People's Republic of Bangladesh

FY2018 Ex-Post Evaluation of Japanese ODA Loan Project

"Eastern Bangladesh Bridge Improvement Project

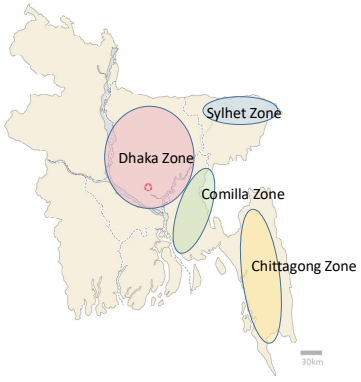
External Evaluator: Keisuke Nishikawa, Japan Economic Research Institute Inc.

0. Summary

Through this project, bridges were replaced and rehabilitated in the eastern region of Bangladesh to promote efficient transportation through improvements in transport networks. The relevance of this project is high as the project was consistent with the development plans and development needs of Bangladesh at the time of both appraisal and ex-post evaluation and was also consistent with Japan's ODA policy at the time of appraisal. As for implementation of the project, while the project was downscaled from the planned scope by excluding five planned bridges from this project, the project cost exceeded the planned amount, and the project period substantially exceeded the plan because of the rebidding for main works and so on. Therefore, the efficiency is low. With regard to project effects, although sufficient data were not necessarily collected, it is considered that the quantitative effects as a whole were largely achieved. The qualitative effects can be said to have been generated particularly in terms of the improvement of functions such as road networks. Regarding the impacts, improvements in living situations and economic activities through increases in the number of shops and better access were observed. Therefore, the effectiveness and impacts of this project can be said to be largely high. As for operation and maintenance, no significant problems were seen in terms of institutional/organizational and technical and financial aspects. However, there were some issues in the operation and maintenance status, and the sustainability of the effects generated through this project can be judged to be fair.

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

1. Project Description



Project Location

A bridge developed through this project
Bridge 106a on National Highway No.4
(Dhaka Zone)

1.1 Background

In Bangladesh, road networks were crucial for transportation. Through assistance from donors such as the World Bank, the Asian Development Bank, the United Kingdom's Department for International Development and so on as well as through the development of roads by the Government of Bangladesh, roads were progressively developed, as shown by the road pavement ratio being over 90% on national highways and regional highways. On the other hand, regarding bridge development, approximately half of the bridges, even on national and regional highways, which were the basis of road networks, needed to be rehabilitated or replaced because of dilapidation and structural problems.

The eastern part of Bangladesh is an economically important region, having more than 60% of the population and producing more than 60% of GDP, but compared to the western part, bridges were not adequately maintained and had become one of the bottlenecks for further economic development of the region. Particularly on national and regional highways without alternative routes, collapses of bridges could have become considerable obstacles to the future elimination of regional disparities and to economic development of the eastern region, so the rehabilitation or replacement of bridges was an urgent issue. In addition, regarding bridge maintenance, further budget increases were necessary and the enhancement of the bridge maintenance structure to efficiently execute the limited budget (such as the formulation of a long-term maintenance plan, improvement of the maintenance system, preparation of bridge inspection manuals, and capacity building) was an urgent issue.

1.2 Project Outline

The objective of the project was to promote efficient transportation through improvements in transport networks by replacing and rehabilitating bridges in the eastern region of Bangladesh, thereby contributing to revitalizing the local economy and rectifying regional disparities.

Loan Approved Amount/ Disbursed Amount	7,824 million yen / 7,813 million yen	
Exchange of Notes Date/ Loan Agreement Signing Date	February 2009 / March 2009	
Terms and Conditions	Interest Rate	0.01%
	Repayment Period	40 years
	(Grace Period	10 years)
	Conditions for Procurement	General Untied

Borrower/ Executing Agency	The Government of the People's Republic of Bangladesh / Ministry of Transport, Roads and Highways Department (RHD)
Project Completion	June 2015
Target Area	Eastern part of Bangladesh (Dhaka, Sylhet, Comilla and Chittagong zones)
Main Contractors	・Mir Akhter Hossain Limited (Bangladesh) ・Gannon Dunkerley & Co. Limited (India) ・Monico Limited (Bangladesh) / Concord Pragatee Consortium Limited (Bangladesh) ・Monico Limited (Bangladesh) / Dienco Limited (Bangladesh)
Main Consultants	・DevConsultants Limited (Bangladesh) / Consulting Engineering Services (India) Private Limited (India) / Oriental Consultants Co., Ltd. (Japan)
Related Studies (Feasibility Studies, etc.)	Special Assistance for Project Formation (SAPROF) for Eastern Bangladesh Bridge Improvement Project (July – December 2007)
Related Projects	[Technical cooperation] Bridge Management Capacity Development Project (2015 – 2018) [ODA loan] Jamuna Multipurpose Bridge Project (1994) Jamuna Bridge Access Roads Project (1997) Paksey Bridge Construction Project (I) (1997) Northern Rural Infrastructure Development Project (1999) Rupsha Bridge Construction Project (2001) Greater Faridpur Rural Infrastructure Development Project (2001) Paksey Bridge Construction Project (II) (2003) Eastern Bangladesh Rural Infrastructure Development Project (2005) Western Bangladesh Bridge Improvement Project (2015)

	[Other International and Aid Organizations] <World Bank (WB)> Implemented the first to third Road Rehabilitation and Maintenance Projects, Rural Roads and Markets Improvement and Maintenance Project, Road Sector Reform Project and so on <Asian Development Bank (ADB)> Road Network Improvement and Maintenance Project (I) (II), Road Maintenance and Improvement Project, assistance at the policy level for traffic and transport <Department For International Development (DIFD)> Road and bridge development in the western Bangladesh, assistance on institutional capacity development of the RHD, implementation of a transport sector administration reform project, and provision of assistance to establish the Road Maintenance Fund

2. Outline of the Evaluation Study

2.1 External Evaluator

Keisuke Nishikawa, Japan Economic Research Institute Inc.

2.2 Duration of the Evaluation Study

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

Duration of the Study: August 2018 – November 2019

Duration of the Meetings in the Third Country: October 22 – 25, 2018 and May 20 – 22, 2019

2.3 Constraints during the Evaluation Study

At the time of this ex-post evaluation, security in Bangladesh was not sufficiently stable. Therefore, the site survey including visits to project sites was conducted by a local consultant on behalf of the evaluator. The external evaluator collected information through direct discussions with the local consultant by inviting him twice to nearby Thailand after having sent the questionnaire related to the target project in advance. The external evaluator did not conduct the actual survey of the project sites, and some information was obtained through the local consultant. Therefore, judgement of some items such as damages of the bridges is based on indirect information.

3. Results of the Evaluation (Overall Rating: C[1])

3.1 Relevance (Rating: ③[2])

3.1.1 Consistency with the Development Plan of Bangladesh

For the development plan of Bangladesh at the time of appraisal of this project, the *Poverty Reduction Strategy Paper* (2005) and its second version (2008) were emphasized, in which sufficient coordination between national highways and rural roads would contribute to economic growth and poverty reduction. In addition, a focus was placed on the adequate maintenance of roads. In the transportation sector, there was a reference to the importance of road development and maintenance in the *National Land Transport Policy* (2004) and the *Integrated Multimodal Transport Policy* (2009). Furthermore, one of the goals of the *Road Master Plan* (2009) was the replacement of bridges in bad conditions.

In the *Seventh Five-Year Plan* (2016-2020), which is the five-year development plan of Bangladesh at the time of ex-post evaluation, resilience against disasters and climate change is emphasized for economic development, and a goal to establish sustainable, safe and high-quality road infrastructure is put forward to achieve social and economic development. Regarding bridges, it is planned that a total of 14,800 m bridges will be newly built and a total of 6,800 m of bridges will be rehabilitated between 2016 and 2020. With regard to the policy on the transport sector, the *National Land Transport Policy* (2004) and the *Road Master Plan* (2009) remained the same and the *Integrated Multimodal Transport Policy* (2009) has been replaced by the *National Integrated Multimodal Transport Policy* (2013). In these policies, development and maintenance of roads and bridges is regarded as important measures. In addition, the *Axle Load Control Station Management Policy* (2012) and the *Road Transport and Traffic Act* (2012) have been formulated, showing the significance of adequately managing axle loads on roads and bridges.

As seen above, in the development plans of Bangladesh, there has consistently been a focus on the importance of the development and appropriate maintenance of roads and bridges both at the time of appraisal and ex-post evaluation, and this project, which realized stable and safe traffic network through bridge development, is consistent with these plans. The policies in the transport sector have remained unchanged in its overall directions while some new policies were developed as stated above, and the consistency of this project is high both at the time of appraisal and ex-post evaluation.

Therefore, this project can be said to be consistent with the development plans of Bangladesh.

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

[2] ③: High, ②: Fair, ①: Low

3.1.2 Consistency with the Development Needs of Bangladesh

At the time of appraisal of this project, roads in Bangladesh were catering for more than 60% of cargo transport (as of 2000) and more than 70% of passenger transport (as of 2005), serving as an essential part for logistics. Bangladesh is located at the mouth of several large rivers flowing into the Bay of Bengal, where bridges have played a very significant role in terms of connectivity of road networks as the country is divided. However, the roads were not maintained appropriately. Concretely, 779 bridges out of 1,710 located on national and regional highways needed to be rehabilitated or replaced due to dilapidation, narrow road widths, structural problems and so on. Moreover, while the road maintenance system had been established, it was not being adequately utilized, and the bridge maintenance system had an issue of non-coordination with actual maintenance activities.

At the time of ex-post evaluation, needs for development of roads and bridges were captured in terms of total road lengths, vehicle registration status, bridge development needs and the bridge management system, which are shown below.

- The total length of trunk roads managed by the executing agency (national and regional highways, and Zila roads) increased from 21,203 km in 2004 to 21,642 km in 2013, showing the continuous needs for development and maintenance.
- The number of newly registered vehicles is shown in Table 1 which indicates that the number of annual vehicle registrations has largely been on an increasing trend, especially motor cycles. As of September 2018, a total of 3,663,000 vehicles are registered in Bangladesh (of which 345,000 private passenger cars and 2,337,000 motor cycles are registered). The role played by roads and bridges has been significant for the smooth passage of these vehicles.

Table 1: Number of Newly Registered Vehicles

(Unit: number of vehicles)

	2011	2015	2016	2017
Number of newly registered vehicles	185,386	321,215	416,410	420,398
Of which passenger cars	12,950	21,062	20,304	21,959
Of which motor cycles	114,616	240,358	332,057	326,550

Source: Bangladesh Road Transport Authority

- Through this project, some bridges were developed in the eastern region of Bangladesh. At the time of ex-post evaluation, the ODA loan project ‘Western Bangladesh Bridge Improvement Project’ was being implemented in the western

region of the country. It indicated that a number of bridges still needed to be constructed or replaced in the country[3]. According to the executing agency, the reason for prioritizing the rehabilitation of bridges in the eastern region in this project was to ensure smooth transportation on the roads connecting Dhaka, the capital city, and Chittagong, the largest port city, for economic growth.

- Regarding the bridge maintenance system, partially improved both through this project and the related technical cooperation project 'Bridge Management Capacity Development Project,' the framework of the database was established but was not being effectively operated as a database because the condition of each bridge had not been sufficiently registered. Although it was planned for the bridge condition survey to be completed throughout the country by the end of 2019 and for the data to be entered, only partial data of bridges, captured by the RHD in 2014, had been entered at the time of ex-post evaluation.

Based on the above, it was observed that the total length of road and the number of newly registered vehicles had increased to some extent, showing that the need for road traffic including bridges have continued to be high.

In the country, there are a number of bridges in need of construction or replacement, and Japan has supported bridge development through ODA loan project '*Western Bangladesh Bridge Improvement Project.*' However, accurate figures could not be captured as the bridge condition survey was still being implemented and as data input into the bridge maintenance system had not been completed. In this regard, it can be said that there were still issues in terms of the development of bridge management tools.

Therefore, this project can be said to be consistent with the development needs of Bangladesh's transport sector at the time of appraisal and ex-post evaluation.

3.1.3 Consistency with Japan's ODA Policy

In the '*Country Assistance Program for Bangladesh*' (2000), which was set as the principal policy of Japan's assistance to Bangladesh at the time of appraisal, poverty reduction through economic growth was set as one of the goals. In the goal, the transport sector was positioned as a priority area.

Also, in providing assistance to Bangladesh, JICA prioritized the transport sector as the key area, particularly the road and bridge sector, and was to provide both financial and technical assistances to achieve 'economic infrastructure development' which

[3] According to JICA, out of 4,500 bridges managed by the executing agency in the country, approximately 1,500 bridges had structural damages and approximately 1,000 bridges were temporary bridges, many of which were dilapidated or damaged.

served as the development agenda for one of the priority goals of 'economic growth.' Concretely, JICA was going to (1) develop and maintain trunk road and bridge networks which were particularly effective for economic growth, (2) develop and maintain regional road and bridge networks particularly conducive to poverty reduction, and (3) improve the administrative capacities of related administrative authorities.

Therefore, this project, which developed bridges, can be said to be consistent with the Country Assistance Program for Bangladesh and JICA's priority goals of assistance at the time of appraisal.

It was confirmed that this project was consistent with the development plans as well as the development needs of Bangladesh at the time of appraisal and ex-post evaluation and with Japan's ODA policy for Bangladesh at the time of appraisal. Furthermore, it 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: ①)

3.2.1 Project Outputs

[Civil works]

As civil works in this project, the development of a total of 68 bridges in four regions (Dhaka, Sylhet, Comilla and Chittagong zones) in the eastern part of Bangladesh was planned as main components. The detailed planned and actual outputs were as follows.

Table 2: Planned and Actual Outputs of This Project (Bridge)

(Unit: number of bridges)

Bridge type	Plan	Actual	Remarks
Replacement of temporary bridge	15	15	
Replacement of 1-lane bridge	42	40	Alterations of R280-058a Bridge Exclusion of R170-018b Bridge
Replacement of deteriorated 2-lane bridge	9	3	Alterations of N4-074c Bridge and N4-078a Bridge Exclusion of N4-090a Bridge, N102-040a Bridge, N102-052a Bridge and N1-441a Bridge
Adding spans for bridges with insufficient length	1	1	
Construction of new bridge	1	1	
Repair of bridge	0	2	Alterations of N4-074c Bridge and N4-078a Bridge
Embankment works	0	1	Alterations of civil works for R280-058a Bridge
Total	68	63	

Source: Information provided by the executing agency

Note: 'N' refers to national highways and 'R' refers to regional highways. 'R280-058a Bridge' means the '058a Bridge on Regional Highway No. 280.'

Table 2 indicates the number of bridges planned by bridge type and the actual number of bridges developed on the four national highways and eight regional highways in Eastern Bangladesh. In the plan, a total of 68 bridges were planned to be replaced or constructed, but five bridges were actually excluded and 63 bridges were eventually replaced, constructed or rehabilitated.

The bridges excluded from this project were the five bridges: the N4-090a Bridge (in Dhaka zone), the N102-040a Bridge and the N4-052a Bridge (in Comilla zone), the N1-441a Bridge and the R170-018b Bridge (in Chittagong zone). Especially, the N4-090a and R170-018b bridges were judged to be of high urgency by the Government of Bangladesh and they were required to be rehabilitated before various procedures were initiated during this project. Therefore, they were excluded from this project and constructed by the Government of Bangladesh as a separate project. Three other bridges were excluded from this project as they were not to be rehabilitated after it became clear as a result of detailed checks after the commencement of this project that there were no severe structural problems. Also, regarding the N4-074c, N4-078a and R280-058a bridges (underlined in Table 2), partial alterations of the project components were observed, such as major repairs instead of installation of bridge columns and embankments instead of replacement after detailed design.

According to regions, while the number of bridges targeted was 18 in the Dhaka zone, 18 in the Sylhet zone, 10 in the Comilla zone and 22 in the Chittagong zone, the actual number was 17, 18, 8 and 20 respectively, showing that the number of bridges developed was lower than the plan except for the Sylhet zone. These alterations of the project components were decided under the concurrence of JICA to implement necessary and sufficient development.

As for other related civil works in addition to bridge development, the development of approach roads required in association with bridge development was planned, and in fact, new approach roads were constructed, while existing approach roads were rehabilitated. Also in association with replacement works of bridges, temporary detour roads and temporary bridges were constructed[4].

[4] Detour roads and temporary bridges were constructed in many locations where bridges were to be replaced. At the locations where bridges were not reconstructed, they were temporarily closed.

N1-394e Bridge (Chittagong zone)

R820-036c Bridge (Dhaka zone)

[Consulting services]

As the consulting services of this project,

- detailed design and tender assistance
- construction supervision
- improvement and development of the bridge maintenance system
- capacity building on bridge maintenance (renewal of bridge inspection standards, improvement of contract management skills, on-site training on bridge inspection, assistance on the formulation of long-term maintenance plan, and so on)
- monitoring of aspects related to environmental and social considerations

were planned and, according to the executing agency and the project consultant, these items were mostly implemented.

With regard to the improvement of the bridge maintenance system, in addition to the execution in this project, further assistance was provided through Technical Cooperation Project '*Bridge Management Capacity Development Project*' following the completion of this project. However, as described in '3.1.2 Consistency with the Development Needs of Bangladesh', it was heard that sufficient information which could be utilized as a database had not been entered at the time of ex-post evaluation. Nevertheless, the planned component of this project was to improve the system and provide instructions on bridge inspection, both of which were implemented as planned.

Based on the above, as the outputs of this project, there was a reduction of five bridges and some alterations to rehabilitation. However, as these were the changes made because of the implementation of another project and for necessary and sufficient development, it can be said that appropriate changes were made in response to the situation at the time of project implementation.

3.2.2 Project Inputs

3.2.2.1 Project Cost

As shown in Table 3, this project was planned at a total cost of 9,308 million yen (foreign currency portion: 1,221 million yen, local currency portion: 8,087 million yen), of which 7,824 million yen (foreign currency portion: 1,219 million yen, local currency portion: 6,605 million yen) would be provided as an ODA loan.

Table 3: Planned Cost of This Project

(Unit: million yen)

		Total	Of which ODA loan	Of which Bangladesh portion
Consultant contract		752	752	-
Main works	Dhaka zone	1,661	1,661	-
	Sylhet zone	1,859	1,859	-
	Comilla zone	1,161	1,161	-
	Chittagong zone	2,004	2,004	-
Other		1,872	388	1,484
Total		9,308	7,824	1,484

Source: Document provided by JICA

Against this planned amount, the actual project cost was, as shown in Table 4, a total of 10,358 million yen, of which the ODA loan amount was 7,813 million yen (foreign currency portion: 1,986 million yen, local currency portion: 5,827 million yen), and the amount borne by Bangladesh was 2,545 million yen.

Table 4: Actual Cost of This Project[5]

(Unit: million yen)

		Total	Of which ODA loan	Of which Bangladesh portion
Consultant contract		702	550	152
Main works	Dhaka zone	2,000	7,264	2,392
	Sylhet zone	2,824		
	Comilla zone	1,152		
	Chittagong zone	3,680		
Total		10,358	7,813	2,545

Source: Document provided by JICA

Note: The individual project costs and the total value do not necessarily match due to rounding.

[5] As the project cost borne by the Government of Bangladesh was calculated by incorporating it into the main works in each region, it was difficult to compare the planned and actual costs in corresponding categories.

As described in '3.2.1 Project Outputs,' the actual output was five bridges fewer than the plan in this project, but the total project cost exceeded the plan as a result of design changes and inflation. While the ODA loan amount was within the plan, the amount borne by the Bangladeshi side exceeded the plan by 71%, and the total project cost was nominally 111% of the plan.

As the planned project cost of the five bridges excluded from this project was 6.4% of the amount for the entire 68 bridges, that portion was considered in the comparison in the ex-post evaluation by calculating the actual proportion of the total project cost as the 'actual amount / (planned amount x (1 - 0.064)),' Consequently, the total project cost was 119% of the plan, exceeding the plan by 19%.

3.2.2.2 Project Period

The planned period of this project was 49 months, from the commencement of the project till the completion of civil works (excluding the warranty period). The planned and actual periods of each stage of the project are shown in Table 5.

Table 5: Breakdowns of the Planned and Actual Periods of This Project

	Plan	Actual
Selection of consultant	June 2008 – February 2009	October 2009 – March 2010
Detailed design	March 2009 – December 2009	April 2010 – February 2011
Tender & contract	October 2009 – August 2010	March 2011 – March 2013
Civil works	September 2010 – June 2012	March 2012 – June 2015
Consulting services	March 2009 – June 2012	April 2010 – June 2016
Project period	June 2008 – June 2012 (49 months in total)	March 2009 – June 2016 (76 months in total[Note])

Source: Document provided by JICA

Note: The actual period is worked out based on the period from the signing of the loan agreement (March 2009) till the completion of civil works (June 2015).

The progress of the project was mostly smooth from the selection of consultants till the detailed design, but during the tender and contract stage, 25 months were needed, far exceeding the planned 11 months. The particularly major factor for the delay was the occurrence of a situation where the tender process had to be repeated as the contractor who had won the bidding with the lowest price for the main works in the Dhaka zone went bankrupt during the contract signing phase. According to the executing agency, although it was judged at the time of pre-appraisal that the successful bidder had the ability to make bank payments, their bankruptcy could not be forecast, as other information on their financial status could not be captured. The prequalification assessment was conducted in accordance with the set procedures, and it is thought to be difficult to forecast the bankruptcy at that point of time.

Moreover, there was a substantial delay in the construction stage, actually taking 42 months against the planned period of 22 months. According to the executing agency, the main factors were a case where redesigning of bridges became necessary after entering the construction phase, turmoil associated with an election (January 2015), holdings of meetings due to uncooperative attitudes by some local residents, occurrences of heavy rain, and so forth. While the factors for the delays during the construction phase were not considered to have been unforeseeable, the actual period till the end of the civil works was 76 months as a result (155% of the plan), exceeding the plan substantially.

Through this project, bridges over 30 m in length were developed. In parallel, 55 smaller bridges between 15 m and 30 m were developed by the Government of Bangladesh. The construction work was carried out between March 2011 and June 2015 and completed at the same time as the completion of civil works of this project.

3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

At the time of appraisal of this project, the Economic Internal Rate of Return (EIRR) was planned to be 27.5% as a whole. The benefit was estimated as reductions in travel time, vehicle running costs, maintenance costs, and so on, while the cost was estimated as the project costs (except taxes) and operation and maintenance costs. The project life was 25 years.

The recalculation of the EIRR based on these preconditions was tried in the ex-post evaluation study. However, it was not possible as neither the traffic volume data nor the bridge database had been developed, and the maintenance costs spent for each bridge and route were unknown.

The output of this project was actually the construction of 63 bridges against the plan of 68 bridges, which was a reduction of five bridges (7%). However, the total project cost exceeded the plan (119% of the plan in real terms) due to the influences of design changes and inflation, and the project period significantly exceeded the plan (155% of the plan) because of various factors.

Therefore, the efficiency of this project is low.

3.3 Effectiveness and Impact[6] (Rating: ③)

3.3.1 Effectiveness

At the time of appraisal of this project, four effect indicators: (1) motorized traffic volume (vehicles/day), (2) non-motorized traffic volume (vehicles/day), (3) traffic

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

congestion rate (volume/capacity) and (4) travel cost saving (thousand Taka/year) were set for each of the 68 bridges as quantitative effects.

When the actual data of the indicators for the 63 bridges developed were requested from the executing agency at the time of ex-post evaluation, the data on the congestion rate and travel cost saving for each bridge had not been captured whereas the results of traffic volume surveys (irrespective of motorized or non-motorized vehicles) conducted in 2013 and 2016 existed. Therefore, the comparison of the data at the time of appraisal and ex-post evaluation was not possible. However, in the project completion report submitted to JICA by the executing agency at project completion, the data for the congestion rate and the travel cost saving of N4-106a were indicated out of the 63 bridges, which enabled the comparison of the data at the time of appraisal and the ex-post evaluation (the latest data). Table 6 shows the achievement status of the indicators for that bridge.

Table 6: Achievement Status of Indicators for N4-106a Bridge Developed in This Project

Quantitative Effects (Effect Indicators)	Baseline 2004	Target 2017 (2 Years After Completion)	Actual 2016
Traffic congestion rate (volume/capacity)	0.87	0.37	0.34
Travel cost saving (thousand Taka/year)	-	892	752

Source: Documents provided by JICA
Note: As the target values for 2014 and 2020 were indicated at the time of appraisal, the target value for 2017, which was two years after completion, was set by averaging the values of 2014 and 2020.

Based on the data for N4-106a Bridge[7], the alleviation of the traffic congestion rate was already above the target, while only data from one year prior to the target year was available. Travel cost savings also reached a value close to the target, and it is considered that the project effects have been generated.

Regarding the traffic volume (annual average daily traffic volume), target and actual values by bridge at the time of appraisal and ex-post evaluation were obtained and summarized by road, the results of which are indicated in Table 7.

[7] The length of the N4-106a Bridge is 58.2 m, and the average length of all 63 bridges is 61.1 m. It also has a girder structure and can be said to be an average bridge in this project.

Table 7: Traffic Volume on Bridges Developed in This Project

(Unit: number of vehicles/day)

Zone	Road	Bridge Number	2004	2013	2014	2016	2020
			Baseline	Actual	Target	Actual	Target
Dhaka	R820	012b, 036a, 036c, 037a, 038e, 041a	2,901	3,836	4,726	4,900	6,332
	N4	067a, 074c, 078a, 106a, 112a, 118a, 125a	5,362	9,669	8,733	11,516	11,704
	R360	63a, 106a, 109a, 111a	1,736	3,053	2,828	4,792	3,790
Chittagong	N1	393a, 394e, 396b, 401a, 434b	3,833	4,843	6,244	5,443	8,367
	N106	015a, 016a, 017a, 018a	4,186	6,435	6,818	9,674	9,138
	R160	044a, 059a, 065b, 066b, 078a, 085b, 088e	2,108	1,626	3,434	2,089	4,601
	R170	071, 015a, 045b, 053b	3,344	5,482	5,447	7,526	7,300
Comilla	N102	053a, 067c, 070a, 047a	6,370	12,771	10,376	15,681	13,905
	R140	057a, 80, 90, 015a	4,432	7,219	4,813	9,674	6,449
	R143	015a	7,739	4,357	12,576	4,150	16,893
Sylhet	R280	020a, 024a, 028a, 029a, 030a, 031a, 032a, 033a, 038c, 053a, 058a, 061a, 064a	5,009	7,583	8,158	5,495	10,933
	R250	036a, 042a, 044a, 049a, 070a	1,406	2,661	2,290	2,031	3,069
Average value of all bridges			3,882	5,990	6,323	6,775	8,474

Source: Prepared from the documents provided by JICA and the information provided by the executing agency

The traffic volume surveys were conducted in 2013 (before project completion) and in 2016 (after project completion), showing the entire traffic volume had increased by 13% over the three years. While the figure is slightly lower than that targeted at the time of appraisal, it is expected to reach 94% of the target value for 2020 provided that the rate of increase from 2013 to 2016 continues through 2020. Therefore, it can be said that the project effects have been generated largely as targeted.

Based on the above, while the quantitative data were not necessarily collected at a sufficient level, it can be judged from the obtained data that the quantitative effect indicators of this project have largely been achieved.

3.3.1.2 Qualitative Effects

At the time of appraisal of this project, the following three points were expected as qualitative effects of project implementation.

(1) Improvement in road functions (travel performance, safety, durability)
(2) Improvement in the bridge maintenance system

(3) Securing of smooth road transport through improvements in maintenance skills of roads and bridges

Regarding these qualitative effects, in addition to the responses from the executing agency, interviews were conducted in the ex-post evaluation with a total of 23 people from public transport operators, shops, public facilities and so on, around the eight bridges[8] where the local assistant carried out site surveys. The results are mainly obtained as shown in Table 8.

Table 8: Generation Status of Qualitative Effects

Qualitative Effects	Responses from the Executing Agency	Results from the Interview Survey
Improvement in road functions	Road functions improved through significant improvements in the widths and conditions of bridges.	All responded 'Improved a lot,' and the satisfaction levels were very high.
Improvement in the bridge maintenance system	Through this project, training was provided to the maintenance staff members and manuals on bridges repairs were developed.	No information as the interview survey was not conducted.
Securing of smooth road transport	Smooth road networks were realized through the implementation of this project.	All responded 'A lot smoother,' Regarding maintenance, while 74% (16 respondents) replied 'Adequate' and 4% (one respondent) 'Dissatisfied' with the conditions of the roads, all responded that they were satisfied with the conditions of the bridges developed.

Source: Prepared from the information collected in the ex-post evaluation

Through the implementation of this project, it was confirmed that the travel performance on bridges significantly improved in general and that smooth road transport was secured. In addition, as only three to four years had passed at the time of ex-post evaluation since the bridges were developed, neither the improvement of

[8] In the four zones targeted in this project, two bridges were selected in each zone as shown below, and the bridge surveys and interview surveys were conducted.

Zone	Bridge Number (Length, Number of Respondents Interviewed)	Average years of residence
Dhaka	N4-067a Bridge (131 m, 3 respondents), R820-036c Bridge (43 m, 3 respondents)	41 years
Sylhet	R250-036a Bridge (85 m, 3 respondents), R280-020a Bridge (100 m, 2 respondents)	35 years
Comilla	N102-070a Bridge (103 m, 3 respondents), R140-80, 90 Bridge (102 m, 3 respondents)	42 years
Chittagong	N1-401a Bridge (51 m, 3 respondents), R170-newly constructed bridge (84 m, 3 respondents)	22 years

* 22 male respondents and one female who responded to the interview near the R250-036a Bridge

maintenance skills of the executing agency nor the causal relation were clear. It was, however, observed that the satisfaction levels of nearby residents on the condition of each bridge were high. Nonetheless, with regard to the bridge maintenance system, while training seminars were held and the manuals were developed, data entry into the system had not been completed.

3.3.2 Impacts

3.3.2.1 Intended Impacts

At the time of appraisal of this project, generation of the following impacts was expected through project implementation:

- Vitalizing regional economies
- Rectifying regional disparities

Regarding these expected items, as there were no quantitative data by region to capture social and economic impacts, the impacts were captured using the answers to the questions from the executing agency and the interview results gathered around the bridges.

From the executing agency, it was heard that there were impacts in terms of easier transportation to agricultural markets, improved access to hospitals, and so on. In the interviews with 23 people around the eight bridges described above, all respondents commented that the access to various facilities had improved and replied that economic and social conditions around the bridges had changed. Especially, comments were heard in each region that impacts such as better movements of people and goods as well as increases in the number of shops around the bridges had been observed.

There was a bridge which had not existed prior to the implementation of this project, which had forced students to commute to a school located further away as they could not cross the river to go to a school on the other side. However, there came an impact that the bridge enabled the students to go to the closer school located on the other side of the river by crossing the bridge after project implementation[9].

On the other hand, it was heard from those around four bridges (in Sylhet and Comilla zones) out of the eight where the interview survey was conducted that as negative impacts, they felt more dangerous than before as the speed of passing vehicles increased because of the better bridge conditions.

- As described above, while there were some issues, it was confirmed that there were

[9] Comments from the residents near a bridge newly constructed on Regional Highway No. 170 in the Chittagong zone

certain impacts generated, such as the increase in the number of shops around the bridges and significant improvements in accessibility.

3.2.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

At the time of appraisal, non-desirable impacts to the environment due to the implementation of this project were judged to be insignificant and the initial environmental examination and the environmental impact assessment (hereinafter referred to as 'EIA') had been approved in August 2008, way before the commencement of this project.

In implementing the bridge rehabilitation project, the result of the EIA required measures to be taken in 23 fields such as waste management, treatment of dangerous goods, prevention of soil contamination, and air pollution and so on, and some fields were respectively applied depending on the condition of each bridge.

Documents provided by the executing agency were checked at the time of ex-post evaluation, which revealed that the environmental monitoring (conditions of drainage, dust occurrences, waste management, soil erosion, noise control, safety measures, traffic control and so on) was regularly conducted and recorded for each bridge. In addition, according to the executing agency, no negative impacts to the natural environment were actually generated during and after the construction, and the interview survey around the bridges showed that all of them responded that there were no negative impacts to the natural environment.

Therefore, this project was implemented in observance of the items set forth in the EIA, and monitoring activities were conducted. As there are no actual negative impacts to the natural environment, it is considered that there were no particular problems as a whole.

(2) Resettlement and Land Acquisition

At the time of appraisal of this project, it was estimated that 1.9 hectares of land would be acquired and the resettlement of 114 people in 27 households would occur through project implementation.

Detailed examinations took place in association with this project, and according to the resettlement action plan prepared, land acquisition or resident resettlement occurred at 32 bridges and 8.3 hectares of land was acquired. The structures of 270 houses and 472 landowners were affected, which substantially exceeded what had initially been expected.

In this project, the 'Resettlement Unit' was established and the assessment

required for compensation payments and the actual payments were implemented[10] based on the domestic law *Acquisition and Requisition of Immovable Property Ordinance* for the landowners to be affected by the project implementation and the nearby residents who would lose job opportunities.

Based on the above, it is considered that there were no issues in terms of procedures as the land acquisition and resident resettlement were compensated for based on the domestic law as described above. However, the actual compensation amount could not be captured as no related documents were not provided.

With regard to the quantitative indicators of this project, traffic congestion rates and travel cost saving could not be confirmed concretely except for one representative bridge (N4-106a Bridge), but presuming from the traffic data of the 63 bridges, target values are thought to have been achieved as a whole. Furthermore, the qualitative effects have been largely generated, particularly in terms of the improvements in the functions as road networks.

As for the impact, while there were no reports indicating quantitative social and economic data, certain impacts are considered to have been generated as it was observed that living situations and economic activities had improved through increases in the number of shops and through access improvements. No negative impacts to the natural environment were confirmed in particular, and the procedures based on the domestic law were taken for resident resettlement and land acquisition cases.

In light of the above, the effectiveness and impact of this project is considered to be high.

3.4 Sustainability (Rating: ②)

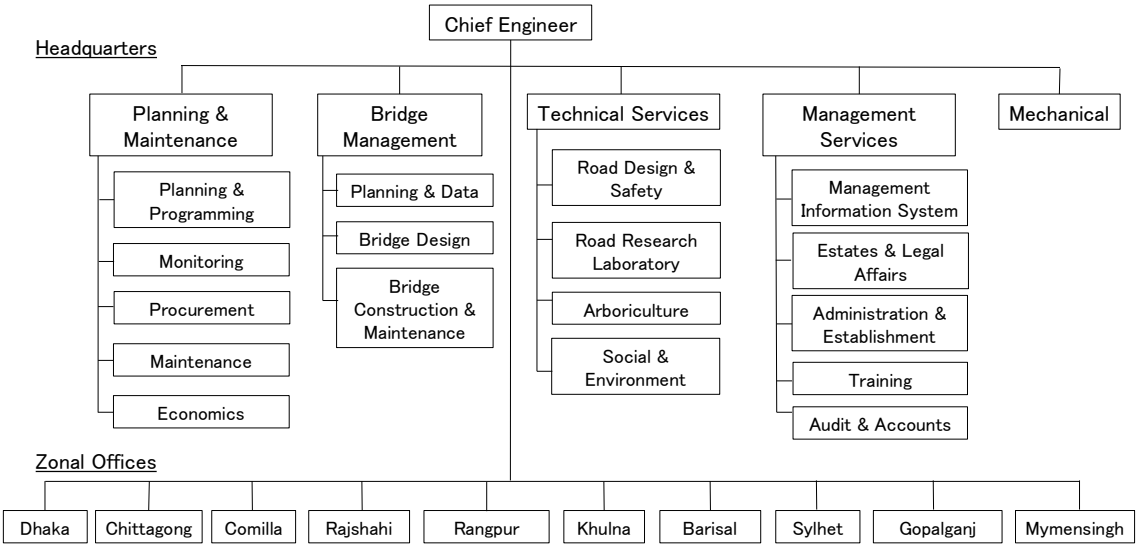
3.4.1 Institutional/Organizational Aspect of Operation and Maintenance

The executing agency of this project was the Roads and Highways Department of the Ministry of Transport (hereinafter referred to as the 'RHD') and the 'Project Implementation Unit' was established in implementing the project.

The maintenance of the bridges after the completion of this project is under the entire jurisdiction of the Bridge Management Wing of RHD in Bangladesh, and routine maintenance work has been undertaken by the 10 zonal offices in the country. There are zonal offices in each of the four zones (Dhaka, Sylhet, Comilla and Chittagong) where this project was implemented.

[10] The actual payment procedure was undertaken by an NGO appointed by the executing agency. However, the concrete amount of payment was unknown as the procedure completion report was not provided during the period of ex-post evaluation.

According to a gazette issued on February 11, 2004, RHD is responsible for the construction and maintenance of relatively large roads such as national and regional highways as well as Zila roads among the roads in Bangladesh, and other small-scale roads are managed by the Local Government Engineering Department and urban roads are managed by authorities of each municipality.



Source: Prepared from the documents provided by the executing agency

Figure 1: Organization Chart of the Roads and Highways Department of the Ministry of Transport (simplified version)

The construction and maintenance structure of roads and bridges in Bangladesh have not been changed significantly from the time of appraisal. The headquarters formulate plans, allocate the budget, operate the bridge maintenance system, and routine maintenance work is undertaken mainly by each zonal office. Also, the types of roads managed have remained the same since the time of appraisal.

Therefore, it is considered that there are no particular problems in terms of the structure of operation and maintenance.

3.4.2 Technical Aspect of Operation and Maintenance

With regard to the technical skills of RHD, it was thought that there were no particular problems in implementing this project as they had implemented a number of projects and they would carry out the project with technical assistance from the consultant hired in this project. Moreover, the following capacity development activities were planned to be implemented through the consulting services of this project to further improve operation and maintenance skills for bridges.

(1) Enhancement of capacities to formulate plans, procurements and contracts, and operations of the bridge maintenance system for the staff members in the bridge maintenance department
(2) Improvement of capacities in routine and periodic inspections, procurements and contracts, and the selection of priorities for maintenance works through on-site training for the staff members in regional and district offices

When the technical skills of RHD was checked with the executing agency at the time of ex-post evaluation, it was heard that RHD engineers had opportunities to undergo training programs inside and outside the country through various projects and there were no problems in terms of the skills of engineers. Moreover, RHD has been conducting a variety of training programs at their own training center, and it was confirmed that 27 courses comprising a total of 430 days were being conducted during the FY2018/19[11].

In the consulting services provided in this project, training sessions on contracts based on the International Federation of Consulting Engineers (FIDIC) clauses, bridge condition survey, construction management, quality management, bridge maintenance and so on were implemented, which led to capacity enhancement on operation and maintenance, according to the executing agency. In addition, in the Technical Cooperation Project implemented from 2015 to 2018 following this project, '*Bridge Management Capacity Development Project,*' a software on the bridge maintenance system was established and a bridge condition inspection manual was developed, and it was heard that the senior engineers trained in the capital have conducted training sessions for junior engineers in regions and the data would be entered in to the system to be fully utilized by the end of 2019. Furthermore, technical assistance has been provided for many years since the period prior to this project to the organizations of the Government of Bangladesh including RHD for the improvement of government procurement capacities.

Therefore, it is considered that various training programs have been systematically conducted to improve the capacities of engineers at each level at RHD and there are no particular problems on the engineers' capacities. Also, it was heard that through consulting services of this project and technical assistance related to ODA loans, capacities on bridge management have improved and the survey was being conducted in

[11] In addition to training courses within the RHD, donors have provided assistance. The World Bank has been supporting the entire Government of Bangladesh for a number of years with the development of capacities in executing the budget allocated within the financial year in procurements and contracts, and those in charge at the RHD also participate in various training programs.

each location for the comprehensive operation of the bridge management system. While the prospect of the commencement of the system operation could not be judged at the time of ex-post evaluation, it is thought that there are few concerns on the technical capacities of operation and maintenance of the bridges developed in this project.

3.4.3 Financial Aspect of Operation and Maintenance

Table 9 shows the maintenance budget of RHD as a whole for the financial years from 2015/16 to 2018/19.

Table 9: Maintenance Budget of RHD

(Unit: million Taka)

	FY2015/16	FY2016/17	FY2017/18	FY2018/19
Periodic Maintenance	4,307.4	3,285.5	6,016.3	4,598.9
Routine Maintenance	800.0	950.0	1,200.0	1,260.0
Emergency Repairs and Maintenance	110.0	100.0	100.0	100.0
Total	5,217.4	4,335.5	7,316.3	5,958.9

Source: Information provided by the executing agency

Also, the recent maintenance budget for the road sections including the bridges developed in this project is shown in Table 10.

Table 10: Maintenance Budget for the Bridge Sections Developed in This Project

(Unit: million Taka)

Zone	Road name	Bridge number	FY2016/17		FY2017/18		FY2018/19	
			Routine maintenance	Periodic maintenance	Routine maintenance	Periodic maintenance	Routine maintenance	Periodic maintenance
Dhaka	R820	012b, 036a, 036c, 037a, 038e, 041a	18.5	45.0	20.1	73.0	19.0	69.0
	N4	067a, 074c, 078a, 106a, 112a, 118a, 125a	19.0	70.0	26.0	126.0	21.5	85.0
	R360	63a, 106a, 109a, 111a	14.0	40.0	17.0	75.0	19.0	60.5
Chittagong	N1	393a, 394e, 396b, 401a, 434b	15.5	176.6	17.5	134.0	20.0	110.0
	N106	015a, 016a, 017a, 018a	53.5	302.2	17.0	172.0	30.0	174.8
	R160	044a, 059a, 065b, 066b, 078a, 085b, 088e	9.5	55.0	12.7	139.9	21.5	108.5
	R170	071, 015a, 045b, 053b	18.5	54.6	20.5	89.0	23.0	45.5
Comilla	N102	053a	21.0	87.7	35.0	233.3	28.0	290.0
	N102	067c, 070a, 047a	14.5	40.0	19.5	75.0	11.0	52.0
	R140	057a, 80, 90, 015a	1.2	50.0	16.5	83.5	18.0	45.0
	R143	015a	12.5	45.0	15.5	77.0	19.5	52.0
Sylhet	R280	020a, 024a, 028a, 029a, 030a, 031a, 032a, 033a, 038c, 053a, 058a, 061a, 064a	11.5	50.0	15.5	70.0	14.0	43.5
	R250	036a, 042a, 044a, 049a, 070a	18.0	55.0	20.0	104.0	20.0	85.0
Total			227.2	1,071.0	252.8	1,451.7	264.5	1,220.8

Source: Information provided by the executing agency

While the maintenance budget of RHD increases and decreases by financial year, the allocated amounts have gradually increased. Out of the total budget, 23% to 30% were allocated from FY2016/17 to FY2018/19 to roads in the eastern region where this project implemented. In particular, more than 80% account for periodic maintenance works. According to the executing agency, the budget required for maintenance has been little at the time of ex-post evaluation as only a few years have passed after the since the development of the bridges was completed in this project and no structural problems have arisen at all. Therefore, the amount of budget needed to sustain the effects generated through this project is considered to be sufficient. However, according to the information separately provided by the executing agency, the amount of budget actually allocated to the entire RHD for their operation and maintenance of roads and bridges has remained at less than 20% of the amount required. It is considered that there are some financial issues in terms of nationwide operation and maintenance.

At the time of appraisal, it was being examined that the road maintenance fund would be created under the assistance of DFID. *The Road Maintenance Fund Board Act* was actually enacted in 2013 and the Board was established. However, according to the executing agency, it has not functioned practically as the manpower and the budget are not necessarily sufficient and the fund for the Road Maintenance Fund has not been secured.

Based on the above, the operation and maintenance budget of the entire RHD has not been necessarily sufficient in terms of the implementation of sufficient maintenance throughout the country, but it has been gradually increasing in recent years, and it is thought at the time of ex-post evaluation that there are no problems for the maintenance of the bridges developed in this project.

3.4.4 Status of Operation and Maintenance

With regard to the maintenance condition of the bridges developed in this project, the interview survey around the bridges[12] has shown a high level of satisfaction as described above. On the other hand, while the bridges were in good condition as a whole, it was confirmed in the site survey conducted by the local assistant that some bridges had damages such as potholes and so on.

[12] The interview survey with 23 people around the eight bridges implemented as part of the qualitative survey, described in '3.3.1.2 Qualitative Effects.'

Damage between the approach road and the abutment
(N102-035a Bridge)

Damages to the slope protection
(R280-038c Bridge)

The bridge maintenance system was a system planned and implemented in this project, followed by JICA's Technical Cooperation '*Bridge Management Capacity Development Project,*' whose operation should have been commenced earlier for the generation of effects of this project and the nationwide maintenance. However, it had not practically been in operation at the time of ex-post evaluation and the conditions of each bridge could not be captured in the system. As the entry of data on the conditions of all bridges by the end of 2019 followed by the formulation of annual maintenance plan is planned by utilizing the knowledge acquired through the subsequent technical cooperation project, it is hoped that the bridge maintenance system will be established for the implementation of adequate operation and maintenance activities.

Therefore, it is considered that there are some issues on operation and maintenance.

Regarding the operation and maintenance of the bridges developed in this project, there were no major problems observed in terms of institutional/organizational, technical and financial aspects, but some issues were found in terms of maintenance and the formulation of a maintenance plan was at the stage of preparation.

In light of the above, the sustainability of the effects generated through this project is fair.

4. Conclusion, Recommendations and Lessons Learned

4.1 Conclusion

Through this project, bridges were replaced and rehabilitated in the eastern region of

Bangladesh to promote efficient transportation through improvements in transport networks. The relevance of this project is high as the project was consistent with the development plans and development needs of Bangladesh at the time of both appraisal and ex-post evaluation and was also consistent with Japan's ODA policy at the time of appraisal. As for implementation of the project, while the project was downscaled from the planned scope by excluding five planned bridges from this project, the project cost exceeded the planned amount, and the project period substantially exceeded the plan because of the rebidding for main works and so on. Therefore, the efficiency is low. With regard to project effects, although sufficient data were not necessarily collected, it is considered that the quantitative effects as a whole were largely achieved. The qualitative effects can be said to have been generated particularly in terms of the improvement of functions such as road networks. Regarding the impacts, improvements in living situations and economic activities through increases in the number of shops and better access were observed. Therefore, the effectiveness and impacts of this project can be said to be largely high. As for operation and maintenance, no significant problems were seen in terms of institutional/organizational and technical and financial aspects. However, there were some issues in the operation and maintenance status, and the sustainability of the effects generated through this project can be judged to be fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

In the ex-post evaluation, it was occasionally seen that repairs of some bridges developed in this project were insufficient. It is important, for the sustainability of good conditions of the entire road and bridge network, to steadily conduct the condition survey including the bridges developed through this project and, based on the results, formulate a concrete maintenance plan including the appropriate securing of the budget. In particular, it is essential, for road safety and the long-term sustaining of road network functions, to keep the bridge maintenance system always up to date through regular inspections and promptly respond to any troubles.

4.2.2 Recommendations to JICA

In this project and the technical assistance related to ODA loans, support was extended so that the operation of the bridge maintenance system would be established and adequate maintenance activities of bridges would be conducted. However, it was observed in the ex-post evaluation survey that the system was not being operated at a sufficient level because of the shortage of data on each bridge. JICA has continued to

cooperate in the bridge development in Bangladesh as seen in the ODA loan project '*Western Bangladesh Bridge Improvement Project,*' which was ongoing at the time of ex-post evaluation. It is important from the viewpoint of sustainability that the bridge maintenance system will be adequately operated based on sufficient data not only for this project but also the said project. Therefore, it is desirable to continue assistance for the improvement of bridge maintenance capacities by following up on the data collection status of RHD and further providing technical assistance as necessary so that RHD will be able to enhance the effects of the projects cooperated by JICA toward the future.

4.3 Lessons Learned

Necessity of project planning with a perspective on steady implementation of maintenance activities

As the issue of maintenance of the bridges developed through this project, the lack of data on the current conditions as well as the maintenance plan was identified. In fact, it was seen at several locations that damages to some bridges were left unrepaired. In this project, data development support was partially implemented, but it was not functioning effectively at the time of ex-post evaluation.

As the development of bridges implies the importance of sufficient post-project maintenance, it is necessary, for the generation of long-term effects, to confirm during the planning stage that a maintenance plan of the developed bridges will be formulated and the budget along the plan will be secured. Therefore, when implementing similar projects, as for the steady implementation of maintenance activities, it is essential to confirm the formulation of the maintenance plan and the securing of corresponding budget, in addition to the organizational structure and technical skills. When the sustainability of project effects cannot be envisaged, it is considered to be necessary for the bridge maintenance aspect that necessary components[13] are added to the project at a sufficient scale or related projects are implemented to firmly establish maintenance activities.

[13] In this project, it is thought to have been important for the sustainability of effects of this project and the good maintenance of domestic bridges that the assistance toward the speedy collection of data and the establishment of the database would actually be provided, in addition to the assistance for the establishment of the framework of the bridge maintenance system as well as the enhancement of data collection capacities through bridge inspections.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs	- Development of 68 bridges (30 m or over) in total (Dhaka zone: 18 bridges, Sylhet zone: 18 bridges, Comilla zone: 10 bridges, Chittagong zone: 22 bridges) - Development of approach roads - Consulting services	- Development of 63 bridges (30 m or over) in total (Dhaka zone: 17 bridges, Sylhet zone: 18 bridges, Comilla zone: 8 bridges, Chittagong zone: 20 bridges) - As planned - As planned
(2) Project Period	June 2008 – June 2012 (49 months)	March 2009 – June 2015 (76 months)
(3) Project Cost Amount Paid in Foreign Currency Amount Paid in Local Currency Total ODA Loan Portion Exchange Rate	 1,221 million yen 8,087 million yen (5,184 million Taka) 9,308 million yen 7,824 million yen 1 Taka = 1.56 yen (As of March 2008)	 Unknown Unknown 10,358 million yen 7,813 million yen —
(4) Final Disbursement	June 2016	

End

JICA Bangladesh Office

JICA Implementing Department's opinions

on Ex-Post Evaluation "Eastern Bangladesh Bridge Improvement Project"

Overall Opinion

Since most bridges in Bangladesh have been constructed during British Colonial era and East Pakistan era, re-construction and rehabilitation of old bridges is crucial for local transport network strengthening. This Project contained the re-construction of 63 priority old bridges identified in JICA's preparatory survey. Based on the Project's high-evaluation by the Bangladesh Government and local users, Bangladesh government requested to Japan for a subsequent Project, "Western Bangladesh Bridge Improvement Project", which is currently under construction.

As properly mentioned in the ex-post evaluation, the consistency with the development plan and development needs, Relevance, Effectiveness, Impact of the Project are high. The Project was implemented properly and the result have contributed to the strengthening of the local road network. Nevertheless, Efficiency and Sustainability aspects were evaluated low. Regarding these aspects, as the Project's implementing department in JICA, we would like to express our opinion below.

In addition, we would like to stress on the fact that the 3rd party evaluator never had the chance to visit Bangladesh due to the security level set by the Japanese Ministry of Foreign Affairs (Level 2: Avoid Non-essential Travel). The evaluator was not able to directly discuss in detail with the Project's executing agency and end-users and had only relied on information gathered by the sub-contracted local consultant. Due to this restriction, in our opinion, the evaluation had regrettably overseen the appreciation of recipient country government and the end-users towards local road network improvement by the Project.

Specific Opinions

1) Efficiency (related page :page 8 to page 13)

In the evaluation, Efficiency is rated low (Rank 1) because the project period significantly exceeded the plan (155% of the plan).

Although Package 2 of the project (consisting of 20 out of 63 bridges in total, one of 4 packages of the project) was delayed because of the re-bidding process that took place when the lowest evaluated bidder of the first bidding process unexpectedly bankrupted, other packages were implemented as planned. In addition, constructed bridges of Package 2 was opened to public, one by one, just after completion of each bridge, not waiting for all the bridges to be constructed. Since the benefit of the Project is realized independently by each bridge, benefit of 40 out of 63 bridges were realized as originally scheduled. Therefore, instead of reflecting the delay of small portion of the Project onto the whole Project, it would have been more accurate rating in terms of efficiency if the schedule of each bridge was taken into consideration.

2) Bridge maintenance (Recommendation to JICA, page 25 to page 26)

The evaluation stipulated that the component of bridge maintenance capacity building was properly conducted in the Project; however, there is still room for improvement in the operation of the system. Thus, the evaluation recommended JICA to continue to support the capacity building of the implementing agency (RHD).

Donors such as JICA and DFID have supported the improvement of bridge maintenance system. Currently data collection and analytical work, planning and budgeting of the bridge maintenance work is under development. Bangladesh Government is also well aware of the necessity for improvement and trying to address this issue. As an example, based on the analysis of the data from the bridge maintenance system, RHD found the necessity and began a program to control over-loaded vehicles. Based on the request from the Bangladesh Government, a new technical cooperation for controlling over loaded vehicles will begin in FY2020 with RHD. This new technical cooperation will benefit the maintenance of bridges.

In the field of bridges maintenance, in the past JICA dispatched the advisor of road and bridge maintenance (1999 -2015), and conducted the technical cooperation project, Bridge Management Capacity Development Project (2015-2018). Additionally, training course of bridge maintenance and long-term training about asset management for RHD engineers have been conducted. As the result of these initiatives, bridge management system has been established and utilized by the implementing agencies. JICA plans to continue to support the

bridge maintenance by various initiatives such as dispatch of experts, training, technical cooperation projects, etc.

(Reference)

RHD also expressed their opinion that the efficiency of the Project should not be evaluated as low for the following reasons: 1) decreased number of bridges in the Project was the result of urgency of the construction; these were completed with government budget, 2) the Project cost increase was the result of currency fluctuation during the implementation period, 3) bankruptcy of bid-winning company was unpredictable therefore the prolonged construction period was not due to RHD.

End