

Republic of Ghana

FY2020 Ex-Post Evaluation Report of Japanese Grant Aid Project

“The Project for Fishery Promotion in Sekondi”

External Evaluator: Keiko Asato,

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0. Summary

This project was implemented to reduce the congestion at the fishing port and improve the freshness of the caught fish by extending the mooring quay and improving related facilities, thereby contributing to the stable supply of marine products at Sekondi Fishing Harbour (hereinafter SKFH).

This is a project for infrastructure development related to the fishing industry, an important industry in Ghana, therefore the project is consistent with the Government of Ghana’s development policy. The measures to an increasing number of fishing vessels and efficient fishing port management are urgent issues, and development needs are high. These issues are also highly relevant as with Japan’s ODA policy of supporting economic infrastructure, therefore relevance is high. The actual project period exceeded the planned duration because re-bidding was necessary due to the spread of Ebola haemorrhagic fever, but the project cost was within the revised E/N amount, so efficiency is fair. One of the initially set target indicators was not appropriate, but the fishing port facilities’ congestions have been improved, which is the project’s purpose, by improving the operation of the fishing port’s facilities. The positive impacts also were recognized, such as maintaining the freshness of the catch, which helps increase its unit price. Due to the influence of external conditions such as fewer fishery resources, the volume of fish landings has decreased. Therefore, not all, but some fishermen and fishmongers have increased their income, so effectiveness and impact are high. No major problems have not observed in the institutional, financial, or technical aspects required for the maintenance of SKFH. The operation and maintenance status is generally good, and this project’s effects are expected to continue, so sustainability is high.

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

1. Project Description



Project Location



Overview of Sekondi Fishing Harbour

1.1 Background

Ghana is one of Africa’s leading fishing countries, with an annual catch of 3.2 million tonnes and 110,000 fishermen, and the annual per capita consumption of marine products is about twice the world average. SKFH, which was developed by the Fisheries Grant Aid Project, “Construction of Sekondi Fishing Port in the Republic of Ghana” (1998), is the second important fishing port in Ghana after the Tema Fishing Port. The Takoradi commercial port, which is managed under the control of Ghana Ports and Harbours Authority (GPHA), operated it. The number of vessels operating at SKFH was increasing and surpassed the port’s capacity, and even though it had operated without major problems as a port facility with support from the Takoradi commercial port, its operational capacity as a “fishing port facility” was insufficient. Therefore, problems such as the inefficiency of landing due to improper operation, the deterioration of the quality of the catch after fishing due to insufficient capacity of landing facilities and ice production facilities, and the loss of income opportunities for fishermen due to these issues arose.

1.2 Project Outline

This project was implemented to reduce congestion at the fishing port and improve the freshness of the caught fish by extending the mooring quay and improving related facilities, thereby contributing to the stable supply of marine products at SKFH.

<Grant Aid Project>

Grant Limit/Actual Grant Amount	1,825 million yen (Amended to 2,169 million yen)/ 2,102 million yen
Exchange of Notes Date /Grant Agreement Date	April 2014 (Amended in December 2015) /April 2014 (Amended in December 2015)
Executing Agency	Ghana Ports and Harbours Authority (GPHA) (Operating Agency is SKFH)
Project Completion	March 2018
Target Area	Sekondi, Takoradi city, Western Region
Main Contractor(s)	Toa Corporation
Main Consultant(s)	Joint Venture of Echo Corporation and OAFIC Ltd. (Representative: Echo Corporation)
Procurement Agency	N.A.
Basic Design/Preparatory Survey	June 2013 - February 2014
Related Projects	- Grant Aid Project, “Tema Outer Fishing Harbour Rehabilitation Project in the Republic of Ghana” (1994)

	- Fisheries Grant Aid Project, “Construction of Sekondi Fishing Port in the Republic of Ghana” (1998)
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2. Outline of the Evaluation Study

2.1 External Evaluator

Keiko Asato, Foundation for Advanced Studies on International Development (FASID)

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule:

Duration of the study: December 2020 - January 2022

Duration of the field study: Due to the spread of COVID-19, the external evaluator refrained from traveling to the country. A remote survey was conducted by visiting the project site and collecting information by a local consultant¹. Surveys were conducted by visiting the project site twice, from April 14 to 22, 2021, and August 17 to 22, 2021.

2.3 Constraints during the Evaluation Study

Due to the spread of COVID-19, the external evaluator could not conduct a field survey. Project-site-visit surveys were conducted with the local consultant residing in the capital, Accra, by remote instruction to collect project information and data and conduct the beneficiaries’ interviews. In addition, the external evaluator conducted online interviews with related organizations. However, it took much time to collect the information, and some information was difficult to obtain.

3. Results of the Evaluation (Overall Rating: A²)

3.1 Relevance (Rating: ③³)

3.1.1 Consistency with the Development Plan of Ghana

In Ghana’s mid-term country development plan framework, *Ghana Shared Growth and Development Agenda (2010-2013)* (hereinafter referred to as “GSGDA”), at the time of the ex-ante evaluation, supply shortages for the domestic demand of marine products and the non-sustainable and less than optimal use of fishery resources arose as issues in the fishing industry. The expansion of the landing, storage, processing, and export facilities was set as goals. GSGDA II (2014-2017) emphasized the improvement of catch volume and productivity in the items of

¹ In the first project site survey, in addition to SKFH administration office, the interview survey was administered to 23 fishermen (8 canoe fishermen, 15 inshore vessel fishermen, 1 trawler owner), fishmongers (6), smoked product manufacturers (3), small store owners (3), and local residents (3) (all fishermen and smoked product manufacturers were male, and all fishmongers were female). In the second project business site survey, we interviewed new canoe fishermen (7) and an additional 2 canoe fishermen, inshore vessel fishermen and fishmongers, who answered that their income had increased in the first survey.

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

³ ③: High, ②: Fair, ①: Low

Development of fisheries for food security and income increase in “Modernization of agriculture and management of natural resources management.”

At the time of the ex-post evaluation, the fishery aquaculture field was listed as a priority field in the mid-term country development plan framework, *An Agenda for Jobs: Creating Prosperity and Equal Opportunity for All (2018-2021)*, which is the successor policy to GAGDA II. Along with promoting the growth of the aquaculture field, the strategy is set to control illegal fishing and reduce post-catch loss with sustainable marine resource management.

In this regard, this project is consistent with Ghana’s development plan.

3.1.2 Consistency with the Development Needs of Ghana

At the time of the ex-ante evaluation, Ghana was a fishing country with an annual catch volume of about 3.2 million tonnes and 110,000 fishermen. The annual per capita consumption of marine products was about 30 kg, which was about twice the world average (16.7 kg). However, the domestic catch was not enough to cover the vigorous fishery consumption, the fishery industry’s share of GDP has decreased from 4.4% (2007) to 1.7% (2011), and about 190,000 tonnes of marine products were imported (2011). Although many fishing ports were operating along the Gulf of Guinea in Ghana, the only modern fishing ports with ice production facilities were the Tema fishing port and SKFH. Inshore fishing was the main activity at SKFH, and the catch from inshore vessels and canoes were mainly transported and sold to the cities of Sekondi and Takoradi and the hinterland of Kumasi. The number of fishing vessels operating at SKFH had been increasing⁴, and the issues were raised, such as congestion at the time of landing, poor landing efficiency due to improper use of fishing port facilities⁵, deterioration of the quality of the catch after fishing due to insufficient capacity of landing facilities and ice production facilities, and the loss of income opportunities for fishermen. In addition, although SKFH had the ability to operate port facilities, it lacked the ability to operate the facilities as a fishing port, including guiding efficient landing.

At the time of the ex-post evaluation, 70% of the catch at Ghana’s fishery was marine fishery (17% inland fishery, 13% in aquaculture), and the importance of marine fishery had not changed. In the “*FISHERIES MANAGEMENT PLAN OF GHANA*” *A National Policy for the Management of the Marine Fisheries Sector, 2015-2019* (Ministry of Fisheries and Aquaculture Development, hereinafter MOFAD), the importance of fish is mentioned as an inoculation source of animal-origin protein for Ghana’s people (60% of animal-origin protein is inoculated from fish). This plan also addresses concerns about the decrease in the catch in recent years. Suppression of excessive exploitation of marine fishery resources, compliance with the Fisheries Law to protect

⁴ It was 51 vessels in 1998, but it doubled to 106 in 2006 (ex-ante evaluation sheet, p.1-2).

⁵ Only 30% of entire handling shed space was used for its original purpose, because it was used for other purposes, such as storing fishing nets, small sales shops, and gambling.

fishery resources, promotion of the export of fishery products with the increased value of catch, and management of the fisheries by participatory decision-making are required to address issues.

In addition to the cities of Sekondi and Takoradi, Kumasi, the second-largest city in Ghana after the capital, Accra, remains a distribution destination for the catch from SKFH. For fishermen using inshore vessels and canoes, whose main fishing ground is the western part of the Guinea Gulf, having a well-equipped fishing port in the western region is important for keeping the catch fresh. In addition, processed marine products are exported from the Takoradi commercial port. SKFH, which provides the catch used as the raw material for exported marine products, plays an important role. Under these circumstances, SKFH is still an important fishing port, following the Tema fishing port, and its development needs are high.

In this regard, this project was consistent with the development needs at the time of planning and upon the ex-post evaluation.

3.1.3 Consistency with Japan’s ODA Policy

According to the Country Assistance Policy to Ghana (April 2012) and the JICA Country Analysis Paper (August 2013), at the time of the ex-ante evaluation, “Economic Infrastructure” was mentioned as a priority issue. This project to renovate SKFH, which supports the local economy, was considered in line with this policy.

Therefore, this project was in line with Japan’s ODA policy at the time of planning.

This project has been highly relevant to Ghana’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

The achievement status of this project’s output was as follows.

Table 1: Output planning and performance

Plan	Actual
Japanese Side	
<u>Facility component</u>	
<u>Civil Facilities Outline</u>	
Additional lay-by berth (Improvement of the existing breakwater)	As planned (length: 180 m, crown width: 15.5 m, crown height: DL +2.6 m)
Access driveway with canoe-berthing facilities	As planned (length: 324 m, crown height: DL +2.6 m to +2.0 m), Crown widths: 5 m road, 2 m sidewalk
<u>Architectural Facilities Outline</u>	
Additional ice plants	As planned (floor area of expansion: 444.0 m ² , ice machinery: 15 t/day)
Additional administration office	As planned (floor area of expansion: 384.25 m ² ,

	floor area of access passage: 12.39 m ²)
Pavement of the area behind fish handling shed (parking lot/net mending area, in-port road)	As planned (floor area of expansion: 384.25 m ² , floor area of access passage: 12.39 m ²)
Pavement of the area behind fish handling shed (parking lot/net mending area, in-port road)	As planned (paved areas: parking lot: 695.85 m ²)
Utilities (street lighting, water supply and drainage)	As planned (street lighting: 19 in total, water supply and drainage facilities, reservoir, high tank, high tank with RC concrete, pump room, additional cesspit)
Fuel-oil-tank site construction	As planned (trenches for piping: 139.7 m, expected fuel tank site area: 128 m ²)
Consulting Service	
Consulting service for detailed design and administration of construction	As planned
Soft Component First Soft Component (March 18-May 1, 2017)/ Second Soft Component(November 14-December 13, 2017)	
【Output 1】 Operation and management plan of SKFH is finalized.	Achieved Based on the survey of the Tema fishing port and discussions at each stakeholder (SH) meeting, drafts of an operation and maintenance plan and a fishing port operation rule were created. The agreement to establish a multi-stakeholder advisory committee (hereinafter referred to as “MSAC”) was drafted, and the first MSAC was held, involving various stakeholders (hereinafter SHs).
【Output 2】 Responsible use of fishing harbour facilities is promoted.	Achieved The operation and maintenance plan was finalized, and through the establishment of the MSAC and the SH meeting, fishermen learned how to use the zoning system and fishing port facilities. SKFH’s management office learned how to monitor the facilities’ usage status, and the countermeasures and recommendations to solve the possible problems were provided.
Ghanaian Side	
Transfer of small-scale shops	As planned The 15 target stores were relocated along the road leading to the mooring and landing quay, next to the ice machine in the port.
Installation of refuelling tank and refuelling machine at mooring pier	Not completed The planned location at the mooring quay was crowded with fishing vessels. The location to set the refuelling machine was not decided on yet, and its installation had not been completed.

(Source: Documents provided by JICA and executing agency)

For all hard components, the planned output was achieved. Soft Component was implemented to strengthen the operational capacity as a “fishing port facility”, and the output was achieved as planned.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The original E/N amount at the time of ex-ante evaluation was 1,825 million yen, but in December 2015, its limit was revised to 2,169 million yen. The actual amount was 2,102 million yen, 96.9% of the revised plan, and the project cost was within the amended plan. Details are as follows:

Table 2: Planned and actual project cost

(unit: 1,000 yen)

	Planned amount	After amendment of E/N	Actual amount		
			Domestic currency	Foreign currency	Total
Construction	1,638,000		1,092,842	790,350	1,883,192
Design and Administration	186,000		18,192	200,992	219,184
Total	1,824,000	2,169,000	1,111,034	991,342	2,102,376

(Source: documents provided by JICA)

The reasons for the amendment of the E/N limit are as follows: (1) The bid price reflected the cost of risk countermeasures against Ebola haemorrhagic fever that occurred in countries around Ghana in March 2014 (about 5 months before bidding), and the bid price did not fall within the planned price. (2) The exchange rate at the time of bidding (August 2014) changed due to depreciation of the yen from the time of calculation (March 2014) (the yen depreciated from ¥ 100.45 / USD to ¥110 / USD). (3) While we awaited the decrease of the Ebola haemorrhagic fever, the yen depreciated further, and the average rate for May-July 2015 was ¥122.56 / USD, which was beyond the calculated limit. Considering these circumstances, the E/N limit was revised in December 2015.

The project cost on the Ghana side was 37 million, which was as planned⁶.

3.2.2.2 Project Period

At the time of the ex-ante evaluation, the project period was planned as 24 months (from April 2014 to March 2016), but the actual period resulted in 36 months (April 2014 to March 2018, but this project period excludes 12 months, which is the period when the project could not be implemented due to Ebola haemorrhagic fever), which exceeded the initial plan, at 150%. Details are as follows:

Table 3: Project period

	Planned	Actual
Grant agreement signing	April 2014	April 2014

⁶ According to the answer to the questionnaire

Consultant contract	April 2014	May 2014
Design and bidding period	April - September 2014 (6 months)	First bidding round: August – September 2014 (6 months, starting at G/A signing) Second bidding round: September 2015 – April 2016 (8 months)
Construction period	October 2014 - March 2016 (18 months)	May 2016 – March 2018 (22 months)
Project completion	March 2016	March 20, 2018
Total project period	April 2014 - March 2016 (24 months)	April 2014 - March 2018 (12 months, from October 2014 to September 2015, were excluded from the project period, which means substantially 36 months)

(Source: Preparator survey report and documents provided by JICA)

The reasons the project period exceeded the plan are as follows: (1) The first bidding round was unsuccessful due to additional expenses to deal with Ebola haemorrhagic fever and the yen's depreciation. (2) The exchange rate was not stable even though Ebola haemorrhagic fever decreased in 2015, the E / N limit was revised in December of the same year, and the second bidding round was held in April 2016⁷. (3) Some inconveniences arose regarding the material for the additional administration office construction, and it was suddenly procured from Japan⁸.

Although the project cost fell within the planned amount, the project period exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness and Impacts⁹ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

The achievement status of the operational indicator to measure “reduction of the congestion of the fishing port and improvement of the freshness of the fish catch”, this project's objective, was as follows.

⁷ According to documents provided by JICA.

⁸ With this procurement, project completion was delayed from October to December 2017.

⁹ Sub-rating for Effectiveness is to be put with consideration of Impacts.

Table 4: Achievement status of operational indicators

【Operational Indicator】 Indicator	Baseline (2013, Actual)	At the time of completion (2018)	Target (2021, 3 years after completion)	Actual		
				Response by executing agency		Re- calculation
				2019	2020	2021
(1) Congestion rate of landing berths and preparation berths(%)	400%	200%	100% or less	100%	40%	257%*
(2) Occupation ration by fishing nets behind preparation berth(%) (except short storage for preparation works)	70%	40%	10% or less	30%	10%	
(3) Sufficiency ratio to ice demand SKFH (annual average) (making ice demand volume at the time of plan as standard)	45.5%	50%	70% or more	50%	60%	85%**

(Source: Baseline/Target: Ex-ante evaluation sheet, Actual: Answer to the questionnaire from SKFH administration office, interview with fishermen¹⁰, Re-calculation: external evaluator calculated based on the data collected in this ex-post evaluation study)

* Because the basis for calculating 40% in the response from the executing agency was different from that at the time of the ex-ante evaluation, this value was recalculated using the 2021 data. The calculation basis was applied at the time of the ex-ante evaluation.

** The responses from the executing agency of “50%” and “60%” are based on the demand for ice at the time of the ex-post evaluation. Subject to the indicator originally set, this value was recalculated using the data for 2021. The calculation basis was applied at the time of the ex-ante evaluation.

(1) Average congestion rate at landing quay and preparation quay

The response from the executing agency was “40%” for the average congestion rate, but because this figure was calculated using a different calculation basis from that used at the time of the ex-ante evaluation, it was recalculated using data for 2021, with the same calculation basis at the time of ex-ante evaluation, resulting in the figure of 257%. The baseline of the congestion rate at the time of ex-ante evaluation was calculated as the ratio (100/25=400%) of the average number of inshore vessels (100 vessels) to the target number of vessels for landing (25 vessels)¹¹. In this ex-post evaluation study, the figure was recalculated using the same calculation basis, with the average number of using vessels (113 vessels) and the target number of vessels for landing (44 vessels), resulting in a ratio of 257%. Table 5 and the footnotes show the calculation for the average number of using vessels (113 vessels). The target number of vessels for landing (44 vessels) is that of inshore vessels brought by this project¹², which was introduced by actual values measured in this project’s baseline survey, referring to the standards established in Japan’s “*Guide for Fishing Port Planning*”.

¹⁰ According to the interview with fishermen in the first project site survey.

¹¹ According to the interview with the consultant.

¹² Refer to the preparatory survey report, p1-4 “Figure 1-1-1(3) Basic Project Concept” and p.2-31

Table 5: Number of fishing vessels registered and used at the fishing port

Year	Target Landing Vessel	Canoe		Inshore vessels			Trawler		
		Registered	Including non-registered	Registered	Including non-registered			Registered	Including non-registered
			High season		High season	Low season	Average		High season
2014	25	----	130	106	123	70	100	9	8
2021	44	----	More than 200	106	144	82	113*	4	N.A.
Change ratio	176%		153%	100%	117%			44%	----

(Source: 2014: Preparatory survey report p. 3-3 and p.3-36, 2021: Documents provided by executing agency and in interview responses)

Because it was difficult to obtain the number of inshore vessels for the low season (82), we calculated it by prorating the number of vessels and low season at the time of planning. The average number of vessels in the high season (144) and low season (82) is 113.

From Table 5, it is clear that the number of fishing vessels using SKFH has increased from the time of the ex-ante evaluation¹³. To achieve the target congestion rate of 100% or less, the number of landing vessels at the time of the ex-post evaluation must be 44 or less. Considering the average number of vessels at the time of the ex-ante evaluation was already 100, the originally established target value was not a realistic one.

On the other hand, regarding this project's objective, congestion has decreased with improved use of the quay, due to compliance with the zoning system, which was introduced by the Soft Component. The situation has improved. The zoning system is the method of operating the facility efficiently by dividing the facility/quay into sections, defining their use, and restricting non-intended use. For example, (1) only the landing fishing vessels use the landing quay, (2) fishing vessels wait offshore in the bay before landing and therefore do not occupy the landing quay, (3) after completing their landing, the fishing vessels quickly separate from the quay and rest at the mooring quay or offshore, and (4) fishing preparations will take place on the preparatory quay.

In the interviews with fishermen, all respondents stated that the waiting time until they started landing and the number of skirmishes resulting from trying to secure a quay for quick landing had decreased¹⁴. The waiting time decreased because (1) no fishing vessels occupied the quay other than those landing, so they could land as soon as space became available, and (2) the landing time decreased. Landing time decreased due to (1) increased unloading staff, (2) efficient landing because fishing nets left on the landing quay were removed, and (3) a decrease in the volume of the catch landed¹⁵.

¹³ It was said that SKFH's effective facility layout and easy access to cheap ice allows the fishing vessels whose fishing area is the western part of Ghana to gather SKFH, which is one of reasons that the number of fishing vessels has increased (according to the interview with SKFH's administration office).

¹⁴ According to the interview with fishermen in the first site survey.

¹⁵ The decrease in fish caught is attributed to the decrease in marine resources, which is an external condition in this

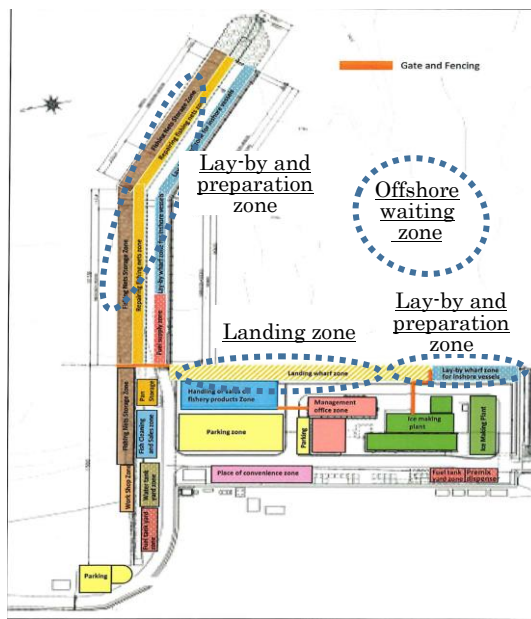


Figure 1: Area zoning

The fishing port management office staff constantly monitors the use of the quay and strictly controls the use of the quay for other purposes. At the SH meeting, the significance of compliance with zoning requirements was explained, and each SH representative called on members to comply with zoning expectations.

Although it cannot be judged from the numerical target of “congestion rate”, considering the above situation, the previously chaotic situation has improved, and landing has been carried out efficiently with the introduction of the operational effort for facility use, called “zoning system.”

(2) Fishing nets’ occupancy rate behind landing and preparation quay

At the time of the ex-ante evaluation, fishing nets occupied the landing quay and handling shed, hindering the rapid landing and the sale and transportation of the catch. At the time of the ex-post evaluation, some fishing nets might have temporarily been placed behind the preparation quay for repairs and drying, but besides those occasions, they have been cleaned on board¹⁶, and the fishing net’s occupancy rate at the landing quay and handling shed has greatly improved.

(3) Supply of ice to meet demand (annual average)

Fulfilment of the demand for ice at the time of the ex-post evaluation, based on the figures at the time of planning, was 85%. Table 6 shows the volume of ice production at the fishing port after the project’s completion.

With the new ice machine introduced with this project and the old ice machine, ice production has reached 30 tonnes per day (15 tonnes/day/unit x 2 units). However, the old ice machine has not operated at full capacity due to spare parts trouble (water leakage from the ice production can). The new ice machine has extended its operating hours since March 2020 to compensate for the old machine’s decreased output and to meet the strong demand for ice. The two machines produce 115% of the full production volume. The ice demand at the time of the ex-ante evaluation was 40.6 tonnes¹⁷, and the sufficiency rate based on the production volume at the

project. Please see the details in 3.2.2 Impact, 3.2.2.1 Impact appearance.

¹⁶ According to the interview with SKFH management office and fishermen.

¹⁷ The annual average reported in the preparatory survey report, p. 2-50.

time of the ex-post evaluation was 85% (= 34.60/40.6), achieving the target value of the operational indicator.

On the other hand, at the time of the ex-post evaluation, fishermen's demand for ice increased significantly from the time of the ex-ante evaluation, and the current ice production does not meet their demand. During the interview, the fishing port's management office replied that the sufficiency rate was 60%. The inshore fishermen (15 people), canoe fishermen (8 people), and trawler owners (1 person) replied "insufficient in ice production", and they reported the sufficiency rate as "50% or less¹⁸".

Table 6 : Ice production

(unit: tons)

	2018	2019	2020	2021
January	313.03	680.38	548.90	682.13
February	250.93	608.95	638.88	548.75
March	457.38	713.63	713.85	722.18
April	540.15	665.40	703.35	718.35
May	382.45	452.78	709.55	811.53
June	610.13	283.15	702.60	668.63
July	606.73	530.48	803.90	N.A.
August	429.03	457.75	807.03	N.A.
September	549.85	496.33	603.23	N.A.
October	705.83	497.30	774.55	N.A.
November	861.75	510.33	673.53	N.A.
December	694.73	512.08	626.63	N.A.
Total	5,972.93	6,125.375	8,305.975	4,151.55
Production volume/day*	27.15	27.84	34.61	34.60
Occupancy rate	0.0%	92.8%	115.4%	115.3%

(Source: Calculated by the external evaluator based on the data provided by the executing agency)

The number of working days per month is 20 days, and the full production of two ice machines is calculated as 30 tonnes. August 2018 and June 2019 were excluded from the calculation of the production volume per day because it was not in full operation due to the maintenance and repair of the ice machine.

The reason for the increasing demand for ice is that fishermen have come to recognize the benefits of using ice, such as maintaining the freshness of the catch, which increases the sales unit price. According to interviews with fishermen, fishmongers, and smoked product manufacturers, fresh products are sold and purchased at higher prices¹⁹. As a result, the consumption volume of ice by fishermen who have used ice since before the ex-ante evaluation has increased, and fishermen who did not use ice before have started to use ice. According to interviews with fishermen, the amount of ice loaded by one vessel has increased by about 70% for canoes and

¹⁸ According to the interview in the first site survey.

¹⁹ Same as above.

about 20% for inshore fishing vessels compared to the time of the ex-ante evaluation²⁰.

The fishing port's management office is aware that the current ice production volume at the port does not meet the growing demand for ice from fishermen. They try to repair the above-mentioned parts trouble at the old ice machine and the two ice machines are expected to be fully



Old ice-making can that leaks water (left) and new ice-making can that was purchased (right)

operational soon to increase the production volume. The repair of the ice cans will be completed in July 2021, and the two units are predicted to produce about 50 tonnes after September 2021²¹.

The shortage of ice is covered by purchasing from outside ice vendors. At the time, there was a rule that the ice produced in the fishing port should be sold out first, and outside vendors were allowed to enter the port to sell ice after that. The price of ice from outside ice vendors is 11 GHS/block, which is higher than that produced in SKFH (8 GHS/block). Fishermen said that the quality of ice (difficulty of melting ice) transported from around the Tema fishing port is good, but that of the vendors around SKFH melts too easily.

3.3.1.2 Qualitative Effects (Other Effects)

The following qualitative effects were recognized through the implementation of this project.

(1) Fair and equal facility operation

As part of strengthening the facility's operational capacity as a fishing port, the MSAC and SHs were introduced by Soft Component. Since the first MSAC meeting was held on December 6, 2017 (during the implementation of the Soft Component), the chief of the fishing port of Sekondi and other staff of the fishing port management office (civil engineer, security officer, finance officer, asset/environment officer, fire prevention and safety officers, etc.), fishermen's association representatives (canoes, inshore fishing vessels, trawlers), maritime police, navy, fuel seller representatives, food market officials, and other major fishing port facility users gathered to discuss issues related to fishing port management, countermeasures, operational policy, facility usage rules, and usage fees. These meetings are held periodically to make recommendations to the management office. In addition, the SH meetings are held regularly between representatives of each major stakeholder who uses the fishing port, such as fishermen, fuel dealers, small store

²⁰ According to the interview with fishermen in the first site survey (with inshore vessels) and second site survey (with canoes). The trawler said there is no change for the loading volume of ice. The trawler recognizes the utility of ice since before the ex-ante evaluation and loaded the necessary volume.

²¹ According to the interview with the acting manager of SKFH.

owners, fishmongers and ice vendors, and the fishing port management office²². The facility is operated fairly and equitably, involving these various parties related to the operation of the port.

(2) Restoration of function for the landing, preparation, and mooring quays

The functions of the landing and preparation quays are considered to have been restored by the thorough dissemination and practice of zoning introduced through the Soft Component (see 3.3.1.1 Quantitative effect (1) Average congestion rate of the landing and preparation quay).

The returning fishing vessel waits offshore in the bay or at the mooring quay, then, according to regulations, moves to the landing quay when it has space, and leaves from there when finished (the fishing vessels that have finished landing do not stay at the quay to rest or to land their catch at the mooring quay). In addition, the fishing nets are placed in the fishing net storage zone and are not left on the landing quay (see 3.3.1.1 Quantitative effect (2) Fishing net occupancy rate). Since so many fishing vessels use the fishing port facilities, they can use the quay for landing and preparation, but to have rest, only 25% of canoes and 20% of inshore fishing vessels can use the quay²³.

Based on these situations, the functions of the landing, preparation, and mooring quays are considered to have been restored.

(3) Improvement of the safety of fisheries-related work & reduction of the cross-contamination risk

The Safety Check Task Force (hereinafter Safety Check TF) of the fishing port management office patrols the port, preventing the use of quays in unintended ways, prohibiting the use of the fishing port for activities for which it was not intended (gambling, missionary activities, etc.), and monitoring for unnecessary objects (fishing nets, metal bowls) that need to be put in their designated areas. Although the fishing port facility is crowded with more fishermen than before, the fishermen and fishmongers recognize that the usage situation is more orderly than before²⁴, and safety can be considered to be better than before.

There is room for improvement in the risk of cross-contamination²⁵ because the fuel supply tank is not installed on the preparation quay and the fuel for the fishing vessels is transported from the fuel storage area behind the administration building. Fuel transportation methods include (1) plastic tanks, (2) drums on carts, and (3) rolling drums. Since there is a risk of oil leakage with (3), an effort has been made to reduce the risk of cross-contamination through instruction at SH meetings and by the Safety Check TF, but it has not been completely eliminated.

²² According to the second site survey.

²³ 2 out of 8 for canoes, 3 out of 15 for inshore vessels, and 1 out of 1 for trawlers answered the first site survey.

²⁴ According to the first site survey.

²⁵ In general, cross-contamination means that a highly contaminant pathogen comes into contact with a less contaminant substance. In this project, this means the risk of contamination spread by pathogens to catch and the catch storage facilities associated with refueling work.

(4) Qualitative improvement of fishery statistical data

Fishery statistical data is collected by MOFAD staff who board fishing vessels chosen for sampling. Previously, the fishing vessels landed at places other than the landing quay, so it took time for MOFAD staff to go to each place to collect data. At the time of the ex-post evaluation, since fishing vessels land their catch only at the landing quay, accessing fishing vessels had become easier, and collecting data had become more efficient. Moreover, because more accurate data collection is possible with more time, the quality of the statistical data has improved²⁶.

(5) Strengthening the supervision and guidance of the fishermen

As mentioned above, MSAC and SH meetings are held regularly, and the fishing port management office discusses facility operations with key stakeholders who use the fishing port, such as fishermen's representatives, fishmongers, ice vendors, fuel dealers, and small store owners. Their decisions are well announced by speakers, posters, and in SH meetings. In addition, the supervision and guidance have been strengthened, such as through patrolling by the Safety Check TF and collecting fines from violators.

(6) Logistics promotion

The access road between the Old Beach²⁷ and the fishing port facility has been improved, which has made it easier for people and goods to move. On the other hand, fishing nets placed on some areas along the access roads makes it difficult for them to move. The fishing port management office is aware of this problem and said that they will strengthen their guidance to fishermen²⁸.

3.3.2 Impacts

3.3.2.1 Intended Impacts

As a “quantitative effect” for “contribution to the stable supply of marine products” which was expected to be brought by this project, a “post-fishing damage rate²⁹” was set. However, this practice was not done by fishermen at SKFH in either the ex-ante or ex-post evaluation³⁰.

On the other hand, since maintaining the freshness of the catch is considered to contribute to a stable supply, the interviews were done with fishermen, fishmongers, and smoked product manufacturers about the improvement of the freshness of the catch, the changes in the sales unit prices of the catch, and the changes in their income. The results are as follows.

²⁶ The collected data includes the type of catch landed, the amount of catch landed, the number of fishing days, and the number of fishing vessels per day.

²⁷ The beach next to this project's fishing port facility; it is mainly used by canoes.

²⁸ According to the interview with the acting manager of SKFH.

²⁹ Ratio of disposal due to deterioration of the quality of the catch after fishing.

³⁰ According to the preparatory survey report and the interviews with fishermen.

Table 7: Results of interviews with fishing port users³¹

Question items	Change status	Number of respondents				
		Fishermen			Fish-mongers	Smoked product manufacturers
		Inshore vessel	Canoe	Trawler		
(1) Changes in the freshness of the catch	Improved	15	8	0	6	3
	Same	0	0	1	0	0
	Worsened	0	0	0	0	0
(2) Changes in the sales price of the catch per unit caused by the change in freshness	Improved	15	8	NA	6	3
	Same	0	0		0	0
	Worsened	0	0		0	0
(3) Increase in income of fishermen and fish mongers	Improved	6	4	1	2	
	Same	0	0	0	0	
	Worsened	9	4	0	4	

(Source: Interviews with fishermen, fishmongers, and smoked product manufacturers)

(1) Improvement in freshness of the catch

Fishermen (inshore fishing vessels and canoes), fishmongers, and smoked product manufacturers all answered that the freshness of the catch was “improved”. The reasons for the improvement are keeping the catch on ice while fishing, shortening the waiting and landing times, buying and selling the catch out of direct sunlight (buying and selling under handling shed with a roof or umbrella), and shortening the time it takes fishmongers to transport the catch to a vehicle after purchase.

(2) Changes in the sales unit prices of the catch due to its improved freshness

Fishermen (inshore fishing vessels, canoes), fishmongers, and smoked product manufacturers all said that fresher catch would sell or be bought at higher prices. Smoked product manufacturers, who sell smoked products around the cities of Kumasi, Accra, and Takoradi, cited quality (freshness) as one of the determinants of the price³².

(3) Income improvement of fishermen and fishmongers

Although the unit prices of the catch have increased, the income of fishermen and fishmongers has not improved. All responded that the sales’ unit price has increased, and 40% of the inshore fishermen, 50% of the canoe fishermen, 100% of the trawlers, and 33% of the fishmongers said that their income had increased. The reason their income has not increased is the decreased landing volumes of the catch. The transition of landing volumes at SKFH over the past 10 years is as follows. The fishermen recognize that the amount of landings has decreased

³¹ According to the first site survey (number of interviewees: 15 for inshore vessels, 8 for canoes, 1 for trawlers, 6 for fishmongers, and 3 for smoked product manufacturers).

³² As with other determinants, market price was mentioned.

compared to that of the year before the start of this project (construction) (2016). This tendency is not limited to SKFH, but the landing volume in Ghana as a whole has been declining since peaking in the 1990s (see Fig. 3). Even after the period covered by the graph, the landing volume, which was 364,000 tonnes in 2000, decreased to 229,000 tonnes in 2016, a drop of 37%³³. One of the reasons for the decrease in landings volume is “overfishing”. As a countermeasure to this situation, MOFAD has set a closed fishing period³⁴ and prohibits fishing of the target species during its spawning season. In addition, although fishing grounds are usually segregated according to the types of fishing vessels, in recent years, there have been illegal acts of trawlers penetrating the grounds of inshore fishing vessels and canoes to catch fish. Changes can also be seen in sea currents, water temperatures, the use of dynamite, and illegal fishing³⁵. All these have a great impact on the catch of inshore fishing vessels and canoes. MOFAD tries to revive marine resources by protecting fishery resources and implementing sustainable fisheries in response to this situation.

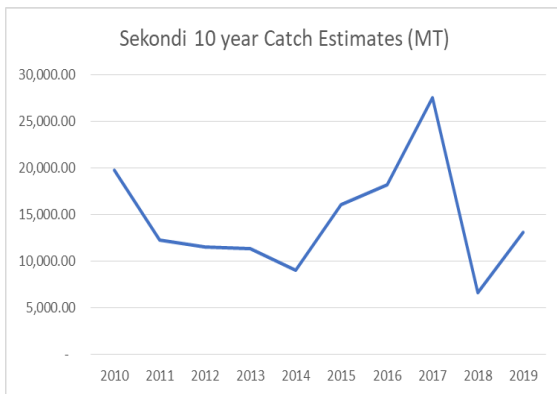


Figure 2: Transition of the catch volume at SKFH
(Source: Elaborated from the documents provided by MOFAD)

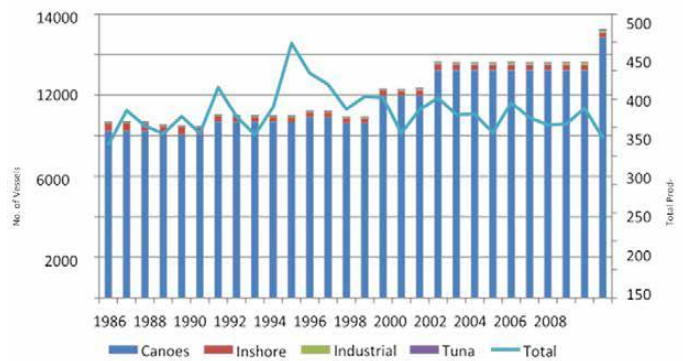


Figure 3: Transition of the number of fishing vessels and total volume of the catch in Ghana
(Source: “Fisheries Management Plan of Ghana,” A National Policy for the Management of the Marine Fisheries Sector, 2015-2019)

(4) Improvement of life

The increased income of the fishermen and fishmongers was used as follows³⁶. Both fishermen and fishmongers spent the most on family clothing, children’s education, and business expansions. Other spending included medical insurance, extended family³⁷ support, and parental

³³ “Empty Oceans: EU Policy and Illegal Fishing in Ghana” (October 2020).

³⁴ In 2021, the closed fishing period for inshore vessels and canoes was July and for trawlers was July and August.

³⁵ ADF, “Saiko Practices Are Killing Ghana’s Fishing Industry”, Oct. 21, 2020. The influence to the catch volume caused by the water pollution during the project period was not confirmed in this study.

³⁶ According to the interviews in the first and second site surveys. This is the results of answers by 10 respondents among the 23 fishermen interviewed (15 for inshore vessels and 8 for canoes), and 2 respondents among the 6 fishmongers, who said their income had increased, by the multiple-choice question.

³⁷ This is the form of families, centered on the nuclear family composed of parents and children, who reside with other nuclear families of children and brothers and sisters.

support.

The increase in income has made it possible not only to spend for the above purposes, but also to have extra money; improve relationships with family, friends, and extended family members; and feel calm.

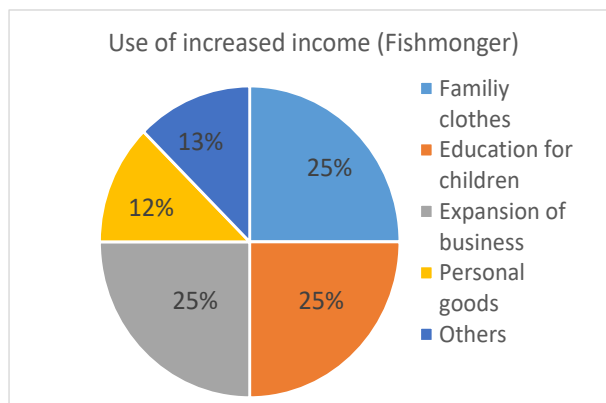
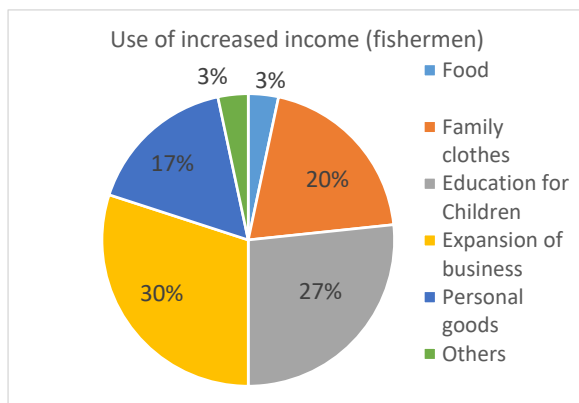


Figure 4: Use of increased income (fishermen)

Figure 5: Use of increased income (fishmongers)

3.3.2.2 Other Positive and Negative Impacts

(1) Impact on the natural environment³⁸

This project started by getting permission from the Environmental Protection Agency (EPA), and necessary measures were taken to manage air pollution, public health, waste, sewage, traffic congestion, and noise during the project implementation period. A report on monitoring the related environmental and social considerations was also submitted, and no major problems occurred in either case³⁹. Even at the time of the ex-post evaluation, no particular problems caused by this project were confirmed in the interviews with the executing agency, fishing port facility users, and local residents or from the inspection records regarding the cleaning status, as submitted to the executing agency by the contractor⁴⁰. Waste from fishing port facilities is collected daily and treated by a contracted cleaning company, and the toilets are also cleaned and treated by the company every day. As a result, no complaints about bad odours were heard. Regarding refuelling and waste oil leaks, the act of rolling drums to transport fuel from the refuelling tank behind the administration building is prohibited. The Safety Check TF patrols the inside of the port and strives to eliminate such risks.

On the other hand, users of SKFH who were interviewed pointed out that vinyl bags and oil floats were conspicuous in the bay and that the water quality near Old Beach was poor. Floating substances, such as vinyl bags and oil floats, gather due to a bay's physical structure, in which seawater prone to stay. The fishing port management office plans to strengthen its patrols for the

³⁸ This project was categorized as "B," subject to the JICA's "Guidelines for Environmental and Social Considerations" (2010)

³⁹ According to the interview with the consultant.

⁴⁰ According to answers to the questionnaire given by the fishing port management office and in the first site survey.

dumping of unnecessary materials, such as vinyl bags, into the bay⁴¹. In addition, the water quality near Old Beach is attributed to the domestic wastewater of Sekondi City residents and is not because of this project. In addition, any complaints from the residents were not heard, such as those regarding traffic congestion around the port due to vehicles entering or leaving the fishing port facility.

(2) Relocation of residents and acquisition of land

To obtain environmental approval from the EPA, the executing agency is responsible for dealing with negative social impacts such as the relocation of residents⁴². GPHA secured relocation destinations for the 15 small stores that were on the access road construction site so that their business could continue even after the relocation. At the time that the project was completed, they were once again relocated to the side of the road leading to the quay, inside the facility. At the time of the ex-post evaluation, their relocation destinations were secured in the food market next to the port facility⁴³. Initially, there were complaints that sales fell because the flow of people heading for SKFH did not necessarily pass through the food market⁴⁴.

In accordance with domestic law, no financial compensation was provided for the relocation, but the fishing port management office banned store operations on the connecting road next to the food market. That road allowed only vehicles to pass, and passers-by were required to pass through the food market, which was an action taken from the viewpoint of revitalizing the food market as a whole and securing the safety of the connecting road. As a result, sales that had once declined are now recovering⁴⁵.



Food market next to the connecting road and gate to prevent the passengers-by pass (Foreground is port facility and circle with dashed line is the gate to prevent the passengers-by flow)

Since this project was an expansion of an existing fishing port facility, there was no relocation of residents or acquisition of land.

(3) Other impacts

The MSAC and SH meetings introduced by the Soft Component have given ownership as a

⁴¹ According to the interview with the acting manager of the fishing port management office.

⁴² Preparatory survey report in Japanese version, p. 2-86. Relocation of small store was agreed by the letter submission by the executing agency to the consultant at the time of preparatory survey, stating that the compensation based on the Ghana's regulation would be done.

⁴³ The shops located in the food market were secured by the fishing port management office.

⁴⁴ According to the first site survey.

⁴⁵ According to the interview with the small store owners.

fishing port user to each related stakeholder and have contributed to efficient fishing port management. The fishermen and fishmongers who participated in the SH meetings commented that they can receive direct explanations from the fishing port management office about the facility's new operational rules and that they greatly appreciated having the opportunity to convey their opinions on those rules⁴⁶. Based on discussions with facility users about the management policies of the fishing port facility and the dissemination of management policies and rules to the parties concerned through these meetings, the users seem to feel ownership now that they also are involved in the facility's operation, and this seems to have increased the sense of compliance with the rules⁴⁷. In addition, the acting manager of SKFH was selected as one of 16 members of the committee on improving the fishing port's operation. He has shared the fishing port's operational method (such as zoning system and the participatory manner of facility management and users in the MSAC and SH meetings) introduced by the Soft Component⁴⁸.

Most of the fishmongers are women. Not all the fishmongers' income has increased due to the decline in landings, but some women who have increased their incomes commented that they have the right to decide how to use their increased incomes, and they use them effectively, such as for education for their children, expenses for their families, and re-investment for expanding their businesses. Moreover, the surplus time secured by the shortened waiting and landing times can now be used for doing housework and spending time with family and friends⁴⁹.

On the other hand, some comments asking for environmental improvements were heard from the fishermen regarding the dumped waste (mainly vinyl bags) flowing from the Old Beach and accumulating on the landing and mooring quays, with which the contracted cleaner has not been able to keep up.

As mentioned above regarding the quantitative effects (operation and effect indicators), (1) the congestion rate has not been achieved, (2) the fishing net occupancy rate and (3) ice sufficiency has been achieved, and other qualitative indicators generally have been achieved. Regarding the congestion rate, there has been doubt about the appropriateness of the initially set target value, but judging from the improvement of congestion at the landing brought about by the effort to improve the operational manner of the fishing port facility, it has been confirmed that the landing of the catch is done more quickly and efficiently since the introduction of zoning system. The chaotic situation seen at the time of the ex-ante evaluation is considered to have been improved.

As for the impact, the maintenance of the catch's freshness is attributable to this project, which has raised the sales prices. An increase in the sales unit price does not necessarily lead to an increase in income, due to external factors such as a decrease in landing volume. However, in

⁴⁶ According to the second site survey.

⁴⁷ According to the interview with the acting manager of SKFH.

⁴⁸ Same as above.

⁴⁹ According to the interview in the second site survey.

cases where income has increased, the reinvesting of that income for business expansions and spending of it for improved living conditions were confirmed, so qualitative effects can be seen. The sales of relocated stores declined initially, but now are recovering due to the effort to change the flow of people into the food market.

In light of the above, the effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ③)

3.4.1 Institutional/Organizational Aspects of Operation and Maintenance

While SKFH is under the control of the Takoradi commercial port supervised by GPHA, MOFAD is also involved in its operation because it is a fishing port (MOFAD mainly collects fishery-related statistical data). The number of people assigned to each department involved in the daily operation and maintenance of the fishing port facilities is as follows.

Table 8: Implementation system of SKFH

Department	Position	Number of staff		
		At plan	Defect inspection	Ex-post evaluation
Administration	Fishing harbour manager, secretary	3	3	3
Finance/Audit	Finance supervisor, Audit	2	2	2
Operation	Senior traffic officer	1	1	1
	Traffic officer	1	1	1
	Harbour operation supervisors	0	5	5
	Ice man	8	12	12
	Tally clerk	1	2	2
Engineering	Mechanical/Electrical engineering supervisor	2	2	1
	Mechanical engineering staff	3	3	1
	Electrical engineering staff	4	4	1
	Civil supervisor	0	1	1
	Civil engineering supervisor	0	1	1
Security	Security supervisor	3	2	1
	Fire and safety supervisor	9	3 (9)	10
	Security guard	6 (18)*	4 (12)	15
Total		43 (55)	46 (60)	55
Number of contract staff				
Entry fee and port dues collection			11	10
Cleaning works			5	6
Assistance to security works			6	6
Water sales			2	3
Total			24	25

*The number in parenthesis is the total number of people by shift system

(Source: Documents provided by JICA and answers to the questionnaire from the executing agency)

The number of people is the same as at the time of the ex-ante evaluation, but no shortage in the number of people assigned has been recognized. The number of the technical staff was reduced, and the number of people in charge of ice sales has increased. This is the result of support from the engineers at Takoradi commercial port as needed and the transferral of staff to meet the high ice demand.

In addition to establishing such a daily facility operation and maintenance system, the MSAC is held quarterly to examine facility operational policies, usage rules, and usage fees at SKFH. Moreover, representatives of fishing port users such as fishermen’s associations, fishmongers, ice vendors, water dealers, fuel dealers, small store owners, security personnel, etc., and the fishing port management office have regular meetings and discuss an agenda specific to each SH. In this way, an operation and maintenance system involving the users is in place.

3.4.2 Technical Aspects of Operation and Maintenance

The operation and maintenance of fishing port facilities and equipment are focused on daily inspections and do not require special skills. If a special problem arises which SKFH alone cannot handle, the Takoradi commercial port is consulted to dispatch technicians as necessary to handle it, and no major problems have occurred.

The fishing port management office recognizes the significance of the operational skills of the fishing port, such as the formulation and implementation of the fishing port operational plan and its zoning system. These skills are fully utilized and put into practice. Operational plans and detailed usage rules are made known to users at SH meetings, and that information is shared among the stakeholders and transmitted by speakers in the bay. Further, rule violators are instructed through the patrols of the Safety Check TF.

There is no technical training for maintenance, but manuals and guidance from superiors have been put in place.

3.4.3 Financial Aspects of Operation and Maintenance

The breakdown of the revenues, expenditures, and operating income related to the operation and maintenance of SKFH is as follows.

Table 9: Balance of revenues and expenditures at Sekondi Fishing Harbour

(Unit: GHS)

	2017	2018	2019	2020
Revenue	2,591,645	2,661,769	2,956,896	3,747,130
Expenditure	3,309,986	3,784,977	N.A.*	N.A.*
Balance	△718,342	△1,123,208		

(Source: Answers to the questionnaire provided by the executing agency)

* Expenditures are managed together with those of the Takoradi commercial port. In 2017-2018, the consultant collected detailed information at the project site because it was within the period before the end of the defect inspection.

On the other hand, at the time of the ex-post evaluation, it was difficult to obtain that information by remote survey through local consultant after the end of the project.

Table 10: Transition of operating income

(Unit: GHS)

	2012	2018	2019	2020
Ice sales	576,000	1,533,780	1,948,253	2,706,347
Entrance fee	36,569	372,867	338,655	358,637
Water sales	63,539	221,140	221,527	205,208
Landing fee	114,809	253,950	192,974	149,541
Others	151,173	280,032	255,487	327,397
Total	942,090	2,661,769	2,956,896	3,747,130

(Source: Answers provided by the executing agency)

Since the completion of this project, income has increased significantly. The revised price list for fishing port facility usage fees, which were raised in May 2019, was applied at the time of the ex-post evaluation. The most significant increases in income are from ice sales and entrance fees. The sales unit price of ice was increased in March 2019 (from 6 GHS/block to 8 GHS/block), and the production volume is also increasing to meet the high demand for ice. Moreover, the entrance fee is strictly collected to control entrance to and exit from the port. On the other hand, it was not possible to obtain information on the expenses of the SKFH exclusively, since the operating expenses of the harbour are managed together with those of the Takoradi commercial port. The SKFH requests the necessary expenses for the following month from the Takoradi commercial port every month, and the approved amount is provided. Although the SKFH management office does not handle its income and expenses, the deficit range might have been reduced because the operating expenses have not increased as much as the operating income has⁵⁰.

3.4.4 Status of Operation and Maintenance

(1) Facility status and utilization status

The facilities and equipment this project constructed and installed, such as quays, management offices (existing/expansion) and ice machine were being used quite often at the time of ex-post evaluation. As mentioned above, the quay is moored and landed efficiently by the zoning system. Further, the handling shed area is controlled for activities other than its intended purpose (such as gambling, missionary activities, etc.) to ensure the space for trading and handling of the catch is available. However, small goods sellers continue their business. Fishing nets and metal bowls have been cleaned up in the designated areas, and the handling shed area, which unintended stuff had previously occupied, has been improved. Regarding the ice production machine, the old ice machine's leaking ice cans will be replaced with new ones at the end of July

⁵⁰ According to the interview with the acting manager.

2021, and it is expected that both ice production machines, the old and new one, will operate at full capacity in the future.

The connecting road is also used according to its purposes, such as the stairs revetment being used for landing and ice loading, and the rubble revetment being used for fishing net storage and its repair.

The administration building is used for not only the fishing port management office but also the MSAC/SH meetings, meetings of the fishing port's users, and MOFAD statistical data collection work. The cesspit⁵¹, which was a concern at the time of the defect inspection, is being pumped more frequently because the number of users is larger than that of the equipment scale.

(2) Facility maintenance status

Machines, facilities, and buildings, including ice production machines, are inspected on a daily basis. The inspection's results are recorded in a prescribed format and the person in charge of the fishing port management office confirms them. The availability of spare parts required for maintenance is generally fine, but in some cases, it takes some time to acquire them. In particular, the response to the water leaks from the ice production machine's ice cans was delayed, which had a considerable influence on the ice production.

Contracted workers clean the port facility area. The port area is divided into 15 sections, and the cleaning status of each section is scored for management. Scoring records are submitted on a monthly basis and confirmed by GPHA trust and environment officer residing at SKFH. Those with less than 70 points are subject to guidance, and those with less than 50 points are affected by their payment.

Canoe fishermen have complained that the canoe landing area is "slippery." GPHA proposed a countermeasure to thoroughly clean that area during the defect inspection study. At the time of the ex-post evaluation, although cleaning was done to some extent, the landing area is still slippery. This could be due to how the surface of the stairs at the landing site is smooth and always submerged in seawater. Fishermen have suggested that the surface of the stairs should be a little rougher.

The facility's maintenance status is regularly reported to the Takoradi commercial port, and an on-site check is made when necessary as well as during the twice-weekly regular visits from the Takoradi commercial port to the SKFH.

(3) Fuel tank installation

The fuel tank had not been installed at the time of ex-post evaluation. Even if it had been installed, the planned installation location is difficult to construct or refuel for use because fishing

⁵¹ This is some kind of facility which treat the domestic wastewater. Here, it means tank which keeps the wastewater from toilet.

vessels always crowd that area. Therefore, another place has been examined for an alternative location, which is behind the mooring quay. By issuing a quick survey, the consensus of users at the MSAC and SH meetings was obtained. The survey determined that a new alternative location was appropriate. The harbourmaster of Takoradi commercial port instructed to conduct an additional survey; therefore, another resurvey will be conducted to reconsider the appropriate installation location.

(4) Prospect to alleviate congestion

Since August 2019, GPHA has been strengthening the landings sites along the Guinea coast (Axim, Dixcove, Elmina, Moree, Fete, Jamestown, and Tesi) and its endeavour will be completed in the first quarter of 2022⁵². However, considering there is no plan to install the ice production machine at these landings sites, it is necessary to confirm the situation in the future and to confirm to what extent that expanding these facilities will alleviate the congestion rate at SKFH.

(5) Lessons from a fire⁵³ on Old Beach

In November 2020, a fire broke out at Old Beach, due to the fishing vessels' fuel being ignited. To prevent this from happening in the future, SKFH has been strictly reminded how to handle fuel, such as handling fuel only in the designated place and prohibiting rolling the drums to carry them to the quay.

With the appropriate support from the Takoradi commercial port, the supervising entity, there have been no major problems in the institutional, technical and financial aspects of the fishing for the facility. The operation and maintenance status is generally good, and the sustainability is high because the new ice cans for ice production machine will be introduced and full operation will be expected in the future.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented to reduce the congestion at the fishing port and improve the freshness of the caught fish by extending the mooring quay and improving related facilities, thereby contributing to the stable supply of marine products at SKFH.

This is a project for infrastructure development related to the fishing industry, an important industry in Ghana, which is consistent with the Government of Ghana's development policy. The increasing number of fishing vessels and efficient fishing port management are urgent issues, and development needs are high. These issues are also highly relevant as with Japan's policy of supporting economic infrastructure, therefore relevance is high. The actual project period

⁵² This is according to the interview with GPHA and acting manager at SKFH.

⁵³ This fire happened next to this fishing port facility, and there was no damage to this grant-aided facility.

exceeded the planned duration because re-bidding was necessary due to the spread of Ebola haemorrhagic fever, but the project cost was within the revised E/N amount, so efficiency is fair. One of the initially set target indicators was not appropriate, but the fishing port facilities' congestions have been improved, which is the project's purpose, by improving the operation of the fishing port's facilities. The positive impacts also were recognized, such as maintaining the freshness of the catch, which helps increase its unit price. Due to the influence of external conditions such as fewer fishery resources, the volume of fish landings has decreased. Therefore, not all, but some fishermen and fishmongers have increased their income, so effectiveness and impact are high. No major problems have not observed in the institutional, financial, or technical aspects required for the maintenance of the SKFH. The operation and maintenance status is generally good, and this project's effects are expected to continue, so sustainability is high.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

- SKFH takes care of operation and maintenance of the fishing port facility with a good sense of ownership and responsibility. The constraints in the physical facilities for its operation and maintenance are compensated by operation method for the fishing port which was provided by Soft Component (such as a zoning system and participatory facility management involving users (MSAC and SH meetings)). That experience is then shared with other fishing ports⁵⁴. It is desirable to continue to share the experience at the current SKFH because it strengthens the operational capacity of all the fishing ports in Ghana. It is expected that fishing vessels landing at SKFH will be diversified due to the increasing number of fishing ports that allow efficient landing. This will occur with the cooperation of the SKFH and if their operation management is thoroughly implemented at other fishing ports.
- To improve the safety in SKFH, it is desirable to proceed with the survey on the fuel tank's location and to prepare the refuelling facility to be installed, thus ensuring the fuel can be refuelled directly on the quay as soon as possible.

4.2.2 Recommendations to JICA

- Monitor the implementation status of the recommendations to the executing agency.

4.3 Lessons Learned

The accurate needs comprehension from social and economic aspects for the improvement of fishing port operation method during the preparatory study, and the appropriate staff

⁵⁴ The acting manager visits the Axim fishing port and provides them with technical guidance, and SKFH receives the technical visit from other fishing ports.

assignments during its technical assistance stage.

This project is a good example of the effective use of constructed facilities and procured equipment in the crowded fishing port with an increased number of vessels, due to the facility's easy use. The specific effective use of facilities includes (1) MASC and SH meetings that enable formulating the operation policies of facilities and equipment by a participatory manner with users and related parties, which allows for enforcing the compliance of these policies, and (2) making fishing vessels, whose number is beyond the physical capacity of facilities, put into practice the zoning, under the crowded fishing port, and trying to operate the facilities as efficiently as possible. These two points were attained through the Soft Component. This effective Soft Component was achieved because the accurate analysis was conducted from both the physical and technical aspects regarding the causes of the target facility's problems, the accurate comprehension of the executing agency's capacity on the facility's operation, and their needs for the target facility. In addition, the executing agency recognized the need to improve the facility operation manner in addition to the physical repairs the facility needed as well as its equipment related to its location condition. Further, the executing agency recognized the need to assign the appropriate personnel, such as an ex-fishing port manager, as a counterpart of Soft Component, and personnel would be instructed to master firmly the content of the Soft Component⁵⁵. It was confirmed that in order for the facilities and equipment to be effectively utilized in the fishing port facility's projects, not only appropriate facilities and equipment procurement in terms of physical aspect, but also appropriate personnel assignment and implementation of useful Soft Component for the target executing agency (in this project, it was technical assistance on the facility's operation method, such as zoning system and improvement of ownership involving users to the facility operation management) would be significant so that the effects would appear, even though that technical assistant can be done in a short period. It is important to plan the project so that both the physical aspects and Soft Component can produce synergistic effects.

Moreover, considering the indicator setting was not appropriate in this project, the evaluation judgment was made by measuring the achievement of the project objective while confirming the achievement level of the initial indicator. At the time of project planning, it is important to set appropriate indicators and target values. With that in mind, if an appropriate indicator is not set and the initially set indicator cannot be used to extract an appropriate evaluation judgment, it is desirable to create an alternative indicator and make an appropriate judgment at the time of ex-post evaluation.

⁵⁵ This is according to the interview with consultant.