation, including the planning of training in July and August, 2012 for fishermen's cooperatives and port administration offices in Piura Region.

manager.

There is a policy of employing temporary maintenance workers on a single, non-renewable three month contract so that the fishermen's cooperative can provide employment opportunities for as many people as possible although this policy has resulted in failure to foster capable reserve technicians. As such, when those in charge of facility and equipment maintenance work are out of action for one reason or another, the facility and equipment maintenance work may not be properly conducted. As far as maintenance work is concerned, it must be recognised that this work demands people with special skills and cannot be covered by person of ordinary ability. Improvement is required in this regard, including modification of the rules governing contract workers and the employment, or training of an assistant mechanic as a full-time employee.

3.5.3 Financial Aspects of Operation and Maintenance

The income and expenditure of the Talara Fishery Port operation are shown in Table 9 and Table 10. The financial statements are jointly prepared by the Administration Office, fishermen's cooperative and Regional Bureau of Production and are submitted monthly to the Regional Government of Piura, FONDEPES and Head Office of the Ministry of Production.

Table 9 Income and Expenditure for Talara Fishery Port Operation from 2008 to 2011 (After Tax)

(Unit; Nuevo sol)

Year	2008	2009	2010	2011
Income	2,022,033	1,382,717	946,393	768,328
Expenditure	1,481,601	1,664,908	1,219,067	1,212,716
Balance	540,432	-282,191	-272,674	-444,388

Source: Talara Fishery Port Administration Office

Table 10 Income and Expenditure for Talara Fishery Port Operation from January to May, 2012

(Unit; Nuevo sol)

Month	January	February	March	April	May	Total of 5 Months
Income	50,686	59,976	58,758	29,414	46,862	245,696
Expenditure	45,593	52,723	58,716	61,013	57,011	275,056
Balance	5,093	7,253	42	-31,599	-10,149	-29,360

Source: Talara Fishery Port Administration Office

According to the above financial data, the operation of the Talara Fishery Port produced a large annual deficit from 2009 to 2011. One causative factor was falling income due to a decline of the

landed quantity of fish. Because the landing fee is a major source of income for the port, what is hoped for to improve the financial situation of the port is recovery of the pota catch. Meanwhile, decline of the catch is unlikely to have been the sole reason for the loss-making operation of the port from 2009 to 2011 and administrative problems regarding port operation could also have been responsible as described next.

Firstly, the user fees may not have been sufficiently collected from port users. The port's income per ton of the landed quantity is shown in Table 11 and Table 12. Compared to the some 40 N.Sol per ton in 2002 to 2004 prior to the commencement of the project, the maximum income per ton in the period from 2008 to 2011 of 26.6 N.Sol recorded in 2010 was much lower. As the income of the Talara Fishery Port Administration Office mainly comes from the landing fee and other types of user fees, failure to collect all of the fees is likely to have caused a drop of the income.

Table 11 Income per Ton of Landed Fish at Talara Fishery Port from 2002 to 2004

Year	2002	2003	2004
Income (Nuevo sol)	1,246,062	1,139,366	1,395,157
Landed Quantity (tons)	31,450	29,060	34,870
Income/Landed Quantity (Nuevo sol/ton)	39.6	39.2	40.0

Source: Calculated by the external evaluator based on information in the Basic Design Study Report

Table 12 Income per Ton of Landed Fish at Talara Fishery Port from 2008 to 2012

	2008	2009	2010	2011	2012*
Income (Nuevo sol)	2,022,033	1,382,717	946,393	768,328	245,696
Landed Quantity (tons)	77,300.79	92,986.40	35,600.99	31,809.41	6,846
Income/Landed Quantity (Nuevo sol/ton)	26.2	14.9	26.6	24.2	35.9

Source: Calculated by the external evaluator based on information provided by the Talara Fishery Port Administration Office

* Up to the end of May, 2012

The interview survey at the Talara Fishery Port found that some measures are being introduced in 2012 to counteract the drop of the income. As a result of these measures described below, the income per ton of fish landed has improved to 35.9 N.Sol so far in 2012 despite a massive decline of the landed quantity of fish.

(1) Measuring of the landed fish has now been extended to 24 hours a day in three shifts compared to the previous single shift of eight hours a day.

(2) The port entry fee is strictly collected and payment on account is no longer accepted.

It is also considered that sufficient efforts have not been made to reduce the expenditure. The average monthly expenditure of the Talara Fishery Port operation was 60,000 – 70,000 N.Sol in the period from 2002 to 2004 (Table 13). The figure increased to more than the 100,000 N.Sol mark in 2008 through 2011 (Table 14). Under the new regime introduced in 2012 by the acting manager, all purchases now require competitive bidding. Because of this and other measures, the average monthly expenditure up to June, 2012, is 55,011 N.Sol which is approximately half of the previous year's figure. The average monthly deficit has also been greatly reduced under the new regime in 2012 from 37,032 N.Sol in 2011 to 5,872 N.Sol or some 16% of the level recorded in 2011.

Table 13 Average Monthly Expenditure for Talara Fishing Port Operation from 2002 to 2004

(Unit; Nuevo sol)

	2002	2003	2004
Expenditure	782,768	743,161	862,862
Expenditure/12 Months	65,231	61,930	71,905

Source: Calculated by the external evaluator based on information in the Basic Design Study Report

Table 14 Average Monthly Expenditure and Profit/Loss for Talara Fishery Port Operation from 2008 to 2012

(Unit; Nuevo sol)

	2008	2009[18]	2010	2011	2012*
Expenditure	1,481,601	1,664,908	1,219,067	1,212,716	275,056
Average Monthly Expenditure (Annual Expenditure/12 Months)	123,467	138,742	101,589	101,060	55,011
Balance	540,432	-282,191	-272,674	-444,388	-29,360
Average Monthly Profit/Loss (Annual Balance/12 Months)	45,036	-23,516	-22,722	-37,032	-5,872

Source: Calculated by the external evaluator based on information provided by the Talara Fishery Port Administration Office * Up to the end of May, 2012

The income and expenditure in 2012 was a result of the possibly very low level of landed pota. If the landed quantity of pota in 2012 is assumed to be that of an average year of 30,000 tons, the annual income is likely to be 1.07 million N.Sol (35.9 N.Sol/ton x 30,000 tons). As the expenditure

[18] The reason for the large expenditure in 2009 is believed to be attributable to self-financed investment to expand the port facilities.

can be estimated to be approximately 660,000 N.Sol (based on the average monthly expenditure of 55,011 N.Sol so far in 2012 x 12 months), major financial improvement of the port operation might be achieved.

The new fishermen's cooperative commenced operation in 2012 while the head of the Talara Fishery Port Administration Office was replaced. Under the new acting head, port operation has shown signs of improvement. If the financial situation up to 2011 continues, the funds to operate the Talara Fishery Port could be exhausted by 2013 or 2014 (as of the end of June, 2012, the Administration Office had deposits of 467,128.47 N.Sol and US$ 10,410.27). However, the present financial situation suggests major improvement in FY 2012. If this situation continues together with a greater catch of pota, the severe financial situation faced by the Talara Fishery Port Administration Office is likely to greatly improve.

3.5.4 Current Status of Operation and Maintenance

There are no specific problems with the operation and maintenance of the port facilities as the work is conducted by an experienced maintenance technician.

Nevertheless, improvement of some of the facilities[19] at the Talara Fishery Port is required as they do not meet the sanitary standard for fisheries facilities. The interview survey found that while a sanitary standard had existed since 2001, it had not been strictly enforced by the Ministry of Health which was responsible for its enforcement. As a result, the basic design for the project did not fully reflect this standard. In 2006, the National Fisheries Health Service (hereinafter referred to as SANIPES) was established at the Institute of Fisheries Technique (ITP) of the Ministry of Production for the purpose of supervising the compliance of fisheries facilities with the relevant sanitary standard. The SANIPES conducted a study to ensure that all fishery port facilities would meet the sanitary standard between 2011 and 2016, and this study found that the facilities at the Talara Fishery Port did not meet the said standard. The revised Sanitary Standard for Fisheries and Fish-culture to be introduced in 2012 is expected to include penalties for those failing to meet this standard and the Talara Fishery Port is currently facing the task of clearly determining who will conduct the required improvement work and when. Even though the SANIPES conducts a monthly inspection at each port, including the Talara Fishery Port, the reports remain at the port level and fail to reach the regional government.[20] Because of this, the Piura regional government does not have a full picture of the compliance situation of the Talara Fishery Port with the sanitary standard. The FONDEPES has already secured the budget to improve the sanitation at fishing ports in 2013. As the priority is expected to be given to those fishery ports with a worse sanitation situation, it is

[19] These include the raw materials used for the drainage gratings, toilets and changing facility for primary processing workers and location of the fuel oil station.

[20] During the interview conducted as part of this ex-post evaluation, the Head of the Bureau of production of the Piura regional government expressed her intention to officially request that the Talara Fishery Port Administration Office and the SANIPES sent monthly sanitary standard compliance reports to the Bureau of Production.

currently unclear whether or not the Talara Fishery Port will be included in the priority ports. Meanwhile, the Director of the SANIPES told the evaluator that the level of sanitation at the Talara Fishery Port is fairly high, presenting few problems compared to other fishery ports with a much worse situation.

As described above, although the operation and maintenance system at the Talara Fishery Port has problems of managerial interference by the fishermen's cooperative and insufficient supervision by the regional Bureau of Production, the regional government is beginning to become aware of these problems to the extent that it is planning to conduct suitable training and other concrete activities to rectify the problems. For the sound operation of this port, the continued support of the regional government is essential. In regard to the operation and maintenance skills, there are no major technical problems except for a need to train back-up maintenance staff. Regarding the financial aspect of operation and maintenance, the port operation has experienced a large deficit in recent years because of the administrative problems even though the annual landed quantity has been at the normal level after the bumper catch in both 2008 and 2009. These problems are recognised by those involved in the operation of the port and there have been positive signs for financial improvement in 2012 due to the increased income and reduce expenditure despite the fact that the level of landing has been abnormally low. Strengthening of the management system through enhanced support by the regional government and recovery of the landed quantity of pota to the normal level will improve the financial situation of the Talara Fishery Port.

Based on the above, some problems have been observed in terms of the structural and financial aspects of operation and maintenance, therefore sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented for the purpose of contributing to enhancement of the added value of marine products shipped from the Talara Fishery Port located on the northern coast of Peru. To achieve this purpose, the project improved the fish landing and primary processing facilities, provided a range of necessary equipment and developed the fish storage, and the seawater intake and effluent treatment functions, thereby easing congestion at the pier as well as improving the fishery port function. All of the facilities were developed to comply with the "Sanitary Standard for Fisheries and Fish-culture".[21]

As the project was highly relevant with the development policies and needs of Peru, as well as Japan's ODA policy, its relevance is high. The project has greatly contributed to (i) shortening times required for the primary processing and transporting work of pota, (ii) compliance with the sanitary standard during primary processing work and (iii) environmental improvement of the Talara Fishery Port.

[21] This standard governs fisheries health in Peru and was introduced in 2001. It is scheduled to be revised by the end of 2012.

However, when the landed quantity of pota returned to the normal level in 2010 and 2011 after a bountiful catch in 2008 and 2009, local fishermen still felt that congestion at the pier had not been fully eased. Together with the fact that the ice-making facility is not fully utilised, the effectiveness and impact of the project are judged to be fair. In contrast, the efficiency of the project is high as both the project cost and project period were within those originally planned. Meanwhile, the sustainability of the project effects is judged to be fair because of a minor problem with the maintenance system and continuous loss-making operation for the last three years.
In light of the above, the project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Recommendations for the FONDEPES and Piura Regional Government

1) Strengthening of Assistance by the Piura Regional Government

The authority to operate the Talara Fishery Port has been transferred from the FONDEPES to the Piura regional government. While the regional government gathers monthly financial data, it does not provide any assistance for the Talara Fishery Port of which the operation has been making a loss in the last three years. Given the fact that this loss-making port operation is still continuing, it is necessary for the regional government to analyse the on-going problems and to examine viable solutions with all stakeholders and also to make the Talara Fishermen's Cooperative and the Administration Office jointly come up with a medium-term improvement plan.

The strong involvement of the Fishermen's Cooperative in the personnel affairs of the Talara Fishery Port Administration Office can have negative impacts on the operation of this fishery port. The Piura regional government should review the management system of the port facilities and provide guidance to ensure the independence of the Administration Office in terms of facility management.

2) Response to the Sanitary Standard

At present, the Talara Fishery Port does not fully meet the national sanitary standard for the fisheries sector in Peru. As the SANIPES aims at making all fisheries facilities throughout the country comply with the sanitary standard, the Talara Fishery Port is facing the important challenge of improving the specifications of its facilities to those required by the sanitary standard. Although the operation of these facilities is the responsibility of the Piura regional government, the FONDEPES must implement the improvement work as soon as possible in close collaboration with the regional government.

(2) Recommendations for the Talara Fishermen's Cooperative and Talara Fishery Port Administration Office

1) Preparation of a Medium-Term Port Operation Improvement Plan

While the operation of the Talara Fishery Port produced a large financial deficit from 2009 to 2011, there were signs of improvement at the time of the ex-post evaluation in 2012 under the leadership of the new acting head of the Administration Office. However, it is unclear what kind of improvement is in progress and how the financial situation will be improved. To clarify these important points, it is highly desirable for such stakeholders as the Piura regional government, Talara Fishermen's Cooperative and Talara Fishery Port Administration Office to work together to prepare and implement a medium-term plan for the improved operation of the port.

2) Available Managerial and Maintenance Skills at the Talara Fishery Port

As present, the management and maintenance aspects of the Talara Fishery Port do not pose any specific problems except for concern that the younger technical staff members were not brought up. Guidance should be provided for the development of a system which is capable of responding to emergencies to ensure the continuation of the technical capability of the Administration Office. The relevant measures should include modification of the regulations governing contract workers, or training of the assistant head to full-time employee status.

4.2.2 Recommendations to JICA

The operation of the Talara Fishery Port has begun to improve in 2012. The JICA should continue its monitoring activities to ensure this improvement continues in planned manner.

4.3 Lessons Learned

At the time of the basic design study for the project, the operation system of the Talara Fishery Port prior to the rehabilitation work enjoyed a healthy financial situation and posed no specific problems. After the completion of the project, some problems emerged, including questionable personnel affairs with interference by the Fishermen's Cooperative and a worsening of the financial situation, partly due to the insufficient collection of the user fees. One major cause of the deterioration of the port operation appears to have been a lack of clarify in regard to the expected roles of the Fishermen's Cooperative, Administration Office and regional government in the operation of the port. This led to a situation where the regional government was supposedly in a position of supervising port operation while preventing excessive interference by the fishermen's cooperative in the port operation by the Administration Office. When planning an operation and maintenance system, emphasis must be placed on the supervision of operation. This system should be designed so as to allow the supervisory body to easily propose and implement improvement measures once problems are found with the operation by the body responsible for it.

Some indicators for the effectiveness of this project have special conditions. A typical example of such a condition is “on a day of average landed quantity of pota (approx. 122 tons by some 49 fishing boats)”. Because of the absence of regular monitoring, it is difficult for an evaluator whose visit to the project site may be arbitrarily arranged to evaluate a project using such indicators. It is, therefore, necessary to conduct a baseline survey targeting the potential beneficiaries, etc. prior to the commencement of the project so that adequate indicators are set up to allow ex-post evaluators to compare ex-ante and ex-post data even if the landed quantity of pota and other conditions are different between the project period and post-project period.

The operation and maintenance system at the Talara Fishery Port which existed prior to the project has been inherited in the post-project period. Even though the interference of the Fishermen’s Cooperative in the personnel affairs of the Administration Office and the financial performance of port operation pose some problems, transfer of the technical aspects of port operation has been smoothly achieved. The main reasons for this are (i) transfer of the existing maintenance, accounting and other staff to the new management body at the basic design stage, eliminating potential technical problems which could later emerge and (ii) confirmation of continued technical assistance by the Ministry of Production and FONDEPES, facilitating the smooth transfer and re-establishment of the technical aspect of port operation by the new body. In general, when a new fishery port-related project is formulated, the recruitment of new technicians and other issues must be dealt with. The probability of the smooth operation and maintenance of port facilities increases if a project is formulated on the basis of well-researched and verified existing human resources and their technical capability.

Saint Vincent and the Grenadines

Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for the Construction of Owia Fishery Center"

External Evaluator: Satoshi Nagashima, ICONS Inc.

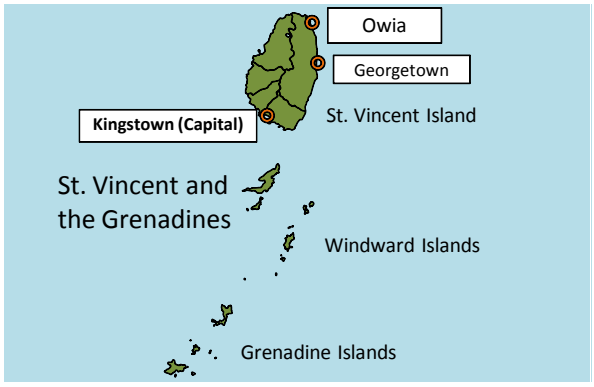
0. Summary

The project was implemented in Owia, in the northeast of Saint Vincent Island, for the purpose of improving safety in the fishery and increasing the opportunities of fishing operations to promote artisanal fisheries and to create new employment by increasing the fish catch in the area, after the construction of slipway, breakwater, rubble rock mound seawall, a fishery center building and fishermen's locker buildings.

The implementation of this project is in accordance with the development plan of Saint Vincent and the Grenadines, and Japan's ODA policy but the development needs are only partly consistent with the actual situation, and the relevance is evaluated as fair. The implementation of the project is working for the fishermen's efficient and safe operation, but on the contrary, the fish catch didn't achieve the objective. Therefore, the effectiveness and the impact of the project are judged as fair. In addition, though the project cost did not exceed the planned amount, the project period wasn't on schedule, and the efficiency of the project was also fair. Furthermore, the sustainability of this project is low, since the operation of the Owia Fishery Complex Inc. (hereinafter referred to as OFC) hadn't been smooth, Fisheries Division, Ministry of Agriculture, Forestry and Fisheries (hereinafter referred to as FD), which temporarily succeeded the operation, has encountered the hard situation of the lack of personnel, and it is difficult to foresee when handover of the operation to National Fisheries Marketing (hereinafter referred to as NFM) will be completed.

In light of the above, this project is evaluated to be unsatisfactory.

1. Project Description



Project Location

Overview of Owia Fish Landing Complex

1.1 Background

The economy of Saint Vincent and the Grenadines depends on the banana industry. However, the cultivated area is limited to 10% of the territory. It was one of the important national issues to raise

potential growth industries, such as the tourism and fishery industries for the replacement of the banana industry.

The Government of Saint Vincent and the Grenadines had a plan to construct 11 fish landing sites nationwide to promote the fishery industry. Eight of the 11 sites had already been constructed at the time of the basic design of the project (seven of them were assisted by Japanese grant aid), but the construction was not ongoing in the North Windward area including Owia located in the northeast of Saint Vincent Island out of remaining three sites.

Though the area of North Windward (Owia, Fancy and Sandy Bay) is near a good fishing ground, it faces onto the Atlantic Ocean and has a topographical restriction of severe wave conditions caused by the swell of the ocean. For that reason, basic facilities had not been constructed, such as landing facilities, primary processing facilities and refrigerating facilities, and this was a factor preventing the development of the fishery.

Because of such a background, the construction of fishery center and breakwaters, etc. in Owia was required for the purpose of developing the fishery in the area of North Windward.

1.2 Project Outline

The objective of this project is to improve safety in the fishery and to increase the opportunity of fishing operations to promote artisanal fisheries and to create new employment by increasing the fish catch in the area, after the construction of slipway, breakwater and rubble rock mound seawall, a fishery center building and fishermen's locker buildings.

Grant Limit / Actual Grant Amount	555 million yen / 527 million yen (I/II) 875 million yen / 874 million yen (II/II)
Exchange of Notes Date (/Grant Agreement Date)	November, 2006 (I/II) June, 2007 (II/II)
Implementing Agency	Fisheries Division, Ministry of Agriculture, Forestry and Fisheries
Project Completion Date	February, 2009
Main Contractor(s)	Toa Corporation
Main Consultant(s)	ECOH Corporation
Basic Design	February, 2006 – September 2006
Related Projects (if any)	<Technical Cooperation> "Adviser in Regional Fisheries Administration" (2006 – 2009, 2009 – 2011) <Grant Aid> "The Project for Fisheries Development" (1980) "The Project for Constructing New Kingstown

	Fish Market" (1987 – 1988) "The Coastal Fisheries Development Project" (1993) "The Fishery Complex Construction Project" (1995) "The Project For Construction Of Fishery Center" (1998) "The Project for re-modeling of New Kingstown Fish Market"(2003)

2. Outline of the Evaluation Study

2.1 External Evaluator

Satoshi Nagashima, ICONS Inc.

2.2 Duration of Evaluation Study

Duration of the Study: December, 2011 – January, 2013

Duration of the Field Study: March 3rd – March 12th, 2012 and June 11th – June 16th, 2012

2.3 Constraints during the Evaluation Study

Since the Owia Fishery Center was not smoothly operated by OFC, to which the operation was entrusted just after the completion of the construction, the operation was passed on to FD from June 2011 to the time of ex-post evaluation. Since the information on the operation such as financial information from the beginning to the succession of June 2011was not passed on from OFC to FD, and the interview to the former OFC manager could not be carried out, it was difficult to clarify adequately the cause of what happened and why the operation was not smooth from the viewpoint of finance.

3. Results of the Evaluation (Overall Rating: D[1])

3.1 Relevance (Rating: ②[2])

3.1.1 Relevance with the Development Plan of Saint Vincent and the Grenadines

According to the "Fisheries Development Plan (2004 – 2005)" of Saint Vincent and the Grenadines, the following have been listed up as development policies in fishery:

(1) The increase in the total production and the productivity by improving the post-catch process and the quality control;

(2) The promotion of raising artisanal fishery by increasing the quality of marine products;

(3) The increase in the production of imported alternatives and the promotion of exports by introducing standards for exporting marine products;

[1] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[2] ③: High, ② Fair, ① Low

(4) The capacity development of the administration including FD.

In addition, the “Three-year Plan for National Development (2004 - 2006)” of Saint Vincent and the Grenadines has indicated that it is moving away from the agricultural industry mainly consisting of banana and evaluates the fishery industry as an important development sector where unused resources exist.

At the time of ex-post evaluation, the following policies have been settled on, though the fishery development plan has not yet been decided:

(1) According to the “Policy Framework & Strategy Plan for Agricultural Development 2012-2018” by the Ministry of Agriculture, Forestry and Fisheries, to “enhance the viability of rural area” and “contribute to increasing food security” have been indicated as strategic goals in the agricultural development;

(2) In the FD “Corporate Plan 2012-2014,” “the development and implementation of marketing and distribution systems” is listed as one of the priority issues.

And, the Prime Minister’s speech called “Toward a National Economic and Social Development Plan for St. Vincent and the Grenadines, 2008-2020” also lists “feasible modernization of the fishery industry” as one of the development goals.

As described above, development of the artisanal fishery in rural areas such as Owia and the value addition in marine products by improving the marketing system are listed in the policies at the time of ex-post evaluation, and there aren’t large differences between policies at that time and the current fishery development plan.

3.1.2 Relevance with the Development Needs of Saint Vincent and the Grenadines

According to the basic design study, the fishermen in Owia and the surrounding villages in Saint Vincent and the Grenadines were forced to do difficult fishery activities as listed below before the beginning of this project:

(1) Since basic fishing port facilities such as wharfs, mooring facilities and slipway weren’t prepared, it was difficult for fishing boats to be docked and to moor;

(2) The safety in fishing activities of fishermen was not enough because of the lack of safe calm areas of the sea since breakwaters and shore protection works were not constructed;

(3) There was a great loss after landing because of the lack of refrigerating facilities around the site;

(4) Fishing boats were apt to be damaged by hitting gravel rocks.

These situations are greatly improved in this project and it seems to correspond to the development needs of the area from the viewpoint of safe and peaceful fishing activities for fishermen.

On the other hand, the basic design study team for the project (dispatched around 2006) indicated that there was potential catch not recorded in the statistics prepared by FD and it was possible to

land approximately 85 tons / year at newly constructed Owia Fishery Center, though the actual fish catch at Owia was around 30 tons per year in the statistics of FD. In the basic design of the project, the demand for marine products in the area of North Windward was estimated at 42 tons, and the target catch in the Owia Fishery Center was set at 85 tons / year and increase of the distribution of the products to outside areas through the center was expected. In the basic survey it was estimated that about five tons / year would be distributed to overseas and about 37 tons / year will be distributed outside of North Windward area. On the distribution to the outside area of North Windward, approximately 27 tons / year was planned for distribution to closer towns outside of North Windward area (such as Georgetown) and about ten tons / year would be distributed to Kingston, the capital. In addition, it was proposed in the basic design study to purchase all landed fish by the Owia Fishery Center when the construction of the facilities was completed, and OFC was planned to purchase all landed fish in their business plan as the result.

In the ex-post evaluation survey, however, the demand of the catch of the beach seine fishery is low among their customers such as restaurants, etc. though the catch is a large portion of the fish landing at Owia, and the center hasn't purchased the large amount of the catch because of the lack of the capital and the manpower. Therefore the plan to purchase all catch by the Owia Fishery Center hasn't realized. It seems that is because the distribution of the catch by the beach seine fishery wasn't adequately examined before the commencement of the project, and the project was planned on the condition of distributing all kinds of the catch by the same distribution route[3], and the concrete solution wasn't proposed. As the consequence of this, even the quantity of fish marketing to neighboring towns such as Georgetown, etc. through the Owia Fishery Center is lower than planned. In addition, the purchase through the Owia Fishery Center is still low at the timing of the ex-post evaluation and the specifications of the facilities such as ice making plant, refrigerators, etc. is too high because the specifications were planned based on the full landing[4].

Furthermore, the plan for Owia Fishery Center to purchase all landing and distribute it to Kingstown and even overseas through a cold chain system does not work up now because of the following reasons:

(1) Each fishery center is operated by entities other than a fishery cooperative, FD or NFM that operates National Kingstown Fish Market, and there is no cooperation system between them. Therefore no flow for the distribution has been seen.

(2) There occurs no incentive for middlemen and fishermen to transport by land the caught fish landed at the Owia Fishery Center, since the purchasing price of fish is almost the same everywhere. And fishermen around the center near Kingstown directly transport the catches at

[3] According to the business plan of OFC, all purchase prices and all selling prices of the catch were planned as the same price.

[4] In the plan, the 85 ton as annual fish landing and 1 ton as the maximum fish landing per day were planned to land at the center and the capacity of the ice making machine was also set as 1 ton, the same as the maximum fish landing per day. For the refrigerator and the freezer, the capacities were set based on two continuous day landing of the maximum fish landing (2 tons). Fish landing based of the quantity of fish purchase at the Owia Fishery Center is clearly lower than the plan, and these facilities weren't utilized as the plan.

National Kingstown Fish Market because it is easier to transport them by sea than by land because of curves and steep slopes.

According to the interview with FD, FD is preparing a concept document that describes the connection of landing sites in the country to NFM with cold chains and is expecting that it will be approved by the Cabinet in the middle of the year 2013. Therefore, the plan to connect landing sites in the country with cold chains seems set to be continued. However, the chief of FD said that it will take a long time to put it into practice because many works remain such as preparing the budget for additional investments, the business plan and the legal framework even after this concept document is approved by Cabinet meeting. This plan of connecting landing sites nationwide with a cold chain has existed since the time of the basic design. Though the plan hasn't been carried out even at the time of ex-post evaluation, more than five years after the basic design, an approach is made to realize the plan.

In the consequence, the effect of the project was seen from the viewpoints of the work efficiency for fishermen and improvement of safety but the forecast of the fish landing at the Owia Fishery Center, the forecast of the demand of fish landing at Owia and the forecast of fish distribution were lower than expectation. For that reason, the examination of the forecast of development needs and project designing based on the pre-conditions wasn't sufficient, and the specification of the facilities was designed more than existing development needs on the fish distribution, and the operation and the utilization of the center are largely different compared with the plan. Therefore, it doesn't meet the development needs and the project design isn't appropriate.

3.1.3 Relevance with Japan's ODA Policy

Japan's aid policy for the Caribbean area including Saint Vincent and the Grenadines says that it designates "fishery", "environment and disaster prevention" and "poverty reduction (aid for the social weak, increase in cash income)" as important fields, in the Economic Cooperation Strategy Task Force in Wider-Caribbean Region consisting of the Embassy of Japan in Trinidad and Tobago and the related persons with Japan International Cooperation Agency (hereinafter referred to as "JICA"). Therefore, this project corresponds with Japan's aid policy.

From above, this project was partly irrelevant with the country's development needs at the time of ex-post evaluation, therefore its relevance is fair.

3.2 Effectiveness[5] (Rating: ②)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

Quantitative indicators measuring the effect of this project are listed in Table 1.

Table 1 Plans and actuals of quantitative indicators for the effectiveness

Effects measured with indicators	**Indicators (unit)**	**Plans (2008)**	**Actuals (2012)**
Efficiency of fishery works	Landing time (average)	1 hour	47 out of 47 fishermen (100%) answered not more than 30 minutes *
	Preparation time for fishing (average)	1 hour	45 out of 48 fishermen (93.7%) answered not more than 30 minutes *
	Manpower for preparation and landing per boat	2 persons[6]	5 out of 48 fishermen (10.8%) answered 2 persons work for landing and 15 of 48 (31.2%) answered 2 persons for preparation *
Safety in fishery works	Number of damages to fishing boats (number of repair works for wooden boats)	Decrease from damages at every landing	0 out of 48 (0%) answered that it occurs at every landing *
Increase in the catch	The catch	Not less than about 85 tons / year	The catch at Owia: 18.45 – 66.35 tons (2009 – 2011) The catch to Owia Fishery Center: 0.01 – 0.1 tons/month (2011) (Note)

Note: estimation from the purchase quantity at Owia Fishery Center in 2011

Source: the result of beneficiary survey (*) and statistics by FD

According to beneficiary survey, goals have been achieved in terms of the landing and the preparation time for fishing and the frequency of damage to fishing boats. This shows that this project greatly contributed to the efficiency of fishing works for fishermen and improvement in safety.

On the other hand, the indicator of the catch didn't achieve the plan in all three years of 2009 – 2011, according to the statistics of FD. The transition of the fish landing at Owia is shown in Table 2. According to the interviews of beach seine fishermen at the Owia Fishery Center, they formerly sold a part of their catch to Saint Lucia, Martinique and Trinidad and Tobago, etc., but currently the

[5] Sub-rating for effectiveness is to be put with consideration of Impact

[6] This plan seems to be the minimum number, however, this indicator is not appropriate for measuring the efficiency of landing, since not only crews land marine products from fishing boats returned from fishing but people remaining onshore also help landing works, according to observation at the site.

volume of overseas sales decreases because the EU regulation prohibits selling catches for which the destination isn't designated. It is considered that the increase in the catch by beach seine boats using the pier of the Owia Fishery Center is the reason for the increase in the catch at Owia in 2009 and 2011 because the landing became easier due to the construction of the facilities.[7]

Table 2 Transition of the fish landing in the area of North Windward 2006 – 2011[8] Unit: ton

	2006	2007	2008	2009	2010	2011
Total in Saint Vincent and the Grenadines	763.97	973.95	630.78	961.3	810.36	776.82
Fancy	1.55	0.36	0.81	10.94	1.67	3.29
Owia	23.41	18.49	12.87	**66.35**	**18.45**	**65.20**
Sandy Bay	0.11	6.84	13.16	8.62	4.41	4.71
Total of 3 areas	**25.07**	**25.69**	**26.84**	85.91	24.53	73.20

Source: FD (estimation from sample survey)

However, the statistics in Table 2 show the change of the catches at Owia area, and not those at the Owia Fishery Center (= quantity of purchased catch[9]). Though there are no statistics on the fish landing at the Owia Fishery Center, but those estimated from the expenditure for fish purchasing are listed in Table 3.

Table 3 The catch at Owia Fishery Center estimated from the expenditure

Year	2011				
Month	Aug.	Sep.	Oct.	Nov.	Dec.
The expenditure on fish (EC$[10])	-	1,092	511	1,185	870
The expenditure on raw materials of fish burgers (EC$)	53	71	202	60	-
Equivalent to the catch[11] (ton)	0.01	0.09	0.06	0.10	0.07

Source: Calculation by the author from the financial information by Owia Fishery Center

[7] There was no clear answer on the reason for the temporal decrease in the catch at Owia in 2010 from the interview survey.

[8] In the plan, it was considered that the catch from the area except Owia (Sandy Bay and Fancy) is distributed through the Owia Fishery Center. However, some portion of the catch is actually landed in these areas. Therefore, it was called into account that the comparison with the catch only at Owia is suitable after the commencement of the operation in 2009.

[9] At the timing of the ex-post evaluation, ice making plant, refrigerator and freezer were used only for the purchased fish at the Owia fishery center, and it was judged that the fish landing at the Owia Fishery Center and the quantity of the purchased fish were equal.

[10] EC$1 = about 29.2 yen (June 2012)

[11] The purchasing prices of fish and raw materials of fish burgers are EC$6/lb and EC$4/lb respectively, then the equivalent catch is calculated as {(the expenditure on fish ÷ 6) + (the expenditure on raw materials of fish burgers ÷ 4)} × 0.45 ÷ 1000kg.

The plan in the basic design and the current situation in the ex-post evaluation are shown in Figure 1.

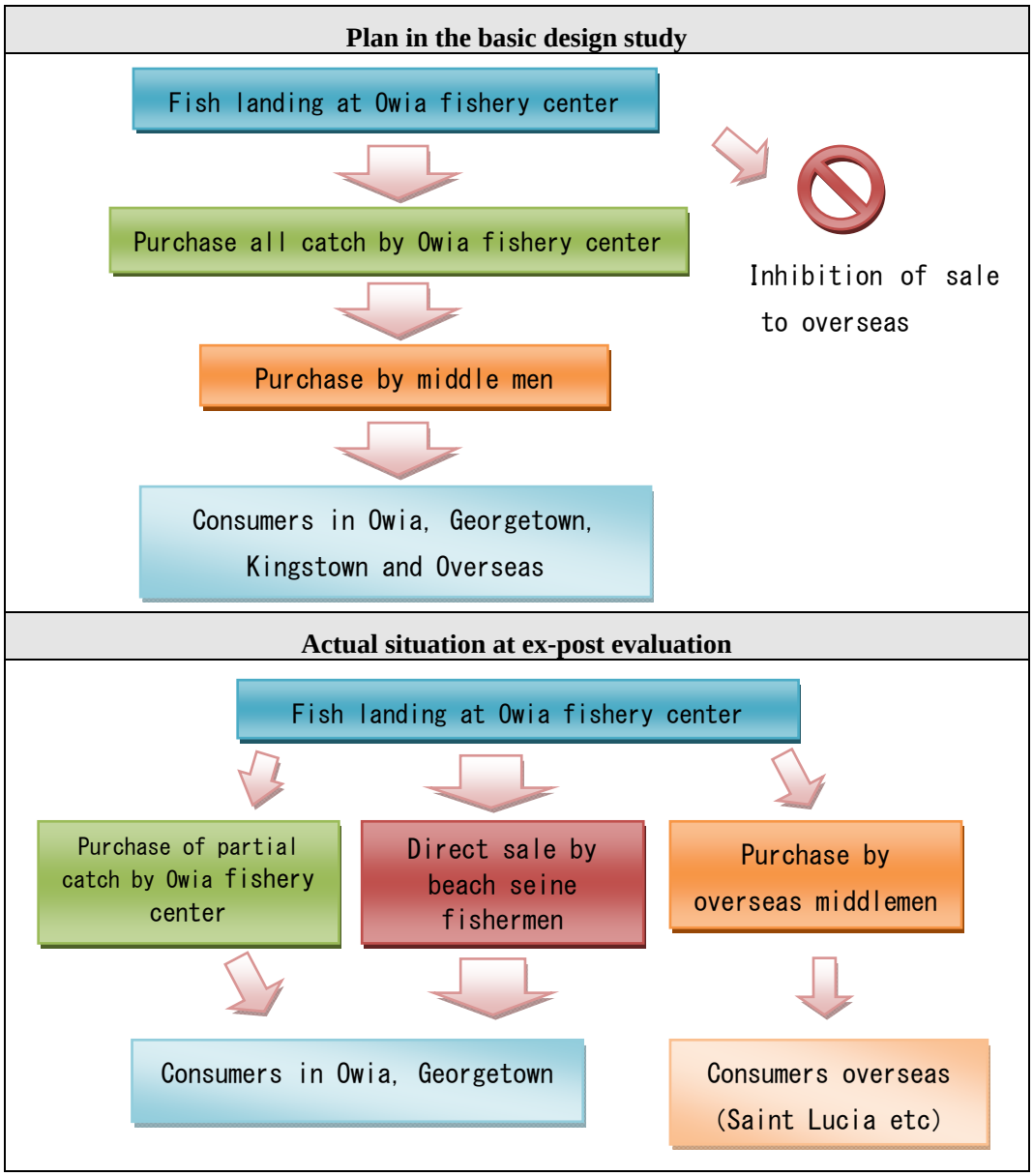


Figure 1 Fish distribution at Owia at the timing of planning and ex-post evaluation

From the statistics in Table 2, it seems that the monthly catch at Owia in 2011 was about 5.5 tons. However, the average volume of purchased catch was estimated to be about 0.07 tons per month (about 1.27% of 5.5 tons per month)[12] during five months after the operation by FD started. It was confirmed from the interview survey with fishermen and the center that most of the fish landing wasn't through the Owia Fishery Center and is sold though it is landed through the piers of Owia Fishery Center. Therefore the actual catch at the Owia Fishery Center is far below the plan of the

[12] The expenditure on fish in 2012 is not known because of the incomplete record of the expenditure information, but according to the personnel dispatched, the products are sold every Saturday and the daily sales volume is about 300lb (135kg).

landing.

In the basic design study, these facilities were designed on the assumption that the annual and monthly catches at the Owia Fishery Center were 85 tons and about 7 tons respectively. The catch at Owia seems to be close to the plan compared with the statistics of FD, but the landing at Owia Fishery Center was not enough.

One of the reasons the catch was assumed not to be less than 85 tons is that the potential catch around Owia in the future was estimated as shown in Table 4 after the interview in the basic design study. This is the value calculated based on the result of the questionnaire survey carried out by the consultant on the number of fishing boats, the frequency of fishing trips and the quantity of the catch per trip by fishing methods based on the assumption that the statistics of FD were sample survey and did not indicate the actual fish landing. This indicator was defined based on the estimates and so were the specifications of the project.

Table 4 Estimated catch in the area of North Windward

Unit: ton

Fishing gear and methods	Annual catch
Beach seine	39.1
Seasonally operated beach seine from Barrouallie and Chateaubelair	6.5
Trolling	27.5
Bottom long line	12.5
Total	85.6

Source: Prepared from Table 2-2-2(2) of the basic design study report

It was planned that about half of the estimated landing would have been from beach seine boats. In the basic design, it was proposed that landing would have been prohibited except at the Owia Fishery Center for beach seine boats that had not directly landed at Owia[13]. It is clear that this calculation itself is nearly accurate since it was coincide with the actual catch in 2009; however, it depends on whether the center purchased the catch from beach seine boats that these estimates are far different from the actual results.

At the timing of ex-post evaluation, a FD officer who dispatched to the Owia Fishery Center mentioned that the center purchased almost all catch from the trolling boats and bottom long line boats. The purchased catch was sold tooking orders from restaurants in neighboring areas of Owia and Georgetown, etc.. Furthermore, direct sales to the population were started every Saturday. However, the Owia Fishery Center does not purchase the catch from beach seine boats. In addition, the estimated landing calculated from the result in 2011 is approximately 1 ton / year and it is significantly low compared with the plan in the basic design study that estimated landing by trolling

[13] The measure which restrict to land the catch except the Owia Fishery Center actually haven't taken. However beach seine fishermen utilize the pier of Owia Fishery Center because of easiness of the landing.

and bottom long line was approximately 40 tons / year though the officer who is dispatched to the center mentioned that the center purchases all catch from the trolling and bottom long line. The cause of the difference seems to be that;

1) the center has purchased only high commodity value fish such as dolphin fish, wahoo, etc.
2) some fishing boats landed the catch during the closed hours of the center such as the early morning or late evening
3) the basis of the calculation of the catch (the catch per one fishing operation, frequency of the operation, etc.) might be lower than the prediction, and actual landing is lower than the estimation

In addition, it seems that the purchasing capacity of the center was also low since FD took over the operation of Owia Fishery Center without capital.

If the center starts to purchase the catch from beach seine fishery which has high landing volume in Owia, the center also has to bear the operation cost of refrigerators and freezers, which are currently not operational, and the profit from the catch of beach seine will be relatively small. Therefore it seems that the possibility to purchase the catch of beach seine fishery by the center is low if the other utilization of the catch as seafood processing hasn't been found out. Therefore, the Owia Fishery Center is in excess of the needs at the time of ex-post evaluation, considering the refrigerators and freezers with which the center is furnished are not used to cut electricity expenses and the catch is kept in small freezing stockers and refrigerators for household use.

As described above, there are some fishing boats which utilize the pier of the Owia Fishery Center but there is no contribution to the Owia Fishery Center because the landing fee isn't charged. If the center doesn't purchase the catch, beach seine fishermen don't land the catch through the Owia Fishery Center. Therefore the pre-condition of the project that all catch is landed at Owia Fishery Center, preserves the catch in the refrigerator and the freezer and distributes it, cannot be fulfilled. Therefore it is difficult to say that the catch of the beach seine is landed at Owia Fishery Center and it is judged that the indicator on the fish landing hasn't been achieved.

3.2.2 Qualitative Effects

Qualitative effects for measuring the effectiveness of this project are given as the role of ports of refuge against hurricanes, the retention of marine products and the increase in work safety etc.

(1) Creation of a place of refuge for fishing boats

According to the beneficiary survey, three of the 48 fishermen (6.3%) used the port as a place of refuge. The reason was confirmed at the Owia Fishery Center, and the answer was that there has been no hurricane that caused the necessity of evacuation since the completion of this facility. Therefore the effect of creation of the place refuge for fishing boats cannot be confirmed at the time of ex-post evaluation.

(2) Keeping the freshness of the fish catch

According to the beneficiary survey, only three of the 47 fishermen (6.4%) had used ice before the construction, and this situation has not changed after the construction to the extent that nobody answered “always using ice” and eight of the 48 fishermen (16.7%) answered “using ice sometimes”. The reasons might be that the Owia Fishery Center does not have policies such as not to purchase the catch unless it is kept fresh with ice, and that there is no need for fishermen to use ice since the Owia Fishery Center immediately purchases the catches caught by hand lining or trolling in one-day fishing operations.

On the other hand, retention of the freshness of the catch is improved, though it doesn’t follow the plan, compared to the former situation of no facility for retention, since catches purchased by the center are kept frozen in small freezing stockers.

(3) Safety of works

Safety of works seems to have been improved since 41 of the 48 fishermen (85.4%) answered that there was no damage to fishing boats during their landing after the construction of the facilities in the beneficiary survey, while it was reported in the basic design study that fishing boats were damaged at every landing. The improvement in safety of works is mainly because the construction of piers and breakwaters deflected the influence of waves, and the depth of water is ensured so as not to cause any contact of boats with the seabed.

(4) Increase in the efficiency of works with selling fuel

At the time of the basic design, the fishermen had to buy fuel at a fuel station in Georgetown, 20 miles from Owia because there was no fuel station there. Therefore it was expected in the basic design stage that it becomes easier to buy fuel and fishing works become more efficient thanks to the installation of a fuel station at the Owia Fishery Center. However, the business of selling fuel had stopped at the time of the ex-post evaluation because of the lack of funds for buying fuel by the poor operation of Owia Fishery Center, and no effect is seen on the efficiency of fishery works by the installation of a fuel stand.

3.3 Impact

3.3.1 Intended Impacts

(1) Increase in distributed fish catch

In this project, it was expected that fresh fish landed at the Owia Fishery Center are distributed through not only the targeted three fishery villages (Fancy, Owia and Sandy Bay) but also neighboring towns such as Georgetown and the fish market in Kingstown the capital, and the supply of fresh fish in all Saint Vincent Island increases, and good quality fish are supplied to consumers and the cash income of those who are related in fishery industries increases.

Though FD does not compile statistics on the distribution of the fish, as shown in Table 3, the Owia Fishery Center hasn't purchased the fish catch of beach seine and the fish landing at the center is low. Therefore, the impact on distribution of fish catch through the center is small. However, as shown in Table 2, fish landing at Owia area increases in the statistics of FD and it seems that the distribution of the fish also seems to increase, though it doesn't contribute to the operation of the center.

(2) Increase in income due to increase in working days

It was expected with the construction of this facility that the working environment of fishermen would be improved, working days and income from fishery would increase, and fishermen would be more motivated and employment opportunity would be created.

According to the beneficiary survey, working days per week are as listed below.

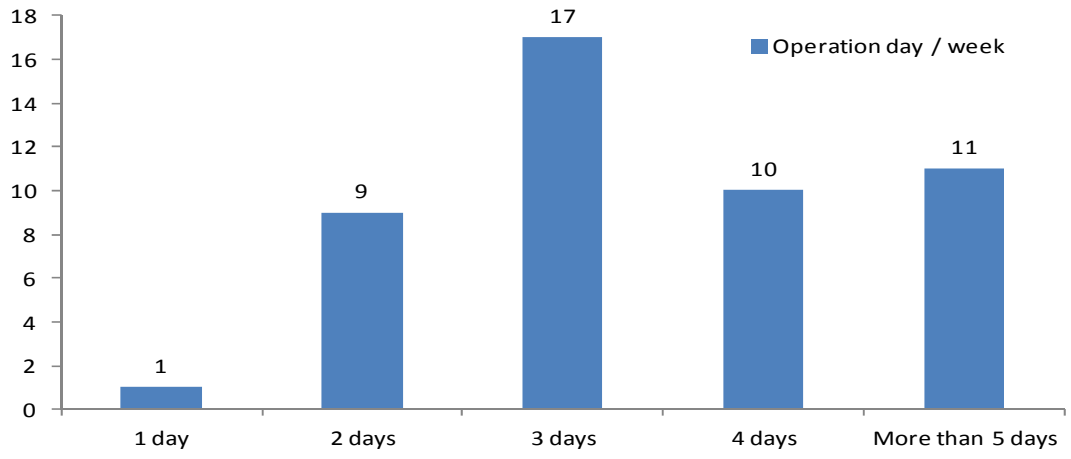


Figure 2 Working days per week of fishermen landing at Owia Fishery Center

Source: beneficiary survey

11 of the 48 fishermen (22.9%) answered "working days increased after the construction of this facility", while 22 (45.8%) and 15 (31.3%) answered "hardly changed" and "decreased" respectively, which are more than the former. According to the interview survey with the officer who is working at the Owia Fishery Center, 33 fishing boats are stored at the Owia Fishery Center and 15 boats out of them are actually operated. Number of the crew in a boat is approximately 2-3 persons, thus 48 samples[14] are almost the total of the active fishermen. Therefore, the numbers of people who feel that their operation days increase are the minority even among the active

[14] In Saint Vincent, fishing registration is carried out and the number of crew is also mentioned in the registration. Therefore it is possible to calculate the number of fishermen in Owia (172 fishermen). However, according to the officer in charge of the center, a lot of fishing boats which aren't currently used are remaining in the registration and it seems that the information isn't accurate. Therefore, this information won't be used in the evaluation report.

fishermen.

In addition, it is estimated from the comments of the fishery officer that there are many inactive fishermen in Owia since half of fishing boats laid at the slipway for a long time[15], and their working days seem to have changed little except for some active fishermen.

Photo: Many fishing boats are laid at the slipway for several months.

In the same beneficiary survey, the average monthly income before the construction was EC$501.38 – EC$2,170.25, while that after the construction was EC$691.59 – EC$2,357.96, indicating improvement.[16] However, the number of main income sources of samples in the beneficiary survey is as follows. Owia is semi - agricultural –fishery village and the samples showing that the fishery is a sub-income source for more than half of fishermen. Therefore, it is difficult to judge whether this is the impact of the project or not because there are two possibilities that increase of the income is due to construction of the project or due to another source.

Table 5 Main income source of the beneficiaries in the survey

	Number of sample	Percentage (%)
Fishery	19	35.8
Agriculture	22	41.5
Others (merchandize etc)	12	22.7
Total	53	100.0
Number of the sample whose main income source is agriculture or the others and fishery is a sub-income source	28	52.8

Source: Beneficiary survey

(3) Function of an accumulating point in the northeast area

According to the interview to FD members and fishermen, most fishing boats in Owia, Fancy and Sandy Bay have come to use the piers of Owia Fishery Center since its construction. However, as shown in Table 2, many fishermen still land at Fancy and Fancy Bay, and the catch at the center is still little. In addition, the beach seine fishermen who have a lot of catch distribute the catches individually. Therefore, it cannot be said that the center plays the role of an accumulating point in the northeast of Saint Vincent Island.

[15] After observation at the site in March and June 2012

[16] This is not be thought as the increase in income caused by inflation, since the inflation rates of Saint Vincent and the Grenadines (yearly average) before the construction of Owia Fishery Center are 3.0%, about 7.0% and about 10.1% in 2006, 2007 and 2008 respectively, while those after the construction are about 3.1% and about 2.7% in 2011 and 2012 respectively, according to the World Economic Outlook Database by IMF (April 2012).

(4) Creation of employment

This project was expected to create employment opportunities by promoting artisanal fisheries. However, there was little impact on the creation of employment opportunities, since the center only employs one security guard and personnel tentatively employed as cleaning women and assistants for primary fish processing, while there is no indirect employment such as porters and fish processing persons and no construction of stores around the center.

(5) Promotion of marine product processing

It was planned at the time of the planning that fish are primarily processed at the Owia Fishery Center. Currently it tries not only to process fish primarily but also process fish products. At the time of ex-post evaluation, it was confirmed that the patty for fish burgers was produced about twice a month. This patty is for domestic consumption and is now under sales promotion at events such as the Fish Night organized by FD, etc., but its benefit currently contributes little to the center.

Photo Produced patty for fish burgers

Table 6 Income by selling fish burger patty in September – December 2011

	Sep.	Oct.	Nov.	Dec.
Sales volume (EC$)	184	156	25	0
Share in the total income (%)	2.9	1.1	1.1	0.0

Source: Owia Fishery Center

FD is expecting in future to be able to purchase the catch by beach seine as well by using meat of horse mackerel, etc. as raw materials to processed products.

3.3.2 Other Impacts

(1) Impacts on the natural environment

According to FD and the consultant who had supervised the works, there was no negative effect such as back-down of shoreline because winding-off method from land side was employed for the outer bailey facilities (breakwater, etc.) during the coastal land filling. In addition, water pollution at the construction wasn't seen because of the method. Furthermore, for the environmental impact from increased traffic of vehicles and vessels, there was no complaint from the population by notification of the plan to pass heavy cars to population and observing the traffic rules when the cars pass through the town. The process of wastewater from the facilities in processing plants was also a concern but no problem was found in the facility. Therefore no impact on the environment

has been seen.

(2) Land acquisition and resettlement

According to the interview to FD, the Government of Saint Vincent and the Grenadines supplied new residences in the vicinity of Owia to the four families that used to live in the planned construction site, and their acquisition was performed without any problem.

(3) Other indirect impacts

The expected impact that fishing boats become larger was not confirmed due to poor information. It was also expected that the exact amount of catch was grasped, but statistical data such as the fish catch haven't been collected at the Owia Fishery Center, and the personnel of FD who are in charge of statistics continues sample survey to grasp the catch.

The facility is used for purposes other than the fishery port, for example, the FD held the Fish Night and the Fish Festival in 2011 at the Owia Fishery Center, which are the events for promoting fish-eating. FD plans to keep holding these events. Therefore the center plays a certain role in enforcing the connection in the local community.

From the analysis above, the indicator of safety of fishing works which is one of the purposes of the project has been achieved and the result is fruitful. However, increase of the fish landing at the Owia Fishery Center which is another purpose of the project is less than the indicator and there isn't adequate result.. In addition, on increasing in the efficiency of works with selling fuel and keeping the freshness of the fish catch, the facilities haven't utilized adequately and the output hasn't seen as planned.

From above, this project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

The following Table 7 shows the plans and results of the project output, and if they are different, the reasons or related issues.

Table 7 Plans and results of inputs by the Japanese side

Items	Plans	Results
Civil works	Land Reclamation	As planned
	Revetment	Anti-subsidence work in revetment omitted
	Slipway	As planned
	Breakwaters	Roadbed pressure at yards for making wave dissipation blocks

		changed Area of yards for making wave dissipation blocks changed Arrangement of wave dissipation blocks in breakwaters changed
	Rubble Rock Mound Seawall	As planned
	Roads - Pavement	Retaining walls at access roads and concrete cover on slopes installed
Architectural works	Fishery Center Building	As planned
	Fishermen's Locker Building (lockers, toilets and showers)	As planned
	External facilities - others (pavement, fishnet drying space, septic tanks and water tank)	Locations of outdoor lamps changed
	Special facilities (ice making facilities, ice storage facilities, refrigerator, freezers, fuel supply facilities, emergency generator)	Design changed due to increase in capacity of fuel tanks and arrangement of parking changed
Machinery	Stainless washing basins, stainless working tables, fish trays, fish box for freezer, pressure water & hose, diving compressors, plastic fish boxes, platform scales, handcarts, FRP tanks and plastic perforated baskets	As planned

(2) The Saint Vincent and the Grenadines side

1) Required manpower

2) Environmental and social considerations: land acquisition and resettlement

3) Installation of electricity, water supply and telephone, office machinery and furniture, etc.

4) Operation of the facilities / machinery

3.4.2 Project Inputs

3.4.2.1 Project Cost

The planned project cost estimated by the Japanese side was 555 and 875 million yen for phase I and II respectively. The results were 527 and 874 million yen respectively, which were lower than planned (98% of the planned).

3.4.2.2 Project Period

It was planned that the total project period was 21 months[17]. Actually, the project started in December 2006 and was completed in February 2009. The total period was 26.5 months[18] and it was longer than planned (126% of the planned period).

According to the consultant in charge of the planning, the reason was that the project period was estimated without any inevitable delay, while the actual period became longer because the installation of breakwater was delayed due to the high waves caused by a hurricane.

From above, although the project cost was within the plan, the project period exceeded the plan, therefore efficiency of the project is fair.

3.5 Sustainability (Rating: ①)

3.5.1 Structural Aspects of Operation and Maintenance

At the time of the basic design of the project, it was expected that the center is initially operated by FD for a certain period and will be passed on to a fishermen's cooperative. In the preliminary study of the project, it was reported that the operation of the fishery center managed by fishermen's cooperative wasn't run very well, but it wasn't well discussed whether the fishermen's cooperative is suitable management body even though nationwide fish distribution was planned. Therefore, it is open to question whether the fishermen's cooperative was adequate as the management body.

When the operation of the center started, the fishermen in the area of North Windward weren't interested in establishing and operating a fishermen's cooperative and it was operated by eight members of OFC[19], which was established just after the construction. The operation by OFC was costly because the organization wasn't restructured in terms of the number of employees even though the center didn't have enough income. The operation then became difficult because OFC couldn't utilize well the capital granted by the Government of Saint Vincent and the Grenadines (EC$200,000 in 2009 and EC$150,000 in 2010, according to the interview to FD). Consequently FD temporarily succeeded the operation in July 2011, and as of June 2012, it operates with three members, an FD officer (in charge of maintenance), a driver and a security guard. Though an administrative staff had been employed until December 2011, she quit for personal reasons and the officer dispatched from FD currently has to look after the trade of fish and the accounting in addition to the maintenance work. Since the Owia Fishery Center was constructed at the site of a severe natural environment, and the maintenance work was complicated and needed a long time, the time for the accounting was insufficient. At the time of the evaluator's visit in June 2012, the

[17] Project pre-planning table

[18] 18th December 2006 (Contract with the consultant) – 27th February 2009 (Completion)

[19] OFC is a public company established by the Government of Saint Vincent and the Grenadines to operate and maintain the Owia Fishery Center. It is described in the business plan that it would be entrusted to a private company after the operation by itself for two years.

income and expenditure information for half a year had not been input. According to the FD member dispatched to the Owia Fishery Center, he is requesting to the chief of FD to employ a new member, but this hadn't been realized as of June 2012.

According to the interview survey with FD, this operation by FD is a temporal step and FD examines how to pass it on to NFM in the future. However, this will need a certain time, since there remain many things to do such as the Cabinet meeting decision on the concept document of the cold chains, additional budget measures and the establishment of the business plan. In addition, NFM commented that additional capital investment is necessary for succeeding the operation in the interview survey.

3.5.2 Technical Aspects of Operation and Maintenance

OFC, which had initially operated the center, was forced to succeed the operation to FD because OFC couldn't utilize well the capital granted by the Government of Saint Vincent and the Grenadines because of its inappropriate operation and maintenance of the facilities. Therefore, its capacity for the operation and maintenance does not seem to have been high. According to the interview survey with fishermen and FD, some inappropriate facts in the operation were confirmed, such as purchasing too much fish and disposal of a part of catches after incomplete selling, and paying expensive electricity charge for continuous use of the freezer and the refrigerator even there was not sufficient catch, etc.

In the timing of the ex-post evaluation, the officer dispatched from FD was in charge of not only the maintenance but also the operation of the center. From the reflection of the operation by OFC as described above, some technical improvement in the operation was seen, such as suspending the use of the freezer and the refrigerator to save the electricity cost. However, an administrative staff quitted in December 2011, and the officer from FD was kept in the situation where he couldn't do any accounting work but the daily accounts since he had too many other jobs to do.

There is no problem for the maintenance of the equipment of the facilities, since it is looked after by refrigerating technicians of FD who were trained in Japan. They keep making their efforts to maintain the facilities by cleaning the places prone to rust with freshwater and repainting anti-rust paint once every three months. According to the interview with an officer of FD who are responsible for the maintenance of the fishery facilities, technicians of FD are to be in charge of the maintenance of the facilities and the equipment, whatever the main operation body is. Therefore, there seems to be no problem for the capacity of the maintenance of the facilities in the future as well.

3.5.3 Financial Aspects of Operation and Maintenance

There remain few financial data by OFC, which had been in charge of the operation in 2009 – 2011, either in the Owia Fishery Center or FD. The plan and results of income and expenditure of

OFC in the period January – March 2010, which are the only available financial information, are as follows. The result of income is one twentieth of the plan.

Table 8 Financial Balance of Owia Fishery Center in January – March 2010

Unit: EC$

	Plan	Result
Income	430,109	22,504
Expenditure	89,088	57,095
Balance	341,021	－34,591

Source: OFC

The results of the operation by FD, which succeeded it from July 2011, are as follows.

Table 9 Financial Balance of Owia Fishery Center in the period August – December 2011

Unit: EC$

	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Income	1,451	6,347	14,379	2,228	3,771	28,176
Expenditure	858	3,039	14,981	3,157	2,197	24,232
Balance	593	3,308	-602	-929	1,574	3,944

Source: Owia Fishery Center

Table 10 Financial Balance of Owia Fishery Center in the period January – March 2012

Unit: EC$

	Jan.	Feb.	Mar.	Total	Monthly average
Income	2,145	8,241	4,525	14,911	4,970
Expenditure[20]	2,041	10,242	10,120	22,403	7,468
Balance	104	-2,001	-5,595	-7,492	

Source: Owia Fishery Center

[20] The expenditure excludes expenses such as electricity charge, since the financial information of 2012 hasn't been completely input.

Table 11 Plan of Balance in the Basic Design Study

Unit: EC$

		Amount	Annual balance	Monthly balance
Income	Facility rent (landing fee, refrigerator rent, gear locker rent)	216,000	305,283	25,440
	Ice sales	56,700		
	Fuel oil sales	22,983		
	Filling air	9,600		
Expenditure	Personal expense	92,400	304,284	25,357
	Maintenance cost such as electric charge	193,536		
	Water expense	5,148		
	Communication and other office expenses	1,200		
	Facilities rent (to FD)	12,000		

Source: Basic design study report

Since the operation by OFC till 2011 spent all capital granted by the Government of Saint Vincent and the Grenadines, FD restarted the operation with practically no capital. Currently the balance of the facilities in the period August – December 2011 was partly in the black, because FD pays the personnel expenses.[21] However, it was greatly in the red in the period February – March 2012 and there is no predicting how the balance will become. In addition, compared with the plan in the basic design study as shown in Table 11, EC$25,000 of monthly income was expected but actual average income is approximately EC$5,000 in 2012. It is about one fifth of the plan and it shows a large difference.

The management is unstable because most income depends on selling fish. A problem of losses occurred in February 2012 where the center lost the price competition with their competitor (direct sale of fishermen) and unsold fish were sold at lower price than those of purchasing from fishermen. According to the plan in the basic design study, it was planned that the main income source was the facilities rent as landing fee, refrigerator rent, etc., but the main income source is the sale of fish in the actual operation, and it is completely different from the original plan. To improve the management of the center, the diversification of income sources is required, such as collecting a charge on using piers for landing by beach seine fishery.

[21] This is because it is expected to cause additional expenditure of EC$5,000 – 6,000 per month for three members, as calculated from the expected annual income for the level of staff of this facility (EC$20,000 – 30,000) in case of paying personnel expenses.

As for the expenditure, the personnel expenses are paid by FD because it currently operates the facilities, however, the personnel expenses should be considered if the operation is entrusted to NFM, etc. in the future, then the balance may stay in the red under the current operation system. Though FD has measures for technical assistance, FD currently cannot secure the budget for restarting the sale of fuel and procuring expensive spare parts of pump, and it is difficult to expect additional financial assistance even if the facilities keep the balance in the red, since it doesn't secure the budget for financial assistance.

There occurs a hindrance to grasping the current situation and the establishment of the future operation plan, since the current situation is that only one member of FD must do the maintenance, the sales of fish and the accountings, and it was revealed during the site survey of the ex-post evaluation studies for the first time that it was greatly in the red in the period February – March 2012. It is necessary to supply a member for an accountant or a secretary at the expense of FD, to grasp the situation and to take measures.

3.5.4 Current Status of Operation and Maintenance

FD succeeded the operation from OFC in July 2011 without capital, since OFC spent all capital granted by the Government of Saint Vincent and the Grenadines. Therefore, it causes a vicious cycle in that it does not have money for purchasing fuel, the refuel service stops and many fishermen cannot go on fishing operations and their use of the Owia Fishery Center decreases. According to the FD member dispatched at the Owia Fishery Center, the restart of the sale of fuel is expected to require about EC$20,000 (about 600,000yen). Currently it is in talks with TEXACO, a major fuel seller, to build a cooperative relation.

As for the maintenance of the facilities, erosion is advancing on metal drainage pipes, shutters and condensers in the ice making plant. Though they are cleaned with freshwater and repainted with anti-rust paint, they rust out within two weeks. This requires continuous maintenance, the cost for which is about EC$500 – EC$1,000 per month[22], which is a heavy burden for the facilities at about 25% of the total expenditure.

Photo: A window sash on which salt is deposited because wind brings salt

On the operation and the maintenance structure in the sustainability, FD is running the center at the timing of the ex-post evaluation but this is temporal measure. It is planned that NFM will take over the operation in the future but the time of the year hasn't been made clear. In addition, lack of manpower is a problem and it hasn't been solved at the time of the ex-post evaluation. On the technical aspects of

[22] After the results of the interview survey

operation and maintenance, no critical problem was found. On the financial aspects of operation and maintenance, the operation has been improved compared with the time of the operation by OFC because of the assistance of FD. However, the income is approximately one fifth compared with the plan of the basic design due to the low fish purchase, and high maintenance cost is a big defrayment because of the severe natural environment, so continuous improvement is necessary.

From above, major problems have been observed in terms of the structural and the financial situation for the operation and the maintenance, therefore sustainability of the project effect is low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project was implemented in Owia, in the northeast of Saint Vincent Island, for the purpose of improving safety in the fishery and increasing the opportunities of fishing operations to promote artisanal fisheries and to create new employment by increasing the fish catch in the area, after the construction of slipway, breakwater, rubble rock mound seawall, a fishery center building and fishermen's locker buildings.

The implementation of this project is in accordance with the development plan of Saint Vincent and the Grenadines and Japan's ODA policy but the development needs are only partly consistent with the actual situation, and the relevance is evaluated as fair. The implementation of the project is working for the fishermen's efficient and safe operation, but on the contrary, the fish catch didn't achieve the objective. Therefore, the effectiveness and the impact of the project are judged as fair. In addition, though the project cost did not exceed the planned amount, the project period wasn't on schedule, and the efficiency of the project was also fair. Furthermore, the sustainability of this project is low, since the operation of OFC hadn't been smooth, FD, which temporarily succeeded the operation, has encountered the hard situation of the lack of personnel, and it is difficult to foresee when handover of the operation to NFM will be complete.

In light of the above, this project is evaluated to be unsatisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Establishment of an operation improvement plan of Owia Fishery Center

At the time of ex-post evaluation, the operation level of Owia Fishery Center is low, but any concrete plan of FD on how to rebuild the operation hasn't been seen. Currently the operation of Owia Fishery Center is planned to be entrusted to NFM and it is necessary to complete the procedure. On that basis, it is desirable to establish an operation improvement plan and improve the operation based on the plan.

(2) Restart of refuel service

Restart refueling service to fishermen, which is one of the main services, is high priority for using the facilities effectively. Immediate measures are required.

(3) Bringing in necessary members

The Owia Fishery Center is currently operated with three members and its important works are performed by one officer of FD, causing problems such as the delay in accounting works, etc. It is required to bring in personnel immediately and to secure the necessary budget.

(4) Diversification of income sources

The current income of the center greatly depends on the sale of fish. This causes the tendency not to stabilize the income. Therefore, income sources should be diversified. Especially it is necessary to collect charges on using piers from beach seine fishermen who use them but do not sell the catch to the center.

4.2.2 Recommendations to JICA

Since an expert who covers the regional fishery matters is dispatched in the area, it is recommended to monitor how the facilities are operated and to continue the assistance on the establishment of the structure and the management of the operation and maintenance.

4.3 Lessons Learned

- The project was planned to change the social conventions such as to make beach seine fishing boats land their catch to the center whereas they didn't land the catch at Owia before, or to purchase all the catch by the center whereas fishermen did it individually before. However, the concrete implementation plan slacked off toward the end and it seems that the project doesn't function well. When similar projects are planned to be implemented, it is necessary to understand the social conventions and to utilize the existing system rather changing in a large way.

- It seems that the operation system by fishery cooperative was planned without sufficient examination at the time of basic design study, although the preliminary study of this project reported that the operation of other fishery centers by fishermen's cooperatives hadn't worked well. It is necessary to plan each project with sufficient examination of the situation of other similar projects implemented in the past and the future plan of the project, etc.

- Since the Owia Fishery Center was constructed at a site of a severe natural environment facing onto the Atlantic Ocean, it was possible to expect that the expenditure also should be high due to the maintenance cost for coping with the erosion of facilities and equipment due to salty wind in the Owia Fishery Center. On the other hand, the number of beneficiaries (fishermen) is limited and the

income of the center is small because the facilities aren’t utilized as planned. For the reasons given above, the project should have prepare the income and expenditure plan very carefully and have been examined over a sustainable range within the bearable expense by the recipient country at the selection stage of the project.