

Ex-Post Monitoring Report of Japanese ODA Loan Projects 2009 (Philippines)

October 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

PADECO Co., Ltd.

Preface

Ex-post evaluation of ODA projects has been in place since 1975 and since then the coverage of evaluation has expanded. Japan's ODA charter revised in 2003 shows Japan's commitment to ODA evaluation, clearly stating under the section "Enhancement of Evaluation" that in order to measure, analyze and objectively evaluate the outcome of ODA, external evaluations conducted by experts shall be enhanced.

This volume shows the result of the ex-post monitoring for a Japanese ODA loan project that was completed seven years ago and was given ex-post evaluation five years ago. The ex-post monitoring was entrusted to external evaluators to review the projects' effectiveness, impact, and sustainability, to follow up the recommendations made in the ex-post evaluation, and to make further recommendations for future sustainability.

The lessons and recommendations drawn from these monitoring will be shared with JICA's stakeholders in order to apply to the planning and implementation of similar projects in the future.

Lastly, deep appreciation is given to those who have cooperated and supported the creation of this volume of evaluations.

October 2010

Atsuo KURODA

Vice President

Japan International Cooperation Agency (JICA)

Disclaimer

This volume of evaluations shows the result of objective ex-post evaluations made by external evaluators. The views and recommendations herein do not necessarily reflect the official views and opinions of JICA.

No part of this report may be copied or reprinted without the consent of JICA.

The Republic of Philippines

Ex-post Monitoring of Completed ODA Loan Project
“Metro Manila LRT Line 1 Capacity Expansion Project”

External Evaluator: Teruki Takahashi
(PADECO Co., Ltd.)
Field Survey: July 2010

1. Project Description



Map of the project area



LRVs procured by this project

1.1 Project Objective

The objective of this project is to expand the transport capacity of Metro Manila Light Rail Transit (LRT) Line 1 and to improve passengers' comfort by procuring new rolling stock cars and by improving existing facilities, thereby contributing to alleviation of traffic congestion and improvement in the urban environment.

1.2 Outline of the Loan Agreement

Approved Amount / Disbursed Amount	9,795 million yen/9,325 million yen
Loan Agreement Signing Date/ Final Disbursement Date	December 1994/April 2002
Ex-post Evaluation	Japan Fiscal Year 2004 ¹
Executing Agency	Light Rail Transit Authority (LRTA)
Main Contract	Marubeni Corporation (Japan), ABB Daimler-Benz Transportation (Sweden), ABB Power Inc. (Sweden), etc.
Main Consultant	Katahira Engineering International (Japan), Nippon Koei Co., Ltd. (Japan), Tonichi Engineering Consultants, Inc. (Japan), De Leuw Cather International Limited (USA), etc.

¹ The evaluation report is published on the Ex- Post Evaluation Report on ODA Loan Projects FY2005. (http://www.jica.go.jp/english/operations/evaluation/oda_loan/post/2005/pdf/2-16_full.pdf)

1.3 Background of Ex-post Monitoring

Since 1990, passengers of LRT Line 1 were often forced to be left off during the morning rush hour and the Light Rail Vehicles (LRVs) were delayed on a daily basis. A surge in the number of vehicles resulted in increase of congestion on roads in Metro Manila, which led economic losses and air pollution. Under such circumstances, this project was implemented for the immediate provision of a safe, comfortable, inexpensive and punctual mass transport system.

At the timing of the ex-post evaluation, the project effect was not maximized since the passenger volume was decreasing due to the low operation rate of LRVs and development of another competing line. Also, there were concerns on the project sustainability since procurement procedures for spare parts were delayed and LRTA faced severe financial situation. Thus it was recommended necessity of the governmental financial support and improvement on profitability. Therefore, this project was selected for the ex-post monitoring and reviewed under each criterion with the findings from the field survey and other research activities with a final conclusion being drawn.

2. Monitoring Results

2.1 Effectiveness (Impact)

Considering Line 1 as a whole, the passenger volume and fare revenue is increasing and operation rate of LRVs has been improved. The congestion rate is at the appropriate level. Thus the effectiveness has been improved since implementation of the ex-post evaluation. Though the passenger volume is still behind the target of 2 years after the project completion set in the ex-post evaluation, there are potential needs for Line 1. Although the transit capacity is diminished since part of LRVs procured in this project is not operated, the passenger volume and fare revenue is expected to increase if the operation situation of LRVs is improved. Also, passenger comfort has been kept at the appropriate level after implementation of the ex-post evaluation, and there can be observed that this project contributes to alleviate traffic congestion, air pollution and traffic noise.

2.1.1 Quantitative Effects

2.1.1.1 Operation and Effect Indicators

(1) Transit Capacity Expansions

Maximum passenger capacity (one-way) increased from 18,000 passengers/hour, which was before the project implementation, to 27,000 passengers/hour when this project was completed and to 40,000 passengers/hour when LRT Line 1 Capacity Expansion Project phase 2 (Phase 2 project) was completed in 2008. LRV Km run is steadily increasing after the ex-post evaluation. The operation rate of LRVs is also improved and remains over 70%. LRVs running during peak hour are around 70 to 100 with headway of 3 minutes.

Table 1: LRV Km run and Operation rate of LRVs

Year	LRV Km run	LRVs running during peak hour actual ¹⁾	LRVs running during peak hour target ²⁾	Target achievement rate (%)	Operation rate of LRVs (%) ³⁾
2001	6,348,872	66	69	95.7%	72.5%
2002	6,057,719	67	72	93.1%	73.6%
2003	5,384,250	61	72	84.7%	67.0%
2004	5,552,754	62	72	86.4%	68.1%
2005	6,024,420	68	72	94.4%	74.7%
2006	6,274,364	71	72	98.6%	78.0%
2007	7,786,792	98	93	105.4%	70.5%
2008	9,271,683	104	101	103.0%	74.8%
2009	8,967,208	101	101	100.0%	72.7%

Source: LRTA

1) The number of LRVs is 91 from 2001 to 2006 and 139 after 2007.

2) It is LRTA's own target.

3) Operation rate = Available LRVs during peak hour / total LRVs x 100

Passenger volume increase, which was stagnant until 2005, has exceeded more than 6% since 2005. Though it exceeds the target of LRTA and has reached 149,440 thousand passengers, it is still at 73.1% of the target of 2 years after the project completion set in the ex-post evaluation, which is 244,000 thousand ones.

Table 2: Passenger volume (Thousand)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Actual	109,943	107,003	107,249	96,844	104,768	111,801	119,120	138,040	149,440
Increase rate	7.3%	-2.6%	0.2%	-9.7%	8.2%	6.0%	7.2%	15.9%	8.3%
LRTA Target	111,197	118,798	105,730	100,006	103,266	112,022	114,437	125,312	147,013

Source: LRTA

Main factors of passenger volume increase are improvement of railway network through development of Line 2 in 2005 and increase of available LRVs in Line 1 through the completion of Phase 2 project in 2008. Also there are several factors of increase including improvement of railway tickets², extension of the operation hour, and improvement of convenience such as connection to the shopping malls. Also, LRTA is now conducting the Line 1 extension project

² Passengers can enter the LRT paid areas with either a single journey or stored value ticket or a Flash Pass. Stored value tickets are usable on either Line 1 or 2 with discount fare rate. Flash Passes are usable on all the LRT Line 1 and 2, and MRT Line 3 with 1 week unlimited ride on above lines with initial cost of PHP 250.

from Monumento Station to North Avenue Station which connects to MRT Line 3. When Line 7, which extends to northern area from North Avenue Station, is developed, it is expected to increase the passenger volume for Line 1 and MRT Line 3, which is around 55 thousand in total.

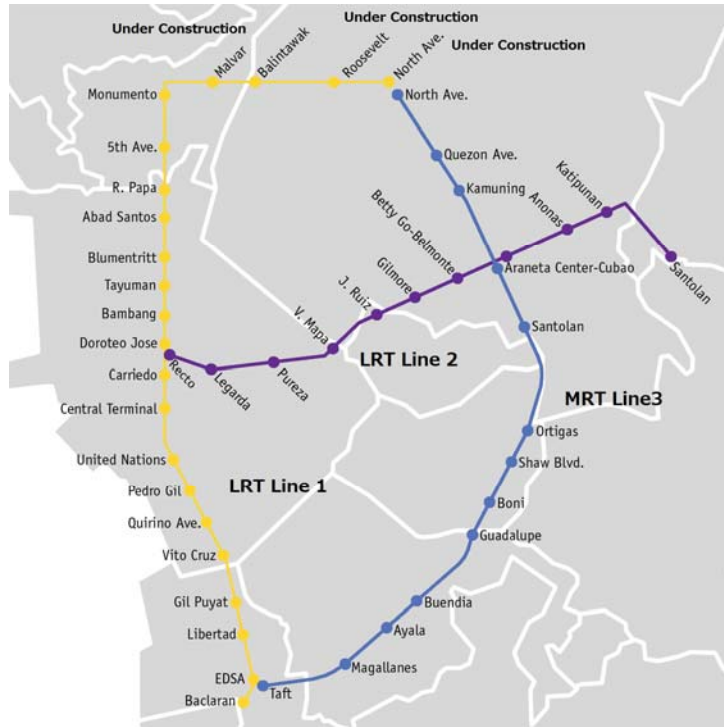


Figure 1 Map of LRT Line 1, 2 and MRT Line 3

Main factors of stagnant passenger volume increase in 2002 to 2004 are decrease in transportation capacity caused by deteriorated LRV operation situation with unavailability of spare parts and fare rate increase in December 2003.

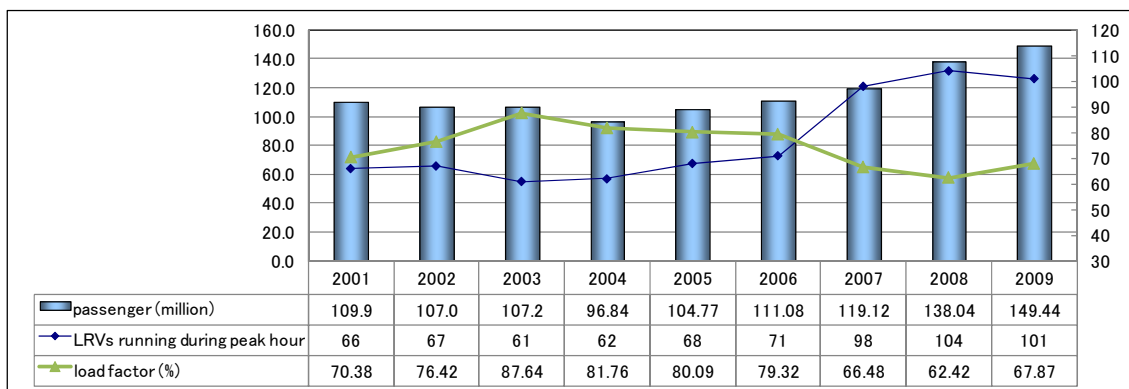


Figure 2: Passenger volume, LRVs running during peak hour and load factor³

Source: LRTA

³ Load Factor=Passenger Peak Load / (Passenger Load Capacity of LRV x Number of LRV Trips Per Hour) x 100

(2) Improved Passenger Comfort

LRTA sets the target for the load factor between 65% and 80% to maintain passenger comfort. As shown in Figure 2, it sometimes exceeds 80% since available LRVs are limited until 2006. After new LRVs were introduced in 2007, load factor has decreased and passenger comfort has been kept at the appropriate level.

(3) Fare revenue

Though the fare revenue from Line 1 has been steadily increasing and reached PHP 2,105.75 million, it is still at 65% of the target of 2 years after the project completion set in the ex-post evaluation, which is PHP 3,237.57 million⁴.

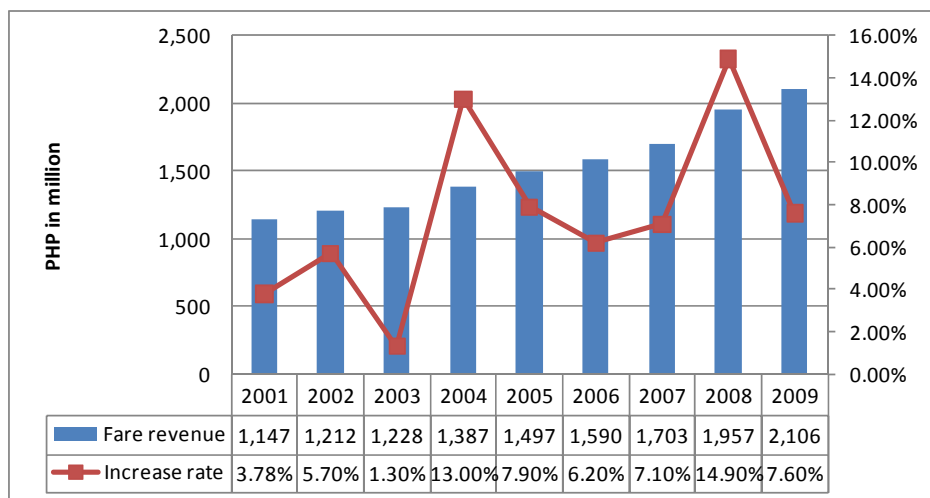


Figure 3 Fare revenue from Line 1 operation

Source: LRTA

Fare rate of LRT is set to cover the operation cost including the maintenance cost and the personnel cost with considering fare rate of other transportation modes. According to Department of Transportation and Communication (DOTC), there has not been significant change on the number of buses and jeepneys along with Line 1 since 2000. Also fare rate of LRT is smaller than that of them. Thus, fare increase of LRT would not affect the passenger volume of LRT. Passenger satisfaction survey results on fare increase are shown as follows;

Table 3 Fare rate comparison of public transportation modes

(Unit: PHP)

Distance	Line 1 average	Jeepney	Bus	Bus with Air Conditioner
9km	14.5	14.5	16.40	19.8

⁴ This amount reflects the inflation on the target of 2 years after the project completion, which is PHP 1,430.80 million (Consumer Price Index in 2009 is 2.38 times as large as that in 1994 according to Philippines National Statistics Office).

14km		21.5	26.55	31.8
------	--	------	-------	------

Source; LRTA for 9km and Ex-post evaluation report of Line 2 in 2009 for 14 km

Table 4 Passenger satisfaction survey results on fare increase

	PHP 2 increase	PHP 5 increase	PHP 10 increase	PHP 15 increase
Continue to use	70.7%	36.0%	6.7%	6.7%
Maybe	1.3%	5.9%	11.7%	5.4%
Not to use	28.0%	57.7%	80.3%	86.6%

It is necessary for fare rate change to be approved by the committee consist of LRTA, Department of Finance, National Economic and Development Authority, Department of Budget and Management, Land Transportation Franchising and Regulatory Board, Department of Public Works and Highways, Metro Manila Development Authority, and etc. under the chairman of DOTC secretary.

2.1.1.2 Financial Internal Rate of Return (FIRR)

FIRR for this project becomes 1.4% at the timing of the ex-post monitoring with considering the constant fare rate increase⁵ which is lower than 1.7% calculated at the timing of ex-post evaluation. Main factors are increase in the operation and maintenance (OM) cost and stagnant increase of fare revenue.

2.1.2 Qualitative Effects

2.1.2.1 Passenger Satisfaction

Several measures contribute to improvement of passenger satisfaction including installation of air conditioner to all the LRVs and special seats for the elderly and persons with disabilities, and introduction of women-only cars. According to the beneficiary survey conducted to 241 passengers at Monumento, Carriedo and EDSA station, satisfaction of passengers has been maintained since implementation of the ex-post evaluation.

- 53% satisfied or highly satisfied with the service provided by Line 1.
- 67% considers service has been improved since 2001.
- 70% feels more comfortable than before.
- 89% agrees with the efforts of LRTA such as priority seats for the elderly and persons with disabilities and women only LRVs.

⁵ It is expected PHP 1 increase for 2010-2015 and PHP 0.5 increase from 2016.

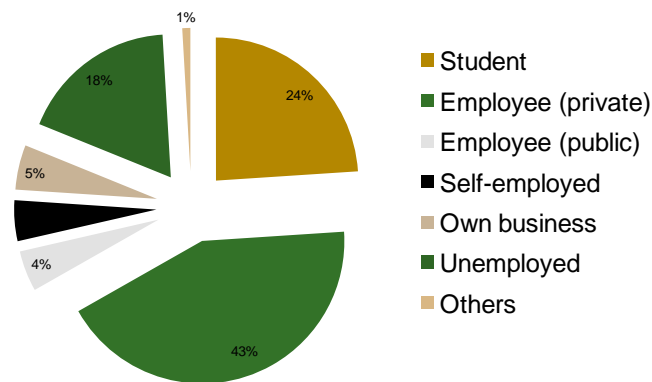


Figure 4 Survey interviewees categorized by occupation

2.1.3 Impact

2.1.3.1 Alleviation of Traffic Congestion

It can be summarized that Line 1 contributes to alleviation of traffic congestion. Traffic volume on Taft Avenue and Rizal Avenue which are along with Line 1 exceeds 15,000 PCU/day and these avenues are crowded with passengers often stop by nearby shopping malls. Number of Line 1 passengers exceeds 410,000 person/day and travel time of Line 1 is less than a third of that of roads along with Line 1. According to the beneficiary survey result, 63% considers that Line 1 contributes to alleviation of traffic congestion and 88% considers travel time is decreased because of Line 1.

Table 5 Passenger volume and travel time survey result
(Surveyed on July 15th, 2010 from 6 am to 20 pm)

	Private car, taxi	Geepney etc	Cargo	Bus	Truck	Tricycle etc	Other	Total
Number of vehicle	4000	5567	497	86	91	3984	41	14266
PCU ¹⁾	4000	8350.5	745.5	215	182	1992	41	15526

	Section	Travel Time
Road	Baclaran→Monumento	96 minutes
	Monumento→Baclaran	115 minutes
Line 1	Baclaran-Monumento	30 minutes

1) Passenger Car Unit

2.1.3.2 Mitigation of Air Pollution/Traffic Noise Level

Though there is no department in charge of the environmental monitoring, Engineering Department, if necessary, conducts surveys by utilizing external consultants. Total suspended

particulate (TSP) concentrations⁶ and the beneficiary survey result show that Line 1 contributes to mitigate the air pollution and traffic noise.

Table 6 TSP concentrations (ug/Ncm)⁷

	2001	2002	2003	2004	2005	2006	2007
Valenzuela (North part of Line 1)	222	206	256	220	169	180	146
Pasay (South part of Line 1)	136	166	196	143	143	166	140

Source: National Center for Transport Studies

Table 7 Result of beneficiary survey

	2004	2009
Congestion is highly or relatively improved	-	76%
Air pollution is highly or relatively reduced	55.6%	72%
Traffic Noise Level is improved	46.9%	51%

2.2 Sustainability

Financial status has not improved since implementation of the ex-post evaluation. It is necessary to strengthen the balance sheet and improve the profitability on the rail revenue since there is limited potential on the non-rail revenue. Also, main cause of decrease in operation rate of LRVs is unavailability of spare parts. This issue which was raised in the ex-post evaluation still needs to be solved.

2.2.1 Operation and Maintenance Agency

2.2.1.1 Structural Aspects of Operation and Maintenance

Maintenance is outsourced to CB&T-PMP-GRAS (CPG) joint venture and LRTA supervises it. There are 380 staff members in LRTA. Among them, 42 members are allocated to Engineering Department and 20 members are allocated for Line 1. There are around 500 staff member in CPG joint venture. Among them, 210 members are allocated to Rolling Stock Department, 161 members are allocated Infrastructure Department and 94 members are allocated Electronics Department. LRTA appropriately supervises CPG joint venture in the following way; LRTA prepares the check list to monitor the performance of CPG joint venture and requests it to periodically submit reports on maintenance activities according to procedures on the engineering and maintenance activity monitoring.

2.2.1.2 Technical Aspects of Operation and Maintenance

LRTA has prepared the manuals for appropriate OM and implemented trainings in

⁶ Standard for TSP concentrations in the Philippines is 230 ug/Ncm.

⁷ Though Tayuman and Libertad Station were selected to review the TSP concentrations in the ex-post evaluation, Valenzuela and Pasay city was selected in the ex-post monitoring because of unavailability of data.

accordance with them and held the examinations annually or semi-annually to review the proficiency level. Also selection process of CPG joint venture was subject to competitive bidding and the maintenance plan and budget projection were reviewed at the timing of bidding. There are not significant issues on way of checking technical aspects of OM.

2.2.1.3 Financial Aspects of Operation and Maintenance

(1) Balance Sheet

The amount of liability in 2009 has reached as large as 2.6 times that in 2001. Though annual paid in capital is around PHP 3 billion it only covers 5% of long term liability which is PHP 59.385 billion in 2009.

The capital expansion law which was indicated in the ex-post evaluation has not yet passed through the congress. However, the financial restructuring committee was formulated as recommended in the JBIC study on LRTA Financial Restructuring and Management Improvement 2007, and it submitted the recommendation to move part of the liabilities from LRTA to Department of Finance (DOF) in 2010. According to LRTA, DOF is currently considering the recommendation. If Secretary of Finance approves it, LRTA can forward the procedures to transfer the liabilities without the law. Immediate actions needs to be taken since financial situation of LRTA has gone down caused primarily by foreign exchange loss in 2008.

Table 8 Balance sheet of LRTA (PHP in million)

Year	Capitals	Liabilities	Assets
2001	18,691	23,593	-4,901
2002	26,522	33,399	-6,877
2003	38,670	40,287	-1,617
2004	42,781	45,828	-3,047
2005	41,165	44,157	-2,992
2006	45,989	45,027	962
2007	46,349	44,141	2,208
2008	51,176	60,827	-9,651
2009	56,471	67,582	-11,111

Source: LRTA

(2) Income Statement

The operating profit is constantly in deficit since the fare rate which is set to cover the operation cost is relatively low. The share of non-rail revenue which includes rental, advertising, interest income etc remains 2% to 4% since 2001 and it is 3.2% in 2009. It is because LRTA minimized the amount of land acquisition to minimize the project cost on Line 1. Therefore the potential of non rail revenue is limited.

Table 9 Income Statement of LRTA (PHP in million)

Year	Total Revenue	Cash flow	Operating Profit	Net Income	Farebox Ratio ¹⁾
2001	1,197.6	160.6	-206.4	-967.2	116%
2002	1,211.9	214.3	-156.2	-1,529.3	121%
2003	1,256.7	228.6	-269.4	5,448.1 ²⁾	109%
2004	1,659.8	452.6	-55.4	-1,463.6	130%
2005	2,057.9	486.6	-118.0	114.4	135%
2006	2,230.5	485.5	-2,271.3 ³⁾	400.4	132%
2007	2,449.6	496.4	-1,727.1 ³⁾	1,058.2	127%
2008	2,769.8	628.7	-657.9	-11,882.3 ⁴⁾	133%
2009	2,940.8	582.5	-463.4	-894.4	127%

Source: LRTA

1) Farebox Ratio=Total Revenue/Rail Operating Cost (Excluding depreciation)

2) The government injected PHP 7,794.7 million of subsidies.

3) Cost of depreciation, amortization and etc. was increased.

4) There was foreign exchange loss of PHP 10,257.5 million.

(3) Governmental Support

The government of the Philippines supports LRTA through tax subsidies, subsidies from DOTC and etc. It supports stable operation of LRTA.

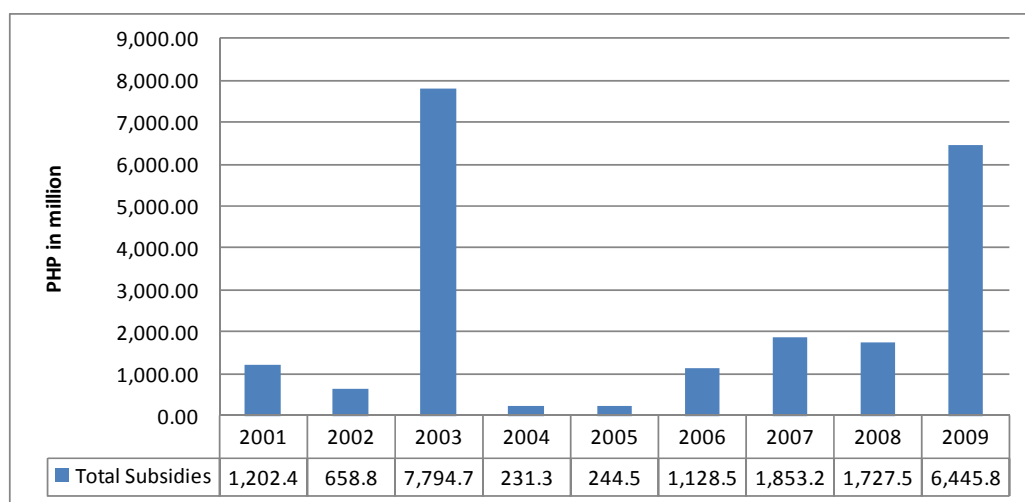


Figure 5 Amount of governmental support

Source: LRTA

2.2.2 Current Status of Operation and Maintenance

Air conditioners of LRVs procured in this project (7 trains with 4 LRVs) are being exchanged by the additional works of Phase 2 project and it is expected to complete in

December 2011. Currently 4 LRVs out of 28 ones are under operation and 20 ones except derailed 4 ones will be re-operated when procurement of spare parts and additional works are completed⁸.

Inspection of LRVs is periodically implemented. Database on spare parts has been developed and LRTA and CPG joint venture can manage the inventory, supplier, cost and etc. There is no significant problem on inspection and information control. The main issue is procurement of spare parts.

Procurement for the spare parts of the LRVs introduced in this project was delayed because of 3 times of bidding failure. According to LRTA, currently it can directly select the supplier and sign the contract. It expects that first batch of shipment will be arrived soon⁹. It is important to clarify actions to take, division of roles among the relevant departments and staff for prompt procurement of spare parts and re-operation of LRVs. Also it is necessary to take the actions to realize the above mentioned plans.

There are several causes of bidding failure including 1) suppliers hedge the investment risks with considering the financial situation of LRTA and 2) suppliers bid in the unexpectedly high unit price, which causes failure of price negotiation. In this project, the main cause of procurement failure is that limited suppliers produce part of spare parts on the electrical system for the LRVs and they are not widely distributed in the market, which caused single bidding and failure of negotiation on the amount and the price of parts. It is affected by the merger of ABB Daimler-Benz Transportation (Adtranz), which is the supplier of the LRVs for this project with Hyundai Rotem, by Bombardier. There are 3 generations of LRVs in Line 1. However, the specification of each generation is quite different. For instance, 2nd generation LRVs which are ones introduced in this project and 3rd generation ones share only around 20% of parts. It results in increase of time and effort for procurement and failure of bidding. It is also a cause of maintenance cost increase. Figure 6 shows that unit cost of maintenance increased in 2001-02 when this project was completed and in 2008-09 when Phase 2 project was completed. Thus it is appropriate to consider carefully the specification of spare parts such as availability in the market and commonality with other generations in the contract agreement for the future similar projects.

⁸ According to LRTA, it determined after the implementation of the field survey of the ex-post monitoring to schedule to install the air conditioners by December 2010 and to restore the LRVs with defective electronic parts by January 2011.

⁹ According to LRTA, the first batch of shipment was arrived on August 2010.

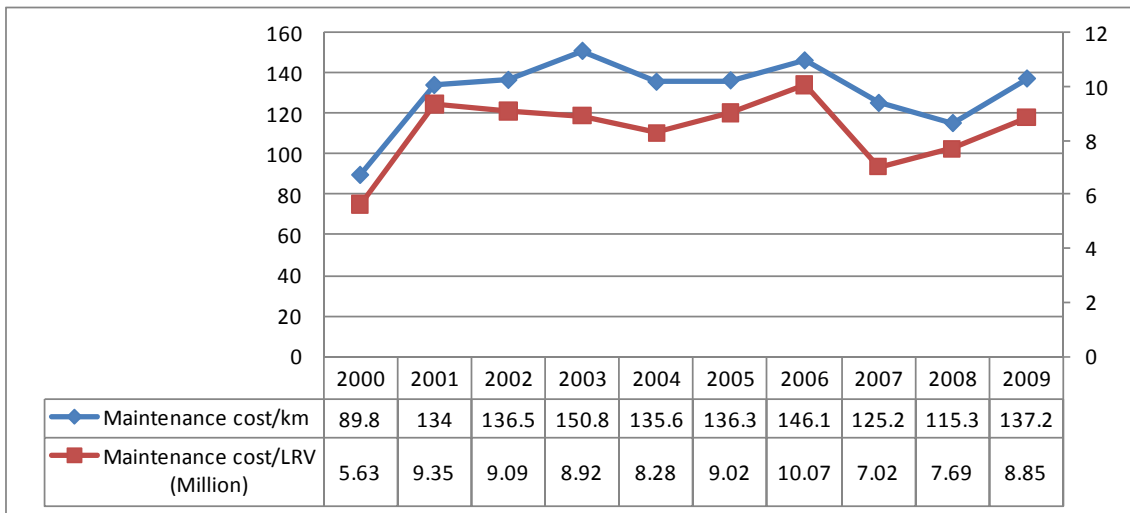


Figure 6 Unit cost for maintenance¹⁰

Source: The evaluator calculated based on the data from LRTA

3. Conclusion, Lessons Learned and Recommendations

3.1 Conclusion

Considering the operation of Line 1 as a whole, passenger volume is increasing and operation rate of LRVs has been improved, and effectiveness has been improved since implementation the ex-post evaluation. However, operation ratio of LRVs procured in this project is deteriorated. Therefore, the contribution of this project for Line 1 is limited. Main cause of deteriorated operation ratio is unavailability of spare parts, and the issue raised in the ex-post evaluation still remains. Financial status has not improved. It is important to strengthen the balance sheet and improve the profitability.

Though LRTA is coping with these issues, it is necessary to vigorously promote the progress.

3.2 Lessons Learned

Contractor agreement: When the procurement process of LRVs has been decided into several phases like the project, it is preferable to carefully consider the specification of spare parts that can be commonly used across the phases and that are widely available in the market.

3.3 Recommendations

Procurement of spare parts (for LRTA): It is important to clarify actions to take, division of roles among the relevant departments and staff for prompt procurement of spare parts and re-operation of LRVs. Based on the above mentioned plans, LRTA should take appropriate actions.

¹⁰ Maintenance cost per LRVs are calculated based only on the cost of LRVs without civil engineering facilities, rails, lights, electricity, communications and etc.

Financial restructuring (for LRTA): It is important to clarify actions to take, division of roles among the relevant departments and staff to promptly transfer the long term liabilities from LRTA to MOF. Based on the above mentioned plans, LRTA should take appropriate actions.

Comparison of Original and Actual Scope

Item	Planned	Actual
(1) Outputs		
1. Procurement of rolling stock cars	32 cars: additional cars with identical spec to existing 2-car trains for each of the currently operable 32 trains	28 cars: 7 new 4-car trains
2. Upgrading of existing facilities	Capacity: 1,122 passengers/train <ul style="list-style-type: none"> • Electrical equipment • Storage track • Electric overhead lines • Signaling/telecommunications equipment • Station buildings/rolling stock cars depot 	Capacity: 1,358 passengers/train <ul style="list-style-type: none"> • As planned • As planned • As planned • As planned • Platform extensions • Additional replacement of ballast (paving stones)
3. Consulting services	<ul style="list-style-type: none"> • Bidding assistance • Work management • Technical assistance for O&M (Foreign consultants: 65M/M; local consultants: 82M/M)	<ul style="list-style-type: none"> • As planned • As planned • As planned (Foreign consultants: 81M/M, local consultants: 82.68M/M)
(2) Project period	Dec. 1994 – Dec. 1999 (61 months)	Dec. 1994 – Mar. 2002 (88 months)
(3) Project costs		
Foreign currency	9,795 million yen	9,325 million yen
Local currency	644 million yen (171 million pesos)	858 million yen (254 million pesos)
Total	10,439 million yen	10,183 million yen
ODA loan portion	9,795 million yen	9,325 million yen
Exchange rate	1 peso = 3.76 yen (January 1994)	1 peso = 3.38 yen (1994-2002 average)