

Binh Bridge Construction Project

External Evaluator: Hajime Onishi

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1. Project Description



Map of Project Area



The Binh Bridge (Photo taken from the approach road at the southern side of the Cam River)

1.1. Background

Hai Phong is the third biggest city in Vietnam next to Ho Chi Minh and Hanoi with a population of 1.85 million as of 2008¹. With Hai Phong Port that serves as an international gateway to the north, the city is a center of economy and physical distribution in the northern part of the country. It has long prospered as a port town where shipping industry, fisheries and marine product processing industry have developed as major industries. Since the 1990s, it has drawn attention from foreign firms as a promising investment destination under the market economy policy of the national government and foreign companies mainly in manufacturing have set up their business in the city at an accelerated rate.

The city has mainly developed on the south side of the Cam River (a tributary of the Red River that runs through northern Vietnam) that runs across the city. However, traffic conditions deteriorated severely due to an increase of flow of people and goods as a result of economic development and development of road infrastructure became an urgent need. The ferry was the only means of crossing the Cam River between the north side that has newly developed and the south side where the city center is located. This was the biggest bottleneck in city traffic.

Of ferry services for crossing the river, the Binh Ferry in the city center and that connects to National Highway No.10 had the heaviest traffic. The traffic increased year after year and

¹ Source: Statistical Yearbook of Vietnam 2008

seriously blocked smooth transportation. In rush hours, for example, people had to wait for around one hour.

Against the backdrop, Hai Phong had an urgent need to construct a bridge across the river as an alternative to the ferry early for smooth flow of the traffic of crossing the river and to develop city traffic network to connect the north and south sides of the river.

1.2. Project Outline

The objective of this project is to improve the traffic network and increase efficiency of physical distribution in Hai Phong and northern Vietnam by constructing a new bridge near a ferry point to cross the Cam River in Hai Phong, thereby contributing to the economic development in the region.

Loan Amount / Disbursed Amount	8,020million yen / 7,308million yen
Exchange of Notes / Loan Agreement Signing Date	March, 2000 / March, 2000
Terms and Conditions	Interest Rate:1.0% (0.75% for Consulting Services and Auditing Services) Repayment Period:40 years (Grace Period:10 years) Conditions for Procurement: Tied (Main Contracts), Bilateral Tied (Consulting Services), General Untied (Auditing Services)
Borrower / Executing Agencies	Guarantor: The Government of Socialist Republic of Vietnam / Hai Hai Phong People's Committee
Final Disbursement Date	July, 2007
Main Contractors (over 1 billion yen)	IHI (Japan) • Shimizu Corporation (Japan) • Sumitomo Construction (Japan) (JV)
Main Consultant (over 100 million yen)	Chodai (Japan) • Japan Overseas Consultants (Japan) (JV)
Feasibility Studies, etc.	1994: Feasibility Study (by The Government of Finland) 1999: Procurement Support Study (Dispatching specialists)

2. Outline of the Evaluation Study

2.1. External Evaluator

Hajime Onishi (Mitsubishi UFJ Research & Consulting)

2.2. Duration of Evaluation Study

Duration of the Study: September, 2009-June, 2010

Duration of the Field Study: December, 2009 / March, 2010

2.3. Constraints to the Evaluation

None.

3. Result of the Evaluation (Overall Rating: A)

3.1. Relevance (Rating: a)

3.1.1. Relevance with the Development Plan of Vietnam

In 1999 when the project appraisal was carried out, the Socio-Economic Development Plan 1996-2000 (commonly called 6th Five-Year Plan), which was a top-level national plan, included the realization of smooth traffic of major routes and supply of transportation infrastructure that meets regional demand as two of main development goals for the facilitation of socio-economic development, granting priority to the transport sector. As related policies in the transport sector in Hai Phong, the overall master plan for Hai Phong city to 2020 that was formulated around the same time included industry development through foreign investment as a purpose of the plan and infrastructure development of port and harbors and industrial parks as well as upgrading of national routes were planned. It is notable that the master plan included a plan to build a bridge over the Cam River to connect the newly developed north-bank side and the city center on the south-bank side to improve the traffic flow over the river. Thus it is fair to conclude that the project to construct a new bridge in order to improve the traffic over the Cam River and develop city traffic network is highly consistent with the upstream policy as a measure to resolve development issues and assist the development plan of Hai Phong in 1999.

In the national 10-Year Socio-Economic Development Strategy 2001-2010² (formulated in 2001) and the Socio-Economic Development Plan 2006-2010 (commonly called 8th Five-Year Plan) that are the highest-level national plans currently in place have designated acceleration of infrastructure development as a major issue. In particular, transport infrastructure development as well as social infrastructure development is regarded as a priority policy. A Politburo decision in 2003 and a Cabinet decision in 2004 provide the promotion of transport

² The Government of Vietnam has formulated the 10-Year Socio-Economic Development Strategy as the topmost document that summarizes the national development vision and Five-Year Socio-Economic Development Plans based on the strategy since 2001. Based on the strategy and plan, it formulates a Five-Year Public Investment Plan (PIP) and annual plan and budget allocation. In collaboration with donors, it formulated the Comprehensive Poverty Reduction and Growth Strategy (CPRGS) in 2002 in parallel with the 10-year strategy and five-year plans. Although the Government of Vietnam regarded the CPRGS as an action plan to implement the 10-year strategy and five-year plans, donors continued to point out confusion and adverse effects of multiple national strategies. As a result, the 8th Five-Year Socio-Economic Development Plan 2006-2010 was integrated with the CPRGS in real terms to consolidate the national development strategy.

infrastructure development and improvement in the northern economic region in Vietnam (target year: 2020). The development of the infrastructure continues to be placed as a priority issue³. The Comprehensive Poverty Reduction and Growth Strategy (CPRGS) that was formulated in 2002 recognized that large-scale infrastructure development contributes to poverty reduction and that transport infrastructure development helps poverty reduction through economic growth. In relation to the transport sector policy of Hai Phong, the overall master plan for Hai Phong city to 2020 continues to be valid. In its 2001 revision, relocation of city administrative organ to the north side of the Cam River is added as a new long-term policy goal in addition to the urban development in the north side of the city that was originally in the plan as a policy goal. Besides, two more bridges are planned to be constructed other than the Binh Bridge for further improvement of traffic flow over the river⁴.

This shows that transport infrastructure development in northern Vietnam is still a priority issue in the national policy and improvement of the traffic over the Cam River has been a critical policy goal in the master plan of city development of Hai Phong. The project is a most efficient option (discontinuation of ferry operation and construction of bridges) to achieve the policy goal and it was highly consistent with the city development plan and sector policy.

3.1.2. Relevance with the Development Needs of Vietnam

In 1999, the ferry was the only means of transportation to cross the Cam River. This divided the city traffic and blocked smooth flow of traffic. The traffic of the Binh Ferry that was the heaviest among a number of ferries continued to increase year after year and people had to wait as long as one hour during rush hours.

The demand for crossing the Cam River has been growing even after the completion of the project⁵. The project to construct a new bridge over the river as an alternative to the ferry to make the traffic flow smooth has been highly relevant.

3.1.3. Relevance with Japan's ODA Policy

In 1999, JICA (former JBIC) placed infrastructure development as a focal field of assistance for Vietnam and the transport sector as a top priority sector together with the electric power sector. As described earlier, the Study on the National Transport Development Strategy in the Socialist Republic of Vietnam (VITRANSS) that was formulated under the leadership of JICA serves as a logical basis of the decision of transport

³ The Study on the National Transport Development Strategy in the Socialist Republic of Vietnam (VITRANSS) that was formulated under the leadership of JICA served as a logical basis of the decision.

⁴ The bridge construction plan is also specified in the Hai Phong City Construction Plan to 2025 that was formulated in 2009.

⁵ See 2.3 Effectiveness (1) Traffic Volume of the Binh Bridge for details.

infrastructure development policies and plans in Vietnam. Furthermore, the Government of Japan extended a yen-loan to the rehabilitation project of Hai Phong Port (that is a gateway in northern Vietnam) around the same time and thus northern Vietnam including Hai Phong was a focal area of Japan's ODA projects in Vietnam.

This project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2. Efficiency (Rating: b)

3.2.1. Project Outputs

The table below presents a comparison of the planned output and the actual output. A semi-automatic toll collection system that is capable of identifying three types of vehicle was originally delivered. Later, it was changed to a system that is able to identify seven types of vehicle in response to the demand of Vietnam (Ministry of Transport) and the system was delivered. The differences between the planned and actual figures for the bridge width and the approach road length are due to the result of the detailed design (D/D).

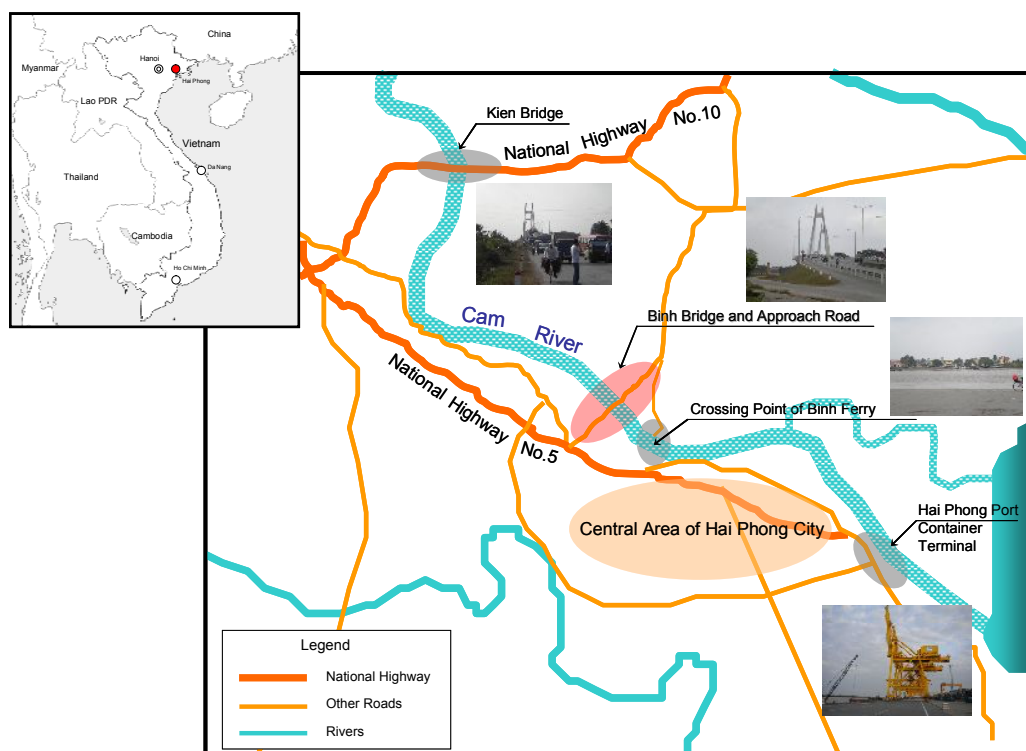


Figure-1: Location of the Project Site (Magnified View of Hai Phong City)

Table1: Changes in Output

Project Components	Original	Actual	Differences
1. Bridge Construction			
1.1 Length	17 spans continuous steel composite concrete girder, including 3 spans cable stayed bridge (Main span: 260m)	The same	As planned
1.2 Width	23.5m (3.75m x 4 lanes, sidewalk, etc.)	22.5m (3.75m x 4 lanes, sidewalk, etc.)	Mostly as planned
1.3 Approach Road	South side: 600m, North side: 900m (including intersection construction at south side)	South side: 594m, North side: 888m (including intersection construction at south side)	Mostly as planned
1.4 Toll Plaza, Toll Collection System	Toll plaza construction at north side, Installation of toll collection system	Toll plaza construction at north side, Revision of toll collection system and reinstallation	Revision of toll collection system
2. Consulting Services (C/S)	839.0M/M	723.4M/M	Reduction of 115.6M/M

Source: JICA internal documents and results of interviews

As for consulting service, the number of consultants turned out much smaller than originally projected, in construction supervision in particular⁶. These figures were probably overestimated in the first place because this was the first construction of a long span cable-stayed bridge in Vietnam.

3.2.2. Project Inputs

3.2.2.1. Project Period

The project period was longer than planned.

The project was scheduled from March 2000 to February 2004, a period of 48 months, but it extended to 63 months, from March 2000⁷ to May 2005⁸, which was equivalent to 131% of the original plan.

⁶ The original and actual consulting service man-month (M/M) of design services were almost the same (original: 84 M/M, actual: 85.9 M/M), whereas the actual M/M of construction supervision services was decreased more than 100 M/M compared with the original one (original: 755 M/M, actual: 637.5 M/M). Note that the actual consulting service cost was decreased 68 million yen compared with the original plan (original: 819 million yen, actual: 751 million yen).

⁷ There were three options of the beginning of the project: (i) when the L/A was signed (March 2000), (ii) when construction of the south-side approach road was launched with Vietnamese fund (May 1998) and (iii) when the selection of consultants began (October 1999). They are milestones of the project and all the events can be considered as the beginning of the project. Because the executing agency, HP Bridge, considers (i) signing of L/A as the beginning, we chose it as the beginning date.

⁸ Loan extension of the project was completed in July 2007. According to the executing agency, HP Bridge, all the project tasks were completed in May 2007 (completion of installation of toll collection system). However, because the Binh Bridge opened and began services on May 13, 2005, it is fair to consider this date as the date of completion.

The major causes of the delay are the delay of the approval of the selection of consultants (critical path) in the first half of the project and the significant delay due to the change of the toll collection system in the latter half. Details of the delay are explained below.

- It took time to have the final decision by the Government of Vietnam (approval by the Ministry of Planning and Investment, in particular) in the selection of the consultants. (Sources: Answers to the questionnaire to HP Bridge and results of interviews)
- After the approval of the investment decision of the project (May 1997), the funding source changed from the U.K., Finland and the Netherlands to Japan. This required a series of re-approvals of investment decision, design and cost estimation. The bidding for construction work was not allowed to be begun until after the re-approval. As a result, the bidding for the bridge construction package began about 1.5 years later than original schedule. (Source: JICA internal documents and results of interviews)

Table-2: Comparative Table of Project Periods

Task	Original Schedule (months)	Actual (months)	Differences (months)
Selection of Consultants ¹⁾	Aug. 1999 – Nov. 1999 (4.0)	Dec. 1999 – Sep. 2000 (10.0)	6.0
Review of Detailed Design	Jan. 2000 – Jun. 2000 (6.0)	Nov. 2000 – Apr. 2001 (6.0)	0.0
Tender / Contract	Jan. 2000 – Feb. 2001 (14.0)	Dec. 2001 – Jul. 2002 (8.0)	- 6.0
Civil Works (incl. Toll Plaza) ²⁾	Feb. 2001 – Feb. 2004 (37.0)	Sep. 2002 – Sep. 2005 (37.0)	0.0
Consulting Services	Dec. 1999 – Feb. 2004 (51.0)	Oct. 2000 – May 2005 (56.0)	5.0
Construction of Toll Plaza and Installation of Toll Collection System	Dec. 2003 – Feb. 2004 (3.0)	Completed in May 2007	N/A
Total	Mar. 2000 – Feb. 2004 (48.0)	Mar. 2000 – May 2005 (63.0)	15.0

Source: JICA Internal documents, answers to the questionnaire to HP Bridge and results of interviews

Note-1): The selection of consultants began before the signing of L/A (March 2000).

Note-2): The construction of the south-side approach road began in May 1998 with the funds of the Vietnam side.

3.2.2.2. Project Cost

Total project cost was lower than planned (99% of the original plan).

The total cost of the project was originally 9,435 million yen (the Japanese ODA loan share was 8,020 million yen) but the actual project cost was 8,406 million yen (the Japanese ODA loan share was 7,308 million yen), which was equivalent to 89% of the original plan.

As a result of efficient order placement through the international competitive bidding, the total project cost decreased. The amount of the domestic currency decreased drastically as shown in the Comparison of Original and Actual Scope at the end of the report, because of (i) a decrease in the payment of import taxes (257 million yen, mainly on steel products), (ii) surplus of contingency (44 million yen), and (iii) depreciation of local currency of Vietnamese dong against Japanese yen (especially that of construction cost in dong, 617

million yen)⁹.

Although the project period was much longer than planned (131% of the original plan), the project cost was lower than planned (99% of the original plan), therefore efficiency of the project is fair.

3.3. Effectiveness (Rating: a)

The traffic volume of certain types of vehicles is slightly smaller than the projection at the time of appraisal, probably because the demand was overestimated. A clear reduction of traveling time and various positive impacts are recognized.

3.3.1. Quantitative Effects

3.3.1.1. Results from Operation and Effect Indicators

(1) Traffic Volume of the Binh Bridge

As presented in Table 3 below, the traffic volume of three types of vehicle—car, bus and truck—in 2009 was slightly below the projection at the time of appraisal (projection of traffic four years after the opening). On the other hand, the volume of motor bikes is 1.8 times as much as the projection. As analyzed later, the demand of cars and buses was probably overestimated.

Table-3: Traffic Volume of the Binh Bridge

Vehicle type	2005 (before beginning of toll collection)			Unit: Vehicle/day or PCU/day					
	Projection for 1 year after opening ¹⁾	Actual result 1 (Average of May 31-June 1)	Actual result 2 (average of July 19 to 25)	2005 (after toll collection began)	2006 1 year after opening	2007 2 years after opening	2008 3 years after opening	2009 4 years after opening	Projection for 4 years after opening ¹⁾
Car ²⁾	1,018	1,261	1,337	1,664	1,790	1,939	2,648	2,946	3,407
Bus ²⁾	350	599	1,026	67	98	196	192	206	675
Truck	676	692	672	569	544	684	862	891	1,091
Motor Bike ³⁾	12,480	31,667	20,234	20,608	24,317	29,424	36,192	45,240	25,334
Passenger Car Unit ⁷⁾	7,071	13,493	11,060	9,628	10,931	13,180	16,468	19,659	14,981

Source: The projections are those in Project Appraisal Documents 2.1.4 Transport Volume of Binh Ferry and its Forecast. The actual results are based on midterm review report and answers to the questionnaire to HP Bridge.

Note-1): The projection in the appraisal is a total of the traffic of the ferry passengers (Binh Ferry and Kien Ferry) and the traffic caused by Hai Phong city development. Because the Binh Bridge opened one year later than originally planned, it is taken into consideration in the projection in the table.

Note-2): The number of buses after the beginning of toll collection in 2005 is the number of city buses. Private buses are included in the car.

Note-3): No toll has been imposed on motor bikes since July 2006 by a government announcement.

Note-4): Under a decision of the Ministry of Transport, the toll plaza on National Highway No.10 in Hai

⁹ Source: Results of interview with HP Bridge

Phong was removed in November 2005, which means that crossing the Kien Bridge (15 kilometers inland from the Binh Bridge) of the route 10 became toll free.

Note-5): The opening of the Binh Bridge was May 13, 2005, the manual toll collection began on September 15, 2005, and the semiautomatic collection system began operation in May 2007.

Note-6): 2009 data is the actual total of 11 months up to November.

Note-7): Passenger Car Unit (PCU) is a converted value showing a homogeneous equivalent of all vehicles of heterogeneous traffic stream.

Table-4 below compiled based on Table-3 shows an annual increase of 9% to 33% of combined traffic of cars and buses, which is almost the same as or higher than the increase rate of GRDP in Hai Phong during the same period. It is reasonable to estimate that the growth rate of traffic volume during a rapid economic growth period is similar rate to the expansion speed of the local economy (local economic growth rate). As shown in Table-3, the projection of 2005 when the Binh Bridge opened (beginning of the projection) was below the actual result. When this is taken into consideration, it is fair to conclude that the projection after 2005 was slightly overestimated.

Table-4: Total Traffic of Car and Bus over the Binh River and its Increase Rate

Item	2005	2006	2007	2008	2009
Car and Bus (Vehicle/day)	1,731	1,888	2,135	2,840	3,152
Growth Rate (year-on-year)	-	9.1%	13.1%	33.0%	11.0%
GRDP growth rate in Hai Phong	12.0%	12.5%	12.7%	13.0%	N/A

Source: The GRDP growth rate is from General Statistics Office of Vietnam and other data is calculated based on Table-3.

Note): 2005 data is that of after the introduction of toll collection

As for the truck, the shift of traffic to the Kien Bridge had a major impact in addition to the overestimate. Interviews with logistics companies revealed that those around Hai Phong tend to use the Kien Bridge rather than the Binh Bridge to transport heavy cargo to northern Vietnam and southern China. (See 3.3.2 Qualitative Effects for details.)

The Kien Bridge was built as part of National Highway No.10 rehabilitation project that was implemented with a yen loan. Development of multiple routes to cross the Cam River generated such synergy effects as (i) dispersion of traffic and (ii) security of an alternative route in case of disasters. However, it created a competitive relationship in truck transportation (especially large container trucks) with the project.

(2) Average Crossing Time over the Cam River after the Completion of the Binh Bridge

As shown in Table-5 below, it currently takes only two to three minutes to cross the river (time to go through the bridge). Compared with one hour during rush hours in the morning and evening at the time of appraisal, the time has been significantly shortened.

Table-5: Average Crossing Time over the Cam River after the Completion of the Binh Bridge Construction¹⁾

Means of River Crossing	1998 (appraisal)	2005 (Opening of the Binh Bridge)	2009
Binh Ferry	30 mins (90 mins at max.) ²⁾	N/A ³⁾	N/A ³⁾
Other ferries	30-60 mins	30-60 mins	N/A
The Binh Bridge	N/A	Approx. 2-3 mins	Approx. 2-3 mins

Source: Answers to the questionnaire to HP Bridge and actual measurement in site survey

Note-1): The time required for crossing the river by ferry includes the waiting time. The crossing time for the Binh Bridge represents the time to go through the bridge (approx. 1.3km).

Note-2): People had to wait for about an hour in morning and evening rush hours. (Source: JICA internal documents)

Note-3): Although the Binh Ferry is still operated in a smaller scale after the opening of the Binh Bridge, it does not carry vehicles as described later. Thus, there is no comparison of crossing time of the Binh Ferry as a means of transporting vehicles. (Currently, the Binh Ferry carries only bicycles and pedestrians and the average crossing time is about 10 minutes.)

(3) Changes of Transportation Volume of Binh Ferry

The Binh Ferry is still operated with two passenger boats to carry bicycles and pedestrians even after the opening of the Binh Bridge. As shown in Table-6 below, the daily average transportation volume of bicycles and pedestrians in 2008 was 1,700 persons, which is 30 percent and 10 percent of that in 2005 immediately before the opening of the bridge and that in 1998 at the appraisal, respectively.

According the interviews with the HP Bridge and local residents, bikers and pedestrians tend to dislike the slope of the approach of the Binh Bridge. The residents living near the Binh Ferry boarding point tend to prefer the ferry rather than the bridge with a detour to get to central Hai Phong.

Table-6: Changes of Transportation Volume of Binh Ferry

Unit: Vehicle/day or Passenger/day

Type of Vehicle	1994 ¹⁾	1998 ¹⁾ (At the time of the appraisal)	2005 ²⁾ (Immediately before opening of the Binh Bridge)	2005 ³⁾ (After opening of the Binh Bridge)	2008 ³⁾
Car	391	278	168	N/A	N/A
Bus	68	145			
Truck	85	181			
Motor Bike	2,743	3,254	4,065	1,819	1,677
Bicycle	6,879	9,383	2,654		
Pedestrian	6,625	6,342	3,463		

Note-1):Source: Project Appraisal Documents “2.1.4 Transport Volume of Binh Ferry and its Forecast”

Note-2):Source: JICA Mid-Term Review Report

Note-3):Source: Results of interview with Department of Transport, Hai Phong People’s Committee

As shown in the table above, the number of ferry users is on a decline trend. However, there was still a certain level of demand even three years after the opening of the bridge in 2008 for reasons described above. A group of residents ongoingly use the ferry as a means of

daily transportation; the ferry and the bridge have been clearly differentiated while coexisting.

3.3.1.2 Results of Calculation of Internal Rates of Return (IRR)

(1) Economic Internal rate of Return

Table-7 below shows the recalculation result of EIRR. The figures are slightly bigger than those at the time of appraisal, mainly because vehicle operation cost savings and travel time savings turned out to be larger than estimated, by virtue of the fact that vehicle operation costs and travel time costs were much smaller than estimated. (although the actual traffic is smaller than the demand projection at the time of appraisal.)

Table-7: Recalculation of EIRR

Timing	Preconditions and Assumptions for Recalculation (Project Life: 30 years after the completion of the Project)	EIRR
At the time of Appraisal (in 1999)	<p>Economic Costs: Economic cost was recalculated based on such financial costs as construction, consulting service, operation & maintenance and ferry operation.</p> <p>Economic Benefit: Travel time savings, vehicle operation cost savings, and ferry operation cost savings</p>	18.0%
At the time of ex-post evaluation (in 2010)	<p>Economic Costs: Same as at the time of appraisal. Standard conversion factor (SCF) of 0.835 is used to convert financial cost into economic cost.</p> <p>Economic Benefit: Same as at the time of appraisal</p>	20.6%

(2) Financial Internal Rate of Return

FIRR figures were recalculated with several conditions described in the table below as the base scenario. With the toll revenues as the parameter, two cases were assumed: a slightly more optimistic case than the base scenario (Scenario 1) and a pessimistic case (Scenario 2) to conduct sensitivity analysis of the recalculated FIRR. Table-8 below shows the recalculation results.

Table-8: Recalculation of FIRR

Timing	Preconditions and Assumptions for Recalculation (Project Life: 30 years after the completion of the Project for each case)	FIRR
At the time of appraisal (in 1999)	FIRR was not calculated at that time.	N/A
At the time of ex-post evaluation (in 2010)	<p>Base Scenario</p> <p>Costs: Construction cost, consulting service cost, operation & maintenance cost, ferry operation cost (assuming that two passenger boats will continue to be in operation)</p> <p>Revenue: Toll revenue (assuming 10% increase every five years after 2005, refer to "3.5 Sustainability" for the existing toll table)</p>	Minus 2.2%
	<p>Scenario-2 (optimistic than base scenario)</p> <p>Costs: The same with base scenario</p> <p>Revenue: Toll Revenue (assuming 20% increase every five years after 2005)</p>	Minus 0.5%
	<p>Scenario-2 (pessimistic than base scenario)</p> <p>Costs: The same with base scenario</p> <p>Revenue: Toll Revenue (assuming no increase after 2005)</p>	Minus 4.2%

The recalculation resulted in minus figures (minus 2.2% in the base scenario). FIRR figures are definitely low in public transportation projects because the toll is kept low due to its public nature and the project is also the case. The sensitivity analysis results were minus 0.5% in Scenario 1 (more optimistic than the base scenario) and minus 4.2% in Scenario 2 (more pessimistic than base scenario).

3.3.2. Qualitative Effects

Improvement of convenience for residential people and private firms through opening of bridge

Table-9 below shows the results of beneficiary survey¹⁰ that was conducted to find out how the bridge improved convenience of residential people in terms of crossing time and cost of the Cam River. More than 90% of respondents said that both crossing time was shortened and cost was reduced. Thus, it is fair to conclude that the project helped improve their convenience.

Table-9: Time and Cost to Cross the Cam River after Project Implementation (N=185)

Question	Decreased		Not decreased		Unknown	
	No. of Respondents	%	No. of Respondents	%	No. of Respondents	%
Time to cross the Cam River	177	95.7	3	1.6	5	2.7
Cost to cross the Cam River	175	94.6	3	1.6	7	3.8

Source: Results of beneficiary survey

During the site survey, we conducted in-depth interviews with seven private companies in Hai Phong (3 manufacturers, 1 transportation and tourism company, and 3 logistics companies¹¹) in order to find out how the bridge improved their convenience. Respondents expressed their opinions that were introduced in Table-10 below as direct impacts of the opening of the Binh Bridge. The bridge improved their convenience in terms of commuting of employees and transportation of their products. A company on the north side of the Cam River (cement manufacturer) pointed out the improvement of access to Hai Phong Port. This shows that the upgrading of traffic network has contributed to the improvement of business environment and the effect has become, if partially, apparent.

On the other hand, three logistics companies near Hai Phong Port on the south side of the Cam River responded that the project has had no impact on their business. According to

¹⁰ Summary of beneficiary survey procedures: In-person interviews with a total of 185 local residents and firms were conducted--113 common residential people and a total of 57 farmers, both living near the Binh Bridge in Hai Phong, as well as 15 private firms located in the city.

¹¹ More specifically, three manufacturers are one cement manufacturer, one cable manufacturer and one steel company. The transportation and tourism company operates bus services and tourist agency, and the three logistics companies are (cargo) forwarder truck companies. (Only the cement company is located on the north side of the Cam River; the other six firms are on the south.)

them, they take the Kien Bridge on National Highway No.10 when they transport heavy cargos and containers to Quang Ninh Province and southern China from Hai Phong Port, because of (i) no toll to cross the Kien Bridge and (ii) loading weight limit of small bridges (Heavy trainers cannot cross them.) in central Hai Phong before the Binh Bridge. The project has had a limited effect on the logistics companies that handle large cargos and are located on the south side of the Cam River.

Table-10: Results of Interviews with Private Firms in Hai Phong (Multiple Answers)

Responses (Direct impact of Opening of the Binh Bridge only)	Number of Respondents
Employees' commuting has become more convenient.	6
Opening of the bridge encouraged decision-making on investment (plant construction, enhancement of production capacity, and purchase of business vehicles, etc.).	4
Product transportation to central Hai Phong has become more convenient.	1
Land prices around the approach road have risen and assets value of their premises has increased.	1
Traveling time to Ha Long Bay has been shortened significantly and tourists from Hai Phong to the bay have increased.	1
Importation of materials and equipment via Hai Phong Port has been facilitated.	1
Opening of the Binh Bridge has had no impact on our business. (response by logistics companies)	3

Effects of technical transfer to local consultants, contractors and related PMU, etc.

After the construction of the Binh Bridge, five long span cable-stayed bridges have been constructed or planned: Bai Chai Bridge, Rach Mieu Bridge, Can Tho Bridge, Phu My Bridge, and Nhat Tan Bridge (under construction). Local consultants and contractors that engaged in the construction of the Binh Bridge also participated in planning and construction of four of the five bridges excluding the Phu My Bridge. In addition, two former members of HP Bridge moved to PMU that supervises long span cable-stayed bridge projects¹².

PMU workers, consultants and contractors involved in the Binh Bridge project have participated in similar projects. Thus, it is fair to say that this shows that technical transfer has had impacts on (i) design skills of cable-stayed bridges, (ii) construction skills of such bridges, and (iii) management skills for cable-stayed bridge construction projects.

This project has largely achieved its objectives; therefore its effectiveness is high.

3.4 Impact

3.4.1 Intended Impacts

Trend of GRDP in target region

As shown in Table-11 below, GRDP in Hai Phong has grown at an annual rate of 10% since 2000. In particular, the average growth rate since 2005 after the opening of the Binh Bridge

¹² For example, one of them moved to PMU85, which is currently in charge of construction management of Nhat Tan Bridge.

is over 12%. Similar trends are shown in Quang Ninh Province (located on the north of Hai Phong) and Thai Binh Province (on the south of Hai Phong) in northern Vietnam.

Table-11: GRDP of Hai Phong City and Provinces in the Vicinity

City/Province	2000	2001	2002	2003	2004	2005	2006	2007	2008
Hai Phong	8313.7	9176.5	10153.8	11241.6	12536.0	14043.1	15801.4	17814.6	20133.2
	13.3	10.4	10.7	10.7	11.5	12.0	12.5	12.7	13.0
Quang Ninh	3996.1	4506.2	5092.5	5715.5	6451.3	7336.0	8347.0	9488.0	10723.0
	16.4	12.8	13.0	12.2	12.9	13.7	13.8	13.7	13.0
Thai Binh	4557.9	4778.5	5137.1	5431.0	5988.0	6464.0	7136.0	7966.0	8919.0
	3.1	4.8	7.5	5.7	10.3	7.9	10.4	11.6	12.0

Source: Department of Planning & Investment of Hai Phong People's Committee, and General Statistics Office of Vietnam

Note-1): The upper figures show GRDP (unit: 1 billion USD) and lower figures show the increase rate (year-on-year) (unit: %) of each city and province.

Note-2): This table indicates GRDP data at 1994 constant prices.

The growth rate shown above significantly exceeds that of whole Vietnam in the same period (6.8% to 8.5%, 1994 price, source: General Statistics Office of Vietnam). Although there is not likely to be a direct relationship between the project and GRDP growth, there is an indirect relationship—the project has contributed to the development and expansion of regional economy through promotion of FDI and an increase in industrial production that have been caused by improvement of physical distribution. (These facts are described later in details.)

Trend of industrial production volume and FDI in target region

Tables 12 and 13 below show an increase of industrial production in Hai Phong at a higher rate than the GRDP growth rate since 2000. The production in 2008 grew by 60% from the level immediately after the opening of the Binh Bridge (2005). Similar trends are shown in Quang Ninh Province and Thai Binh Province. FDI in Hai Phong has significantly increased in the number of cases and value since around 2005.

Table-12: Industrial Production of Hai Phong City and Provinces in the Vicinity

City/Province	2000	2001	2002	2003	2004	2005	2006	2007	2008
Hai Phong	7995.2	9526.0	11172.4	12927.0	14920.1	17625.3	20776.4	24323.1	28336.4
	19.6	19.1	17.3	15.7	15.4	18.1	17.9	17.1	16.5
Quang Ninh	3788.8	4358.9	5038.1	5982.5	6421.2	8066.9	9307.9	10859.5	11986.9
	20.7	15.0	15.6	18.7	7.3	25.6	15.4	16.7	10.4
Thai Binh	1397.0	1588.8	1796.7	2026.1	2424.1	2917.5	3596.2	4476.4	5479.1
	6.9	13.7	13.1	12.8	19.6	20.4	23.3	24.5	22.4

Source: Department of Planning & Investment of Hai Phong People's Committee, and General Statistics Office of Vietnam

Note-1): The upper figures show industrial production (unit: 1 billion VND) and lower figures show the increase rate (year-on-year) (unit: %) of each city and province.

Note-2): Industrial production is presented at 1994 prices.

Similarly to GRDP growth, there are a number of factors other than the improvement of traffic network and improved efficiency of physical distribution behind the growth of industrial production and FDI, the increase does not solely depend on the impact of the project. However, it is fair to say that the project has helped improve business and investment environments in Hai Phong and contributed to bringing in businesses and investments through the bridge development at the bottleneck of physical distribution.

Table-13: FDI to Hai Phong City

Item	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
New FDI	6 6.9	14 30.7	24 40.9	42 148.6	18 88.8	34 251.1	37 156.2	43 297.6	46 915.5	15 38.0
Additional investment of existing firms	6 12.8	6 29.2	4 20.9	12 21.7	17 187.9	18 71.3	33 41.6	25 133.7	23 699.9	8 76.0

Source: Department of Planning & Investment of Hai Phong People's Committee

Note-1): Upper figures show the number of cases of investment and the lower figures show FDI values (unit: million USD).

Note-2): The sharp decline in 2009 is likely to be the result of the impact of the global financial crisis in late 2008.

Trend of Industrial Location around the Binh Bridge

The results of the beneficiary survey on the trend of industrial location around the Binh Bridge after the completion of the project are shown below. A majority of businesses consider that the inflow of industries accelerated after the completion of the bridge. It is fair to conclude that the project has partially helped to attract industrial operations to the area surrounding the Binh Bridge.

Table-14: Industrial Location around the Binh Bridge after Project Completion (N=185)

Response	Number of Respondents	%
Inflow of industries accelerated after project completion.	161	87.0
No change in industrial location trends after project completion	3	1.6
Do not know.	21	11.4
Total	185	100.0

Source: Results of beneficiary survey

The origin of the north approach road of the Binh Bridge is a four-street intersection. However, there is no traffic light or roundabout there and the number of traffic accidents has increased in accordance with the increase in traffic of the Binh Bridge¹³. Traffic lights or a roundabout should be built immediately to ensure orderly flow of traffic.

¹³ Source: Interview results with firms and local residents

3.4.2. Other Impacts

3.4.2.1. Impact on Natural and Social Environment

(1) Environmental Impact

There has appeared no serious negative environmental impact.

As described in detail in the sections on the project effectiveness, traffic of the approach road has increased since the opening of the bridge. In the beneficiary survey, however, 40 percent of respondents in the neighborhood said that noise increased after the completion of the project. The percentage is smaller than that of respondents who said that there is no change or they cannot tell whether the noise increased or not. (See Table-15 below.) Although the correlation between the project and noise increase is still unclear, it is fair to say that no serious problems of noise have been found.

Table-15: Noise after Project Implementation (N=185)

Response	Number of respondents	%
Noise increased after project completion.	75	40.5
No change.	69	37.3
Do not know.	41	22.2
Total	185	100.0

Source: Results of beneficiary survey

(2) Implementation status of Environmental Impact Assessments (EIA) and Environmental Monitoring

As scheduled, the environmental impact assessment (EIA) was completed in March 1997 and approved by the Vietnamese supervising agency, Ministry of Science, Technology and Environment. During the construction period, the following environmental monitoring was conducted: (i) surface water contamination test (total of 9 times, once almost every four months), (ii) groundwater contamination test (same as (i)), and (iii) social environmental survey on north and south sides of the bridge (once). It is fair to conclude that the frequency (once every four months for some items during the three-year construction period) and the coverage (water contamination test, groundwater contamination test, and social environmental survey) of environmental monitoring were sufficient.

The social environmental survey confirmed that the noise and vibration caused by the pile foundation work during the construction was below the standard. However, a total of 3 billion VND was paid to 30 households by the contractor through an insurance company as compensation in response to complaints from the local residents¹⁴. Although there was no obligation to pay the compensation because the noise and vibration levels were below the standard, the payment by the executing agency can be respected as a decision aiming for smooth implementation of the project.

¹⁴ This payment was made after the consultation between HP Bridge and the contractors.

(3) Implementation Status of Resettlement and Land Acquisition

The project involved resettlement of local residents and land acquisition. Table-16 below shows the scale and process of the resettlement.

Table-16: Status of Resettlement and Land Acquisition of the Project

Item	Original Plan (in 1999)	Actual (in 2010)
Scale of Resettlement	184 households	184 households
Resettlement Action Plan (RAP) and its process, etc.	Of 184 households, 113 have resettled. The remaining 71 agreed to resettle by December 1999.	(1) Formulation of resettlement plan (resettlement of 184 households) →(2) briefing about resettlement (15 sessions)→(3) social infrastructure development of the new sites (total of 19 ha in So Dau and Tang Dong districts) →(4) compensation payment ^(note) , land transfer to target group
Scale of Land Acquisition	19 ha.	19 ha.
Completion of Resettlement	December 1999	2001

Source: Hai Phong People's Committee and results of interview with HP Bridge

Note): Of 184 households, 96 moved to the new address (free land plus compensation). The remaining 88 households purchased land with compensation and moved by themselves. The compensation totaled approx. 25 billion VND.

There is no problem with the special resettlement process and 184 households completed resettlement as originally scheduled¹⁵. It took some time to complete the resettlement (2 years behind the schedule), mainly because of the delay of social infrastructure development of the new site in Tang Dong.

(4) Support for Reemployment of Workers who Lost Jobs in Ferry Operation

Hai Phong People's Committee planned to introduce jobs to workers who would lose jobs in ferry operation. After the opening of the Binh Bridge in 2005, 150 of 170 employees (then) of publicly-operated Binh-Ferry¹⁶ resigned and they were introduced some jobs¹⁷ for reemployment¹⁸. Thus, it is fair to conclude that there is no problem with the reemployment introduction process.

¹⁵ Interviews with those who moved to So Dau revealed that the social infrastructure is more developed than the former area and they have no apparent complaints about the compensation.

¹⁶ Before the opening of the Binh Bridge, there were six ferry operators: public Binh Ferry (operated by Hai Phong Road Company) and five private companies. Only the Binh Ferry transported vehicles.

¹⁷ The remaining 20 employees continued to work for Hai Phong Road Company that currently operates passenger boats only. Of the retired 150 employees, 30 got a job at the Binh Bridge toll plaza (HP Bridge toll plaza section) and 50 got a job at the public bus company with the assistance of the Hai Phong people's committee. Another 50 people were transferred to the operation and maintenance section of the Hai Phong Road Company. The remaining 20 retired voluntarily with extra retirement money.

¹⁸ Three people who got a job at the Binh Bridge toll plaza were interviewed in the site survey. They responded that they were satisfied with their new job and that their salary and other benefits improved significantly. Although details for other 27 people are unknown, both the executing agency of HP Bridge and Hai Phong Road Company that supervises the Binh Ferry responded in the interview that the support for reemployment went smooth.

On the other hand, all private ferry operators were dissolved (Details of reemployment of the workers are unknown) and the number of small retailers around the boarding point on the north bank has reduced from 12 to two. There was no briefing to the retailers and salesclerks before the project and no official compensation was paid^{19,20}. Although Binh Ferry workers who were public employees received good compensation, there was little consideration for private ferry operators and small retailers. It would have been possible to provide some measures or options within the limited budget.

3.5. Sustainability (Rating: a)

3.5.1 Structural Aspect of Operation and Maintenance

The executing agency of the project, HP Bridge²¹, is responsible for operation and maintenance (O&M) of the bridge and approach road that were built in the project²². The agency is also responsible for O&M of the toll plaza facility and toll collection.

HP Bridge consists of six departments: Engineering, Planning, Accounting, Administration, Operation and Maintenance, and Toll plaza²³. The operation and maintenance department is responsible for O&M of the Binh Bridge. (The toll department is in charge of toll collection²⁴.) Details of their duties and operation system are shown in Table-17 below.

There is no particular problem with the operation and maintenance system. The Road Agency of the Ministry of Transport (VRA) that is responsible for O&M of national routes, etc., or other organizations are not involved in operation and maintenance of the bridge. HP Bridge is responsible for O&M of all facilities related to the Binh Bridge project.

As shown in the table below, maintenance work of the Binh Bridge is mainly outsourced. Consultants of the project compiled an O&M manual and there is no particular problem with the operation of HP Bridge in planning, bidding and contractor supervision related to maintenance work. There has not been any major repair work (It is recommended in 2015,

¹⁹ Source: Interview results with HP Bridge and owners of retailers that continue to operate their business.

²⁰ HP Bridge explained that no action was taken because the legal status of the retailers and salesclerks were unclear at that time.

²¹ Binh Bridge Projects Management Unit (BPMU) that was responsible for the project was renamed Hai Phong Bridge Projects Management Unit in November 2003 and again renamed Hai Phong Bridge Projects Management Department (HP Bridge) after the completion of the project. There is no major change in the organization in accordance with the renaming. HP Bridge is responsible for O&M of other bridges in Hai Phong as well as the Binh Bridge.

²² Binh Bridge Operation and Management Cooperation Agency (BBOMCA) that was to be newly organized was originally planned to be responsible for O&M at the time of appraisal in 1999. However, it was not set up and HP Bridge is in charge of O&M.

²³ HP Bridge now has a total of 138 employees (73 in the toll department, 30 in the O&M department, and 35 in other departments). The workforce before the opening of the bridge was around 30 to 35. It was increased gradually (35 to 138) between May and September in 2005 immediately after the opening of the Binh Bridge in response to the more sophisticated and increased duties required for the new bridge. HP Bridge considers that the current workforce is sufficient. (Source: Results of interview with HP Bridge)

²⁴ Of 73 employees in the toll plaza department, 30 are from the Binh Ferry. They have received necessary training to perform their duties and are accepted smoothly. (Source: responses to interviews with HP Bridge and those who found employment there)

10 years after the opening of the bridge, in the O&M manual.) and attention needs to be paid to future formation of the system for repair work²⁵.

Table-17: Operation and Maintenance System of the Binh Bridge

Stage/Category of Maintenance Activities	Planning	Preparation of Tender Documents	Implementation	Supervision
Daily Maintenance	HP Bridge	HP Bridge	Contractors	HP Bridge
Periodical Maintenance	HP Bridge	HP Bridge	Contractors	HP Bridge
Large Scale Maintenance	HP Bridge	HP Bridge	Contractors	Consultant

Source: Answers to the questionnaire to HP Bridge

Note): HP Bridge refers to the operation and management department.

3.5.2 Technical Aspects of Operation and Maintenance

Technical skills of engineers and workers

There are a total of 30 engineers in the O&M department of HP Bridge as of 2009. Ten of them hold a bachelor's or higher degree and remaining 20 are high school graduates. They have two to six years of experiences in maintenance work of cable-stayed bridges. All employees in the O&M department are engineers and there is no special problem with their skills to perform their duties (planning, bidding and supervision).

Maintenance work of long cable-stayed bridges in Vietnam has just begun and thus it is not clear whether they will be able to handle technical issues (preparation of tender documents and estimation for hiring consultants) related to planning and bidding of large-scale repair work that was mentioned in the previous section. They should work to secure funding for maintenance (Details are described later.) and utilize such outside resources as university professors and special consultants to improve the skills of their employees.

Training programs provided by contractors of the Project

Of engineers responsible for maintenance work, 10 employees in management were given training on maintenance skills of the cable-stayed bridge by the contractor of the project. Ten engineers in the O&M department were given overseas training in Japan (visit to long cable-stayed bridges and lectures on bridge engineering). Training by the contractor was provided smoothly and participants highly evaluated the training²⁶.

3.5.3 Financial Aspects of Operation and Maintenance

As shown in the tables below, annual O&M expenditure of HP Bridge has increased sharply since 2005. (The spending in 2009 was 4.4 times as much as that in 2005.) Major items of

²⁵ HP Bridge commissions experts in the Hanoi University of Transportation to conduct periodic technical inspection of the Binh Bridge every year. Annual inspection results are used in formulating repair plans for the next year.

²⁶ Source: Results of interview with participants in training

spending are (i) labor cost, (ii) various expenses associated with researches and inspections, and (iii) outsourcing cost. Increase in labor cost due to annual pay raise and increase in outsourcing cost due to diversification of activities account for a large portion of the increase²⁷.

Since the opening of the bridge in May 2005, the maintenance cost for the bridge has also increased sharply. The spending in 2009 was 19 times as much as that in 2005 immediately after the opening of the bridge. The ratio in all maintenance cost of HP Bridge has also risen year after year (6% in 2005 to 25% in 2009).

Table-18: O&M Expenditure and Toll Revenue of HP Bridge

Unit: Mil. VND			
Year	O&M expenditure (total)	O&M expenditure (for the Binh Bridge)	Toll revenue of the Binh Bridge
2005	1,628	95	3,144
2006	4,128	222	8,300
2007	4,846	917	8,982
2008	6,226	1,468	11,399
2009	7,089	1,801	11,780

Source: Answers to the questionnaire to HP Bridge
Note-1): 2009 data is the total of 11 months up to the end of November.

Note-2): Toll collection began on September 15, 2005 and toll on motor bikes was abolished in July 2006.

Table-19: Toll Fare of the Binh Bridge

Unit: 1,000VND

Category of Vehicle	One-way	Monthly toll	3-month toll
Motor bike (2 or 3 wheels) ¹⁾	1	10	-
Taxi, simple truck, small tractor	4	120	300
Vehicle (with less than 12 seats), truck (less than 2 tons), bus	10	300	800
Vehicle (12 to 30 seats), truck (2 to 4 tons)	15	450	1,200
Vehicle (more than 31 seats), truck (4 to 10 tons)	22	660	1,800
Truck (10 to 18 tons), container truck (20 feet)	40	1,200	3,200
Truck (more than 18 tons), container truck (more than 40 feet)	80	2,400	6,500

Source: Ministry of Finance - Circular 90

Note): Toll on motor bikes was abolished in July 2006.

Although there is a gap between the projected and actual traffic volume mentioned earlier in the section on the effectiveness, toll revenue²⁸ of the Binh Bridge has increased steadily as shown in the left-side table²⁹ and the revenue significantly exceeds the maintenance cost of the Binh Bridge. Although the ratio of toll revenue to maintenance cost has been on a decline trend, there still remains a sufficient amount of income in form³⁰.

Concerning financial resources for the major repair work expected in 2015, HP Bridge said that it has agreed with the Hai Phong People's Committee that HP Bridge estimate necessary costs for the repair work through conducting an extensive technical inspection in advance and

²⁷ Source: Results of interview with HP Bridge

²⁸ The toll plaza department is responsible for toll collection as mentioned earlier. Toll is collected with the semiautomatic toll collection system (It identifies vehicle types automatically and indicates the toll) at the toll plaza on the north approach road of the Binh Bridge.

²⁹ Toll revenue has risen steadily and that in 2009 was 3.7 times as much as that in 2005. Because the toll of motor bikes was abolished in July 2006 by a government announcement, the income decreased temporarily. However, the impact is minor.

³⁰ Toll revenue is given to the national treasury and then redistributed to local governments as subsidies from the national budget. It is not the case in which surplus of the toll revenue is distributed internally as a budget.

then ask the committee for an additional budget for the repair.

3.5.4 Current Status of Operation and Maintenance

Generally speaking, there seems to be no problem with the operation and maintenance status, thereby, they can be judged as extremely good.

There is no particular problem with the use and O&M of the facilities (bridge, toll plaza and approach road) that were constructed in the project. As for maintenance of the main body of the bridge, pavement and cable conditions were good when observed in the site survey.

According to the residents around the north approach road, there is no fence or similar installations around the restricted zone (site below the bridge pier) on the north side of the bridge and children, etc., sometimes enter the site illegally. Some measures should be taken in order to ensure safety.

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

4. Conclusion, Lessons Learned and Recommendations

4.1. Conclusion

The components of the project are highly relevant to the related national policies and there seems to be no problem with the operation and maintenance systems. In addition, a clear reduction of traveling time was recognized and a certain number of positive impacts have been developed through the implementation of the project. Although the project period was longer than planned, the project cost was lower than planned. In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations for Executing Agency

Recommendation-1

Maintenance work of long span cable-stayed bridges in Vietnam has just begun and they are not equipped with skills of planning and running tender process for major repair work. In preparation for the major repair work that is scheduled in 2015, it is recommended that outside resources including university professors and special consultants be utilized to sort out envisioned technical problems and technical capacity of employees continue to be improved. They should study examples in Japan and other countries that have sufficient experiences in long span cable-stayed bridge construction.

Recommendation-2

The origin of the north approach road is a four-street intersection. However, there is no traffic light or roundabout. There is a concern over a further increase in traffic accidents in accordance with increasing traffic of the Binh Bridge. Traffic lights or a roundabout should be built immediately to ensure orderly flow of traffic.

Recommendation-3

There is no fence or similar installations around the restricted zone (site below the bridge pier of the approach road) on the north side of the bridge and children, etc., sometimes enter the site illegally. Some measure (installation of fence or allocation of guards) should be taken in order to ensure safety.

4.3 Lessons Learned

One single agency is responsible for construction and maintenance of the project (although the name of the agency changed). This assured the sustainability of maintenance knowledge and skills of human resources (HP Bridge employees) who supervise maintenance activities because employees who received a variety of training continued to be employed after the completion of the project. Because construction and maintenance of transport and traffic projects are performed by separate organizations in Vietnam in general, it is difficult to ensure sustainability after the completion of the construction. Human resources who participate in the project should be employed continually as much as possible. The Decree 12³¹ issued on February 12, 2009, states that the human resources responsible for maintenance work should participate in PMU (that is the executing agency of construction). The decree should be observed in the future. Even if the decree is not observed for practical reasons, information should be shared actively in the project implementation stage between PMU that is responsible for construction and VRA that is responsible for maintenance.

Binh Ferry employees who were semi-public workers were given good compensation, whereas there was little consideration for the unemployed who used to work for private ferry companies and small retailers around the boarding point. When a project to construct a bridge involves the discontinuation of ferry operation, briefing sessions to those involved in business around the site (the poor in particular) in addition to ferry companies should be held in the project planning stage and thereafter and compensation in accordance with legal rules of the subject country should be considered.

³¹ Decree on management of investment projects on the construction of works

Column

1. Project Management System in Transport and Traffic Sector in Vietnam (responsible body of construction and maintenance)

“It is difficult to ensure sustainability after the completion of the project. (There are separate responsible bodies for construction and maintenance.)” “It is difficult to secure financial resources for maintenance. (There is a problem with consistency between investment and ordinary budgets³².)” These points have been discussed not only in individual projects including the bridge construction project but in multinational frameworks that include local transportation partnership (JICA is the joint chair with the Ministry of Transport.), Poverty Reduction Support Credit, Joint Portfolio Performance Review Meetings of 5 Banks (5 loan providers³³ of JICA (former JBIC), World Bank, ADB, KfW (Germany), and AFD (France)) and Vietnamese government organizations. Complementary and multilayered measures in various levels have been taken.

Meanwhile, the project ensured continued employment of workers because one single body was responsible for both construction and maintenance. It is a good exceptional example in which sustainability was secured. There appear to be abundant financial resources for maintenance because of a steady increase in toll revenue. It may be good to introduce this case in joint portfolio meetings and conduct case study as best practice of transport and traffic projects in Vietnam.

2. Views of Recipient Executing Agency on Use of Special Yen Loan

The Special Yen Loan Facility was applied to the project. The Facility was formulated when the Asian economic crisis occurred in 1997. The executing agency of HP Bridge commented that the payment period of the loan (40 years) and interest rate (1.0%) were very good conditions for the borrower, although the tender process of contractors was extended due to the use of the Facility. (They explained that it is mainly because of a large number of check items for bidding.) We also received a comment that it was extremely significant in terms of technical transfer in addition to the contribution to prompt and ensured project implementation because the skills of Japanese contractors with abundant experiences in long span cable-stayed bridges and that the executing agency were able to procure high quality Japanese products (steel products in particular) and avoid product risks, because contractors and materials and equipment were procured only from Japan.

³² It is often pointed out that: Investment budget, which is the main source for the construction of infrastructure projects, is in an increasing trend whereas ordinary budget, that should cover the operation and maintenance costs of infrastructure constructed, is relatively small.

³³ It has become a 6-Bank structure including EDCF (South Korea).

Comparison of the Original and Actual Scope of the project

Item	Original	Actual
1) Projects Output		
1. Bridge Construction		
1.1 Length	17 spans continuous steel composite concrete girder, including 3 spans cable stayed bridge (Main span: 260m)	The same
1.2 Width	23.5m (3.75m x 4 lanes, sidewalk, etc.)	22.5m (3.75m x 4 lanes, sidewalk, etc.)
1.3 Approach Road	South side: 600m, North side: 900m (including intersection construction at south side)	South side: 594m, North side: 888m (including intersection construction at south side)
1.4 Toll Plaza and Toll Collection System	Toll plaza construction at north side, Installation of toll collection system	Toll plaza construction at north side, Revision of toll collection system and reinstallation
2. Consulting Services (C/S)	839.0M/M	723.4M/M
2) Project Period	March 2000 – February 2004 (48 months)	March 2000 – May 2005 (63 months)
3) Project Cost		
Amount paid in Foreign currency	6,143 million yen	5,994 million yen
Amount paid in Local currency	3,292 million yen (329,200 million VND)	2,412 million yen (313,560 million VND)
Total	9,435 million yen	8,406 million yen
Japanese ODA loan portion	8,020 million yen	7,308 million yen
Exchange rate	1 VND=0.0100 yen (as of March 1999)	1 VND=0.0077 yen (Average between 1999 and 2007)