

Papua New Guinea

FY2018 Ex-Post Evaluation of Japanese Grant Aid Project

‘The Project for Rehabilitation of Madang Town Market’

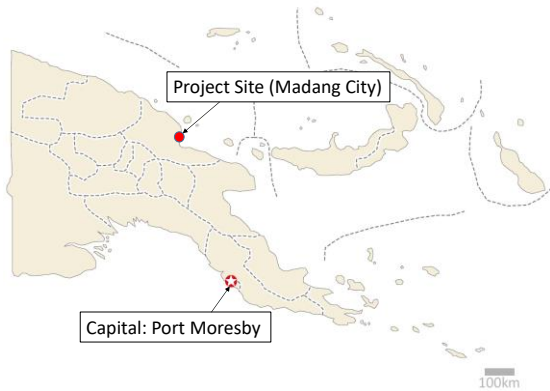
External Evaluator: Keisuke Nishikawa, Japan Economic Research Institute Inc.

0. Summary

Through this project, the Madang Town Market was rehabilitated to contribute to the sustainable economic development of the Madang region by providing an environment where agricultural and fishery products can be hygienically and efficiently distributed. The relevance of this project is high as it was both consistent with the development plans and development needs of Papua New Guinea (hereinafter referred to as ‘PNG’) at the time of both planning and ex-post evaluation and was also consistent with Japan’s ODA policy at the time of planning. As for implementation of the project, the project outputs were largely as planned and the project cost was within the planned cost, but the project period substantially exceeded the plan. Therefore, the efficiency is fair. With regard to project effects, it was confirmed that the targets for almost all the quantitative indicators were achieved, and regarding the qualitative effects, the hygienic and usage environment improved significantly. The market has been used by a number of people, showing booming activities in which even the buildings developed through this project were not providing sufficient room, and it is thought that the market has been playing a vital role for distribution and sales of vegetables, fruits, fish, crafts and so on. There were neither negative impacts on the natural environment nor occurrences of resident resettlement and land acquisition cases. As a whole, the effectiveness and impact of this project are high. Regarding operation and maintenance, there were no major issues in terms of technical and financial aspects, but some issues were found on the organisational aspect in terms of employment of staff for the market company as well as those on the maintenance status. Therefore, sustainability of the effects generated through this project is judged to be fair.

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

1. Project Description



Project Location



The Madang Town Market developed through this project

1.1 Background

The agriculture, forestry and fishery sector was a key industry as it contributed to 27.9% of PNG's GDP (2012), but the activities in rural areas mostly focussed on self-sufficiency and small-scale production, and surplus products were sold as commercial products at the local markets in order to gain precious cash income. In Madang City, the Madang Town Market functioned as a retail market for agricultural and fishery products for Madang residents and simultaneously as a key place for those who came to sell many local products from inlands, isolated islands, and the Highland districts in order to gain cash income. However, the existing facilities of the Madang Town Market were dilapidated, that is, there was noticeable damage to roofs, downspouts, and sales tables; moreover, there was a lack of space in the market buildings as well as incomplete flooring even though there was a roof. The standby rubbish bays were also generally deteriorating, and their capacity was smaller than the actual quantity of rubbish. As a result, a large amount of rubbish left on the ground was accompanied by the unhygienic environment causing odour nuisance. Since most parts of the market were unpaved, mud after rains caused poor mobility and unhygienic conditions to a considerable extent, and also the fundamental infrastructure for market functionality was inadequate: specifically, a cut-off of the water supply and inadequate drainage channels. The lagoon shore, close to the market, provided a marketplace for fresh fish, where cold insulation boxes were used, but the freshness was difficult to maintain properly under the conditions of open-air stalls, and ice in the boxes melted and the water was discharged, causing another unhygienic condition.

1.2 Project Outline

The objective of the project was to provide high-quality services at the Madang Town Market by securing an environment where local agricultural and fishery products could be sold hygienically and efficiently, thereby contributing to sustainable economic development in the region.

Grant Limit / Actual Grant Amount	1,004 million yen / 999 million yen
Exchange of Notes Date / Grant Agreement Date	October, 2013 / October, 2013
Executing Agency	National Fisheries Agency
Project Completion	February, 2016
Target Area	Madang Province (including Madang City)
Main Contractor	Dai Nippon Construction
Main Consultant	Overseas Agri-Fisheries Consultants Co., Ltd.
Preparatory Survey	January - October, 2013
Related Projects	[Grant Aid] The Project for Construction of Wewak Market and Jetty (2008) The Project for Rehabilitation of Alotau Town Market and Fisheries Facilities (2017) [Other International and Aid Organisations] <Asian Development Bank> Fisheries Development Project (1998 - 2002) Coastal Fisheries Management and Development Project (2004 - 2007) <European Union> Regional Fisheries Development Project (2003 - 2008) <German Society for International Cooperation> High-level Fisheries Education Support Project (2008 - 2009)

2. Outline of the Evaluation Study

2.1 External Evaluator

Keisuke Nishikawa, Japan Economic Research Institute Inc.

2.2 Duration of Evaluation Study

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

Duration of the Study: September 2018 - September 2019

Duration of the Field Study: December 2 - 15, 2018

3. Results of the Evaluation (Overall Rating: B¹)

3.1 Relevance (Rating: ③²)

3.1.1 Consistency with the Development Plan of Papua New Guinea

At the time of planning of this project, there was a strategic concept to shift from dependency on resources and energy to the agricultural, forestry and fishery sector in ‘Vision 2050’, which was the PNG’s long-term national development strategy. Also, this project, through which the market was constructed, was a project to expand income-earning opportunities for fishermen, farmers, and craftspersons through providing a place for selling and purchasing, and was consistent with ‘wealth creation’, which was one of the focus areas set out in the strategy. Moreover, in the ‘Medium Term Development Plan 2011-2015’, formulated under ‘Vision 2050’, a target to ‘Increase market access opportunities and the number of horticultural farmers by five times’ was set out for regional development, and this project was related to this direction.

At the sector level, in the ‘National Agriculture Development Plan 2007-2016’, formulated based on the ‘Medium Term Development Plan 2006-2010’, improvements in food safety, nutrition, income, and employment opportunities for rural residents were focus areas, and in the ‘National Fisheries Development Plan 2006-2016’, formulated under the same medium-term development plan, both infrastructure construction to promote the growth of fishery cooperatives and small and medium enterprises as well as the enhancement of market access by rural fishing villages were additional focus areas. It can be said that this project, through which market facilities conducive to distribution of safe food were developed, was consistent with these focus areas.

The long-term development plan at the time of ex-post evaluation was the ‘Development Strategic Plan 2010-2030’ (formulated in 2010), which is the national development plan with enhanced concrete strategies based on ‘Vision 2050’. The plan, under the objective of PNG to become a middle-income country by 2030, aims to achieve a departure from dependency on resources and so on and a promotion of wealth creation as part of its goals. Also, in the plan, income improvements as well as agricultural and fisheries development in rural areas were set as focus areas. Furthermore, the ‘Medium Term Development Plan III 2018-2022’

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

² ③: High, ②: Fair, ①: Low

was formulated (in 2018) as a short-period development plan, in which ‘increased revenue and wealth creation’ is set as the first area of eight key result areas. In the area, creation of employment and economic opportunities and a reduction in imports through increases in domestic production of agricultural and fisheries products are set as the goal.

At the sector level, subsequent plans were being formulated after the expiries of the ‘National Agriculture Development Plan 2007-2016’ and the ‘National Fisheries Development Plan 2006-2016’. More concretely, at the time of ex-post evaluation, the ‘National Agricultural Sector Plan 2019-2028’ was being formulated for the agricultural sector, and a tentative summary has been released. For the fisheries sector, the ‘National Fisheries Agency Action Plan 2019-2023’ was being formulated.

In PNG, the ‘Development Strategic Plan 2010-2030’, the ‘Medium Term Development Plan 2011-2015’ and the ‘Medium Term Development Plan III 2018-2022’ were set under the long-term plan of ‘Vision 2050’. This project can be said to have been consistent with ‘increased revenue’, emphasised in all these plans. In the agricultural and fisheries sector, since the expirations of both plans in 2016, which had been effective at the time of planning, no new plans have been set in place, but according to the National Fisheries Agency, the importance of market facilities as a venue for distribution of agricultural and fisheries products as well as handicrafts has been unchanged. The consistency of this project has been considered to be high even at the time of ex-post evaluation. Therefore, it can be said that this project had been consistent with PNG’s development policies at both the time of planning and ex-post evaluation.

3.1.2 Consistency with the Development Needs of Papua New Guinea

According to the data from the PNG National Statistics Office, the agricultural and fisheries sector was an important industry, accounting for 22.4% of the GDP (in 2009) at the time of planning of this project, and surplus products not for self-consumption were generally sold at local markets. The Madang Town Market, the target site of this project, was a crucial retail market for Madang province, but the sales rates at open-air and ground stalls were 52% and 66% respectively, and 85% of the entire premises had been flooded with mud after rains. Moreover, the market was in unhygienic condition as blood from fresh fish and melted ice flowed into the lagoon, and fresh water was not being supplied.

At the time of ex-post evaluation, the proportion of the agricultural and fisheries sector was 18.8% of the GDP (in 2014³), lower than the planning period. However, the industry

³ The data on the ratio of the agricultural, forestry and fisheries sector to GDP only up to 2014 was made publicly available. Therefore, the 2014 figure was used.

contributes to a relatively high proportion, comprising slightly less than 20% as of 2014, and according to the ‘Development Strategic Plan 2010-2030’, approximately 85% of the population resided in rural areas (as of 2010), showing that this project was a project to meet the needs of economic activities in total areas. Regarding the significance of the Madang Town Market, the number of vendors (vegetables, fruits, and handicraft sections)⁴ increased from 626 at the time of planning to 821, according to the site survey at the time of ex-post evaluation, confirming continuously high sales and purchase needs. Moreover, according to interviews with those concerned with this project, such as the Madang Provincial Government, the Madang Urban Local Level Government, and the Madang Town Market Limited, the Madang Town Market is the only large market permanently installed to facilitate sales and purchases of agricultural and fisheries products in Madang province and surrounding areas, and is a venue of high significance for farmers and fishermen as well as local residents.

The National Fisheries Agency has placed emphasis on the improvements of market facilities in various locations around PNG. Following this project, a grant aid project, ‘The Project for Rehabilitation of Alotau Town Market and Fisheries Facilities’, was being implemented in Alotau (the capital of Milne Bay province) at the time of ex-post evaluation. Also, market rehabilitation was being planned in Kavieng (the capital of New Ireland province). They indicate that the importance of the functions the markets play for vital economic activities in various parts of the country has been well recognised.

Therefore, this project can be said to have been consistent with the development needs at both the time of planning and ex-post evaluation.

3.1.3 Consistency with Japan’s ODA Policy

At the time of planning of this project, Japan positioned maritime issues as one of the five pillars of cooperation and set a policy to provide assistance on fisheries at the Sixth Pacific Islands Leaders Meeting (2012). In the Country Assistance Policy for PNG (2012), ‘Expansion of Economic Activities’ was a focus area and it was planned to develop public commercial facilities as part of the ‘Industrial Promotion Programme’.

Therefore, this project can be said to have been consistent with Japan’s ODA policy for both the entire Pacific region and PNG at the time of planning.

It was confirmed that this project has been consistent with the development plans and the development needs of PNG at both the time of planning and ex-post evaluation, and with Japan’s ODA policy for both the Pacific region and PNG at the time of planning. Furthermore, it

⁴ The number of people described in the preparatory survey report of this project

was considered that there were no issues in terms of project planning and approach.

In light of the above, the relevance of this project is judged to be high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

Through this project, the Madang Town Market was rehabilitated to ensure an environment where agricultural and fisheries products could be distributed hygienically and efficiently, and technical instructions on the maintenance of facilities and equipment, as well as the financial processing for efficient operations of the market, were provided. The concrete plan and actual outputs (executed by the Japan side) are shown in Table 1.

Table 1: Planned and Actual Outputs of This Project

		Plan	Actual
Civil work	Market buildings	6 buildings, 2,899 m ² in total	6 buildings, 2,899 m ² in total
	Fresh fish retail building	127 m ²	127 m ²
	Administration building	153 m ²	153 m ²
	Ice storage / sales facility	30 m ²	30 m ²
	Market toilets	134 m ²	136 m ²
	Gate house	3 buildings, 45 m ² in total	3 buildings, 45 m ² in total
	Exterior	Unloading space (61 m ²), Standby rubbish bay (103 m ²), Interlocking pavement (3,636 m ²), etc.	Unloading space (61 m ²), Standby rubbish bay (103 m ²), Interlocking pavement (3,636 m ²), etc.
	Seawall	Approximately 76 m	Approximately 76 m
Soft component	<ul style="list-style-type: none"> - Technical instructions on the operations of market facilities and the maintenance of facilities and equipment - Instructions for the improvement of fee collection, accounting and financial processing 	<ul style="list-style-type: none"> - Setting of basic rules for operation and maintenance of market facilities - Development of the structure for collection of market facility fees, accounting and financial processing - Transfer of maintenance techniques of market facilities and equipment 	

Source: Preparatory Survey Report, documents provided by JICA

As shown in the table above, the civil work for this project was executed mostly as planned. The only alteration was a change in the pavement for some parts of the market parking and the ice storage / sales facility space (a total of 412 m²) from 80-mm-thick interlocking pavement to 150-mm-thick concrete pavement because a delay in material supply from the material manufacturer was expected. A check at the time of ex-post evaluation revealed that there were no problems caused by the change of paving method and

no defects had occurred.

With regard to the soft component, activities related to technical instructions on operation and maintenance of facilities and improvements in fee collection, as well as accounting and financial processing were conducted as planned. According to the National Fisheries Agency, 16 trainees were able to learn various aspects of operation and technical management. However, as described later, as a result of organisational restructuring of the market operating body, the majority of those trainees were not involved in market operations at the time of ex-post evaluation.

In this project, it was planned that the PNG side was also to implement the tasks listed below (the ones requiring expenses, except for various administrative procedures to implement the project), and it was confirmed at the time of ex-post evaluation that they had actually been implemented as planned.

- Procedures related to environmental and social considerations (obtaining environmental permits)
- Removal of existing structures and obstacles and cutting of trees within the project site
- Installation of electric wires, water pipes, and telephone cables
- Construction of fences and gates
- Procurement of office supplies, phone equipment, and furniture associated with project implementation.

In light of the above, as a whole, the outputs of this project can be said to have been largely as planned.

3.2.2 Project Inputs

3.2.2.1 Project Cost

This project was planned at a total cost of 1,047 million yen, composed of Japan's project cost of 1,004 million yen and PNG's project cost of 43 million yen.

Regarding the actual project cost, while the amount of input by the PNG side was not known, Japan's project cost was 999 million yen as shown in Table 2.

Table 2: Breakdown of Actual Project Cost of Japan

(Unit: million yen)

Breakdown	Project cost
Construction	894
Direct construction	595
Other construction	299
Design and supervision	105
Total	999

Source: Prepared from documents provided by JICA

As the amount of input by the PNG side was not known, the comparison was made only for Japan's project cost. Against the planned amount of 1,004 million yen, the actual amount was 999 million yen, which can be said to have been within the plan (100% of the plan).

3.2.2.2 Project Period

The planned project period of this project was 23 months from the signing of the grant agreement, including the detailed design and bidding period. The actual project period required was 29 months, from October 2013 till February 2016, and was mainly due to a delay of three months, prior to commencement of construction caused by the stranding of the vessel transporting the heavy equipment and materials to be used in the work of this project. In addition, while the main construction was completed in February 2016, the actual opening of the market was delayed until the end of August of that year, as the agreement between the provincial government and the urban local-level government had not been concluded. It was 35 months after the signing of the grant agreement that the project effects started to be generated⁵. Therefore, the actual project period is regarded as 35 months, which can be said to be 152% of the plan.

The outputs necessary for the generation of project effects were implemented mostly as planned. The project cost for them was within the plan, but the project period substantially exceeded the plan. Therefore, the efficiency can be said to be fair.

3.3 Effectiveness and Impacts⁶ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects

⁵ Initially, project completion was defined as the 'completion of equipment, interior and exterior work'. However, as the market was expected to be used straight after the completion of work and as the generation of project effects was important in light of the objective of this project, opening of the market was regarded as the project completion.

⁶ Sub-rating for Effectiveness is to be put with consideration of Impacts.

At the time of planning of this project, the ratio of retailers running businesses in the facility with both flooring and roof, the number of sales units per floor area of 100 m² in market buildings, and the amount of tap water sold within the market were set as quantitative indicators. Also, the amount of ice sold within the market, waiting time for unloading operations when three truck-style public motor vehicles (PMVs) simultaneously arrive during the morning rush hours, and the number of uses of the market toilet were set as three supplementary indicators.

The Madang Town Market was operated by the Madang Urban Local Level Government from August 2016 till the middle of November 2017 and has then been operated by the Market Limited, established under the local-level government. The actual data for each indicator were kept only for the period of January to September 2018. Therefore, the actual values indicated are the nine-month data provided by the Market Limited and the data directly measured at the time of ex-post evaluation.

Table 3: Changes in the Effect Indicators of This Project

	Baseline	Target	Actual
	2011	2018	2018
		3 Years After Completion	2 Years After Completion
Ratio of retailers running businesses in the facility with both flooring and roof	Approx. 34%	Approx. 80%	80%
Number of sales units per floor area of 100 m ² in market buildings	Approx. 15.6 units	Approx. 17.9 units	Based on the number of sales units: 17.7 units (Based on the number of vendors: 14.5 units)
Amount of tap water ^{Note} sold within the market	0	Approx. 60 tons/year	75 tons/9 months (Jan. - Sep. 2018)
Amount of ice sold within the market	0	Approx. 15 tons/year	Not known
Waiting time for unloading operations when three truck-style public motor vehicles simultaneously arrive during the morning rush hours	Approx. 1 hour	Approx. 30 minutes	Approx. 20 minutes
Number of uses of the market toilet	0	Approx. 70,000/year	95,000/9 months (Jan. - Sep. 2018)

Source: (baseline and target values) Ex-ante Evaluation Summary Report, Preparatory Survey Report (actual values), responses from Madang Town Market Limited, and the result of actual counting at the time of ex-post evaluation

Note: Hygienic water used for washing, preventing desiccation, and keeping freshness of vegetables and fresh fish

While 2018 was initially expected as three years after project completion, it actually became two years after project completion because the period of this project was extended, and the commencement of operations at the Madang Town Market was delayed. Therefore, in the ex-post evaluation, the achievement level of indicators was judged with a viewpoint of estimating the situation in 2019 (the actual three years after project completion) by using the actual values in 2018.

First, regarding the ratio of retailers running businesses in the facility with both flooring and roof, as there were no data, the number of vendors were actually counted with the staff members of the Market Limited during the site survey in December 2018, and it was confirmed that 420 vendors were selling their products within the facilities with both flooring and roof, comprising 523 booths. The ratio of retailers in the facility with both flooring and roof was 80%, therefore the target value can be said to have been achieved. The ground of the Madang Town Market was already in saturation with a large number of vendors, and it is expected to be the same in 2019.

The number of sales units per floor area of 100 m² in market buildings was 17.7. Except for a part of the section for root crops, all booths were occupied, and it can be said that the target value was mostly achieved. However, there were some instances seen where one vendor was occupying several booths, thus, the number of sales units per floor area of 100 m² based on the number of vendors was lower at 14.5. It was considered to be a point for improvement in market operations.

While the data for the amount of water sold and the number of uses of the toilet were available only from January to September 2018, they had already surpassed their annual targets and it was expected that the same level would be achieved in 2019⁷. Also, the time required for unloading trucks during the hours of market opening was 20 minutes on average, realising the alleviation of congestion.

The amount of ice sold was set as a supplementary indicator of this project. However, the existing ice machine⁸ that had not been introduced in this project broke down in 2018, and fresh fish vendors had to purchase ice from nearby supermarkets. Moreover, as sufficient data regarding the sales volume was not being kept by the Madang Provincial Fisheries Office, which was the owner of the existing ice machine and was selling ice, the actual sales volume could not be captured. At the time of ex-post evaluation, there were no problems in maintaining the freshness of fish as ice was sold at nearby supermarkets, but it was considered that improvements were needed in terms of ensuring convenience

⁷ During the site survey, water supply from Water PNG had been suspended for a month throughout Madang City, leading to a problem caused by the external factor: water cannot be supplied within the market.

⁸ It was not introduced in this project, but there was a plan to use the existing ice machine that the Overseas Fishery Cooperation Foundation of Japan supplied to the Madang Provincial Government prior to this project.

for vendors and use of the facilities (ice storage / sales facility at the fresh fish retail building) developed through this project.

3.3.1.2 Qualitative Effects

At the time of planning of this project, the following two points were mainly expected as the qualitative effects of project implementation.

- (1) The hygienic conditions in the Madang Town Market are expected to be improved through promotion of appropriate rubbish disposal enhanced by standby rubbish bays, mud prevention by pavement on the premises, a better drainage system, and so forth.
- (2) An environment for users including functions such as buying flow at the Madang Town Market will be improved through separate management of entrances, evening-out of bumps, soft zoning, and so forth.

Wastes such as vegetable waste were properly collected at the standby rubbish bays, which were then transported out to a landfill by truck several times a day. The market premises are entirely paved, and it was confirmed at the time of site survey that the occurrences of mud had been eliminated, and that drainage had been developed. It was heard in the responses from the National Fisheries Agency, the Madang Urban Local Level Government, and the Market Limited that the hygiene conditions inside the market, including those of reduced odour and avoidance of dirt from mud, had significantly improved compared to conditions before project implementation through improvements in waste disposal.

In the ex-post evaluation, in addition to the interviews with those related to the project, an interview survey with vendors and customers (qualitative survey⁹) was conducted at the time of site survey to understand the opinions related to the qualitative effects and so on. The results shown in Table 4 were obtained regarding waste management, occurrences of muddy conditions, drainage functions of the market, and occurrences of odour.

⁹ In order to understand the improvements in both hygienic environment and the environment for users made through the development of the Madang Town Market, a total of 40 people (20 vendors and 20 customers) who had used the market for more than five years were interviewed (conducted in four zones of vegetables and fruits [on the shelves], root crops and vegetables [on the floor], crafts, etc. [on the shelves] and fresh fish, etc. [in boxes]). The main questions were the degree of improvement in: the product display environment or buying flow environment; floor condition (pavement and bumps); odour; rainwater and drainage in the market; waste disposal; occurrences of muddy conditions; and so on.

Table 4: Results of Qualitative Survey on the Changes
in Hygienic Environment of the Market

		Improved a lot	Improved a little	Same level	Worse
Waste management	Vendor	85%	10%	5%	0%
	Customer	80%	20%	0%	0%
Muddy conditions	Vendor	95%	0%	5%	0%
	Customer	100%	0%	0%	0%
Drainage functions	Vendor	90%	5%	0%	5%
	Customer	95%	0%	5%	0%
Odour	Vendor	70%	10%	5%	15%
	Customer	80%	20%	0%	0%

Source: Results of the Qualitative Survey

Note: Indicating the correlative percentages of respondents composed of 20 vendors and 20 customers (e.g. '85%' indicates 17 persons out of 20)

While there were some negative opinions about odours heard from the vendors whose booths were located near the rubbish bay, opinions that the hygienic environment of the market improved significantly were obtained from both vendors and customers for all items. These results are the same as the responses from the National Fisheries Agency, the Madang Urban Local Level Government, and the Market Limited. Therefore, the hygienic environment as a whole can be judged to have improved.

With regard to the environment for users in the market, according to the National Fisheries Agency and the Market Limited, the environment for users in the market improved through separate management of entrances, evening-out of bumps, and demarcation of booths (zoning). In the qualitative survey, questions were asked on the display and the ease of finding products, and the responses from vendors and customers were as shown in Table 5.

Table 5: Results of the Qualitative Survey on the Changes
in the Environment for Users of the Market

		Improved a lot	Improved a little	Same level	Worse
Display and ease of finding products	Vendor	85%	10%	5%	0%
	Customer	80%	20%	0%	0%

Source: Results of the Qualitative Survey

Note: Indicating the correlative percentages of respondents composed of 20 vendors and 20 customers (e.g. '85%' indicates 17 persons out of 20)

As shown in Table 5, it was confirmed that the environment for users in the market was also favourably valued by vendors and customers. In addition, it was confirmed during the site survey that the booths for vegetables/fruits, root crops, crafts, and fresh fish were

clearly demarcated, and it was thought that the environment for users improved substantially.

3.3.2 Impacts

3.3.2.1 Intended Impacts

At the time of planning of this project, it was expected as an impact of project implementation that this project would ‘contribute to sustainable economic development of the Madang region’. Neither the sales data in the market nor descriptions on the importance of the market in policy documents existed, but in the Madang Town Market, as a result of expansion of the sales floor through the implementation of this project, the number of vendors surged, and the new market was already in saturation at the time of ex-post evaluation. The number of vendors was counted during the site survey which revealed that there were 796 (821 including the fresh fish retail building), an increase from 626 (excluding the fresh fish retail building) counted at the time of planning in 2013¹⁰. It was observed that the market was vibrant and was playing a significant role for the local residents in terms of distribution of vegetables, fruits, fresh fish, crafts, and so on.

According to the Market Limited, not only were vendors residents of Madang province but also approximately 30% of them were from the interior of PNG’s Highlands region, indicating that the market had become a hub where economic activities were seen beyond Madang province. Moreover, it was observed that the market was a sales hub for fishermen in the coastal area of Madang city, improving the conveniences of shopping for customers. During the qualitative survey in the ex-post evaluation, there were some vendors seen who had newly started selling vegetables and fruits in the new market after the completion of this project.

In this way, while it was difficult to indicate quantitative data such as the sales value, the results of interviews with the provincial government, the urban local-level government, and the Market Limited, as along with the site survey show that this project contributed to the vitalisation of economic activities in the Madang region mainly in terms of agricultural and fishery activities and distribution.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

At the time of planning of this project, the project area did not fall into the category of

¹⁰ The rehabilitation of the market was implemented within the existing premises. There was a constraint in the land size, and it was difficult to expand the site.

national park or others, and undesirable impacts to the natural environment were thought to be minimal. Also, while the implementation of an environmental impact assessment for this project was not mandatory in light of PNG's domestic laws, it was necessary to have the project registered during the preparatory stage of project implementation and to obtain environmental permits from the Department of Environment and Conservation prior to project implementation. Furthermore, the Madang Town Market operating body, directly managed by the Madang Urban Local Level Government at that time, was to carry out monitoring activities for air pollution, water pollution, noise, social and environmental considerations, and so on during project implementation, in addition to water pollution, social environment, and so on after project completion.

According to the executing agency (National Fisheries Agency) and the Conservation and Environment Protection Authority, this project would not cause serious environmental impacts, and was executed after obtaining the environmental permits. In addition, according to both agencies, there had been no particular cases reported or complaints regarding negative impacts to the natural environment during or after project implementation. It was confirmed in the ex-post evaluation that the Market Limited was disposing of waste properly after the market was opened, showing that there were no particular problems, but was not managing water quality such as water drainage.

Based on the above, while the monitoring status by the Market Limited is not necessarily sufficient, no problems as a whole are considered to have been seen, as no particular negative impacts to the environment associated with project implementation have been caused.

(2) Resettlement and Land Acquisition

It was thought at the time of planning of this project that no land acquisition or resident resettlement cases would be seen, since this project would involve the construction and rehabilitation of the facilities within the premises of the old Madang Town Market, and the site where the market was located was public land owned by the PNG government.

When this point was checked at the time of ex-post evaluation, this project was actually implemented within the premises of the existing market and did not cause any resident resettlement or land acquisition cases.

Therefore, there were no problems as neither land acquisition nor resident resettlement occurred.

(3) Other Impacts

In this project, by considering the gender ratio of market vendors, it was planned to

install a toilet which could be used by the general public, and the toilet was constructed as planned. The number of uses confirmed at the time of ex-post evaluation is shown in Table 3, indicating that it was being used more than expected. Both vendors and customers could use it for a fee. As the size of it is sufficient, it was heard from all the respondents in the qualitative survey that there was no waiting time caused. It was thought that this project improved the hygienic environment of the market and the convenience of visitors to the market regardless of gender.

Regarding the quantitative indicators of this project, all of them achieved the targets, except for the data on the amount of ice sold, which was a supplementary indicator and was unknown. Also, as for the qualitative effects, it was observed that both the hygienic environment and the environment for users of the market improved substantially.

The market has been frequently used not only by vendors around Madang city but also by the ones from the Highlands region and has been vibrant to the extent that even the buildings developed through this project were not providing sufficient room. In the regional economy, the market was considered to be playing an essential role in terms of the distribution and sales of vegetables, fruits, fresh fish, crafts, and so on. Also, there were neither environmental nor social problems seen since neither negative impacts to the natural environment nor resident resettlement / land acquisition cases having been caused through this project.

In light of the above, it is judged that the effectiveness and impacts of this project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional / Organisational Aspects of Operation and Maintenance

While it was planned that the operation and maintenance of the new market developed through this project be undertaken by a special-purpose operating company under the urban local-level government, it was instead done by the staff of the urban local-level government from the commencement of the new market use till November 2017, in the same way as the planning period, because the preparatory establishment work was delayed. Eventually, the Madang Town Market Limited was established under the Madang Urban Local Level Government in November 2017, and a total of nine posts were set under the market manager. At the time of ex-post evaluation, four posts were vacant, as no suitable officers were found and temporary staff members were filling up those posts. At the time of site survey, the tasks of the accountant and the office assistant in the administration division were supported by the market manager and one of the fee collectors¹¹.

¹¹ When the situation was re-checked in June 2019, the accountant was already selected and was expected to be formally hired once it was approved at the board meeting to be held in August 2019.

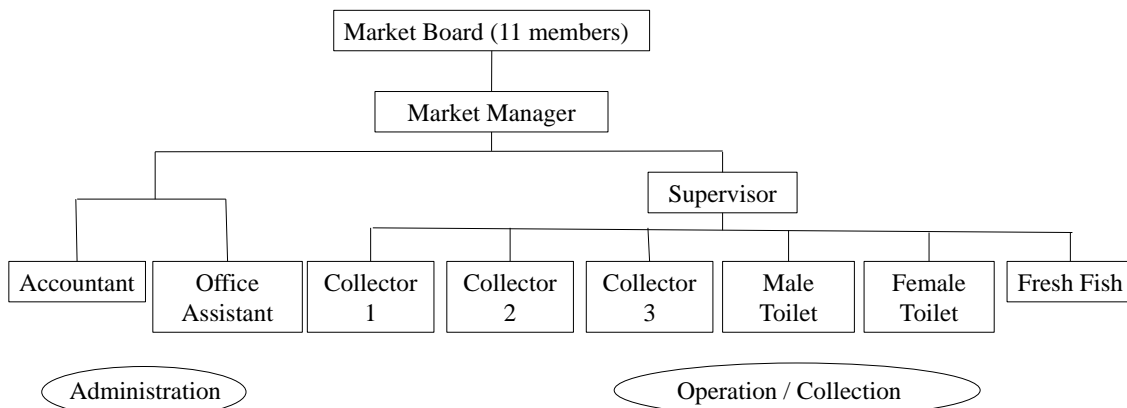


Figure 1: Organisation Chart of the Madang Town Market Limited

Source: Prepared based on the documents provided by the Madang Town Market Limited

Note: At the time of ex-post evaluation, the four posts of ‘Accountant’, ‘Office assistant’, ‘Collector 2’ and ‘Male Toilet’ were vacant.

The Market Limited has been structurally separated from the Madang Urban Local Level Government since its establishment in November 2017 and is required to operate business under a self-supporting accounting system. For its operations, the Market Board has been organised, consisting of 11 members under the mayor, including representatives of women’s and community organisations.

As described above, the commencement of market use was delayed by half a year as an agreement was not made between the provincial government and the urban local-level government regarding what kind of management body would be in charge of the market after this project was completed. However, it was being operated under the Market Limited at the time of ex-post evaluation, and the characteristics of its structure were as follows:

- Daily cleaning of the market was undertaken by two youth groups in Madang city, taking turns every other month. They were to clean the market for about two hours from around closing time every day and clean the drains and so forth on Sundays, when the market was not open.
- As for the security of the market, each security guard was dispatched from each of the five local security companies.
- When the facility was damaged or needed painting, the work was to be outsourced to external companies. During the site survey, repainting work of the exterior fence was being carried out.

Regarding the organisational structure, it could not be said that a sufficient structure had

been established as some posts had not been filled, especially the accountant role as described above. Moreover, while the sale of ice was to be undertaken by the fishery cooperative at the time of planning of this project, no structure to sell it had been established at the time of ex-post evaluation as the fishery cooperative had not been functioning. On the other hand, cleaning, repairs, and security of the market facilities were being carried out by utilising youth groups and external companies. There were no issues found on these points.

The project consultant had recommended that a vendor be on the market board, but there was a problem in that the market vendors were from several different tribes making it difficult to select a representative to be the board member based on everyone's consensus. The board members from the women's and community groups were considered to be practically substituting for the vendor organisations to some extent.

Based on the above, the institutional and organisational aspect of operation and maintenance can be said to have some issues in terms of securing some staff members.

3.4.2 Technical Aspects of Operation and Maintenance

At the time of planning of this project, technical problems were thought to be few, as there was no equipment requiring high-level operating techniques for the operation and maintenance of the Madang Town Market. However, as there would be some changes to the operating method of the market, a soft component was planned for implementation, including the formulation of market operation regulations and operation manuals so that cleaner and more hygienic market operations would be carried out.

When the techniques on operation and maintenance of the market were checked at the time of ex-post evaluation, market rules were well informed and executed, and there were several signboards installed regarding the main rules. The maintenance plan instructed and formulated in the soft component was not really used and the maintenance notebook was not developed, as only one trainee among the trainees from the urban local-level government continued working for the Market Limited, but it was confirmed that the staff members were patrolling inside and inspecting the market every day. While it is desirable to formulate a maintenance plan and to record the activities, it can be said that no technical problems were identified in particular, as the market was inspected every day with necessary actions taken and there were no facilities requiring high-level operation and maintenance techniques.

In addition, clean water was supplied from the taps in the market into vendors' buckets and sold, for which no particular technique was needed. Generally, repairs and cleaning of the facilities were outsourced to external companies, and there were no issues found. However, the breakdown of the ice machine, which was outside the scope of this project, was in the condition as described above, and there was a possibility that it would not be

repaired or replaced. While ice can be procured by buying it from nearby supermarkets, vendors have to purchase it individually every time. Therefore, it was considered necessary that the Market Limited keep ice in stock at the ice storage / sales facility and sell it to the vendors as necessary.

With regard to efforts to raise the staff skill level, the supervisor of the Market Limited was a trainee under the soft component of this project and had changed jobs from the Madang Urban Local Level Government in time for the inauguration of the Market Limited. At the time of ex-post evaluation, the OJT performed by the supervisor was practically training on operation and maintenance for other staff members. On the other hand, regarding account processing, no continuation and utilisation of soft component outcomes were confirmed, as no accountant had been placed by the Market Limited¹².

Based on the above, it can be said that there were no serious technical issues on operation and maintenance of the market as a whole.

3.4.3 Financial Aspects of Operation and Maintenance

The operating balance from November 2017, when the Madang Town Market Limited was established, till September 2018, when the data was available, is shown in Table 6.

Table 6: Balance of the Madang Town Market Limited (November 2017 - September 2018)

(Unit: Kina)

Item	Amount
Revenue	<u>580,782</u>
<i>Madang region vendor fees</i>	286,557
<i>Highlands region vendor fees</i>	150,085
<i>Male toilet fees</i>	40,610
<i>Female toilet fees</i>	77,517
<i>Clean water sales</i>	3,995
<i>Fresh fish building fees</i>	15,065
<i>Male shower</i>	764
<i>Female shower</i>	6,029
<i>Other (penalties)</i>	160
Expenditure	<u>544,795</u>
Balance	<u>35,987</u>

Source: Prepared based on the materials provided by the Madang Town Market Limited

75% of the revenues of the Market Limited are from vendor usage fees, and the amount of

¹² The collection and recording of facility fees were concurrently undertaken by one of the fee collectors, and the summarising of balance was done by the market manager as there was no accountant. The procedure book was not really used, but the accounting management was being done with the Market Limited's own bank account.

revenue from November 2017 till September 2018 was 581 thousand Kina (634 thousand Kina, annual adjusted). This is substantially larger than the annual value of 441 thousand Kina expected at the time of planning.

No sufficient breakdown of the expenditure amount could be obtained, but the main items were personnel costs, outsourcing costs, electricity charges, transportation, consumables, and so on, and the amount was 545 thousand Kina (594 thousand Kina, annual adjusted), being lower than the revenues and leading to a profit of 36 thousand Kina (39 thousand Kina, annual adjusted) as a whole. As the project at the time of planning expected 73 thousand Kina, the actual profit was roughly half of it, but it was confirmed that the profit was ensured in the first year after the inauguration of the Market Limited. It was considered necessary to improve the method of collecting fees and to increase revenue through repairing the male shower, along with the necessity of filling the vacant posts of the permanent staff and of repairing the facilities that would become dilapidated in the future.

While the operating balance of the market was in surplus, there was no conclusion made as to whether the profit would be delivered to the urban local-level government or accumulated to establish a maintenance fund appropriate for maintenance of the market, so it was kept in the bank account of the Market Limited.

Based on the above, there were largely no problems in terms of the financial aspect of operation and maintenance.

3.4.4 Status of Operation and Maintenance

The facilities developed through this project were used in largely good condition, and there were no major problems seen as for the operation and maintenance status. Also, spare parts and so on were not particularly needed, and the maintenance of the location requiring re-painting was being carried out at the time of site survey. It was heard that the materials and parts needed for maintenance were largely available within Madang city, showing that there were no particular problems in terms of procuring parts and materials.

However, the male shower room could not be used because a shower instrument had been broken, and the revenue from its fees was zero in 2018. The maintenance plan of the facilities was not formulated, and any defect identified through the routine patrol by the Market Limited staff members was attended to accordingly. On the other hand, while a number of cracks were seen in the plaster panels on the back side of the roofs of the market buildings, the Market Limited was not repairing them on their own. It was thought to be necessary to take measures such as replacement or installation of wire-mesh protection to ensure the safety of vendors and customers.

It was confirmed that cleaning was being carried out every day by the youth groups, as

described above, and cleaning of drains was also being done every Sunday. In addition, it was heard that awareness-raising activities on cleaning were conducted twice in 2018 with the cooperation of a church group. However, some vegetable waste being left unattended by vendors in the market was occasionally spotted, and it could not be said that the cleaning of the market during operating hours was always sufficient.

Regarding the operation of the market, fees were collected when vendors entered the market every morning and it was seen that some of them had occupied several booths in the sales space after they entered the market. As this is an action negatively affecting both efficient use of the market and fee revenues for the Market Limited, the Market Limited was planning to change the fee collection method in 2019 to improve the situation against one vendor taking possession of several booths¹³.

There is a public street between the agricultural market site and the fresh fish retail site, and some of those related to the market pointed out the danger of crossing it. At the time of the defect inspection, conducted one year after project completion, the project consultant proposed the installation of a pedestrians' crossing. A check on this point in the ex-post evaluation survey revealed that 60% of the respondents in the qualitative survey for customers recognised that it was dangerous to cross the street. According to the Market Limited, blocking the public street would be unrealistic and no major accidents had occurred, but it was considered important to ensure added safety through applying speed mitigating measures and installing a pedestrians' crossing on the public street.

Based on the above, regarding the operation and maintenance status, it can be said that there were mild issues in terms of safety measures and waste disposal.

While there were no major problems found in the technical and financial aspects of operation and maintenance of the market, there were some issues in the organisational aspect, in terms of securing staff members for the Market Limited, and in the maintenance status.

In light of the above, it can be judged that the sustainability of the effects generated in this project is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

Through this project, the Madang Town Market was rehabilitated to contribute to sustainable economic development of the Madang region by providing an environment where agricultural and fishery products are hygienically and efficiently distributed. The relevance of this project is

¹³ At the time of ex-post evaluation, the fee for each booth was being collected from each vendor at the entrance gate. However, there was a policy to change this method in 2019 to collecting fees based on the number of booths occupied by vendors a certain time after the operating hours start.

high as it was both consistent with the development plans and development needs of PNG at the time of both planning and ex-post evaluation and was also consistent with Japan's ODA policy at the time of planning. As for implementation of the project, the project outputs were largely as planned and the project cost was within the planned cost, but the project period substantially exceeded the plan. Therefore, the efficiency is fair. With regard to project effects, it was confirmed that the targets for almost all the quantitative indicators were achieved, and regarding the qualitative effects, the hygienic and usage environment improved significantly. The market has been used by a number of people showing booming activities in which even the buildings developed through this project were not providing sufficient room, and it was thought that the market has been playing a vital role for distributions and sales of vegetables, fruits, fish, crafts and so on. There were neither negative impacts on the natural environment nor occurrences of resident resettlement and land acquisition cases. As a whole, the effectiveness and impact of this project are high. Regarding operation and maintenance, there were no major issues in terms of technical and financial aspects, but some issues were found on the organisational aspect in terms of staff employment for the market company as well as on the maintenance status. Therefore, sustainability of the effects generated through this project is judged to be fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Toward better operation and maintenance of the market, the following points are derived from the evaluation results, and it is important to make efforts to improve them.

- There were some instances where a vendor was occupying several booths despite having paid a fee for one booth. On the other hand, because of it, there were quite a few vendors selling goods on the ground under the sun without a roof. Therefore, it is important that the Market Limited strengthens the process of allocating booths and collecting fees based on their policy so that more vendors will be able to sell their products using the booths developed through this project, and the Market Limited will thus be able to collect fees in accordance with the occupying status.
- It was confirmed that there were a number of cracks on the panels on the backside of the roofs in the market buildings. If they are left unattended, there is a risk that the panels may fall. Therefore, it is necessary to install the wire-mesh or replace the panels immediately to ensure the safety of market users.
- During the site survey in the ex-post evaluation, the market could not supply fresh water to vendors, as the water supply was suspended in the entire area. From a hygienic

aspect and from the viewpoint of securing the freshness of vegetables, fruits, and so on, it is considered desirable to install a large standby water tank (connected to water taps and gutters) as a contingency for this kind of situation.

- The broken ice machine might not be repaired or replaced in the future. While it is possible to procure ice by purchasing it from nearby supermarkets, it is considered necessary, from the point of ensuring convenience, that the Market Limited keep ice in stock in the ice storage / sales facility developed through this project and sell it to vendors as necessary.
- There is a public street between the agricultural market site and the fresh fish retail site, developed through this project, and it became clear that a certain level of danger was being felt. As it is not a realistic measure to block the street, it should be important to ensure higher safety through applying speed mitigating measures and installing a pedestrians' crossing on the public street

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Need for advance confirmation of the establishment of organisational structure conducive to the generation of project effects

In this project, the actual commencement of operation was August 2016, which was a delay of half a year after the date of completion, caused by the operating structure of the market not being decided after project completion. Also, the majority of those related to the Madan Town Market instructed under the soft component of this project (except for one person) were not involved in the operation of the market after the Market Limited was set up. As the establishment of an appropriate operating structure is essential for the sufficient generation of project effects, it is desirable to have credible assurance on the structure for the generation and steady continuation of project effects during the planning stage. Moreover, it is important to provide technical instructions directly to those staff members engaged in operation and maintenance when the organisational structure is confirmed.

End