

Republic of Indonesia

Ex-Post Evaluation of Japanese ODA Loan Project  
“Rehabilitation and Improvement Project of Jakarta Fishing Port”

External Evaluator: Keiko Watanabe,  
Mitsubishi UFJ Research & Consulting Co., Ltd

## **0. Summary**

The project aimed to restore the function of the Jakarta Fishing Port (hereinafter referred to as “JFP”) and to make effective use of related facilities by elevating quaywalls and other major facilities which have sunk down by the land subsidence effect. The target quaywalls were constructed by the Phase 1 project (completed in 1982). In addition to the quaywalls, the project rehabilitated breakwaters, revetments and roads which were also affected by the land subsidence, and constructed a control tower.

The project is well consistent with the development policy and development needs of Indonesia, as well as with the Japan’s ODA policy; thus, the relevance of the project is high. All of the operation and effect indicators, i.e., fish landing volume, fish landing value, total berthing income and total number of operation days for Control Tower reached the target level, thus, the restoration of the function of JFP was confirmed. A beneficiary survey also confirmed the improvement of quality of fishery products by better sanitary and hygienic conditions of JFP and the enhancement of convenience for port users by the project. In addition, JFP has been expanding with having more than 300 fishery companies and 46,000 employees. This contributed to the promotion of fishery industry in Indonesia. In particular, impact was observed on the generation of employment for women living close to JFP after restoring the functions by the project. Therefore, effectiveness and impact of the project are high. Although the project cost was within the plan, the project period significantly exceeded the plan. Therefore, efficiency of the project is fair. In regard to operation and maintenance, the clear divisions of work and responsibility have not been made between the two organizations, “UPT” under the Ministry of Marine Affairs and Fisheries and “PERUM” under the Ministry of Ministry of State-Owned Enterprises. Therefore, some issues were observed in the institutional aspects. It was also found that there was room for improvement in staffing and financial aspects; thus, sustainability of the project is fair.

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

## 1. Project Description



Project Location



Jakarta Fishing Port (Control Tower)

### 1.1 Backgrounds

Indonesia is the third largest maritime country having waters with its fishing rights waters of 5.87 million km<sup>2</sup> including 3.17 million km<sup>2</sup> of territorial waters and 2.7 million km<sup>2</sup> of Exclusive Economic Zone (EEZ) waters. The nation has huge marine fishery resources with more than 8 million tons of fish landing a year. In order to promote effective use of the affluent fishery resources, total of 589 fishing ports (at the time of 2004) had been established across Indonesia as infrastructure directly related to the marine fisheries. JFP was one of them and one of 31 government managed ports at the time of appraisal. JFP is a port for serving the ocean-going fishing vessels with capacity of berthing as much as 200 tons ships (full capacity). Japan has been provided Yen loan to develop JFP for four times since 1970's<sup>1</sup> and it became a largest fishing port in Indonesia. However, JFP has been affected and sinking down by the land subsidence mainly due to the excessive deep ground water pumping in Jakarta city. The settlement had reduced the functionality of the JFP. In light of this, the urgent measures such as elevating east and west quaywalls which were mostly affected by the settlement were required to maintain the function of the port and to make effective use of the related facilities.

<sup>1</sup> Basic infrastructure of the port was constructed for the Phase 1 and Phase 2 projects. Phase 1 project developed lands by reclaiming, and constructed revetments, breakwaters, light houses and so on. Phase 2 project constructed minimum required facilities to operate port on the reclaimed lands such as refrigeration facilities, ice works factory, place for landing fish, administrative office, and drainages. In Phase 3 (Engineering services), a master plan for JFP was developed aiming JFP to have a full function as a fishing port, distribution center, and a place for building and developing fishery industry. In Phase 4, the port was expanded and modern sewage water treatment center, administration office and landing place for fresh tuna were newly constructed in order to meet the increasing fishing volume and enhance convenience for port users.

## 1.2 Project Outline

The objectives of the project are to maintain the function of the port and to make effective use of the related facilities in Jakarta Fishing Port by elevating major facilities such as east and west quaywalls which were sank by the subsidence effect, thereby contributing to the promotion of effective and sustainable use of marine and fishery resources.

Loan Approved Amount/ Disbursed Amount	3,437 million yen / 3,382 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March 2004 / March 2004
Terms and Conditions	Interest Rate: 1.3 % Repayment Period: 30 years (Grace Period: 10 years) Condition for Procurement: General Untied Consultant: Untied
Borrower/ Executing Agency(ies)	The Government of Republic of Indonesia / Directorate General of Capture Fisheries (DGCF), Ministry of Marine Affairs and Fisheries (MMAF)
Final Disbursement Date	September 2012
Main Contractor (Over 1 billion yen)	<ul style="list-style-type: none"> <li>• Package 1 (Lot1): TOA Corporation (Japan) / PT. Pembangunan Perumahan JO (Indonesia) (JV)</li> <li>• Package 2 (Lot2): PT. Hutama Karya (Persero) (Indonesia)</li> <li>• Package 3 (Lot3): TOA Corporation (Japan) / PT. Pembangunan Perumahan JO (Indonesia) (JV)</li> </ul>
Main Consultant (Over 100 million yen)	Oriental Consultants Co., Ltd. (Japan) / PT. Perentjana Djana (Indonesia) (JV)
Feasibility Studies, etc.	<ul style="list-style-type: none"> <li>• Feasibility Study on Construction of Jakarta Fishing Port/Market Development (1974)</li> <li>• Rehabilitation Needs Survey on Yen Loan Completed Project (2000)</li> <li>• Distribution Mechanism Reform through Development of Wholesale Market (Improving of Post-Harvest Handling and Marketing Facilities) (2011)</li> </ul>
Related Projects	<p>&lt; Yen Loan Project (L/A date) &gt;</p> <ul style="list-style-type: none"> <li>• Jakarta Fishing Port/Market Development Project (1) (March 1979)</li> <li>• Jakarta Fishing Port/Market Development Project (2) (June 1980)</li> <li>• Jakarta Fishing Port/Market Development Project (3) (March 1985)</li> <li>• Jakarta Fishing Port/Market Development Project (4)</li> </ul>

	<p>(November 1993)</p> <p>&lt; Technical Cooperation Project &gt;</p> <ul style="list-style-type: none"> <li>• Project for the Promotion of Port Maintenance and Management Skills (September 2004 – September 2006)</li> <li>• Dispatch a Policy Advisor on Fishery (March 2013 – March 2015)</li> </ul> <p>&lt; Other Donors and International Organization &gt;</p> <ul style="list-style-type: none"> <li>• World Bank: Technical Assistance on Restructure of the Ministry of Marine Affairs and Fisheries (2004)</li> <li>• Asia Development Bank: Development of Fishing Ports Infrastructure, Assistance in Marine Resources Management</li> <li>• World Bank: Water Resources Sector Adjustment Loan Project (WATSAL)</li> </ul>
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## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

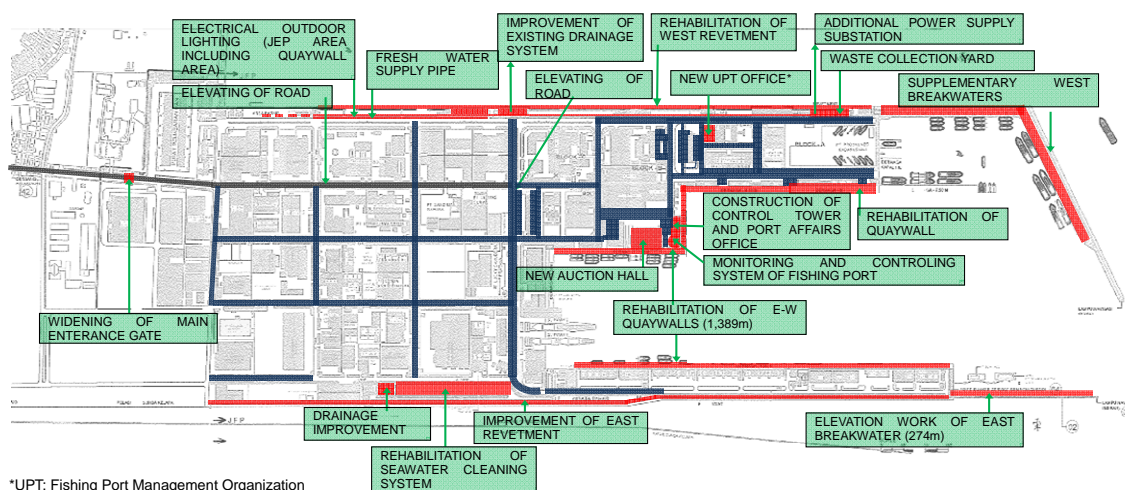
Keiko Watanabe, Mitsubishi UFJ Research & Consulting Co., Ltd.

### 2.2 Duration of Evaluation Study

Duration of ex-post evaluation study was conducted as follows;

Duration of the Study: September 2014 – September 2015

Duration of the Field Survey: December 10 – December 22, 2014, March 16 – March 20, 2015



Source: Modified based on the map provided by the executing agency

Figure 1: Jakarta Fishing Port (Main project sites)

### **3. Results of the Evaluation (Overall Rating: B<sup>2</sup>)**

#### **3.1 Relevance (Rating: ③<sup>3</sup>)**

##### **3.1.1 Relevance to the Development Plan of Indonesia**

In PROPENAS (2000-2004), the national five-year development plan of Indonesia at the time of appraisal, “economic recovery and securing sustainable economic recovery” was listed as one of the priority issues and stipulated function maintenance of existing infrastructure by rehabilitation and improvement as its strategy. In addition, in fishery sector in the above development plan, improvement of productivity and quality of fishery products and income generation of fishery workers were listed as important issues. Furthermore, a master plan formulated by the Directorate General of Capture Fisheries (hereinafter referred to as “DGCF”) in 2003 emphasized on the role of JFP as a port for ocean-going vessels to promotion of fishery industry. Therefore, the objective of the project that restores the function of JFP is in line with the master plan.

PRJMN (2010-2014), the national five-year development plan at the time of the ex-post evaluation, prioritizes strategic development inside of the territorial water and conservation of marine resources. In addition, new administration of Indonesia since October 2014 launched “maritime doctrine” highlighting importance of conservation of marine resources and construction of marine infrastructure.

In light of the above, the objective of the project is in line with the development policy of Indonesia both at the time of appraisal and the ex-post evaluation.

##### **3.1.2 Relevance to the Development Needs of Indonesia**

At the time of appraisal, mainly due to the excessive deep ground water pumping in Jakarta city, the quaywalls and revetments which were constructed in the Phase 1 project had been sinking down. It brought not only the inconvenience for fish landing since the water flowed into the landing place at the time of high tides but also created problems in hygiene of fishery products and in operation of fishery processing factories. JFP plays an important position for Indonesian economy in terms of fish industry and employment. Considering the serious influence on the business in the JFP<sup>4</sup>, the rehabilitation of the JFP had high urgency and importance.

At the time of the ex-post evaluation, JFP generated about 46,000 employments and

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<sup>2</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>3</sup> ③: High, ②: Fair, ①: Low

<sup>4</sup> JFP held a prominent position since fish landing volume of JFP occupied about 60,000 ton (about 22%) of total amount of 31 government managed ports, which was about 280,000 ton at the time of 1988. Besides, since late 1980's the demand of tuna has been rapidly increased in the international market. JFP which is close to the international airport and has facilities to deal with fresh and frozen tuna assumed important role to promote fishery industry and obtain foreign currency. At the time of appraisal, JFP became one of the leading ports in the world which had more than 100 private companies operated and generated more than 30,000 employees inside the port.

handled about 100 million yen worth fishery production every day; therefore, JFP continues to play an important position for Indonesian economy. Additionally, the settlement has been progressing even at the time of the ex-post evaluation and the land around JFP keeps sinking down at an annual pace of 7-15 cm. The land subsidence is the serious problem not only for JFP but also Jakarta city as a whole; however, the effective countermeasures have not been identified yet. Therefore, the need of the project, which is to prevent flood in JFP, is high even at the time of the ex-post evaluation.

### 3.1.3 Relevance to Japan's ODA Policy

JICA prepared the "Mid-Term Strategy for Overseas Economic Cooperation Operations" in April 2002, based on the Japan's assistance policy to Indonesia. In this document, "infrastructure development for economic growth" was put as one of priority areas and "economic infrastructure development" which was vital for recovery towards sustainable growth through economic reform was promoted as country specific assistance to Indonesia. Country assistance strategy to Indonesia formulated in October 2003 stipulates "creating environment for private sector led development" as one of important issues. Since the project which strengthened economic infrastructure through rehabilitation of the Fishing Port and related facilities would contribute to the economic growth, the project was in accordance with the assistance policy of that time.

In light of the above, the project has been highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

## 3.2 Efficiency (Rating:②)

### 3.2.1 Project Outputs

#### (1) Civil Works

Comparison of planned and actual project outputs is summarized in Table 1.

Table 1: Comparison of Planned and Actual Project Outputs

	Construction Works	Planned	Actual
Package1	1-1)Elevation of East and West Quaywalls <sup>5</sup>	West : 574m East : 775m Total : 1,349m	West : 614m East : 775m Total : 1,389m (West: add 40m)
	1-2) Rehabilitation of West Breakwaters <sup>6</sup>	600m	594m (difference is a result of actual measurement)
	1-3) Control Tower	New Construction	As planned
	Additional works	-	1) Elevation of East and West Breakwaters (West: 745m, East

<sup>5</sup> Quaywall is a structure that ships can be tied up for landing goods and fish. The quaywall are equipped with barrier curbs, mooring posts for tied up ropes of ships, and rubber buffers between wall and ships.

<sup>6</sup> Breakwater is a structure that protects harbor and coast lines from the wave actions of off shore.

			272m) 2) Dredging <sup>7</sup> in front of -4.5 m revetment 3) Construction of Port Authority Office
Package2	2-1)Rehabilitation of roads near the main gate	Distance: 300m Width: 6m	Additional rehabilitation was done other than the planned distance (distance 6,250m, width 6-18m)
	Additional Works	-	1) Rehabilitation of West Revetments <sup>8</sup> 1,113m 2) Rehabilitation of East Revetment 1,500m 3) Improvement of Existing Drainage system
Package3	Additional Works	-	1) Expansion of Quaywalls 175m, width 20m 2) Improved Sea Water Cleaning System (change of installation point of outlets 3) Construction of Revetment near Shipyards 4) Improvement of Waste Water Treatment System 5) Improvement of Fresh Water Supply System 6) Construction of Waste Collection Yard (including provision of backhoe loader and compactor truck) 7) Construction of Auction Hall (two storied) 8) Expansion of UPT Office (five storied) 9) Installment of Solar Outdoor lightning (147 lightings) 10) Installment of Monitoring Control System (CCTV system) 11) Additional Installment of Power Supply (for backup when blackout)

Source: Information provided by JICA, Results of questionnaire and interviews to executing agency



Photo 1: Main Gate of JFP  
(January, 2008)

Source: DGCF



Photo 2: Main Gate of JFP  
(At the time of the Ex-post Evaluation)

<sup>7</sup> Dredging is an excavation work which removes sediments from the bottom of harbors and others.

<sup>8</sup> Revetment is a structure that prevents lands behind from erosion. Ships cannot moor at revetments.





Photo 3: Access Road inside JFP  
(January, 2008)

Source: DGCF



Photo 4: Access Road inside JFP  
(At the time of the Ex-post Evaluation)

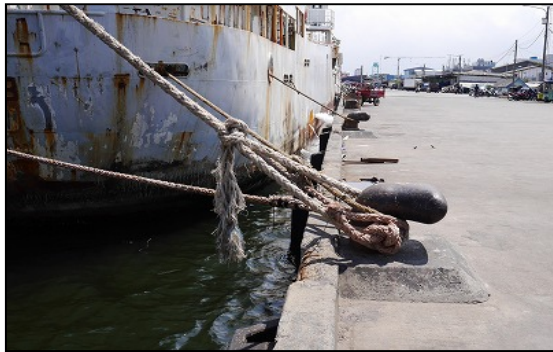


Photo 5: Elevated West Quaywall  
(At the time of the Ex-post Evaluation)



Photo 6: UPT Office (extension)  
(At the time of the Ex-post Evaluation)



Photo 7: Sewage Treatment System  
(At the time of the Ex-post Evaluation)



Photo 8: Sea Water Cleaning System  
(At the time of the Ex-post Evaluation)

Intended outputs were implemented almost as planned. The additional and some changes of works occurred due to the following reasons. Those changes are deemed appropriate since all of them were intended to restore the functions and enhance effectiveness of JFP.

- Massive flood in entire area of Jakarta city happened in 2007 and 2008 during the construction period of the project and caused extensive damage on JFP including roads and drainage system inside of JFP (Photo 1 and Photo 3). For this reason, the additional



works were required as emergency flood measures.

- The land subsidence and sea level rise (which is assumed to be caused by climate change) have advanced more than it was expected at the time of appraisal. It caused flood especially from the west revetment and the construction works were also affected by the flood. Therefore, the elevation of other areas of quaywalls and revetments which were not in the initial plan was urgently required.
- Other facilities which were not functioning well due to the flood and aging including roads, drainage, east and west revetment, reservoir for flood control, drainage pumps and so on had to be improved.

The construction was done by the method with an emphasis on economic efficiency. For example, the depth of piles for elevation of quaywalls was decided to be the same -20m as the existing one from the view of economic efficiency. However, the piles made of concrete were adopted to have strength withstanding future elevation. Similarly, for the improvement of the breakwaters, instead of conventional way of heightening by elevation, the project incorporated efficient and environmentally friendly ideas. The project expanded width and planted dense mangrove to absorb waters by driving sheet piles and putting sediments on the inner side of the existing breakwater.



Photo 9: Breakwater using Mangrove (2011)  
Source: DGCF



Photo 10: At the time of the Ex-post  
Evaluation (December, 2014)

## (2) Consulting Services

Table 2 shows the comparison of planned and actual inputs of consulting services. It was found the reason of increase in actual man months (hereinafter referred to as “M/M”) of both foreign and local consultants was mainly due to the extension of project period associated with additional civil works.

Table 2: Comparison of Planned and Actual Inputs of Consulting Services (M/M)

	Plan	Actual	Comparison
Foreign Consultants	69	81.2	Increased by 12.2
Local Consultants	217	285.2	Increased by 68.2
Total	286	366.4	Increased by 80.4

Source: Information from JICA and results from questionnaire survey to the executing agency

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

At the time of appraisal, total project cost was planned to be 4,056 million yen (out of which 3,437 million yen was to be covered by Japanese ODA loan). In reality, the total project cost was 4,056 million yen (out of which 3,382 million yen was covered by Japanese ODA loan) which was as planned (100% of the planned amount).

The reason why the total project cost was as planned despite the additional outputs was mainly due to the exchange gains from the strong yen<sup>9</sup>. Since the construction contract was nearly 100 percent rupiah-denominated, the surplus with the yen gains was utilized.

#### 3.2.2.2 Project Period

The overall project period was planned as 57 months, from April 2004 (conclusion of Loan Agreement) to December 2008 (completion of construction). In reality, the overall project period was 100 months, from April 2004 (conclusion of Loan Agreement) to July 2012 (completion of construction), which was significantly longer than planned (175% of the planned period).

Table 3 shows the comparison of planned and actual project period.

Table 3: Comparison of Planned and Actual Project Period

Item	Planned	Actual
Selection of Consultants	April 2004 – March 2005 (12 months)	April 2004 – December 2005 (21 months)
Consulting Services	April 2005 – December 2009 (57 months)	December 2005 – December 2012 (85 months)
Detailed Design	February 2005 – November 2005 (10 months)	PKG1 : December 2005 – January 2007 PKG2 : March – June 2007 PKG3 : August – October 2010 (Total of 59 months)
Procurement Period	December 2005 – December 2006 (13 months)	PKG1 : September 2006 – April 2007 November 2007 – May 2008 PKG2 : October 2008, January 2009 PKG3 : December 2010 – May 2011 (Total of 31 months)

<sup>9</sup> Exchange rate at the time of appraisal was ¥1 = Rp. 71.4, while actual exchange rate during the implementation period was ¥1 = Rp. 110 (average of 2008 – 2010 when the construction was implemented), which produced gains about 54% rise of yen from the strong yen.

Civil Works	January 2007 – December 2008 (24 months)	PKG1 : December 2008 – December 2010 PKG2 : March – November 2009 PKG3 : September 2011 – July 2012 (Total of 44 months)
Total	April 2004 – December 2008 (57 months)	April 2004 – July 2012 (100 months)
Defect Liability	January – December 2009 (12 months)	PKG1 : January 2011 – December 2011 PKG2 : December 2010 – November 2011 PKG3 : August 2012 – July 2013 (12 months each)

Source: Information from JICA, results from questionnaire survey to the executing agency and interview survey results from the field survey

The main reasons of delay are listed below;

- In selection of consultants, the submission period of bidding documents was within three weeks after the announcement according to the procurement regulation of Indonesia (Presidential Decree 80 (Keppres 80, 2003)), while the JICA regulated the submission period was within two months after the announcement. Therefore, the process delayed significantly to adjust which regulations to be followed.
- The additional construction works were required since only the initial scope of the plan could not prevent inundations which happened more than assumed at the time of appraisal. The inundation was caused by the flood occurred during the implementation period as well as continuous land subsidence. Therefore, extra time for detailed design and construction of the additional works was necessary.

### 3.2.3 Results of Calculations of Internal Rates of Return (Reference Only): Economic Internal Rates of Return (EIRR)

At the time of appraisal, EIRR was calculated by considering construction cost, maintenance cost (1% of construction cost), future rehabilitation cost for elevation of quaywalls as costs, and loss of profits when rehabilitation was not done (decrease value of fish catches in case of “With or Without project” which attributed to the available annual time by the settlement) as benefits, with the project life of 50 years. As a result, EIRR was calculated as 20.3%.

On the other hand, EIRR at the time of the ex-post evaluation could not be calculated under the same conditions since the statistical data for fish landing volume of the same kinds of fish which were the basis of calculating benefit have not been collected. Therefore, EIRR values of appraisal and the ex-post evaluation could not be compared under the same conditions. However, using alternate representative of fish value<sup>10</sup>, EIRR was calculated as 25.9%, which

<sup>10</sup> At the time of appraisal, tuna (fresh, frozen, and canned), non tuna (local and export), and shrimp were used for calculation of EIRR. Alternatively, at the time of the ex-post evaluation, tuna (no classification of

slightly exceeded the value of assessment.

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

### **3.3 Effectiveness<sup>11</sup> (Rating: ③)**

#### **3.3.1 Quantitative Effects (Operation and Effect Indicators)**

As shown in Table 4, all of the four operation and effective indicators exceeded the target value of 2016 set forth at the time of appraisal, therefore, it can be regarded the original goal has been achieved<sup>12</sup>. However, regarding the operational hours of control tower, it was found that staff members were not always present at the control tower. The monitoring was conducted mostly in the monitoring room situated next to the control tower using the closed-circuit television (CCTV) during the working hours<sup>13</sup>. The control tower was constructed aiming to monitor the movement of fishing vessels and preservation of environment inside of JFP. It is expected that the control tower be operated 24 hours a day by the direct observation of the officers at the tower and by CCTV. Therefore, although the operation indicator of “total number of days of surveillance of the control tower” reached the target at 365 days per year, it is thought that there is room for improvement for effective use of the tower since the direct observation were not conducted and officers were not resided at the tower.

The project aims to restore the function that was aggravated by land subsidence. The target year of the indicators was set in 2016 which was seven years after the project completion scheduled in 2009. However, setting the 2016 as target year, after 15 years of the baseline year of 2001 is considered to be underestimated<sup>14</sup> since indicators would be influenced greatly by other external factors<sup>15</sup> during the period of 15 years. As pointed out in the mid-term review of this project (implemented in 2009), the target year should have been set two years after the project completion as standard time frame of the ex-post evaluation expecting early realization of the rehabilitation effect.

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fresh, frozen and canned), tongkol (similar kind of tuna), skip jack and squid were used.

<sup>11</sup> Sub-rating for Effectiveness is to be put with consideration of Impact.

<sup>12</sup> Fish landing volume were not always proportional to the fish landing value. The changes in the price of tuna which are the majority of landing fish are thought to be the cause for this.

<sup>13</sup> The monitoring of fishing port is expected to be conducted, in principle, both by direct observation from the control tower and by CCTV which can monitor the places with close views which cannot be observed from the tower. The current situation of monitoring of the port was confirmed at the field survey of the ex-post evaluation.

<sup>14</sup> Background reasons for setting a target value after seven years of the project completion could not be identified clearly. JFP has handled a lot of landing of tuna as open-ocean fishing port and at the time of appraisal, it is conceivable that in particular taking into account that from the point of view of tuna resource management, measures had been taken not to increase the level of tuna catch globally.

<sup>15</sup> For example, fish landing value is not only influenced by the elevation of quaywalls by the project but it is also affected largely by other external factors such as number of fish industry workers, unit cost of fish, economic trends of Indonesia and so on.

Table 4: Operation and Effect Indicators

Indicator		Baseline 2001 (Appraisal)	Target 2016 (7 years after completion)	Actual 2011 (1 year before completion)	Actual 2012 (completion year)	Actual 2013 (1 year after completion)
Effect Indicators	Fish landing volume (total tons/year)	35,760	35,760	101,189	104,854	113,342
	Fish landing value (million Rp./year)	1,673,000	1,673,000	1,931,197	2,357,590	3,093,454
	Total income from berthing vessels (million Rp. /year)	2,350	2,350	6,080	6,790	7,658
Operation Indicator	Total number of days for the surveillance (days/year)	0 (2003)	365	365	365	365

Source: Information from JICA, results from questionnaire survey of the executing agency and interview survey results from the field survey

Figure 2 displays the total annual fish handling volume<sup>16</sup> at JFP. The total fish volume (ton/year) increased year by year, growing almost double during the period of four years from 2009 to 2013, which amounted from about 13 million tons to 25 million tons. This indicates the increase in the fish landing volume at JFP. In addition, as shown in Table 5, which shows the trend of number of vessels using JFP, as incoming vessels were increasing, the rate of landing vessels out of incoming vessels was also increasing. In 2008, out of 3,276 incoming vessels only 1,493 vessels (45%) landed fish, while in 2013 out of 4,396 incoming vessels 3,911 vessels (89%) did fish landing. According to the interviews to the executing agency and seafarers of fishing vessels, it was found that “they had to use neighboring ports other than JFP when they could not off load fishery products at JFP due to flooding”. In this way, the increase in the portion of landing vessels out of incoming vessels was mainly due to the restoration of landing function of JFP. It is, therefore, considered to be the effect realized by the project.

<sup>16</sup> Total fish handling volume includes fish landing volume at JFP and fishery production from other domestic ports which are imported by both land and sea.

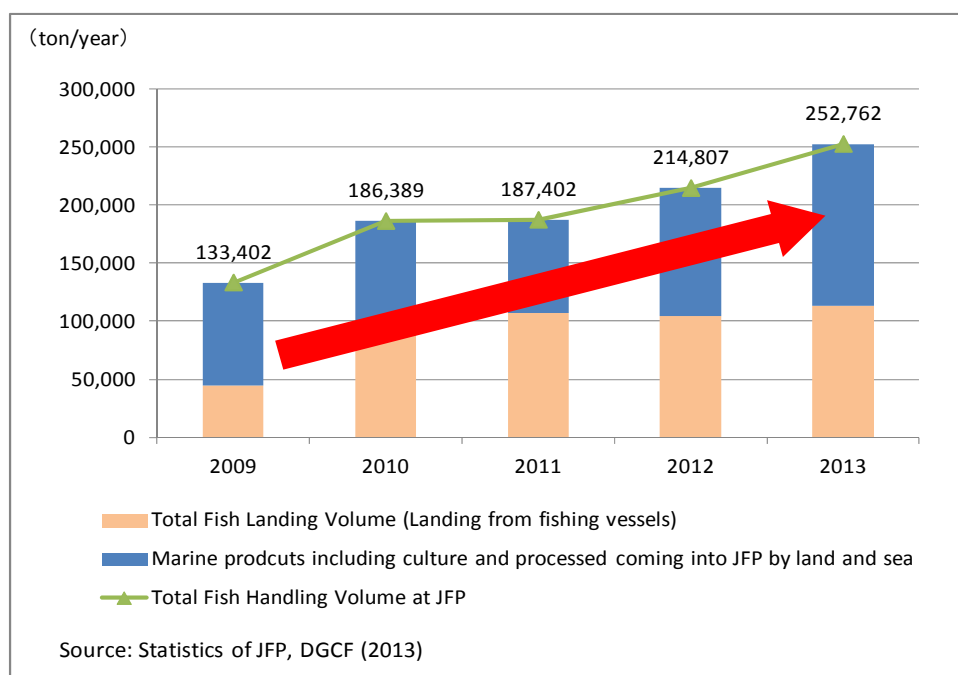


Figure 2: Total Fish Handling Volume at JFP

Table 5: Fishing Vessel Activities in JFP

Vessels (number)	2008	2009	2010	2011	2012	2013
Registration*	1,181	1,178	1,259	1,309	1,382	1,478
Incoming vessels	3,276	3,400	3,478	3,890	4,075	4,396
Outgoing vessels	3,166	3,370	3,383	3,817	3,968	4,208
Landing vessels	1,493	2,704	2,983	3,496	3,588	3,911

\*Note : Ships registered at JFP as their base

Source: Statistics of JFP, DGCF (2013)



Photo 11: Fishing ships entering at JFP  
(At the time of the Ex-post Evaluation)



Photo 12: Fish landing at Quaywall  
(At the time of the Ex-post Evaluation)

### 3.3.2 Qualitative Effects

As the quantitative effects, three issues below, namely, improvement of environment in

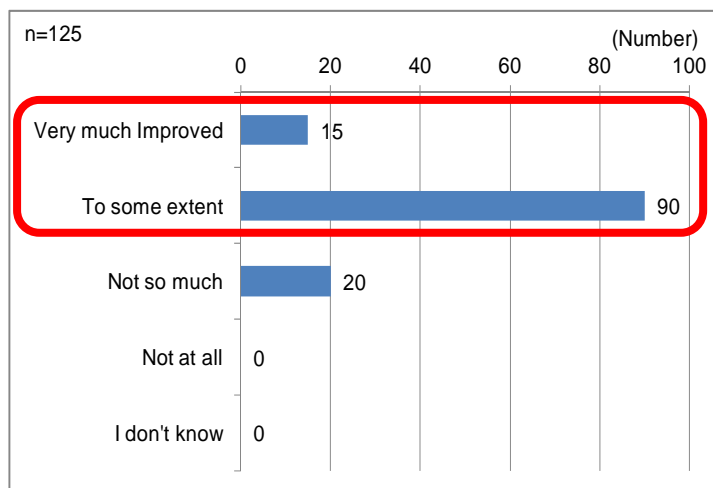


JFP, improvement of sanitary and hygienic conditions, and enhancement of convenience for port users are raised.

A beneficiary survey was conducted to assess effectiveness and impact by the project. The survey targeted port officials, fisheries industries and neighboring local residents. The total of 125 samples was collected<sup>17</sup>.

### 3.3.2.1 Improvement of Environment in JFP

As seen in the Figure 3, most of the beneficiaries recognized the improvement of environment of JFP judging from the fact that 105 (84%) answered either “very much improved” or “to some extent” to the question. Most of the people who felt the improvement of environment of JFP raised its reason as no flooding in the Fishing Port (46 respondents, 36.8%) and improvement of access by roads (37 respondents, 29.6%). It can be said, therefore, improvement of environment of JFP was achieved because the effectiveness of measures against flooding and inundation that project undertook were successfully realized.



Source: Results from the beneficiary survey

Figure 3: Assessment against Improvement of Environment of JFP

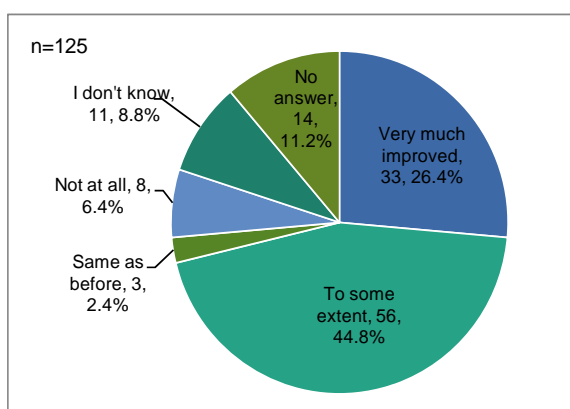
### 3.3.2.2 Improvement of Sanitary and Hygienic Conditions

As a result of the beneficiary survey, as shown in Figure 4, 33 respondents (26.4%) responded “very much improved” and 56 respondents (44.8%) responded “to some extent” towards the quality of fishery products after the project. In this way, more than 70% of beneficiaries recognized the improvement of quality of fishing products. 79 out of 89 respondents (88.7%) raised its reason as “reduction of flooding” and 67 respondents (75.2%) answered as “improvement of sanitary and hygienic conditions”. In addition, interviews to the beneficiaries revealed that efficient management of waste was realized using backhoe<sup>18</sup> and

<sup>17</sup> A total of 125 samples (Male: 105, 84% and Female 20, 16%) were collected at random with face to face interviews; Wholesale dealers (23, 18.4%), Fish retailers (15, 12.0%), Fish boat crews (14, 11.2%), Fish processing workers (29, 23.2%), Workers at JFP (bank officers, truck drivers, bicycle rental workers, mechanics, etc.) (35, 28.0%), and people living nearby JFP (9, 7.2%).

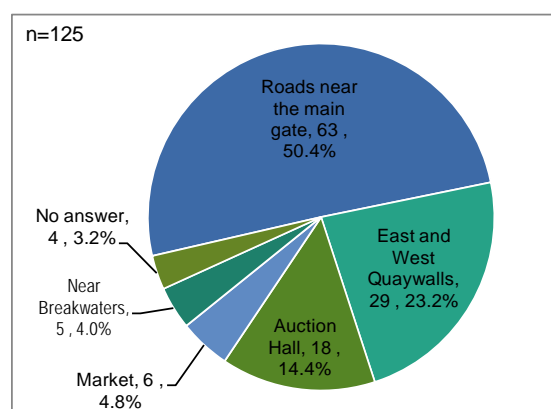
<sup>18</sup> Please refer to the photo 18 in “3.5.4 Current Status of Operation and Maintenance”.

compact truck which were procured by the project. In light of the above, the effect by the project which prevented flood by elevating quaywalls and roads, and enhanced hygienic conditions by improving waste water and solid waste management is presumed as high. The places where the beneficiary feels improvement in sanitary and hygienic conditions are shown in Figure 5. More than half of respondents (63, 50.4%) pointed out roads near the main gate as the hygienic improvement place and 23.3% (29 respondents) of respondents raised east and west quaywalls where fish landing takes place. Apparently, those are the effect of the project.



Source: Results from the beneficiary survey

Figure 4: Improvement of Quality of Fishery Production



Source: Results from the beneficiary survey

Figure 5: Places where Sanitary and Hygienic Conditions have been Improved

### 3.3.2.3 Enhancement of Convenience for JFP Users

Table 6 shows the results of interview on the enhancement of convenience for JFP users. As seen in the answers to the Question (1), more than half of respondents (69, 55.2%) had some difficulties on their works in the port due to the flood inside of the port before the project. Due to the floods inside of the port, many of them could not sell the fishery products and they had to stop fish landing, delivery and operation of fish processing factories. As much as 30% of the respondents answered that “it was very difficult even to enter the port due to the flood of access roads”. It was assumed that the flood of roads became a big obstacle for them. On the other hand, “access roads to the port” was raised by 82.4% of respondents as significant effect of the project. The improvement of the roads had highly evaluated as tangible effects of improvement. Other highly marked facility by the respondents was elevation of quaywalls since 57.6% of the respondents felt that the elevation of quaywalls by the project prevented the port from flooding. Overall, it was confirmed that convenience for the users enhanced judging from that 101 respondents (80.8%) answered that “the port has become user friendly” against the question (4) in Table 6.

Table 6: Enhancement of Convenience

Questions	Answers (n=125)
(1) Before the project, in what way were you affected by the flood in the port? (Free answers)	<ul style="list-style-type: none"> <li>• Could not work (could not sell fish, could not deliver fish production, could not work because water came into the factory, could not land fish, income reduced, etc.) 69 (55.2%)</li> <li>• Very difficult to access to the port due to flood of roads 38 (30.4%)</li> <li>• Water came into the house 12 ( 9.6%)</li> <li>• Others (Vessels were always late, No answer) 6 ( 4.8%)</li> </ul>
(2) Among facilities which were improved by the project, which facility was the most beneficial to you?	<ul style="list-style-type: none"> <li>1. Access Roads to the Port 103 (82.4%)</li> <li>2. Elevated East and West Quaywalls 7 ( 5.6%)</li> <li>3. Rehabilitated Breakwaters 3 ( 2.4%)</li> <li>4. Improved Drainage 3 ( 2.4%)</li> <li>5. Newly Constructed Auction Hall 2 ( 1.6%)</li> <li>6. Improved Solar Outdoor Lighting 2 ( 1.6%)</li> <li>7. Constructed Port Authority Office 1 ( 0.8%)</li> <li>8. Newly established Waste Yard 1 ( 0.8%)</li> <li>9. No Answer 3 ( 2.4%)</li> </ul>
(3) Besides above (2), which facility was beneficial to you?	<ul style="list-style-type: none"> <li>1. Elevated East and West Quaywalls 72 (57.6%)</li> <li>2. Monitoring and Control System 10 ( 8.0%)</li> <li>3. Constructed Port Authority Office 8 ( 6.4%)</li> <li>4. Rehabilitated Breakwaters 6 ( 4.8%)</li> <li>5. Access Roads to the Port 6 ( 4.8%)</li> <li>6. Improved Drainage 4 ( 3.2%)</li> <li>7. Sea Water Cleaning System 4 ( 3.2%)</li> <li>8. Improved Solar Outdoor Lighting 2 ( 1.6%)</li> <li>9. Newly Established Waste Yard 2 ( 1.6%)</li> <li>10. Water Supply to Newly Established Auction Hall 2 ( 1.6%)</li> <li>11. No Answer 9 ( 7.2%)</li> </ul>
(4) Do you think the JFP became user friendly after the project?	<ul style="list-style-type: none"> <li>1. Yes 101 (80.8%)</li> <li>2. Same as before 21 (16.8%)</li> <li>3. No Answer 3 ( 2.4%)</li> </ul>

Source: Results from the beneficiary survey

### 3.4 Impacts

#### 3.4.1 Intended Impacts

##### 3.4.1.1 Promotion of Fishery and Fishery Processing Industry

Figure 6 shows the trends of labor forces and fishery companies inside JFP. At the time of the ex-post evaluation, 352 fishery companies were operating fishery processing factories such as for bonitos, frozen shrimps, frozen tuna, minced fish, and so on, and as much as 46,000 employees were working in JFP. The number of fishery companies has increased nearly three times over three years from 133 in 2010 to 352 in 2013. The labor force also has increased by 10,000 employees (about 26.5% increase) from the 2004 figure of about 36,000 which was before the project to the 2013 figure of about 46,000. In this way, it is understood that fishery production activities have become more active after the project completion. In addition, as shown in Figure 7, more than 70% of employees are working in

private sector, which means that JFP has been providing a large labor market. Therefore, it can be considered that the project has contributed to the production activity and job creation in JFP.

According to the fishing port management organization of JFP called “UPT” which is under the direct control of DGCF, Ministry of Marine Affairs of Fisheries (MMAF), many fishery companies had left JFP since their operations were affected by the flood before the project. However, after the project, demands for investment in JFP were increasing seeing the fact that many companies came back to resume the operation in JFP as a results of the restoration of function by the project. The number of new comers is on the increase since JFP improved convenience by the project. Besides, as stated in the column below, since the fishery processing industry employs overwhelmingly women workers, the restoration of function by the project made great impacts on increasing job opportunities and generating income for women living near JFP.

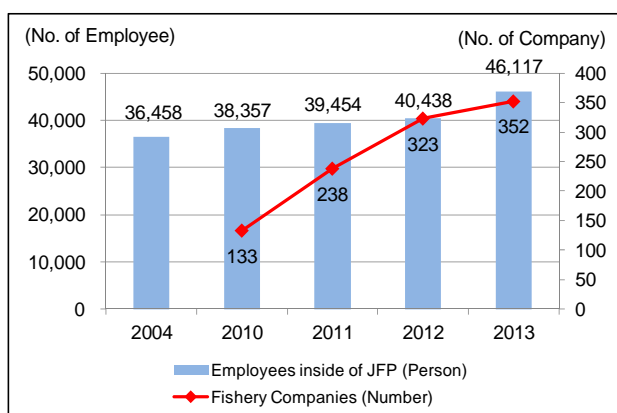
In light of the above, it can be considered that the restoration of the function of JFP by the project, being the largest fish handling port of Indonesia, contributed to the promotion of fishery and fishery processing industry to a certain extent.



Photo 13: Beneficiary Survey  
(Fishermen)

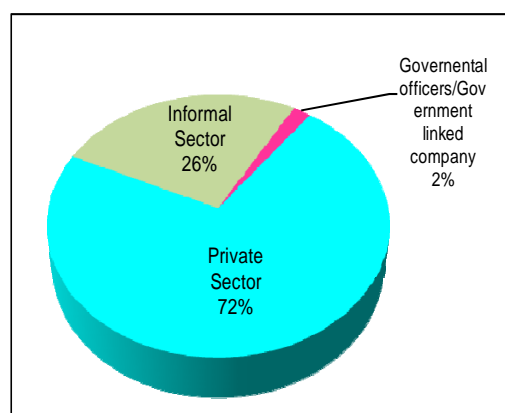


Photo 14 : Beneficiary Survey  
(Cafeteria Worker inside JFP)



Source: Results from questionnaire survey to DGCF

Figure 6: Labor force and Fishing Company in JFP



Source: Statistics of JFP, DGCF (2013)

Figure 7: Breakdown of Labor force in JFP (2013)

<Column : Creating new employment for women living near JFP by the expansion of fishery business>

(Case 1)

Company F is the cultured shrimp processing company and their products are exported to the United States. In 2008 when the serious flood had occurred, the water reached about 1 m outside of the factory and entered up to about 50 cm inside of the factory. This caused problems in operation. Employees without any choice commuted by using the high height buses and trucks due to the flooded access roads. Some of them who could not use those transports had to resign from the factory. As a result, there was time the company temporary stopped operation since the trucks to distribute the products also could not be operated.

Shrimp processing work is a woman's work. About 85% of Company F's employees are female. Those female workers are mostly contract employees. Therefore, the suspension of the factory operation means an immediate loss of revenue opportunity for them.

According to the Company F, after the project which prevented JFP from the flood, it was possible to increase the production volume without considering about distribution problem, which led to the improvement of the business. As a result, Company F newly employed additional 300 female workers. Most of them were residents near the Fishing Port. At the time of the ex-post evaluation, there were about 850 female employees in Company F.

(Case 2)

Company K started operation in JFP since 2009 and has exported frozen and canned fish to Europe and Asia. At the time of the flood, the roads in front of Company K were flooded up to the knee level. There had also been a difficult time even to access to the company. In addition, the status of flood inside of the Fishing Port gave a bad impression on hygiene when the buyers coming from outside saw the situation, so that Company F was severely damaged since the business could not be materialized.

After the project, although still small scale of floods occurred at the time of high tides, the business got better by the great improvement of access and hygienic situation. As a result, Company K entered the new business of bonito processing and additionally employed about 50 female workers around the Fishing Port for processing. According to the interview to those female workers, there were many similar responses such as followings; "It was very helpful to find the job close to the house since the previous working place was far and transportation cost me a lot", "At the time of the flood, I had to change jobs because the flood forced me move the house far from JFP since the water even entered into the house. I could come back and find a job at the factory of JFP since the flood has not occurred any more". Some women pointed out the increase of income by working at this factory.

As described above, since the role of women is of great importance in the work at the fishery processing factories, it was confirmed that the promotion of fishery industry by the project contributed to the increase in employment opportunities and income generation of women.



Photo 15 : Shrimp Processing at Company F  
(At the time of the Ex-post Evaluation)



Photo 16: Bonito Processing at Company K  
(At the time of the Ex-post Evaluation)

### 3.4.2 Other Impacts

#### 3.4.2.1 Impacts on the Natural Environment

According to the interview to the executing agency, the environment monitoring during the implementation period of the project was conducted periodically mainly by DGCF and UPT. There has been no negative impact on the natural environment by the project.

On the other hand, the project gave positive impact on natural environment. Project constructed the breakwaters utilizing mangroves which are the local vegetation. It gave the good impression on scenery and it has established recognition as “environmentally friendly fishing port”. The interview at the time of the beneficiary survey revealed that many people highly evaluated the beauty of the JFP which was maintained with lots of green like a park.

#### 3.4.2.2 Land Acquisition and Resettlement

There were no land acquisition or resettlement issues in the project.

#### 3.4.2.3 Other Impacts

##### (1) Prospect for the approaches which were adopted in JFP to become popular

As referred to above, the project adopted unique ideas such as breakwaters utilizing mangroves and sea water cleaning system<sup>19</sup> which was rehabilitated by the project. Those

<sup>19</sup> It is the system to clean sea waters inside of the port using the difference of tidal levels, not utilizing heavy pumps and other equipment. It is efficient and easy for maintenance since only using the mechanism of tidal levels. At the time of incoming tide, sea waters are allowed to flow into the reservoir together with



ideas were generated by the implementing consultant. These methodologies are unique even in the world and the ideas were presented at the academic conferences by the consultant<sup>20</sup>. The approaches that were adopted to JFP including revetments and breakwaters utilizing piles and mats made of bamboo which were constructed in the Phase 1 project, are identified as efficient and have drawn attentions domestically and internationally as applicable methodologies for developing countries. Although these approaches have not been yet applied to other fishing ports domestically and internationally, there is possibility for those approaches adopted in JFP to become popular in the future. These approaches actually are the fruits of ideas of the Japanese consultant who has been involved since the Phase 1 project and brought the passion into enforcement of functions of JFP. It is well noticed by the executing agency as well as people involved in the Fishing Port, which also contributed to the strengthening the trust and tie with Japan.

In light of the above, this project has largely achieved its objectives. Therefore effectiveness and impact of the project are high.

### **3.5 Sustainability (Rating: ②)**

#### **3.5.1 Institutional Aspects of Operation and Maintenance**

Jakarta Fishing Port is maintained and operated by two organizations; UPT and state-owned public fishery corporation under the Ministry of State-Owned Enterprises (MSOE), called PERUM. In principle, UPT is responsible for operation and maintenance (O&M) of public facilities and PERUM is responsible for commercial facilities. In this regard, most of the facilities which were improved by the project are maintained by UPT. However, it was identified that the division of work and responsibility between the two organizations in terms of detailed maintenance activities at the operational level remained unclear which had been pointed out since the time of appraisal<sup>21</sup>. For example, under the contract with PERUM, the private company which is newly established in the Fishing Port is expected to construct drainages next to the premises. However, the detailed information on the drainages such as the capacity and procedures of maintenance in the contract is not shared with UPT since the contents of the contract between the private company and PERUM are not open to UPT. Although the drainages are maintained by UPT in principle as public facilities, the

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floating wastes and oils, and then the wastes are accumulating at the screen. If those wastes at the screen are cleared appropriately, the sea waters are cleaned and flowed into the reservoir. If those wastes at the screen were not cleaned, sea waters remain stagnant. At the time of the falling tide, cleaned sea waters are drained away to the sea outside of the port.

(<https://libportal.jica.go.jp/fmi/xsl/library/public/ProjectHistory/jakarta/2003.pdf>) (in Japanese)

<sup>20</sup> (<https://libportal.jica.go.jp/fmi/xsl/library/public/ProjectHistory/jakarta/jakarta-p.html>) (in Japanese)

<sup>21</sup> JICA has made proposals several times to the MMAF about clearing division of works between the two organizations such as formulation of comprehensive guideline of maintenance. However, it was not materialized.

responsibility on who should do the improvement and repair of the drainage is vague when the drainages were built with low capacity and overflowed waters at the time of high tides.

Another example is the waste water management. Waste waters from the factories are discharged to the sea either through the waste water treatment plant which was improved by the project or after being treated by the own equipment of the factory. However, according to UPT, a small number of factories have been discharging waste waters without treatment. UPT has given the warning to those factories; however, neither UPT nor PERUM, have rights to stop operation of such factories although PERUM is the one which has responsibility of commercial facilities. In this way, even one issue of waste management raises problems of operation and maintenance.

Since similar issues on the division of works between UPT and PERM are observed not only in JFP but also other DGCF administered fishing ports, MMAF recognized it as a problem and drafted an agreement between the two organizations. At the time of the ex-post evaluation, the agreement has not been reached; however, the direction for improvement has been confirmed<sup>22</sup>.

The number of staff in UPT was 207 as of December 2014, of which staff members in charge of maintenance were 107. Table 7 shows the O&M staff allocation and frequency of maintenance of facilities which were improved by the project. It is assumed that ample number of staff members for cleaners is allocated by actually observing them working every day for roads, vegetation, drainage, and garbage collection inside of the port at the time of the ex-post evaluation. Regarding operators<sup>23</sup>, however, the number of staff members was not sufficiently allocated. There was no staff member residing at the sea water cleaning system, and only two staff members cannot conduct 24 hours monitoring from the control tower as stated the above. Therefore, it is expected to allocate necessary number of staff for effective use of the facilities. For example, it is considered that two staff members on the rotation basis will be necessary for the sea water cleaning system, and four to six staff members will desirably work in shifts for 24 hours monitoring from the control tower.

On the other hand PERUM (JFP branch) had 104 staff members as of December 2014. Since most of the facilities which were improved by the project are public facilities so the maintenance is done by UTP. Auction hall is the only facility where PERUM is in charge of maintenance. According to the interview to PERUM, there are enough staff members in maintenance and there was no particular problem observed.

In light of the above, some concerns were observed in institutional aspects of operation and

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<sup>22</sup> Information is according to the interview with DGCF officers.

<sup>23</sup> For example, the role of operator of seawater cleaning system is to open and close the drainage by manually. The role of operator of waste water treatment system is to operate waste treatment equipment considering volume of drained water.

maintenance since it was found that detailed division of work and responsibility between the two organizations of operation and maintenance of JFP have not been clearly articulated and there were some staff shortage in O&M.

Table 7: O&M Staff Allocation and Frequency

	Items	Frequency	Number of Workers (person)	
			Operator	Cleaner
1	Quaywalls	Daily	—	20
2	Breakwaters	—	—	—
3	Control Tower and UPT	Daily	2	6
4	Access Roads	Daily		15
5	Revetments	—	—	—
6	Main Drainage, Ponds, Pumping Station, Pumps and Power Supply	Daily	3	2
7	Sea Water Cleaning System	Daily	—	2
8	Auction Hall	Daily	—	6
9	Sewage Treatment System, Pumps, Drainage	Daily	6	2
10	Manhole House, Pumps, Panel	Daily	3	2
11	Piped Liquid Sewage System	Daily	—	6
12	New UPT Office	Daily		6
13	Waste Collection Yard	Daily	—	2
14	Solar Cell	Daily	3	—
15	Electrical System	Daily	3	—
16	Drainage	Daily	—	10

Source: Information provided by JICA

### 3.5.2 Technical Aspects of Operation and Maintenance

Technical problems of O&M were not observed in the basic infrastructure such as quaywalls and revetments. However, there are some concerns in technical aspects for O&M of other facilities. According to the interview to UPT, although there are three to four staff members in UPT who can conduct simple repairs, there is shortage of technical personnel who have specific O&M knowledge. The capacity building is done mostly through OJT and training opportunity for strengthening technical capacity is limited. Although there is not much problem in O&M at the usual time by referring to the manuals; however, when problems occurred, immediate actions could not be taken. For example, there is no technician who could judge to take appropriate actions by assessing the report on the environmental monitoring related to the drained water from waste water treatment system, which is outsourced to the external research institution. It is desirable that monitoring of water quality not only for drained water of the waste water treatment system but also for sea water of inside and outside of the JFP should be done internally. It is also expected that technical personnel should be developed to make decision for appropriate measures.

In addition, for further effective use of sea water cleaning system and waste water

treatment system, rather than simply operating by the determined volume and time of drained water automatically, it is recommended that the operators who could adjust and predict the volume and time of drainage and cleaning of water by assessing weather information, amount of rainfall, and situation of tides, should be developed and allocated. In this way, it can be said that there is room for improvement.

In light of the above, although there is no major problem in technical aspects, however, there are minor concerns in it considering insufficient experience on preventive maintenance and necessity of allocation of appropriate personnel for effective utilization of the facilities that were improved by the project.

### 3.5.3 Financial Aspects of Operation and Maintenance

The budget of UPT is allocated by the national budget through DGCF since UPT is under DGCF. Entering fee for JFP is administered by UPT; however, the fees are put into the national budget and UPT cannot use it directly for JFP. Table 8 shows the maintenance cost for the facilities rehabilitated by the project. According to DGCF and UPT, although the budget is not sufficient overall, the budget to maintain the current situation has been secured.

As seen in Table 8, the budget allocated from DGCF to UPT for the facilities rehabilitated by the project was 1.45 billion rupiah in 2013 and 1.69 billion rupiah in 2014. Considering the necessary annual maintenance budget for the facilities in the JFP was estimated at 1.6 billion rupiah<sup>24</sup>, the maintenance budget can be said as fulfilled. Actually, the maintenance budget is mostly for cleaning and purchase of spare parts, and there is no particular financial problem to obstacle operations for this routine maintenance. At the time of the ex-post evaluation, budgets for rehabilitation and improvement of drainages and revetments became necessary in order to prevent further floods from happening. Those improvements require the construction works; however, there is no budget for such construction works. It means that if such needs for construction works arise, it was identified that the immediate arrangement could not be possible. On the contrary, vulnerable parts for flooding should be maintained in advance since the land subsidence has been progressing even at the time of the ex-post evaluation.

PERURM runs on a stand-alone basis. Its financial sources are coming from most income generated activities inside of JFP including rents for land to the private companies, quaywall usage fees, workplace usage fees, income from water supply and gas station. Since the investment in the port has been increasing, there is no problem in finance for PERUM. Annual budget for PERUM secures about 1 billion rupiah and it is mainly used for maintenance, repair and rehabilitation of external walls for cold storage and warehouses, etc.

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<sup>24</sup> Report for the ex-post evaluation on “Jakarta Fishing Port/Market Development Project (IV)” - [http://www.jica.go.jp/english/our\\_work/evaluation/oda\\_loan/post/2005/pdf/2-04\\_full.pdf](http://www.jica.go.jp/english/our_work/evaluation/oda_loan/post/2005/pdf/2-04_full.pdf).

In light of the above, some concerns remain in financial aspects since cost for maintenance that requires a certain level of construction has not been secured although enough finance to maintain the current level is ensured.

Table 8: Maintenance Cost for the Facilities Rehabilitated by the Project (Actual)

(unit: Rupiah)

	Facility	2013		2014	
1	UPT Office and Control Tower	Building Lift Water pump	— 24,000,000 5,000,000	Building Water pump	137,500,000 5,000,000
2	Main drainage, Pump house, Power supply for western side	Water pump Pond	241,500,000 22,500,000	Water pump	10,000,000
3	Sea water cleaning system	Building	34,000,000		
4	Main drainage, Pump house, Power supply for eastern side	Water pump Power supply Pond Building	64,250,000 12,589,000 15,000,000 120,000,000	Water pump	75,000,000
5	Fish landing center	Building Drainage Water system	20,000,000 55,350,000 13,500,000		
6	Machine, Power supply, Pump	Water pump Power supply Panel	106,000,000 16,637,000 100,090,000	Power supply Water pump	28,200,000 12,000,000
7	CCTV system	System	9,000,000	System	10,000,000
8	New UPT office	Building Lift	48,000,000 24,000,000	Building Water pump Lift	175,000,000 5,000,000 54,000,000
9	Power House, Power supply	Power supply	18,225,000	Power supply	29,600,000
10	Solar Cell	—	—	—	—
11	Piped liquid sewerage system, Manhole house	Pump & Panel, Manhole Sewerage system	60,000,000 70,695,000	Pump & Panel Building Sewerage system	210,000,000 60,000,000 715,982,000
12	Fresh water supply system, Ground tank/Reservoir	—	—	—	—
13	Temporary landfill	—	—	—	—
14	Landscape for port' s garden	Maintenance	200,000,000	Maintenance	100,000,000
15	Drainage	Dredging	60,000,000	Dredging	60,000,000
	<b>Total</b>	<b>1,446,836,000</b>		<b>1,687,282,000</b>	

Source: Information provided by JICA

### 3.5.4 Current Status of Operation and Maintenance

Current status of maintenance of facilities improved by the project was generally good. However, as stated above, it was noted that there was room for improvement such as in

operation of control tower and sea water cleaning system. Another improvement point was found in control berthing of ships. Since the berthing of ships entering into JFP has not been controlled, the ship which could not park alongside the quaywalls but next to other ship had to land and relocate fish to the other ship which berthed next to the quaywalls.

On the other hand, it was confirmed that there were some damaged parts in revetments and drainages, and broken roads which had puddles. Furthermore, although UPT monitors water quality of drained water from the waste water treatment plant, monitoring of water quality of sea water after drained in and outside of JFP has not been conducted. As stated above, although only a few, some companies has been discharging waste water from their factory directly to the sea without treatment, It is, therefore, beneficial to conduct periodical water quality monitoring of sea water in and outside of JFP. As Photo 19 shows, land subsidence which continues severely at present has not been monitored by UPT. It shows that concrete around the standard pile installed in 2009 in the project was torn off about 80 cm down at the time of the ex-post evaluation due to the influence of land subsidence.

In light of the above, the current status of maintenance is generally good; however, there were some issues since some problems and points of improvement were observed.



Photo 17: Puddle caused by the broken roads  
inside of JFP  
(At the time of the Ex-post Evaluation)



Photo 18: Garbage collection using Backhoe  
procured by the project  
(At the time of the Ex-post Evaluation)





Photo 19: Standard Pile installed inside of JFP (Installed in 2009)  
(At the time of the Ex-post Evaluation)



Photo 20: Cleaning and Vegetation inside of JFP (At the time of the Ex-post Evaluation)

Some minor problems have been observed in terms of the institutional and financial aspects. Therefore, sustainability of the project effect is fair.

#### **4. Conclusion, Lessons Learned and Recommendation**

##### **4.1 Conclusion**

The project aimed to restore the function of the JFP and to make effective use of related facilities by elevating quaywalls and other major facilities which have sunk down by the land subsidence effect. The target quaywalls were constructed by the Phase 1 project (completed in 1982). In addition to the quaywalls, the project rehabilitated breakwaters, revetments and roads which were also affected by the land subsidence, and constructed a control tower.

The project is well consistent with the development policy and development needs of Indonesia, as well as with the Japan's ODA policy; thus, the relevance of the project is high. All of the operation and effect indicators, i.e., fish landing volume, fish landing value, total berthing income and total number of operation days for Control Tower reached the target level, thus, the restoration of the function of JFP was confirmed. A beneficiary survey also confirmed the improvement of quality of fishery products by better sanitary and hygienic conditions of JFP and the enhancement of convenience for port users by the project. In addition, JFP has been expanding with having more than 300 fishery companies and 46,000 employees. This contributed to the promotion of fishery industry in Indonesia. In particular, impact was observed on the generation of employment for women living close to JFP after restoring the functions by the project. Therefore, effectiveness and impact of the project are high. Although the project cost was within the plan, the project period significantly exceeded the plan. Therefore, efficiency of the project is fair. In regard to operation and maintenance,

the clear divisions of work and responsibility have not been made between the two organizations, “UPT” under the Ministry of Marine Affairs and Fisheries and “PERUM” under the Ministry of Ministry of State-Owned Enterprises. Therefore, some issues were observed in the institutional aspects. It was also found that there was room for improvement in staffing and financial aspects; thus, sustainability of the project is fair.

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

## **4.2 Recommendations**

### **4.2.1 Recommendations to the Executing Agency**

#### **(1) Clarification of role and responsibility between UPT and PERUM**

In principle, UPT is responsible for public facility and PERUM is in charge of commercial facility. Therefore, general clarification of role and responsibility between UPT and PERUM has been established. However, when it comes to the issue of specific operational works such as waste water management from factories, improvement of drainage near factories, and security management inside the port, division of role and responsibility between UPT and PERUM are ambiguous in many points.

MMAF (directly control UPT) and MSOE (directly control PERUM) have already been discussion on this issue; however it is desirable that agreement should be reached urgently on the role and responsibility of UPT and PERUM for the smooth operation and maintenance of the fishing ports. In addition, the detailed guideline and manuals should be developed for the specific operational works immediately after the agreement has been reached.

#### **(2) Immediate implementation of necessary reinforcement in case of land subsidence and thorough monitoring**

Quaywalls elevated by the project was designed that there was no need to rehabilitate for about 30-50 years. However, considering the rapid progress of land subsidence both at JFP and the surrounding areas at the pace that is faster than expected at the time of appraisal, it is necessary to periodically monitor it at various locations inside the Fishing Port. In concrete terms, the periodical monitoring is required to know to what extent the major facilities have been sinking, with the standard pile as a reference. It is also desired to allocate the staff for this periodic monitoring. Measures such as reinforcement of fragile ground parts beforehand would also be necessary.

#### **(3) Development of a medium and long term plan for operation and maintenance**

Considering the land subsidence has been currently in progress, it is assumed that rehabilitation works will be necessary in the medium and long term. It is, therefore, required to formulate the medium and long term plan for operation and maintenance including the

accumulation of budgets for reinforcement and rehabilitation of the facilities. When formulating such a plan, involvement of PERUM from the planning stage should be considered for effective and efficient operation and maintenance, although it is subject to the agreement between MMAF and MSOE.

#### (4) Further enhancement of functions of JFP

By the placement and training of necessary personnel, further enhancement of functions of JFP could be realized, including, enhancement of safety management by utilization of control tower and efficient utilization of sea water cleaning system. Apart from the monitoring of the settlement mentioned above, periodical monitoring of water quality of sea water inside and outside the JFP is desirable. Some companies, though a few, have drained waste water without treatment. The negative environmental impact has not been confirmed at the time of the ex-post evaluation; however, the periodic monitoring should be urgently implemented.

### **4.3 Lessons Learned**

#### Prior consultation on the difference on the procurement guidelines between the partner government and Japan

In this project, it took an extra time to reconcile the procurement regulations between JICA and the executing agency on the submission period of proposal. This caused delay of the commencement of the project. Since the new procurement regulation of Indonesia was developed in 2003 when the assessment for this project was on the table, the prior consultation might have been difficult to be conducted. Nevertheless, if the new procurement regulation is formulated in the future, it is important to identify the difference between the regulations of two governments before starting the project and confirm the way of reconciliation.

Comparison of the Original and Actual Scope of the Project

Items	Original	Actual
1. Project Outputs	<p>1) Civil Works</p> <ol style="list-style-type: none"> <li>1. Elevation of East and West Quaywalls (West: 574m、 East: 775m、 Total: 1,349m)</li> <li>2. Rehabilitation of West Breakwaters (600m)</li> <li>3. Construction of Control Tower</li> <li>4. Rehabilitation of roads near the main gate (length: 300m、 Width: 6m)</li> </ol> <p>2) Consulting Services</p> <ol style="list-style-type: none"> <li>a) Survey and preliminary design stage</li> <li>b) Detailed design and preparation of tendering documents</li> <li>c) Pre-qualification and Tender evaluation</li> <li>d) Monitoring and promotion of discussion of relevant organizations on ground water taking</li> <li>e) Supervisory services</li> <li>f) Alternative study of the access roads</li> <li>g) Technical Transfer</li> <li>① Analysis of the cause of the land subsidence due to the excessive pumping underground water</li> <li>② Structure design of quaywalls (including breakwaters)</li> <li>③ Proper operation and maintenance method of fishing port</li> <li>④ Collection of operation and effective indicators</li> <li>⑤ Planning of breakwaters</li> <li>⑥ Information System</li> <li>⑦ Method of environment monitoring with dispatched experts</li> </ol>	<p>1) Civil Works</p> <ol style="list-style-type: none"> <li>1. West: 614m, East: 775m, Total: 1,389m</li> <li>2. 594m</li> <li>3. As planned</li> <li>4. Extended (length: 6,250m, width: 6~18m)</li> <li>5. Additional construction <ol style="list-style-type: none"> <li>① Improvement of East and West Breakwaters (West: 745m, East: 272m)</li> <li>② Dredging in front of -4.5m quaywalls</li> <li>③ Construction of Port Authority Office</li> <li>④ Rehabilitation of west revetments (1,113m)</li> <li>⑤ Rehabilitation of east revetments(1,500m)</li> <li>⑥ Improvement of existing drainage system</li> <li>⑦ Increase quaywalls</li> <li>⑧ Improvement of Sea water cleaning system</li> <li>⑨ Construction of revetments near ship yard</li> <li>⑩ Improvement of waste water treatment system</li> <li>⑪ Improvement of fresh water supply system</li> <li>⑫ Installment of waste yard (including procurement of backhoe and compressor)</li> <li>⑬ Construction of Auction Hall</li> <li>⑭ Extension of UPT office</li> <li>⑮ Installment of solar outside lightings</li> <li>⑯ Installing monitoring and control system</li> <li>⑰ Additional power supply</li> </ol> </li> </ol> <p>2) Consulting Services</p> <p>Intended services except “⑦ Method of environment monitoring with dispatched experts” were implemented.</p>
2. Project Period	April, 2004 – December, 2008 (57 months)	April, 2004 – July, 2012 (100 months)

3. Project Cost		
Amount paid in Foreign currency	1,826 million yen	1,973 million yen
Amount paid in Local currency	2,230 million yen (159,286 million rupiah)	2,083 million yen (231,444 million rupiah)
Total	4,056 million yen	4,056 million yen
Japanese ODA loan portion	3,437 million yen	3,382 million yen
Exchange rate	1 rupiah = 0.014 yen (as of October 2003)	1 rupiah = 0.009 yen