

The Republic of Mozambique

FY2021 Ex-Post Evaluation Report of

Japanese Grant Aid Project

“Maputo Fish Market Construction Project”

External Evaluator: Hisae Takahashi, Octavia Japan, Co., Ltd.

## **0. Summary**

The Project was implemented with the aim to increase the amount of the fishery products handled in accordance with the standard of market operation guidelines and to expand the capacity of the facilities in the public fish market in Maputo City, thereby contributing to the improvement of the environment for fish marketing and increased income for artisanal fishermen, retailers, etc. Its objective is in line with the development policy in Mozambique at the times of planning and the ex-post evaluation, which has indicated the importance of promoting artisanal fishery as a means of contributing to poverty reduction, and development needs to improve facilities and equipment at fish markets. The Project is also consistent with Japan’s Assistant Policy, projects and support by the Japan International Cooperation Agency (JICA) and other agencies, and Goals 1 and 9 of the Sustainable Development Goals (SDGs). Therefore, its relevance and coherence are high. While the outputs were mostly as planned, the project costs exceeded the plan, and the project period significantly exceeded the plan. Therefore, efficiency of the Project is moderately low. The development of facilities and equipment under the Project has significantly improved the hygienic and marketing environment of fishery products at Maputo Fish Market. On the other hand, the amount of fishery products handled at the market is significantly below the target due to a combination of factors, including high selling prices compared to neighboring markets, its location, and others. Therefore, the contribution to increased income of artisanal fishermen and retailers is also likely to have been limited. Accurate data on the amount of ice that can be produced and purchased, an operation and effect indicator, could not be ascertained, and the number of cars parked legally by market users was also below the target. In light of the above, this project has achieved its objectives only to a certain extent. Therefore, effectiveness and impacts of the project are moderately low. Some minor issues have been observed in the technical, financial, and the current status of operation and maintenance (O&M) of this Project. They are not expected to be improved/resolved. Therefore, sustainability of the project effects is moderately low.

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

## 1. Project Description



Project Location (source: JICA Website)



Inside of Maputo Fish Market

### 1.1 Background

The Republic of Mozambique (Mozambique) was experiencing economic growth rates of approximately 6-8% at the time of the Project planning. In Mozambique, approximately 280,000 people were engaged in the fisheries sector, mainly in artisanal fisheries. Reflecting the doubling of production in the artisanal fishery sector, the national fishery volume, which had been around 80,000 tons per year in the mid-2000s, had increased to the 160,000 ton level by 2010. In addition, artisanal fisheries development was key to the development of the fisheries industry in the country, as approximately 80% of the annual catch was caught by artisanal fishermen. Meanwhile, basic infrastructure, including fish markets, was not sufficient in the country, and significant losses after catches were the issues. Moreover, while there were four fish markets in Maputo City, none of them complied with *the Guidelines for Operation & Management of Maputo Public Markets 2008* (the Guidelines), which stipulate hygiene management in markets, and there were also hygiene issues. Therefore, improving the livelihoods of those involved in artisanal fisheries by improving the marketing of fishery products through the development of basic infrastructure was an urgent issue. Under these circumstances, the Government of Mozambique requested the Government of Japan for a grant aid project for the development of a public fish market to replace the A Ruta Continua market in Maputo City, which had problems with the market environment, with the aim of promoting the fisheries industry by promoting hygienic fishery marketing activities, and this Project was implemented.

### 1.2 Project Outline

The objective of this Project is to increase the amount of the fishery products handled in accordance with the standard of market operation guidelines and to expand the capacity of facilities in the public fish market of Maputo City, thereby contributing to the improvement of the environment for fish marketing and increased income for artisanal fishermen, retailers, etc.

Grant Limit / Actual Grant Amount	918 million yen / 917 million yen
Exchange of Notes Date / Grant Agreement Date	February 2012 / February 2012
Executing Agencies	Ministry of Fisheries / Maputo Municipality
Project Completion	December 2015
Target Area	Maputo City
Main Contractors	Konoike Construction Co., Ltd. / Tokura Corporation (JV)
Main Consultant	OAFIC Co., Ltd.
Preparatory Survey I Preparatory Survey II	January 2010 Outline Design Study: March - April 2011 Explanation of the Outline Design: September - October 2011
Related Projects	[Grant Aid] - The Project for Rehabilitation of Maputo Fishing Port Phase 1 (1998) - The Project for Rehabilitation of Maputo Fishing Port Phase 2 (1999) [Skillshare International (Irish NGO)] - Support for the capacity enhancement of the staff in National Institute for the Development of Small-Scale Fisheries, establishment of the council for the fishing community, and procurement of the vehicles and training fishing boats (2007-2010) [INFOSA (Dutch NGO)] - Technical assistance related to aquaculture distribution, research activities related to the artisanal fishery (2007-2010) [Iceland Aid Agency] - Support for the development of fish inspection systems, and funding to the Fisheries Development Fund for low-interest loans (2006-2007)

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Hisae Takahashi, Octavia Japan, Co., Ltd.

### 2.2 Duration of Evaluation Study

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

Duration of the Study: November 2021 – February 2023

Duration of the Field Study: May 3 - May 28 and August 24 – September 3, 2022

### 3. Results of the Evaluation (Overall Rating: C<sup>1</sup>)

#### 3.1 Relevance/Coherence (Rating: ③<sup>2</sup>)

##### 3.1.1 Relevance (Rating: ③)

###### 3.1.1.1 Consistency with the Development Plan of Mozambique

At the time of the project planning, the *Poverty Reduction Strategy Paper (PARPA II) (2006-2009)* aimed at poverty reduction through broad-based economic growth, and the promotion of poor artisanal fishermen was considered part of this effort. In the fisheries sector, the *Strategic Plan for Artisanal Fisheries Development (the Plano Estratégico para o Sector da Pesca Artesanal (PESPA)) (2007-2011)*, which aimed to improve the livelihoods of artisanal fishery communities, was formulated. The plan aimed to promote and increase the profitability of fishing activities using traditional fishing tools and methods, develop fisheries adapted to the fishing grounds in high seas fisheries, and expand marketing networks of fishery products from the perspective of both subsistence and commercial activities of artisanal fishers, and indicated the development of retail markets for fisheries products as a related measure.

*The National Five-Year Development Program (2020-2024) (2020)* at the time of the ex-post evaluation indicates a more diverse and competitive economy as its goal and aims to fight poverty and contribute to improving the quality of life of the population through increased employment opportunities for young people. With regard to fisheries, it indicates the strengthening of artisanal fisheries and specifies sustainable artisanal fisheries development as a priority. The PESPA's successor plan, *PESPA II (2019-2025) (2018)*, also aims to contribute to the improvement of environmental sustainability, food and nutrition security, and the country's socio-economic development, and addresses the sustainable development and promotion of artisanal fisheries, including support for infrastructure and equipment development as a strategic pillar.

As mentioned above, at both the times of planning and ex-post evaluation, the objective of the Project indicates the importance of the artisanal fishing and is in line with the Government's development plan for the country, which refers to the importance of the need to develop markets.

###### 3.1.1.2 Consistency with the Development Needs of Mozambique

At the time of the project planning, the national fisheries production in Mozambique had doubled, with artisanal fishermen catching more than 80% of them (2010) (see Table 1); thus, artisanal fishery development was key to the development of the fisheries industry. Furthermore, the A Luta Continua Market, which mainly handled fish landed by artisanal fishermen, was the sole public market in Maputo City that specialized in handling fishery products. However, since it did not comply with the Guidelines<sup>3</sup> on market hygiene management, etc., hygiene was

<sup>1</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>2</sup> ④: Very High, ③: High, ②: Moderately Low, ①: Low

<sup>3</sup> The Guidelines classify markets into Group A (the market infrastructures are well developed), Group B (the market infrastructures are developed but not yet enough,) and Group C (the market infrastructures are not yet developed),

considered a major issue.

Table 1 Trends in Fisheries Production in Mozambique

	2010	2017	2018	2019	2020	2021
Commercial fisheries	23,474	23,906	38,831	36,745	17,234	17,740
Artisanal fisheries	139,891	314,740	355,187	380,330	413,023	425,655
Aquaculture fisheries	667	1,835	3,245	3,770	3,312	4,109
Total	164,032	340,481	397,263	420,845	433,569	447,504

(Unit: tons)

Source: Preparatory survey report, questionnaire answers

Fisheries production in Mozambique has significantly increased from the 160,000-ton level at the time of planning to the 440,000-ton level at the time of the ex-post evaluation. The fisheries products supplied by artisanal fisheries account for about 90% of the total at the time of the ex-post evaluation. Therefore the artisanal fishery development is essential to promote the fishing industry, just as it was at the time of planning. Maputo Fish Market, which was relocated from the A Luta Continua Market and constructed under the Project, continues to have high needs for facilities and equipment, as it is the only public market in Maputo City that specializes in fisheries products and operates in compliance with the Guidelines. In addition, as fisheries production in Maputo City has also increased by about 1.5 times since the time of planning,<sup>4</sup> the selection of the Maputo Fish Market as the target of the Project was appropriate.

As described above, at the times of planning and ex-post evaluation, the development needs for the facility and equipment of the fish market were high, and the Project was consistent with these needs.

### 3.1.1.3 Appropriateness of the Project Plan and Approach

Although the construction of some facilities was borne by the Mozambican side, the outputs of the Project were mostly as planned. Though “the amount of the fishery products handled in the Market,” which was set as an operation and effect indicator, is significantly below the target, it can be considered that this is not due to the logic or the project plan or approach but to complex factors, such as expensive sales prices at Maputo Fish Market, the location of the market, and others as described below in “3.3.1.1 Quantitative Effects (Operation and Effect Indicators).” Therefore, it can be concluded that there are no problems with the project plan, design, logic, and approach.

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depending on the grade of development of the market infrastructure. A Luta Continua market was categorized in Group C.

<sup>4</sup> The fisheries production around the Maputo area increased from 8,249 tons in 2010 to 12,718 tons in 2021. (Source: Preparatory survey report, questionnaire answers)

### 3.1.2 Coherence (Rating: ②)

#### 3.1.2.1 Consistency with Japan's ODA Policy

At the time of project planning, Japan identified “revitalization of rural economies” as a priority area and particularly placed emphasis on supporting corridor development to reduce poverty through industrial vitalization. The Project was positioned as the core project of the “Programme for Maputo Corridor Development and Improvement” and was implemented with the aim of contributing to the improvement of the fisheries product marketing environment and the livelihoods of artisanal fishermen in the country through the development of a public fish market in Maputo City. The objective was in line with Japan's Country Development Cooperation Policy for Mozambique, which took poverty reduction through industrial vitalization as a key issue.

#### 3.1.2.2 Internal Coherence

The grant aid “The Project for Rehabilitation of Maputo Fishing Port” (1998, 1999) supported the rehabilitation of the largest fishing port in the south of the country, and it was noted at the time of planning that some fisheries products landed at the port would also be handled at Maputo Fish Market. At the time of the ex-post evaluation, it was confirmed through interviews at Maputo Fish Market and Maputo Fishing Port that some of the fishery products landed at Maputo Fishing Port are actually handled at Maputo Fish Market. Cooperation was also identified, with Maputo Fishing Port supplying ice during periods when the ice-making machine was not functioning at the Market<sup>5</sup> (see 3.4 Sustainability), indicating a certain degree of coordination between the two projects.

#### 3.1.2.3 External Coherence

At the time of planning, no complementarity, collaboration, or coordination with projects implemented by other Japanese agencies, or other developing cooperation agencies, including other donors, or support provided by the private sector was identified. According to the executing agency, however, although no specific outcomes have been set through collaboration and coordination, Maputo Fish Market was taken up by the Artisanal Fisheries Promotion Project supported by the International Fund for Agricultural Development (IFAD) as a reference for the design of a market with hygienic facilities and restaurants attached to the fish market, and the Market was utilized as a place where technical staff from different provinces exchanged experiences in fish handling and preservation.<sup>6</sup> In addition, the Project, which aimed to improve the livelihoods of artisanal fishermen, retailers, and others through the development of public fish markets, is consistent with “Goal 1: No poverty (end poverty in all its forms everywhere)” and “Goal 9: Industries, innovation and infrastructure (build resilient infrastructure, promote

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<sup>5</sup> Source: Questionnaire answers

<sup>6</sup> Source: Questionnaire answers

sustainable industrialization and foster innovation)” from the perspective of the international framework.

As described above, the implementation of the Project is in line with Mozambique’s development policy and development needs, and there are no issues with the Project plan and approach. It was also confirmed that the Project is consistent with Japan’s assistance policy, JICA’s grant aid project, and support from other cooperation agencies, as well as with international frameworks. Therefore, its relevance and coherence are high.

### 3.2 Efficiency (Rating: ②)

#### 3.2.1 Project Outputs

This Project was designed to implement the construction of Maputo Fish Market’s facilities, civil works on the shore protection, procurement of equipment, such as an ice-making machine, consulting services, and guidance on the operation of the market and maintenance of the ice-making facility (soft component). Table 2 shows the planned and actual outputs of this Project understood at the time of ex-post evaluation.

Table 2 Planned and Actual Outputs

Facilities		Plan	Actual
Facility construction	Retail building	1,572m <sup>2</sup> Retail booth, stock room for chest freezers, administration office, technical staff room, reception area, toilets in office, machine room, flake-type ice-making machine, chilled rooms	1,619m <sup>2</sup> As planned
	Power substation	60m <sup>2</sup> Electricity receiving facilities, emergency generator	As planned
	Public toilet building	169m <sup>2</sup> Toilets for customers and staff, ticket collection area	Changed to be cover by the Mozambican side
	Garbage storage building	16m <sup>2</sup> Storage for garbage from raw material, place for garbage container, washing place	As planned
	Food court	494m <sup>2</sup>	Changed to be cover by the Mozambican side
	Elevated water tank	26m <sup>2</sup> Pump room, water tank	As planned
	Sewerage disposal facilities	11m <sup>2</sup> Aeration system tank for sewerage disposal, underground infiltration facilities for treated water	As planned
	Outdoor facilities	Storm drain (U shape 334 m), storm drain (box culvert 70 m), pavement (2,282 m <sup>2</sup> ), water reservoir	Storm drain (U shape), pavement (Changed to be cover by the Mozambican side); Storm drain (box culvert), water reservoir (as planned)

Shore protection	Total length 210 m, apron, recurved parapet, storm water outlet	As planned
Equipment	Insulated fish box: 40 boxes, Cart: 5 units, processing table for fresh fish: 10 units, platform scales and unit scales: 2 each	Insulated fish box: 40 boxes, Cart: 2 units, processing table for fresh fish: as planned, platform scale and unit scale: 1 each
Consulting services, Soft component	Detailed design, construction supervision, assistance in preparing market operation manuals, guidance on maintenance and management of ice-making facilities	As planned

Source: Preparatory survey report, questionnaire answers

As shown in Table 2, while the outputs were mostly as planned, changes occurred in the expansion of retail building space of Maputo Fish Market, and exclusion of the public toilets, food courts, storm drain and pavement from the Japanese contribution (changed to be cover by the Mozambican side), and reduction in the number of piece of equipment. The reasons for the changes are as follows.

#### Expansion of the retail building area

In accordance with the Guidelines of Maputo City on hygiene management, the retail building area was expanded by changing the location of the water taps and adding toilets and changing rooms. Maputo Fish Market facility was designed in accordance with the Guidelines formulated by Maputo City, but the Guidelines were mainly concerned with planning theory and did not contain specific figures for the facility design. Therefore, in the preparatory survey in this Project, existing facilities and examples from Japan were cited in the design of this facility. On the other hand, at that time, Maputo City was updating the Guidelines, referring to the preparatory survey of the Project. The detailed design was revised due to the impact of the updated Guidelines of Maputo City.<sup>7</sup> Design changes related to the expansion of the retail building affected the delay in the Project period, but this change was unavoidable for hygiene management purposes.

#### Change of the party responsible for some facilities from the Japanese side to the Mozambican side, reduction in the number of piece of equipment

The tender for the public toilets, food court, storm drain, and pavement failed due to exchange rate fluctuations and bidding prices exceeding the planned prices; thus, the Mozambican side bore the cost of the above facilities to keep the project cost on the Japanese side within the plan for the re-tender. The numbers of cold storage boxes, carts, and scales were also reduced for the same reason.<sup>8</sup> There is no impact on the Project cost or the generating effects due to these changes.

For the soft components, the following targets and outcomes were set, and training for the

<sup>7</sup> Source: Documents provided by JICA

<sup>8</sup> Documents provided by JICA, questionnaire answers, interview with the Project consultant



operation and management of the market and maintenance of the ice-making facility.<sup>9</sup>

Objective: To smoothly initiate O&M functions of the concerned facilities of the fish market.

Outcome 1: Establishment of basic rules for O&M for the concerned facilities of the fish market.

Outcome 2: Improvement of collection and accounting system for fees for the use of the concerned facilities and equipment of the fish market.

Outcome 3: Establishment of maintenance and management plans for the ice-making machine, chilled rooms, emergency generator, etc.

Activities associated with each outcome were implemented as planned; the draft of the basic rules were prepared through the activities (Outcome 1); some of the collection systems were changed (Outcome 2); and the maintenance and management plans were prepared (Outcome 3).<sup>10</sup> According to the training participants, the content and duration of the training were mostly appropriate. However, it was noted that the person in charge of maintaining the equipment at Maputo Fish Market was an electrician and had little experience or knowledge of maintaining ice-making machine and chilled rooms; therefore, more extensive training specific to these facilities was needed.

In addition to the cooperation items from the Japanese side, the Mozambican side was also expected to handle the following items in this Project:

- 1) Acquisition of environmental license
- 2) Acquisition of land for construction
- 3) Measures responding to smooth progress of the Project, including exemption of taxes
- 4) Construction works for water supply pipe installation, electric supply, etc.
- 5) Smooth relocation of the Market

According to the executing agency and Project consultant, all responsibilities on the Mozambican side were carried out, though tax exemption took longer time than planned.

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

This Project was planned to cost 1,289 million yen, consisting of 918 million yen on the Japanese side and roughly 371 million yen on the Mozambican side. Although details of the cost covered by the Mozambican side was not available,<sup>11</sup> the amount borne by the Japanese side was 917 million yen; thus, the project cost was within the plan. However, if the amount of

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<sup>9</sup> Training was conducted from October to December 2015 for staff at Maputo Fish Market, Maputo Municipality, and the Organization for Fisheries and Aquaculture Development.

<sup>10</sup> Source: Documents provided by JICA, questionnaire answers

<sup>11</sup> As the items to be covered were implemented as planned, it is considered that the planned cost was spent as planned.

approximately 86 million yen<sup>12</sup> for the public toilets and food court, which were not covered by the Japanese side, is excluded from the planned project cost, the revised planned amount is approximately 832 million yen, which slightly exceeded the planned amount (110% of the original plan).

### 3.2.2.2 Project Period

The project period<sup>13</sup> was planned to be 19 months, but the Project lasted 45 months, from April 2012 to December 2015, which significantly exceeded the plan (237% of the plan). The main reasons were the delay in obtaining approval for the Environmental Impact Assessment (EIA)<sup>14</sup> and the subsequent unsuccessful bidding. In Mozambique, it is not permitted to start construction work without EIA approval, and this led to significant delays in the Project. In addition, as mentioned, the time taken to redesign the retail building area also led to delays, but the process thereafter proceeded smoothly.

Table 3 Planned and Actual Project Period by Item

	Plan	Actual
G/A	—	September 2014
Detailed design	2.5 months	(Detailed design including the tender period) April 2012 – May 2014
Tender and contract with construction companies	3 months	
Civil work and procurement period	15 months	(Civil works) July 2014 – December 2015 (Equipment procurement) May – December 2015 (Soft component) September – November 2015
Project period	19 months <sup>Note 1</sup>	45 months

Source: Preparatory survey report, documents provided by JICA and questionnaire

Note 1: Since some of the work processes would overlap, the overall project period was planned to be 19 months from the month of the consultant contract.

In light of the above, the project cost slightly exceeded the plan and the Project period significantly exceeded the plan. Therefore, efficiency of the Project is moderately low.

<sup>12</sup> The documents at the time of planning were reviewed, however, it was difficult to calculate the breakdown of the amounts for the storm drain and pavement sections as the details could not be confirmed.

<sup>13</sup> The Project period is defined as the period from the month in which the contract with consultant is made to the month in which the construction works are completed.

<sup>14</sup> Initially, the land where Maputo Fish Market was built was also considered for the construction of a hotel, and the coordination also took longer time than expected. In the meantime, the process of obtaining EIA approval was also suspended.

### 3.3 Effectiveness and Impacts<sup>15</sup> (Rating: ②)

#### 3.3.1 Effectiveness

##### 3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

At the time of the project planning, “Amount of the fishery products handled in the Market in accordance with the Guidelines,” “Amount of ice that can be purchased in the Market,” “Number of retailers who can handle the products in the appropriate business environment,” and “Number of cars parked legally in the Market” were set as the operation and effect indicators. The actual values for these indicators after the project completion are shown in Table 4.

Table 4 Operation and Effect Indicators of This Project

	Baseline value	Target value	Actual value			
	2011	2015	2018	2019	2020	2021
		2 years after completion	Completion Year	1 year after completion	2 years after completion	3 years after completion
Amount of the fishery products handled in accordance with the Guidelines in the Market (tons/year)	0	Approx. 350 <sup>Note 1</sup>	126	116	122	121
Amount of ice that can be purchased in the Market (tons/day)	0	Approx. 2	N.A.	N.A.	N.A.	0.07 (2.7) <sup>Note 2</sup>
Number of retailers who can handle the products in the appropriate business environment (persons)	0	Approx. 100	100	100	100	100
Number of cars parked legally in the Market (cars/day)	0	Approx. 38	9	N.A.	6	8

Source: Documents provided by JICA, documents provided by the executing agency, documents provided by the parking management company, and interview with the retailers.

Note 1: The target values were estimated in a preparatory survey based on the sales volume of the old market.

Note 2: An average of 0.07 tons/day was reported from Maputo Fish Market, and an average of 0.09 tons/day was reported from Maputo Municipality. On the other hand, since it was apparent during the site survey that retailers were purchasing and using much more ice than the above mentioned amount, the local assistant interviewed the retailers (90 out of 100 retailers in total; the remaining 10 were either absent or not using ice at the time of the interview) about their average daily ice purchases, and estimates were calculated based on the results, which were approximately 2.7 tons/day.

Of the operation and effect indicators set, “the number of retailers who can handle products in the appropriate business environment” has been maintained at the target value since the Project was completed. Maputo Fish Market is equipped with facilities that meet the key principles specified in the Guidelines and has installed 100 booths for retailers. After the completion of the Project, all booths have been contracted with retailers, who are now selling their products. On the other hand, “the amount of fishery products handled in accordance with the Guidelines in the

<sup>15</sup> When providing the sub-rating, Effectiveness and Impacts are to be considered together.

Market” was limited to about 35% of the target value. In the interviews with retailers, all respondents also stated that their sales had decreased after the relocation.<sup>16</sup> Behind this, a combination of factors is considered to have had an impact, including the higher sales price of fishery products at the Market compared to prices at neighboring markets, a decrease in the amount of fishery products brought in by the retailers due to changes in the ways fishery products are preserved,<sup>17</sup> the location and convenience of the market,<sup>18</sup> the spread of COVID-19 after 2020, and others. The higher sales price of fishery products reflects the high quality and freshness of the fishery products handled at the Market. In the old market, it was common for unsold fishery products to be frozen and sold on another day, and fishery products which are inexpensive but not fresh were also sold. This practice continues at present in the markets apart from Maputo Fish Market, leading to a tendency whereby price is valued more than freshness.<sup>19</sup> Therefore, it is also effective to promote understanding of the freshness of fishery products, etc. through the promotion activities for general consumers in order to encourage them to choose fresh fishery products despite their high price.

Accurate information on “the amount of ice that can be purchased in the Market”<sup>20</sup> was not available. As the record obtained from Maputo Fish Market was 0.07 tons per day on average, which was well below the target (2 tons), it was estimated by using figures obtained through the interviews with retailers in this evaluation survey, which was approximately 2.7 tons per day on average. Regarding the gap between the submitted data and the interview results, Maputo Municipality responded that the data submitted by them was considerably less than they had felt, and that it is possible that Maputo Fish Market may not have recorded the information accurately. On the other hand, the installed ice-making machine has the capacity to produce approximately 2 tons of ice per day, and the consistency of the amount of ice that can be purchased in the market, obtained from interviews with retailers, has not been confirmed. It was also pointed out that some retailers may be bringing in ice cubes from outside and using them, as the flake ice produced by the ice-making machine in the Market easily melts and is more expensive. As accurate data was not available as described above, it was deemed difficult to analyze the achievement level of this indicator.

“The number of cars parked legally in the Market” was also below the target. In the old market, A Luta Continua Market, illegal parking by market users outside the market blocked traffic,

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<sup>16</sup> As the amount of fishery products handled was significantly below the target, the increases or decreases were confirmed with the retailers at the Market to verify the reliability of the data.

<sup>17</sup> Maputo Fish Markets do not permit marketing of frozen fishery products, as it is not ideal from the perspective of maintaining freshness to freeze unsold fishery products and sell them the next day, or to bring in frozen fishery products and repeatedly thaw and freeze them, which was common practice in the old markets.

<sup>18</sup> When heading towards Maputo Fish Market from the center area of Maputo City, a U-turn is required as the Market is on the opposite side of the road.

<sup>19</sup> Interviews with the executing agency

<sup>20</sup> The Market requires the use of ice produced with appropriate water, and the use of ice produced within the Market is mandatory.

leading to traffic congestion on nearby roads. In addition, the installation of a parking lot at Maputo Fish Market was planned and implemented because the Guidelines required the installation of a parking lot at the public fish market. Currently, a certain number of cars parked on weekends and other times, but many do not use the parking lot to avoid paying the parking fee (20 Mt: approx. 45 yen/hour). On the other hand, due to the deployment of security guards and police patrols, no illegal parking or congestion has occurred on the surrounding roads up to the time of the ex-post evaluation.<sup>21</sup>

### 3.3.1.2 Qualitative Effects (Other Effects)

The qualitative effects of this Project were assumed as follows: 1) It will be possible to provide more hygienic and higher quality retail transactions of the fishery products with users; and 2) Management of usage charge collection and accounting and the O&M of the ice-making machine, chilled rooms, and emergency generator will be conducted. The status of each qualitative effect is as follows.

#### (1) Hygienic and higher quality retail transactions

Compared to the old market, hygiene conditions at Maputo Fish Market have improved significantly as follows.<sup>22</sup>

##### [Condition of the old market]

The retail area was located outside and the floor was not maintained (soil), which meant that the entire market flooded during rainfall, causing a hygiene issue. In addition, fishery products were placed directly on a wooden stand, so it could not be said that the fishery products were treated properly. Fish were processed in every part of the market, and scattered waste parts were a source of an odious smell.

##### [Improvement in the new Market]

The retail area is located indoors and is maintained hygienically even during rainfall. Furthermore, Maputo Fish Market is cleaned daily and has the necessary facilities for treating fishery products hygienically. For example, the appropriate tables for displaying fishery products make it possible to display them in a hygienic manner. In the fish processing booths that have been set up, fish are processed in defined compartments, and the waste portions are properly treated. In addition, each booths is equipped with a water tap which makes it possible to keep the retail area clean.

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<sup>21</sup> Source: Questionnaire answer, interviews with the executing agency

<sup>22</sup> Source: Interviews with the executing agency, retailers and restaurant owners



Booth for Treating Fishery Products    Water Tap Installed at Each Booth    Displayed Fishery Products

As described above, Maputo Fish Market, which has the basic facilities and equipment to keep the market hygienic, has maintained a much better hygienic environment compared to the old market and other markets dealing with fishery products in Maputo City. Moreover, the quality of fishery products has been maintained in good condition thanks to the well-developed environment.

(2) Implementation of collection and accounting system, and operation and maintenance management of the ice-making machine, chilled rooms, and emergency generator

With regard to the collection and accounting system, rules for the amount and payment of rental fees have been decided through the soft component, and retailers and restaurants pay rental fees to Maputo Municipality on a monthly basis at Maputo Fish Market.<sup>23</sup> According to Maputo Municipality, the collection rate from the retailers is not high, and it was found through the interviews with retailers that a common understanding of the rules for the payment of rental fees has not been disseminated between Maputo Municipality and retailers (See 3.4.4 Financial Aspect).

Regarding the equipment, the generator is operated and maintained without problems. On the other hand, the ice-making machine and chilled rooms have frequently had problems since installation. While Maputo Fish Market pointed out the possibility of initial defects of the equipment, the project consultants also explained that the necessity and importance of maintenance are not fully understood by the personnel in charge of maintenance and management, and that appropriate actions are not taken in a timely manner.<sup>24</sup> The training required for O&M was carried out as planned, and JICA has continued to provide support through the dispatch of the expert for O&M of equipment, including the ice-making machine, after receiving reports of defects. However, it is considered that the effect in terms of appropriately operating and maintaining the ice-making machine and chilled rooms has been limited.

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<sup>23</sup> Retailers pay a monthly rental fee of 900 Mt (approx. 1,900 yen), while restaurants pay between 3,000 Mt and 6,000 Mt (approx. 6,400-12,700 yen) monthly depending on the size of the restaurant.

<sup>24</sup> Refer to “3.4 Sustainability 3.4.3 Technical Aspect” for details.

### 3.3.2 Impacts

#### 3.3.2.1 Intended Impacts

As no impact was set for this Project at the time of planning, it was confirmed and agreed with the executing agency that “improvement of fishery product marketing environment and increase in incomes of artisanal fishermen” were appropriate for the expected impact of the Project.

##### (1) Improvement of the fishery product marketing environment

Significant differences were observed in the operation and freshness of fishery products at Maputo Fish Market and neighboring markets in Maputo City. For example, in other markets, fishery products are sold in an environment that is not clean, with no ice used to maintain freshness and the products displayed directly on wooden sales stands. Accordingly, the prices of fishery products in Maputo Fish Market are higher than in other markets; for example, the selling prices at other markets were approximately 60-70% of those in Maputo Fish Market. Prices have also increased compared to those in the old market.<sup>25</sup>



Fishery Products Displayed at a Stand in Maputo Fish Market



Fishery Products Displayed in Other Market

##### (2) Increase in incomes of artisanal fishermen

Data on the income of artisanal fishermen were not available, despite requests to the executing agency and the Fisheries and Aquaculture Development Agency (Instituto Nacional de Desenvolvimento da Pesca e Aquicultura: IDEPA). As 90% of fishery products in the country are caught by artisanal fishermen, an increase in sales volume is expected to affect the increase in their income. However, the current sales volume has not increased, and as has been already explained, the retailer's opinion that sales have decreased since the relocation also indicates that the contribution to the increase in incomes of artisanal fishermen has been limited.

#### 3.3.2.2 Other Positive and Negative Impacts

##### 1) Impacts on the Natural Environment

The Project does not fall into any of the sensitive sectors, characteristics, or areas listed in

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<sup>25</sup> Groupers and snappers, which were about 300 Mt/kg in the old market, have risen to 500 Mt in Maputo Fish Market, cod from 150 Mt to 300 Mt, and prawns from 500 Mt to 800-1,000 Mt. (Source: Confirmation at Maputo Fish Market)

*JICA Guidelines for Environmental and Social Considerations* (formulated in April 2004), and the undesirable effects on the environment are not considered to be significant; therefore, the Project is classified as Category B. The EIA, which was planned to be carried out and approved by Maputo Municipality, was already obtained in December 2013. In addition, the following measures were planned to address the negative impacts that were anticipated with the implementation of the Project: i) Trees that would not affect the construction of the facilities would be preserved as much as possible, ii) Coastal erosion, which was a concern due to the construction of the market, would be reduced by constructing a sea wall, iii) Air pollution would be reduced during construction through measures to reduce dust (sprinkling water, installation of sheets, etc.), and iv) Maputo Municipality would monitor seawater quality around the new market for a certain period. For i), trees were preserved basically except for the minimum necessary felling; ii) and iii) have been addressed and no issues occurred; and concerning (iv), the Ministry of Land, Environment and Rural Development takes samples once a year and analyzes the water quality, and no problems have been reported.<sup>26</sup>

## 2) Resettlement and Land Acquisition

At the time of the project planning, it was agreed among the stakeholders (retailers and restaurant owners) that Maputo Municipality would provide alternative facilities for the relocation from the old market to Maputo Fish Market in accordance with domestic law. In implementing the Project, alternative facilities were provided to 100 retailers and 48 restaurant owners in Maputo Fish Market as planned.<sup>27</sup> Retailers were highly satisfied with the facilities at the Maputo Fish Market compared to those at the old market as it is an indoor facility and the necessary facilities are in place. According to the executing agency, no complaints were received about the relocation; however, it was confirmed that retailers have demanded compensation upon relocation. In addition, some restaurant owners expressed opinions on the situation after the relocation, such as the fact that the food court is outdoors and therefore easily affected by weather conditions, that individual spaces have been reduced compared to before, and that rental fees have become more expensive.

## 3) Gender Equality

There are many female retailers who use Maputo Fish Market. Therefore, it was planned that

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<sup>26</sup> Source: Questionnaire answers, interview with the project consultant

<sup>27</sup> The compensation stipulated by Maputo Municipality at the time of planning has been addressed, but since late July 2022, there have been regular demonstrations by retailers and restaurant owners at Maputo Fish Market. According to Maputo Municipality, the reasons for the demonstrations include: a demand for more compensation for the relocation of the old market to the Maputo Fish Market after a private company purchased the site of the old market, which was owned by the Maputo Municipality; and dissatisfaction with the high rental fees after the relocation. According to Maputo Municipality, it plans to explain at the Maputo Fish Market that the Municipality is not obligated to pay the retailer or restaurant owner any compensation for the sale of the old market site because the site was owned by Maputo Municipality.



the stands would be designed to be easy for women to use. They were designed at a height that makes it easy for women to work on, and according to female retailers, they have never experienced any problems when using them. Furthermore, they also mentioned that while the old market did not have gates or guards in place allowed free access 24 hours a day, Maputo Fish Market has set the opening hours and guards at the gates, which prevents intruders, creating a safe environment, especially for female retailers.<sup>28</sup>

#### 4) Marginalized People, Social Systems and Norms, Human Well-being and Human Rights

No specific and direct initiatives from the perspectives of marginalized people, social systems and norms, human well-being, and human rights were articulated at the time of planning, and no relevant impact occurred during and after the implementation and completion of the Project.<sup>29</sup>

#### 5) Other Positive/Negative Impacts

The constructed Maputo Fish Market has become a tourist attraction in Maputo City due to its hygienic environment and design with restaurants located on the same site although it could not be directly confirmed at the time of the ex-post evaluation due to the impact of the COVID-19. Maputo Municipality and JICA Mozambique Office have also planned, implemented, and encouraged initiatives to further attract tourists to the Market. For example, initiatives have been implemented to make the market an even more attractive tourist destination by arranging wall paintings and seafood shows.<sup>30</sup>



Wall Painting to Promote Tourist Attraction

Thanks to the construction of the public fish market that meets the standards of the Guidelines set by Maputo Municipality, the hygienic conditions of the Market have significantly improved. Due to the unavailability of data, it was difficult to analyze the achievement status on the amount of ice that can be purchased at the Market, which is essential for the sale of fishery products. In addition, the amount of the fishery products handled at the Market is significantly below the target due to a combination of factors, including the high sales price compared to neighboring markets and the Market's location. As a result, although the fishery product marketing environment has improved, the impact in terms of contribution to the livelihoods of artisanal fishermen and retailers was limited due to the limited sales volume of fishery product. In light of the above, this Project has achieved its objectives only to a certain extent. Therefore, effectiveness and impacts of the Project are moderately low.

<sup>28</sup> Ex-ante evaluation, questionnaire answers and interviews with the retailers

<sup>29</sup> Questionnaire answers

<sup>30</sup> As for the seafood show, the date and time of the show had been fixed, however, it has not been implemented due to the COVID-19.

### 3.4 Sustainability (Rating: ②)

#### 3.4.1 Policy and System

*The Regulation for the Management and operation of the Fish Market* has been developed as a set of rules for the management and operation of markets dealing with fishery products, and it describes a code of conduct for markets. Maputo Fish Market has also set the closing times and outsourced cleaning services, which were not available at the old market, to maintain a safer and more hygienic market in response to the Regulation and the Project's proposals for market operation, and both have contributed to maintaining the hygienic environment in the Market.

#### 3.4.2 Institutional/Organizational Aspect

Maputo Fish Market is owned by the IDEPA, an organization under the Ministry of Fishery. Meanwhile, Maputo Municipality oversees the O&M of the Market, and the operation body which is organized under Maputo Municipality is conducting the O&M activities. Twelve staff members (one market manager, two technicians, two accountants, three cleaning-related staff, and four administrative staff) are also assigned by Maputo Municipality.<sup>31</sup> According to the market manager, the required number of personnel is in place, but there is a lack of personnel with sufficient technical competence on ice-making machine and chilled rooms. (See 3.4.3 Technical Aspect for more information.) Maputo Municipality works closely with Maputo Fish Market and supervises its proper operation. The reporting system and cooperation are good, and there have been no cases of problems.

#### 3.4.3 Technical Aspect

At the time of planning, Maputo Municipality already had experience in operating a total of 39 public markets. In addition, as Maputo Fish Market does not install equipment that requires advanced operational technology, it was assumed that there would be few technical problems related to O&M. However, technical training was provided as the ice-making machine, for which there has not been the extensive operational experience in Maputo Municipality, has been newly installed. In fact, at the time of the ex-post evaluation, no technical maintenance problems have arisen, except for the ice-making machine and chilled rooms. Regarding these facilities, it is difficult for the Market to respond to and repair problems when they occur; thus, such work is outsourced. However, no maintenance records could be confirmed at the time of the site survey, and concerns on technical issues, such as cases of inadequate responses to problems with the ice-making machine and malfunctioning for certain periods, were identified. The Market is explaining that the "quality of the ice-making machine itself" is the issue since the problems have occurred frequently since its installation, while the project consultant explained that "the problems are due

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<sup>31</sup> Source: Interviews with the staff of Maputo Fish Market (as of May 2022).

to lack of basic maintenance.<sup>32</sup> As the ice-making machine is essential for the operation of the Market, preparations are underway to procure a new ice-making machine with JICA's support, considering the past circumstances. The installation is contingent on the signing of a maintenance contract with a company specializing in ice-making machines and chilled rooms and the establishment of a system.

#### 3.4.4 Financial Aspect

At the time of planning, it was estimated that Maputo Fish Market would generate operational revenues of approximately 253,350 Mt per month, but the Market has been running at a loss (see Table 6). According to Maputo Municipality, this is because a certain number of retailers have not paid the rental fee since the opening of Maputo Fish Market, and this ratio has been increasing every year.

Table 6 Profit and Loss for Operation of Maputo Fish Market

	Plan	2020	2021
(Unit: Mt/month)			
<b>Operation income</b>			
Retail area rental	90,000	41,817	35,492
Coking service shop (restaurant) rental	144,000	108,926	97,611
Public toilet usage fee	75,000	13,682	9,357
Parking lot usage fee	79,800	-	-
Ice sales	300,000	11,822	11,423
Chilled room usage fee	24,000	192	270
Usage fee of stock room for chest freezer	9,000	-	-
<b>Total income</b>	<b>721,800</b>	<b>176,439</b>	<b>154,152</b>
<b>Operation cost</b>			
Salary	180,120	149,000	156,450
Garbage collection fee	13,200	15,000	15,000
Miscellaneous office supplies expenses	30,000	4,167	4,517
Communication expenses	10,000	5,000	5,000
Water supply cost	17,790	37,605	38,855
Electricity supply cost	127,340	49,535	50,369
Maintenance and operation cost	30,000	79,457	74,333
<b>Total cost</b>	<b>408,450</b>	<b>339,764</b>	<b>344,524</b>
<b>Profit</b>	<b>313,350</b>	<b>-163,325</b>	<b>-190,371</b>

Source: Preparatory survey report, documents provided by the executing agency, and interview with Maputo Municipality

Note: Totals may not add up due to rounding.

As Maputo Fish Market is under the direct control of Maputo Municipality, income from rental fees, chilled room charges, ice sale revenues, etc. paid by the retailers and restaurant owners goes directly to Maputo Municipality. Various costs, including salary and major maintenance, have

<sup>32</sup> According to the project consultant, maintenance for an ice-making machine requires timely implementation rather than complex knowledge. Therefore, they take a lack of sufficient understanding of the need for maintenance as the problem rather than expertise.

also been paid by Maputo Municipality, and 10% of the rental fees collected by Maputo Municipality are returned to Maputo Fish Market to be used for minor maintenance.<sup>33</sup> According to the staff of Maputo Fish Market, there are some maintenance items that have not been addressed due to budget shortfalls,<sup>34</sup> but there are no financial problems as Maputo Municipality covers the expenses that cannot be covered by the market's revenues. On the other hand, Maputo Municipality is concerned about the increasing annual deficit and is considering reminding the retailers who are in arrears of their rental fees and acting if they do not pay.<sup>35</sup> Meanwhile, several retailers explained that they were burdened with expenses, such as an increase in rental fee from 150 Mt per month at the old market to 900 Mt per month. They also need to pay the costs arising from buying ice, using the chilled rooms (20 Mt per box), and using toilets (5 Mt per time), which was free at the old market. Furthermore, as previously described, it was confirmed that the retailers recognize that daily payments, which are less burdensome for them, are not permitted, while Maputo Municipality allows for both the monthly and daily payment of rental fees. To reduce the burden on retailers, the correct understanding needs to be shared among them.

#### 3.4.5 Environmental and Social Aspect

At the time of planning, there was a concern about odors caused by garbage and non-organic waste, such as bottles and cans, and measures were proposed to install garbage storage for the Market and to reduce waste volume by recycling through waste separation. Accordingly, garbage storage (refrigerated room) was installed under this Project. The refrigerated room was designed to dispose of garbage in plastic bags; however, it is not used due to malfunction of the refrigeration system and budgetary difficulties in purchasing the large quantities of garbage bags required. Currently, garbage is gathered in the container and collected by a company in Maputo City. According to the Market staff and retailers, fish are processed in the designated booths, waste portions are properly disposed of, and no odor is generated as waste is collected daily. It was confirmed that odors were not caused in the Market during the site survey. In addition, to prevent pollution of the surrounding seawater, a septic tank was installed to treat the combined sewage from the public toilets and wastewater from the market. No pollution issues with seawater have been reported since then.

#### 3.4.6 Preventative Measures to Risks

No specific risks are assumed at the time of ex-post evaluation. On the other hand, although it is out of the control of Maputo Fish Market, a resurgence of COVID-19 is expected to affect sales

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<sup>33</sup> At the time of planning, it was recommended that a part of the Market revenues would be saved monthly as a fund to cover maintenance expenditure; however, no funds were set aside until the time of the ex-post evaluation, and the funds are disbursed monthly for necessary maintenance.

<sup>34</sup> According to Maputo Fish Market staff, activities such as wall painting, which are supposed to take place regularly, have been postponed due to lack of budget.

<sup>35</sup> Source: Interview with Maputo Municipality

of retailers and restaurants in the Market, which attracts many tourists. If the situation gets worse, consideration could be given to the burden on retailers and restaurant owners, e.g., through temporary reductions in rental fees or late fees.<sup>36</sup>

### 3.4.7 Status of Operation and Maintenance

Both facilities and equipment are well maintained and used appropriately, except for the ice-making machine, chilled rooms and some other facilities or equipment. Regarding the chilled rooms, as fish are generally preserved in the frozen state in Mozambique, the retailers were not familiar with their usage, and there were frequent cases of stored fish spoiling and being discarded in the early stages of operation. The usage was then repeatedly explained to the retailers by market officials and JICA experts, and the method of preserving fish by chilled rooms is currently better understood. The garbage storage is also used as a storage room because the refrigeration system is out of order, and the large-sized chilled room is not in use due to an issue with the evaporator. The ice-making machine, as already explained, has broken down frequently since installation and has been out of operation for a certain period of time, but it has been repaired and is operational at the time of the ex-post evaluation. On the other hand, many retailers expressed that they prefer the cube type of ice, as the ice produced is in the form of flakes, which melt more easily than ice cubes and are more expensive to purchase. With regard to the ice-making machine currently planned for procurement with the support of JICA, it is desirable to solicit opinions widely from the retailers who use ice, in addition to the maintenance staff of the Market, and then to proceed with the procurement. In addition, the changing rooms for men and women installed in the Market are now only used by the market staff, as they were not properly used when they were opened to the retailers. The defect inspection that was conducted one year after the completion of the Project reported the following five defects. The responses to the findings and the current status are shown in Table 7.

Table 7 Findings during Defects Inspections and Status of Response

Identified defect	Responses and current situations
Decreased refrigerant in two chilled rooms. Filling work was carried out during defect inspection.	After that, one chilled room is still not working due to compressor failures.
The water was supplied only in the morning, resulting in a situation where the water storage tank was empty. The installation of a receiving water tank was recommended.	A tank of 60,000 liters has been installed.
The hinge at the machine loading dock of the ice-machine room was damaged, and it was instructed to clean the air-cooled condenser once/month.	Issues with the ice-making machine occur frequently. While parts need to be purchased through public procurement system, it is difficult to procure parts that are not generally distributed because agents may not deal with those parts.

<sup>36</sup> Maputo Fish Market charges a 100% late fee when the payment of rental fees is delayed.

Damage to the circuit breakers in the main distribution board due to overcurrent in the electrical supply to the restaurants. Circuit breakers with standards larger than those initially adopted have already been installed.	Resolved. No further problems have arisen.
Washing water after cooking from the restaurants flowed into the open culvert and caused bad odors. Routine cleaning was recommended.	Resolved. No odor has occurred since then.

Source: Defect inspection report, questionnaire answers and confirmation during the site survey

The Project also supported i) the establishment of rules for the O&M of fish markets, ii) the improvement of rental fee collection, and iii) the development of maintenance and management plans for the ice-making machine, chilled rooms, etc., to ensure the proper O&M of the Market. When confirming with the executing agency and training participants, they replied that the basic rules set out what is necessary to maintain the hygienic environment of the Market and the freshness of fishery products, that the hygienic environment of the market has improved, and that the situation has been maintained by following these rules. Regarding the rental fee collection, the effect was limited as described in 3.3.1.2 Qualitative effects (2) Implementation of collection and accounting system, and operation and maintenance management of the ice-making machine, chilled rooms, and emergency generator and 3.4.4 Financial Aspect. Moreover, in terms of the development of maintenance and management plans for ice and refrigeration facilities, etc., basic knowledge about the facility was obtained, but problems have frequently arisen in the O&M.<sup>37</sup> At the time of the ex-post evaluation, the Technical Department of Maputo Fish Market has carried out daily maintenance for the equipment such as cleaning, checking oil and gas, and the Maputo Municipality has outsourced the periodical maintenance and the repair of machine failures since there is not enough capacity of technical staff to respond promptly to the equipment failures. Moreover, the contracted company for the maintenance was not able to offer sufficient support; therefore, as already mentioned, it is expected that the situation will be improved by concluding a maintenance contract with a company that specializes in maintenance when a new ice-making machine is procured in the future.

As described above, some minor issues have been observed in the technical and financial aspects, and the current status of O&M. They are not expected to be improved/resolved. Therefore, sustainability of the Project effects is moderately low.

<sup>37</sup> Source: Questionnaire answer, and interviews with the staff who participated in the training

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

### 4.1 Conclusion

The Project was implemented with the aim to increase the amount of the fishery products handled in accordance with the standard of market operation guidelines and to expand the capacity of the facilities in the public fish market in Maputo City, thereby contributing to the improvement of the environment for fish marketing and increased income for artisanal fishermen, retailers, etc. Its objective is in line with the development policy in Mozambique at the times of planning and the ex-post evaluation, which has indicated the importance of promoting artisanal fishery as a means of contributing to poverty reduction, and development needs to improve facilities and equipment at fish markets. The Project is also consistent with Japan's Assistant Policy, projects and support by the JICA and other agencies, and Goals 1 and 9 of the SDGs. Therefore, its relevance and coherence are high. While the outputs were mostly as planned, the project costs exceeded the plan, and the project period significantly exceeded the plan. Therefore, efficiency of the Project is moderately low. The development of facilities and equipment under the Project has significantly improved the hygienic and marketing environment of fishery products at Maputo Fish Market. On the other hand, the amount of fishery products handled at the market is significantly below the target due to a combination of factors, including high selling prices compared to neighboring markets, its location, and others. Therefore, the contribution to increased income of artisanal fishermen and retailers is also likely to have been limited. Accurate data on the amount of ice that can be produced and purchased, an operation and effect indicator, could not be ascertained, and the number of cars parked legally by market users was also below the target. In light of the above, this project has achieved its objectives only to a certain extent. Therefore, effectiveness and impacts of the project are moderately low. Some minor issues have been observed in the technical, financial, and the current status of O&M of this Project. They are not expected to be improved/resolved. Therefore, sustainability of the project effects is moderately low.

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

### 4.2 Recommendations

#### 4.2.1 Recommendations to the Executing Agency

- The relocation from the old market to Maputo Fish Market has significantly increased the burden on retailers in terms of increased rental fees, the cost of buying ice, and the usage fee for chilled rooms and toilets. With sales declining since 2020 due to the impact of the COVID-19, it may be worth considering the burden on retailers and restaurant owners through, for example, a temporary reduction in late payment fees if the impact is prolonged. Moreover, some retailers do not recognize that daily payment is also acceptable for the rental fee payment. As some retailers feel less burdened by paying fees daily rather than monthly, it is advisable that the

market operator provide retailers with another opportunity to be informed of the correct rules, so that the correct information is conveyed to them.

- Maputo Fish Market does not record or keep accurate information on the ice-making machine maintenance work, ice sales charges, etc. The Market should be required to record and keep the information to accurately understand whether facilities and equipment are being properly operated and maintained, and to use this information for future maintenance and management.
- Reflecting the high quality and freshness of the fishery products handled at Maputo Fish Market, the sales prices of fishery products at this Market are higher compared to those at other markets, which is one of the reasons why the amount of the fishery products handled has not increased sufficiently. Promotional activities for consumers are also important to encourage them to choose fresh products at Maputo Fish Market even though the sales price is higher compared to other markets. From the perspective of ensuring sustainability, as before the spread of the COVID-19, it is considered effective to promote the consumption of fresh and high-quality fishery products handled at the Market through holding fairs and other promotion activities for general consumers.

#### 4.2.2 Recommendations to JICA

- Procurement of an ice-making machine based on the views of ice users

The ice-making machine procured by the Project produces flake ice. According to the retailers, this type of ice is prone to melting and requires frequent purchasing, and the cost of purchase is high, while flake ice is generally considered to have a higher cooling capacity. Following repeated failures of the ice-making machine in the past, Maputo Municipality and the JICA office are preparing to purchase a new ice-making machine. It is advisable to solicit opinions from retailers who use ice in addition to the market maintenance staff before selecting the ice-making machine to be procured. If flake ice is more effective than ice cubes, it may be necessary for the market staff to arrange an opportunity to explain the reasons and effectiveness before the machine is installed to gain the understanding of retailers.

#### 4.3 Lessons Learned

- Conducting training reflecting conventional practices

In Maputo Fish Market, handling of frozen fishery products is not permitted from the perspective of maintaining freshness. In Mozambique, on the other hand, fish are generally preserved by freezing. Therefore, after the chilled rooms were put into operation, cases where fish spoiled due to using the chilled rooms in the same way as freezers were reported. Since then, through explanations by the market staff and experts, fish have been preserved correctly and are no longer discarded, but an understanding of refrigerated storage remains low. In addition, maintenance of equipment is generally not emphasized in Mozambique, and even after the



training was provided on the maintenance of the ice-making machine, the staff have not yet recognized the necessity of such maintenance or performed it in a timely manner. As in this Project, in case where methods and actions that differ from conventional practices are required for the O&M of facilities and equipment, it is necessary to provide opportunities where the necessity for and importance of such methods and actions are fully understood before transferring experience and technology through training, etc., and to continuously work to deepen understanding through the executing agency and relevant institutions even after training is conducted, from the perspective of ensuring sustainability.

- Selection of equipment based on procurement systems

When repairing the ice-making machine, a problem arose where the required parts were not available. In Mozambique, parts and consumables must be purchased through a tender process in accordance with national rules. Therefore, if the parts are not handled or are difficult to be handled by the agency that wins the tender, they will not be available. To avoid such situations, the executing agency and experts need to examine local procurement routes for parts when planning projects in countries/regions where a defined procurement system is imposed for the purchase of parts, etc., and select equipment so that parts will not be difficult to obtain.

## **5. Non-Score Criteria**

### 5.1. Performance

#### 5.1.1 Objective Perspective

None

### 5.2. Additionality

None

(end)