

Republic of the Philippines

Ex-Post Evaluation of Japanese ODA Loan Project

Subic-Clark-Tarlac Expressway Project

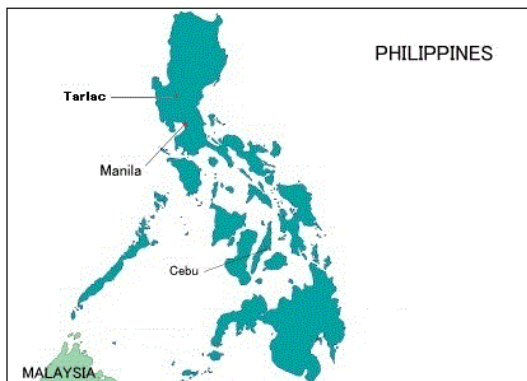
External Evaluator: Yasuhiro Kawabata, Sanshu Engineering Consultant

0. Summary

The objectives of the project were to promote human exchange and logistics system, improve transport efficiency, reduce transport costs and enhance highway safety by constructing an expressway with a total length of 90km connecting Subic with Tarlac via Clark, thereby contributing to promotion of the economic development in the Central Luzon Region. The project has been highly relevant to the development plans and needs of the Philippines, as well as Japan's ODA policies. Comparing the projected traffic volume with the actual figures (in 2011) in the Subic - Clark section and in the Clark - Tarlac section, the actual figure in each section is 70% and 77% of the projected traffic volume, respectively, which are lower than the planned. However, since the travel time was substantially shortened and the number of traffic accidents has been decreased year by year, the development of an efficient and safer expressway contributes to promotion of logistics. The project has somewhat achieved its objectives, and thus the effectiveness is fair. Since both project cost and project period exceeded the plan, efficiency of the project is considered fair. No major problems have been observed in the operation and maintenance system, therefore sustainability of the project effect is considered high.

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

1. Project Description



Project Location



Conception Interchange

1.1 Background

The Central Luzon Region (with a total area of 16,500 km²), which is located in the north of Metro Manila, is a key area for agricultural production in the Philippines, focusing on rice production. At the same time, it is the central industrial zone along with the Calabarzon region in the south of Metro Manila. The Central Luzon has been accommodating migrated people from the northern Luzon, and it is expected that it would help alleviate concentration into the Metro Manila. Particularly, it is expected that an alternative hub function for the logistics, which has been concentrating into the Metro Manila region would be promoted through developing infrastructure such as ports and airports around “Subic Bay Freeport Zone” and “Clark Freeport and Special Economic Zone”, which were established in the former US bases after the US Navy and Air Force withdrew in 1992, and attracting private enterprises into both zones. In the JICA’s Master Plan, the regional development plan covering three poles including Metro Manila, Subic and Clark is proposed. In the Luisita District of Tarlac City, which is located in the north of Clark and along the expressway, a large scale industrial park is being developed. Central Luzon is a key area for agricultural production, and also serves as a collection and distribution base for agricultural products from northern Luzon. Thus, development of agricultural sector is expected.

The project is divided into two expressway sections consisting of the Subic - Clark section and the Clark - Tarlac section. Since the road width of the existing national road between Subic and Clark is narrow, and some sections need to be largely bypassed due to eruption of Pinatubo volcano and succeeding mud flow damages, efficient logistics have been affected and substantial economic loss has accrued. Since the existing North Luzon Expressway ends around the suburb of Clark, the existing national route 3 (so called “Macarthur road”), which is parallel to the expressway, has been chronically congested by traffic in the Clark - Tarlac section. Since Tarlac has served as a collection and distribution base for agricultural products from northern Luzon, trucks loading full agricultural products have been constantly travelling with lower operating speed, and have created more congestion along the Macarthur road.

As mentioned above, early commencement of the project implementation has been anticipated so that efficient logistics in the Central Luzon Region would be promoted resulting in the integrated development of the regional economy, and correction of concentration into Metro Manila, which has been saturated, could be made.

1.2 Project Outline

The objectives of the project were to promote human exchange and logistics system, improve transport efficiency, reduce transport costs and enhance highway safety by constructing an expressway with a total length of 90km connecting Subic with Tarlac via Clark, thereby contributing to promotion of the economic development in the Central Luzon Region.

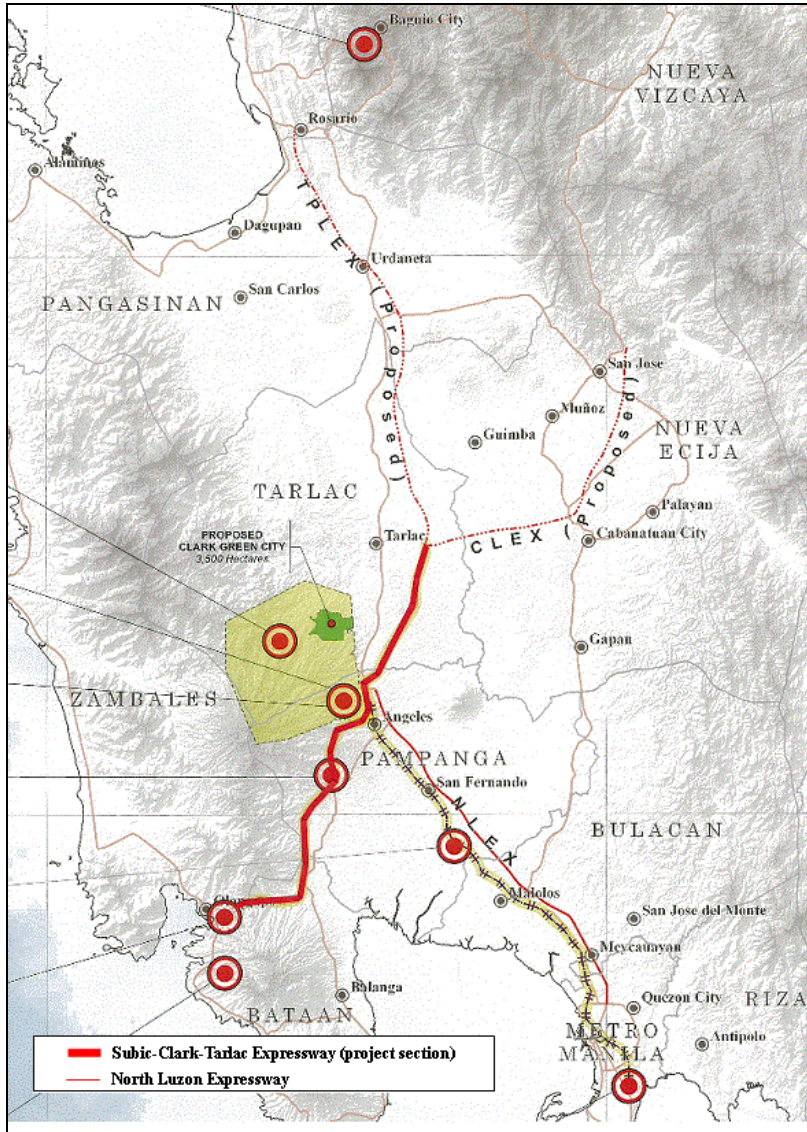


Figure 1: Location of Project Site

Loan Approved Amount/ Disbursed Amount	59,037 million yen (originally 41,931 million, but additional loan provided on March 31, 2008)/ 58,138 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	September 2001/September 2001
Terms and Conditions	Special Loan Civil Work: Interest Rate: 0.95%, Repayment Period: 40 years (Grace Period: 10 years) Conditions for Procurement: Multiple conditions Consulting services: Interest Rate: 0.75% Repayment Period: 40 years (Grace Period: 10 years) Conditions for Procurement: Multiple conditions
Borrower / Executing Agency(ies)	Base Conversion Development Authority (BCDA) /BCDA
Final Disbursement Date	December 17, 2010 (originally December 17, 2009)
Main Contractor (Over 1 billion yen)	Obayashi Corporation • Kajima Corporation • Mitsubishi Heavy Industries, Ltd. • JFE Engineering Corporation (JV), Taisei Corporation • Hazama Corporation • Nippon Steel Corporation (JV)
Main Consultant (Over 100 million yen)	Nippon Koei • Katahira and Engineers International • Oriental Consultants Co. Ltd (JV)
Feasibility Studies, etc.	Mater Planning (for Central Luzon Development Plan) by JICA in September 1995, Feasibility Study (for Central Luzon Expressway Construction Project) by BCDA in 1999
Related Projects (if any)	Japanese ODA Loan: Subic Port Development Project (L/A signed in August 2000), Grant Aid: Construction of Rural Road Bridges and Supply of Materials (5 stages since 1989)

2. Outline of the Evaluation Study

2.1 External Evaluator

Yasuhiro Kawabata, Sanshu Engineering Consultant

2.2 Duration of Evaluation Study

Duration of the Study: October 2012 – September 2013

Duration of the Field Study: January 24 – February 13, 2013, April 14 – April 27, 2013

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

3.1 Relevance (Rating: ③²)

3.1.1 Relevance with the Development Plan of Philippines

The development objective of the transport sector in the Mid-Term Development Plan

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

² ③: High, ② Fair, ① Low

1999-2004 was to support the social-economic development in the Philippines by providing the safe and reliable transport services. In order to achieve the objective, the following strategies were established: 1) reduction of government's involvement in the transport infrastructure development and promotion of the private sector participation; 2) enhancement of quality of existing infrastructure by appropriate rehabilitation and maintenance management; 3) introduction of the appropriate legal framework and price policy to foster the competitive market, and others. Regarding the subject project, the government identified it as the transport network development project in the bases conversion and development program, which aimed to develop the socio-economic development in the central Luzon region. The maintenance and management services after completion of the project were planned to be entrusted to the private sector, and thus the project also met the government's policy, which aimed at promoting the private sector participation.

Under the current Mid-Term Development Plan 2011-2016, the following agendas are to be addressed in order to achieve the inclusive growth: good governance, promotion of investment, infrastructure development by the PPP scheme, social security reforms, enhancement of tax collection capacity, peace building/national security and others. With respect to the transport sector, the government is to strengthen the Philippines' productivity and competitiveness in the international community through development of the strategic logistics corridors around the Metro Manila region, and thus improving the logistics between the economical center and suburban cities. In the Development Plan, priority is given to development of the Subic-Clark-Manila-Batangas corridor, followed by the extension plan to both north and south directions as a strategic logistics corridor. Moreover, the government has a vision for "Clark and Subic to be the best international service and logistics center in the Southeast Asian Region".

3.1.2 Relevance with the Development Needs of the Philippines

It was expected that the traffic volume would drastically increase in the Subic-Clark section under the project as development of Subic Port and regional development around Clark has proceeded. Thus, in order to achieve the smooth traffic flow and secure traffic safety, development of an expressway connecting these two cities was anticipated. The northern section beyond Clark of the existing National Highway 3 (one lane for each direction) had been chronically congested and traffic accidents due to forced overtaking had often occurred. Thus, early construction of a safer expressway with higher capacity was seriously anticipated.

Under these circumstances, the earlier implementation of the project was anticipated in order to enhance efficiency of logistics in the central Luzon region, to undertake the comprehensive development of the regional economy, and to remedy concentration to the Metro Manila region, which has been already over-saturated.

The objective of the project matches with the concept and strategies of the current national

urban policy, and the project has contributed to strategic thrust for regional development plans for each of Clark Freeport/Special Economic Zone and Subic Freeport Zone. Key development regions in the Central Luzon including Clark Freeport/Special Economic Zone, Subic Freeport Zone and the Industrial Park in Tarlac were directly and effectively connected with the shortest length upon completion of the project. Furthermore, Tarlac-Pangasinan-La Union Expressway expanding to the north from Tarlac is expected to be open to traffic by the end of 2013, and construction of Central Luzon Expressway connecting between Tarlac and Philippine-Japan Friendship Highway is planned to be started with the JICA loan by the end of 2014. Thus, the highway network in the Central Luzon would be more expanded and it is expected to contribute to the regional economic development.

3.1.3 Relevance with Japan's ODA Policy

Under "the Medium-Term Strategy for Overseas Economic Cooperation Operations" (issued in December 1999), the assistance to the following agendas was listed as the priority agenda for the Philippines: strengthening of economic structure for the sustainable growth and overcoming factors, which constrain growth, poverty alleviation and correction of disparity among regions, assistance to environmental protection measures including disaster prevention, and development of human resources and institutional reforms.

As the JICA's policy at the appraisal stage, JICA planned to assist the development of the economic infrastructure including the transport sector in order to ensure the sustainable economic growth, and to resolve the bottleneck for economic development.

Accordingly, the project has been highly relevant with the Philippine development plan and development needs, as well as Japan's ODA policy. Its relevance is therefore considered high.

3.2 Effectiveness³ (Rating: ②)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

As operation and effect indicators, three indicators including 1) annual average daily traffic, 2) travel time, and 3) number of traffic accidents were adopted.

(1) Annual Average Daily Traffic

The annual average daily traffic upon completion of the expressway is shown in Table 1.

³ Sub-rating for Effectiveness is to be put with consideration of Impact.

Table 1: Annual Average Daily Traffic

Unit: vehicles/day

Annual Average Daily Traffic (veh./day)	Benchmark	Actual			
	2006	2009	2010	2011 ⁴	2012
Subic - Clark	3,900	6,100	8,100	7,800 (11,100)	8,400
Clark - Tarlac	5,700	13,600	16,400	15,700 (20,500)	16,700

Source: Toll Rate Adjustment to TRB(2009,2010,2011)and TMC data for 2012 unaudited yet

Note 1: Originally planned completion date: 2006

Note 2: Traffic volume in passenger car unit (PCU)

Note 3: Numbers in () are projected volume (appraisal documents for the supplemental loan)

Since the whole sections of Subic - Clark - Tarlac Expressway (SCTEX) were open to traffic in July 2008, the traffic volume has been increasing during the period from 2009 to 2012. Comparing the actual traffic volume in 2011 with the projected on the both Subic – Clark and Clark – Tarlac sections, they are 70% and 77% of the projected, respectively.

(2) Travel Time

Changes of travel time in the project section before and after the project are shown in Table 2.

Table 2: Travel Time

Unit: minutes

	Baseline	Bench mark	Actual			
	2001	2006	2009	2010	2011	2012
Subic - Clark section	120	(60)	35	35	35 (60)	35
Clark - Tarlac section	90	(30)	22	22	22 (30)	22

Source: Responses to the Questionnaire

Note 1: Originally planned completion date: 2006

Note 2: The travel time at Baseline is the travel time traversing using the existing national road.

Note 3: Bench mark and actual figures are the travel time using the completed expressway.

The travel time required for the section between Subic and Clark, and between Clark and Tarlac using the existing national road before the project was 120 minutes and 90 minutes, respectively. After open to traffic, it was substantially shortened to 35 minutes and 22 minutes, respectively.

⁴ At the appraisal time for the supplemental loan in November 2007, the expressway was planned to be open to traffic in April 2009 and thus the year of 2011 was assumed to be 2 years after opening.

(3) Number of Traffic Accidents

Changes in the number of traffic accidents after completion of the project are shown in Table 3.

Table 3: Number of Traffic Accidents

	Numbers in traffic accidents			
	Actual			
	2009	2010	2011	2012
Subic - Clark section	349	424	323	211

Source: Responses to the Questionnaire

Note 1: Originally planned completion date was 2006.

Note 2: Data on traffic accidents on the existing national road is not available.

Since the data on the traffic accidents on the parallel national road is not available, the impact due to completion of the expressway cannot be examined. The number of traffic accidents occurred on the expressway has been decreasing for the past three years as the expressway users has been getting used to drive on the expressway.

3.2.2 Qualitative Effects

Completion of the safer expressway with 2 interchanges for Clark, which enabled substantial shortening of the travel time has contributed to economic development in the Central Luzon Region, particularly in Pampanga. The invested amount to the Clark Freeport Zone has also been increasing.

Under the post evaluation assignment, beneficiary surveys were conducted⁵. Survey results are summarized below.

- i) Has traffic congestion on the parallel national road (Subic - Clark - Tarlac) improved after completion the project? (%)

Yes	No
88	12

Among respondents who gave positive answers, 59% answered it was “substantial”, and 36% said it was “fairly”. Five percent answered it was “slightly”.

⁵ Surveys conducted: January 2013. Number of samples: 403 (persons interviewed are road users, who are traveling on the expressway and residents along the expressway corridor. Male: 64%, Female: 36%). Survey method: interviews using a questionnaire.

ii) Was travel time shortened after completion of the project? (%)

Yes	No
90	10

iii) Has accessibility to following facilities been improved? (%)

Facility	%
Market, Shops, Trade Center	82
Social services	47
Hospitals	30
Government agencies/Public Services	35
Ports	34
Others	1

iv) Has the safety on the national road parallel to the expressway been improved after completion of the project? (%)

Substantially	Fairly	Improved	Not so much	Not Improved
5	7	47	25	16

About 60% of respondents conceive that the safety on the national road has been improved.

According to the beneficiary surveys, about 90% of respondents acknowledge that traffic congestion on the parallel national road has been improved, and that the travel time has been shortened after completion of the project. Moreover, they conceive that accessibility to each facility has been improved and the highway safety has been also improved.

3.3 Impact

3.3.1 Intended Impacts

(1) Transition of Population

Transition of population in three provinces where the project is located are shown in Table 4.

Table 4: Transition of Population

Unit: 1,000 persons

Province	2000	2010	Growthrate
Bataan	558	662	19%
Pampanga	1,484	1,911	29%
Tarlac	1,045	1,243	19%
Philippines	76,790	94,010	22%

Source: Responses to the Questionnaire

Note: Pampanga is the province where Clark Freeport Zone is located.

The growth rate of population in Pampanga, where Clark Freeport/Special Economic Zone is located for the past ten years was 29%, which exceeds the national average.

(2) Invested Amount

Transition of the invested amount to Clark Freeport/Special Economic Zone (CFZ) and Bataan Technology Park (BTP), which are located in the project area are shown in Table 5.

Table 5: Invested Amount to CFZ and BTP

	2008	2009	2010
CFZ: billion dollar	64.56	74.30	81.65
BTP: million peso	7.0	7.0	11.0

Source: Responses to the Questionnaire

Note: Invested amount is the accumulated amount.

The growth rate of the invested amount to Clark Freeport/Special Economic Zone for the past two years is 12% per annum.

(3) Increase of Floor Area of non-residential Buildings

The increase of the floor area of non-residential buildings in three provinces, where the project is located is shown in Table 6.

Table 6: Increase of Floor Area of non-residential Buildings

Unit: m²

Province	2010	2011	Growth Rate
Bataan	64,000	75,000	17%
Pampanga	233,000	354,000	52%
Tarlac	44,000	109,000	148%

Source: Responses to the Questionnaire

Note: Pampanga is the province where Clark Freeport Zone is located.

The floor area of non-residential buildings has been increased by 52% in Pampanga and by 148% in Tarlac for the past two years (2010/2011).

By completion of the project, accessibility between Clark and international port city, Subic has been substantially improved. Furthermore, the Tarlac - Pangasinan - La Union Expressway expanding to the north from Tarlac is expected to be open to traffic by the end of 2013, and construction of Central Luzon Expressway connecting between Tarlac and Philippine-Japan Friendship Highway (linking with Aparri, northern tip of Luzon Island) is planned to be started at the end of 2014. Thus, the project has contributed as a priming for the regional economic development in Pampanga province, which is the center of Luzon in and around Clark.

Findings on the impact revealed through the beneficial surveys are summarized below.

- i) Has the regional economic activities been promoted after the project? (%)

Yes	No
78	21

- ii) Has the business chances been increased after the project? (%)

Yes	No
70	30

About 60% of the respondents, who answered “yes”, state that the increase was more than 30%.

- iii) Has the transport amount of commercial goods to the markets increased after the project? (%)

Increased	Decreased
78	22

As the most increased commercial goods among increased goods, 64% answered that it was “agricultural products”, and 22% said that it was “industrial goods”. Twenty percent answered that it was “processed goods”.

- iv) Has the household income increased after the project? (%)

Yes	No
53	46

Regarding the contribution of the project to the increase of household income, about half of the residents along the corridor conceive its positive contribution, while the remaining half do not its contribution.

According to the beneficiary surveys, about 80% of respondents acknowledge that the regional economic activities have been promoted, and 70% answered that the business chances have been increased. However, only half of the residents admit that they have received the benefit (increase of household income) from the project.

3.3.2 Other Impacts

(1) Impacts on the Natural Environment

Regarding the water pollution problem during the project implementation, the stockyard for construction materials (sand/soil, cement and others), which was considered to be the main source, was properly controlled and managed to contain the spill. According to the national law, tree planting has been done to replace the number of trees knocked down. During the operation stage, a multi-party monitoring team composed of representatives from Department of Environment and Natural Resources, BCDA, local governments and NGOs was created, and an environmental monitoring has been quarterly undertaken. No particular issue has been reported. BCDA has provided an environmental guarantee fund (EGF) to cover immediate rehabilitation and to compensate parties/communities affected by negative impacts of the project.

(2) Land Acquisition and Resettlement

Under the project, about 746 ha of land was acquired and compensation was paid to 1,358 land owners. Compensation was paid in cash and the total amount paid was about 810 million peso. It took much longer time than expected to acquire lands and pay compensation, since it needed to negotiate with each affected people about the amount to be paid, and time was also needed for application for tax clearance, application/approval for subdivision plans for revision, and other administrative procedures according to the domestic law.

(3) Other Positive and Negative Impacts

The implementation of the project has accelerated plans for construction of the Tarlac - Pangasinan - La Union Expressway, which heads north from Tarlac, and the Central Luzon Expressway, which connects Tarlac with Japan-Philippines Friendship Highway. It is expected that the highway network in the central Luzon region would be further strengthened and that they would contribute to promotion/activation of the regional economy, once two expressways were completed.

Comparing the actual traffic volume on the expressway in 2011 with the projected on the both Subic - Clark and Clark - Tarlac sections, they are 70% and 77% of the projected, respectively. However, the travel time has been substantially shortened and the number of traffic accidents on the expressway has been decreasing year by year. The development of efficient and safer infrastructure has contributed to promotion of logistics.

The project has somewhat achieved its objectives and thus the effectiveness is fair.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

The original and actual output of the project is shown in Table 7.

Table 7: Output (original and actual)

	Scope of Work at Appraisal (Appraisal documents)	Scope of Work at the Project Completion
Civil Work:	<ul style="list-style-type: none">• divided 4-lane expressway (about 56 km between Subic - Clark) (about 34 km between Clark - Tarlac)• 8 interchanges• 2 long bridges, 35 medium/small bridges• 6 overbridges• 8 toll stations	<ul style="list-style-type: none">• divided 4-lane expressway (about 50 km between Subic - Clark) (about 40 km between Clark - Tarlac)• 12 interchanges• 4 long bridges, 33 medium/small bridges• 12 overbridges• 14 toll stations
Consulting Services:	1)detail designs 2)assistance in tendering 3)construction supervision 4)assistance in management and maintenance 5)environmental protection related services (assistance in land acquisition and resettlement, environmental monitoring, advice to environmental protection undertaken by an Implementing Agency and contractors) Foreign: 481 M/M Local: 879 M/M	as planned Foreign: 619 M/M Local: 1,833 M/M

Source: JICA Appraisal documents, Wikipedia website, Project Completion Report, Responses to the Questionnaire

Main revisions made on the scope of work are as follows:

1. In the linking section connecting between the Subic-Clark section and Clark-Tarlac section, a segment of the existing North Luzon Expressway with a total length of about 3.2 km was originally planned to be used. However, since the agreement on the distribution of the collected toll revenue was not made with the management company in charge of North Luzon Expressway, an additional 4.5 km section was newly constructed parallel to the existing expressway. Accordingly, two interchanges were added.
2. Originally planned Portland cement concrete pavement was changed to the asphalt concrete pavement (surface course with a thickness of 10cm).
3. The bridge span for Sacobia-Bamban Bridge was widened by about 560 m taking into

account the wider river basin. As a result of detailed designs, the Pasig - Potreo River Bridge was planned to be located at the narrower crossing point so that the bridge length was shortened by about 1.9 km.

4. In order to improve the inconvenience due to separation of communities to be caused by the access controlled expressway, additional overbridges (6 units) were constructed. Furthermore, as a passage for farmers, 36 underpasses were additionally constructed.
5. Taking into account the hydrological system in the region, drainage culverts and irrigation channels were additionally constructed.
6. The grass was changed to trees in some slope sections.
7. Safety facilities (delineators, protection barrier, and others) were added.



Gumain River Bridge



Clark – Subic section

3.4.2 Project Inputs

3.4.2.1 Project Cost

The originally estimated project cost at appraisal was 49.33 billion yen, of which the total Japanese ODA loan was 41.931 billion yen. During the project implementation, the supplemental loan was provided, and the newly estimated cost became 82.166 billion yen, of which the Japanese ODA loan was 59.037 billion yen. The actual project cost was 71.734 billion yen and the Japanese ODA loan disbursed was 58.138 billion yen. The actual project cost was higher than the planned cost, which is equivalent to 145% of the planned cost. However, if the foreign exchange rate (1 peso is 2.4 yen) at the appraisal stage and the average rate (1 peso is 1.95 yen) during the implementation, which covers about 75% of the project cost, are taken into account, yen appreciated by about 20%. It is considered that the project cost was higher than the planned by about 100% in Philippine peso.

Table 8: Comparison of Project Cost
(Originally Planned, Planned after Supplemental Loan Provided and Actual)

Unit: million yen

Item	Originally planned					Planned after supplemental loan provided						Actual					
	Foreign		Local		Total	Foreign		Local		Total	Foreign		Local		Total	ODA	
	ODA loan	Own fund	ODA loan	ODA loan	ODA loan	Total	ODA loan	Own fund	ODA loan	Total	ODA loan	ODA loan	Own fund	ODA loan	Total	ODA loan	
1) Civil Work	23,220	0	12,664	35,884	35,884	31,290	31,290	5,505	23,082	59,877	54,372	24,638	0	19,317	43,955	43,955	
2) Contingency	2,322	0	1,249	3,571	3,571	60	60	0	0	60	60	-	-	-	-	-	
3) Consulting Services	2,051	0	425	2,476	2,476	2,364	2,364	0	1,103	3,467	3,467	2,430	0	901	3,331	3,331	
4) Interest during implementation						1,485	1,138	0	0	1,485	1,138	1,217	401	0	1,618	1,217	
5) Land Acquisition/compensation	0	2,604	0	2,604	0	0	0	2,367	0	2,367	0	0	1,579	0	1,579	0	
6) Management expenses	0	341	0	341	0	0	0	2,591	0	2,591	0	0	1,554	0	1,554	0	
7) Taxes	0	4,438	0	4,438	0	0	0	12,319	0	12,319	0	0	8,070	0	8,070	0	
8) Price escalation												5,309	0	4,326	9,635	9,635	
9) Interest/Guarantee fees to BCDA												0	1,992	0	1,992	0	
Total	27,593	7,383	14,338	49,330	41,931	35,199	34,852	22,782	24,185	82,166	59,037	33,594	13,596	24,544	71,734	58,138	

Source: Original JICA appraisal documents, JICA appraisal documents for supplemental loan

Exchange Rates : At original appraisal 1 US\$ = 108 yen, 1 Peso = 2.4 yen (January 2000)

At appraisal for supplemental loan 1 US\$ = 122 yen, 1 Peso = 2.63 yen (November 2007)

At post evaluation 1 Peso = 1.90 - 2.42 yen (for each item, average during implementation period)

During the project implementation, the following revisions and additional work were undertaken, and they resulted in increase of the project cost:

- 1) Parallel to the expressway, a 4.5 km expressway was newly constructed together with additional two interchanges.
- 2) Six overbridges and 36 underpasses for farmers to pass were additionally constructed.
- 3) Culverts for drained water and irrigation channels were additionally constructed.

Reasons for the supplemental loan made after commencement of the project are as follows. The supplemental loan covered the additional costs increased by the above mentioned items as well.

- 1) The price of major construction materials substantially increased. (iron bars by 24%, asphalt by 68%, and steel by 25%)
- 2) Peso substantially appreciated. (1 peso = 1.93 yen at appraisal to 1 peso = 2.63 yen in

November 2007.)

- 3) Three interchanges and access roads were added to the project, and
- 4) It was considered essential that in order to reduce the share by BCDA, the ODA loan covered the cost increase due to designs changes and the interest during the project implementation, which were originally planned to be locally funded.

3.4.2.2 Project Period

The actual project period was longer than the planned. The original project period planned at appraisal was from September 2001 (signing of the original Loan Agreement) to December 2006 (planned opening date) with a total period of 64 months. The actual project period was from September 2001 to July 2008 (official opening to traffic) with a total period of 83 months, or equivalent to 130% of the plan.

Main reasons for delay of the project implementation are as follows:

1. Subic - Clark Section:
 - 1) additional work for 2 interchanges
 - 2) delay of acquisition of some part of land
 - 3) delay of installation work for traffic signs
 - 4) delay of procurement of contractors (Bid prices of bidders exceeded the government estimated price and rebidding was done)

2. Clark - Tarlac Section:
 - 1) additional work for Clark South Interchange and access roads (3.8 km)
 - 2) delay of acquisition of some parts of land for Mabalacat Interchange
 - 3) delay of final inspection and acceptance of Mabalacat Interchange and its connecting access road
 - 4) delay of procurement of contractors (Bid prices of bidders exceeded the government estimated price and rebidding was done)

3.4.3 Results of Calculations of Internal Rates of Return (IRR)

(1) Financial Internal Rate of Return (FIRR)

FIRR at the appraisal time for the supplemental loan, which was recalculated using the same condition and assumption made for calculation of the FIRR at the original appraisal time, is shown in Table 9. (Recalculation was made by the implementing agency.)

Table 9: FIRR (at original planning stage and at the reappraisal stage for the supplemental loan)

	at original planning stage	at the reappraisal stage for the supplemental loan
FIRR (%)	5.7	7.78

Source: JICA appraisal documents for the supplemental loan

Cost: Construction cost, operation and maintenance costs

Benefits: toll revenues, other revenues from expressway service facilities

According to the recalculation made by the implementing agency, FIRR at the post evaluation stage is 8.00%, which is almost same as the FIRR calculated at the reappraisal stage.

(2) Economic Internal Rate of Return (EIRR)

EIRR at the appraisal time for the supplemental loan, which was recalculated using the same condition and assumption made for calculation of the FIRR at the original appraisal time, is shown in Table 10. (Recalculation was made by the implementing agency.)

Table 10: EIRR (at original planning stage and at the reappraisal stage for the supplemental loan)

	at original planning stage	at the reappraisal stage for the supplemental loan
EIRR (%)	20.4	15.49

Source: Responses to the Questionnaire

Cost: Construction cost, operation and maintenance costs

Benefits: VOC savings, time savings, income from promotion of tourism, savings of cargo transport charges at Subic Port

Since the basic data and information on each benefit item needed for calculation of benefits was not available, EIRR at the evaluation stage was not calculated.

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

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

Regarding the operation and maintenance services for the expressway completed under the project, the contract for the interim service provision was signed between Bases Conversion and Development Authority (BCDA), which is one of the government owned and controlled companies under the Office of the President and Tollways Management Corporation (TMC, subsidiary of Manila North Tollways Corporation) in December 2007, and TMC commenced

their services in March 2008. Although the operating right of the expressway was transferred to Manila North Tollways Corporation on July 20, 2011, the transfer of the operating right has not been approved by the government authority as of today. The total number of TMC staff, who are responsible for operation and maintenance of the expressway under the control of BCDA, is about 700 including about 230 toll attendants, about 250 traffic management staff, and about 150 workers in charge of maintenance work.

The Toll Operation Center, which is located in the Dolores Toll Station is responsible for operation and maintenance of the expressway.



Traffic Management in Toll Operation Center



Tarlac Interchange

3.5.2 Technical Aspects of Operation and Maintenance

According to Tollways Management Corporation (TMC), all the staffs in charge of operation and maintenance possess appropriate skills and technical qualification, and the number of staff assigned for operation and maintenance work is sufficient. All the staffs have regularly taken training courses in the relevant sectors and fields. Training subjects include: manual toll collection system (4 days), counterfeit detection (1 day), traffic management and incident response (20 days), and customer services (2 days). As the standard manuals, those for toll collection, traffic management, maintenance, and support services have been prepared.

No particular problem on implementation of trainings and preparation of manuals has been observed in the offices in charge of operation and maintenance of the expressway, and thus there is no technical issue, which might affect the sustainability of the project.

3.5.3 Financial Aspects of Operation and Maintenance

The revenues and expenditures of BCDA for the last three years are shown in Table 11.

Table 11: Revenue and Expenditure of BCDA

Unit: million peso

	2010	2011	2012
Revenues	2,435	3,674	3,047
Personal services	294	242	234
Maintenance and Other Operating Expenses	2,553	2,890	2,461
Total Expenses	2,848	3,132	2,694
Income from Operation	△413	543	352
Other Income	△2,405	548	△21
Net Income	△2,821	1,036	285

Source: Responses to the Questionnaire

The year 2010 ended in a deficit. However, it went from the red to the black in 2011 and the year 2012 ended in a slight surplus. The financial position of BCDA as of the end of fiscal year 2012 was as follows:

Assets:	130.3 billion peso
Liabilities:	41.3 billion peso
Equity:	89.0 billion peso

As shown in Table 12, the balance (toll revenue – operation and maintenance expenses) for the past three years has recorded surplus. However, in this balance sheet, financial costs (repayment of loans and others) and other non-operational income and expenditures are not included. The toll rates were revised and put into effect on January, 2011. The current toll rate for a passenger car is 2.67 peso per km.

Table 12: Revenue and Expenditure for SCTEX

Unit: million peso

Item	2010	2011	2012
Toll revenue	629	769	865
Operation and maintenance expenses	481	382	458
Balance	148	387	407

Source: Responses to the Questionnaire

Currently, BCDA repays the JICA loan. From the current financial position of BCDA, repayment would not be a problem. Should BCDA has difficulties to repay the JICA loan, BCDA has received guarantee letters, dated August 13, 2001 and February 11, 2008 (for a supplemental loan) from Department of Finance, which state that the government would repay the loan for BCDA.

As stated above, operation of SCTEX is to be entrusted to Manila North Tollways Corporation (MNTC) with the 33-year concession period, and MNTC is to be responsible for repayment of loan without receiving any subsidies from the government. MNTC has been operating the North Luzon Expressway, and the total net profit of 2009, 2010 and 2011 was 256

million peso, 1,308 million peso and 1,580 million peso, respectively. Thus, its financial condition is stable.

3.5.4 Current Status of Operation and Maintenance

The daily routine maintenance has been regularly undertaken, and any defect or damages were not observed on the surface of the expressway. However, since the expressway is entering its fifth operational year, repavement and major rehabilitation works including those for toll plazas, slopes⁶ and drainage facilities are planned to be conducted in addition to the regular maintenance work in 2013. Regarding maintenance equipment and spare parts, there are no specific items to be procured. However, some equipment may be due for replacement.

No major problems have been observed in the operation and maintenance system, and therefore, sustainability of the project effect is considered high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objectives of the project were to promote human exchange and logistics system, improve transport efficiency, reduce transport costs and enhance highway safety by constructing an expressway with a total length of 90km connecting Subic with Tarlac via Clark, thereby contributing to promotion of the economic development in the Central Luzon Region. The project has been highly relevant to the development plans and needs of the Philippines, as well as Japan's ODA policies. Comparing the projected traffic volume with the actual figures (in 2011) in the Subic - Clark section and in the Clark - Tarlac section, the actual figure in each section is 70% and 77% of the projected traffic volume, respectively, which are lower than the planned. However, since the travel time was substantially shortened and the number of traffic accidents has been decreased year by year, the development of an efficient and safer expressway contributes to promotion of logistics. The project has somewhat achieved its objectives, and thus the effectiveness is fair. Since both project cost and project period exceeded the plan, efficiency of the project is considered fair. No major problems have been observed in the operation and maintenance system, therefore sustainability of the project effect is considered high.

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

⁶ Artificial slope created by cut and embankment.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

None.

4.2.2 Recommendations to JICA

Although the operating right of the expressway was transferred to Manila North Tollways Corporation on July 20, 2011, it has not been approved by the government authority as of today. Since the expressway is entering its fifth operational year, major periodic maintenance work and rehabilitation work including overlay and improvement of service areas need to be conducted. Thus, JICA needs to regularly follow up the clearance progress on the concession agreement.

4.3 Lessons Learned

None.

Comparison of the Original and Actual Scope of the Project

Item	Original plan	Actual
<p>1. Output Civil Work</p> <p>Consulting Services</p>	<ul style="list-style-type: none"> • divided 4-lane expressway (about 56 km between Subic – Clark) (about 34 km between Clark – Tarlac) • 8 interchanges • 2 long bridges, 35 medium/small bridges • 6 overbridges • 8 toll stations <p>Foreign: 481 M/M Local: 879 M/M</p>	<ul style="list-style-type: none"> • divided 4-lane expressway (about 50 km between Subic – Clark) (about 40 km between Clark – Tarlac) • 12 interchanges • 4 long bridges, 33 medium/small bridges • 12 overbridges • 14 toll stations <p>Foreign: 619 M/M Local: 1,833 M/M</p>
<p>2. Project Period</p>	<p>Original Plan: September 2001 (L/A signing) – December 2006 (open to traffic) (total 64 months)</p> <p>Plan after supplemental loan provided: September 2001 (L/A signing) – April 2008 (open to traffic) (total 80 months) Completion of civil work was scheduled for April 2009.</p>	<p>September 2001 (L/A signing) – July 2008 (open to traffic) (total 83 months)</p> <p>Subic – Clark section was open to traffic in April 2008.</p>
<p>3. Project Cost</p> <p>Amount paid in Foreign currency</p> <p>Amount paid in Local currency</p> <p>Total</p> <p>Japanese ODA loan portion</p> <p>Exchange rate</p>	<p align="center">27,593 million yen</p> <p align="center">21,721 million yen</p> <p align="center">49,330 million yen</p> <p align="center">41,931 million yen</p> <p align="center">1 Peso = 2.4 yen (as of January 2000)</p>	<p align="center">33,594 million yen</p> <p align="center">38,140 million yen</p> <p align="center">71,734 million yen</p> <p align="center">58,138 million yen</p> <p align="center">1 Peso = 1.9 - 2.42 yen (Average between May 2002 and July 2008)</p>