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

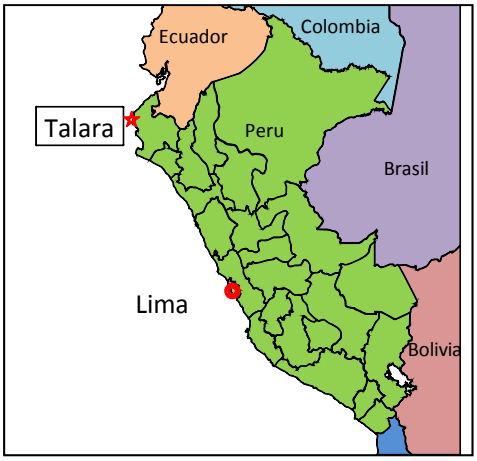
This project was implemented for the purpose of contributing to enhancement of the added value of marine products shipped from the Talara Fishery Port located on the northern coast of Peru. To achieve this purpose, the project improved the fish landing and primary processing facilities, provided a range 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

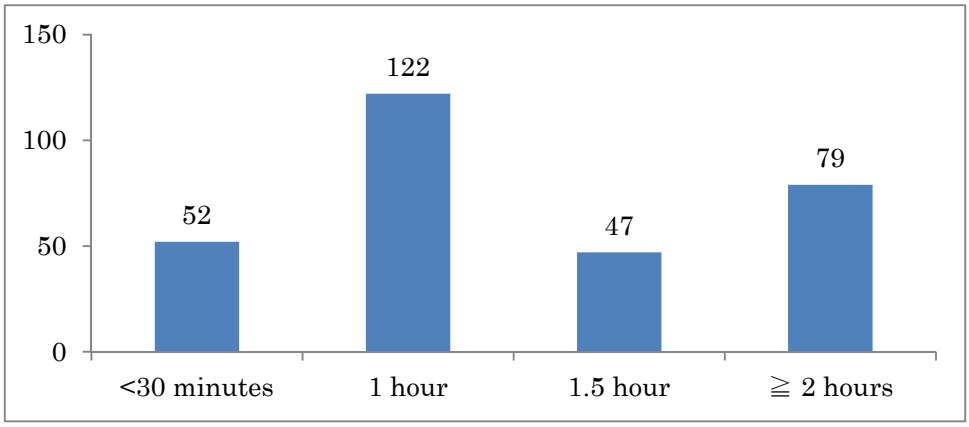
Source: Talara Fishery Port Administration Office

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

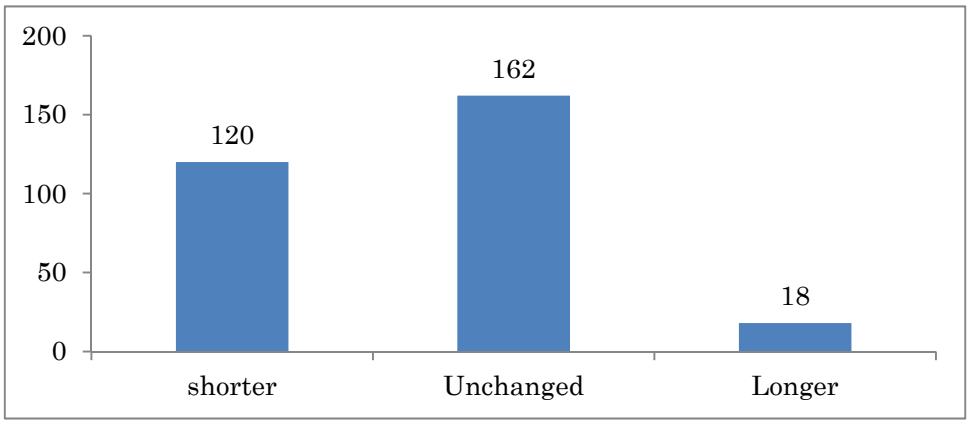
[9] Calculated on the basis of 25 working days per month.

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.

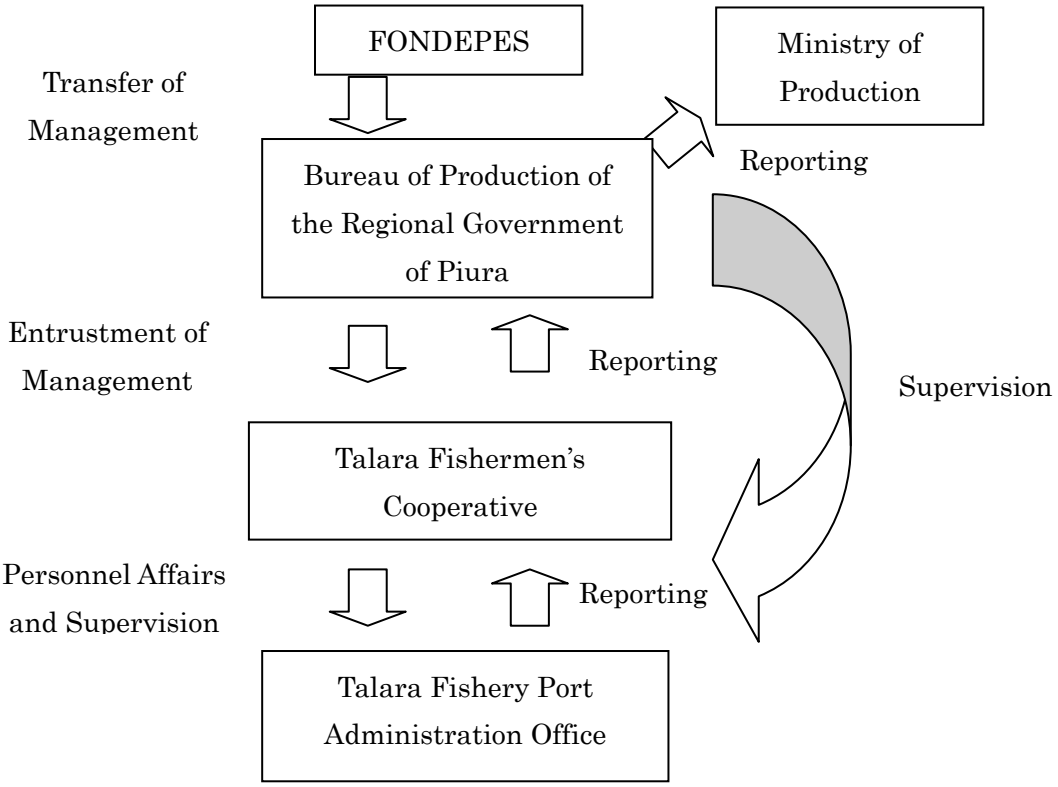


Fig.3 Talara Fishery Port Management System

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.