

Vietnam

## Hanoi-Ho Chi Minh City Railway Bridge Rehabilitation Project (1)(2)(3)

Evaluator: Vietnam-Japan Joint Evaluation Team 2007<sup>1</sup>

On-site Survey: December 2007

### 1. Project Profile



Project Site (Hanoi-HCMC railway line)      Ganh Railway Bridge (Binh Dinh Province)

#### 1.1 Background

Railways in Vietnam began with their construction during the French colonial period in the 19<sup>th</sup> century. The railway network in Vietnam consists of seven principal routes<sup>2</sup>, which are all single-track and non-electric lines. In 1935, the Hanoi-Ho Chi Minh City (HCMC) line<sup>3</sup> was completed<sup>4</sup>. It was the most important and longest railway line in Vietnam connecting the north, central, and the south regions with a length of 1,729km which stretched two-thirds of the total length of the Vietnam Railways.

Most of the railway infrastructures such as railway bridges, rail trucks, track beds, rolling stocks, signals and communication equipments, and maintenance facilities were seriously deteriorated due to the damage of the Vietnam War (1959-1975) and lack of capital investment, materials and maintenance. There were about 1,300 railway bridges (total length of 28,000m) between Hanoi and HCMC, but many of them were aged and severely damaged even after the temporarily restoration by the Vietnamese government after reunification in 1975. A speed limit of 30km per hour or less as well as a weight limit was required at many bridges. They were critical problems on safety, loading capacity and the

<sup>1</sup> The Vietnam-Japan Joint Evaluation Team 2007 consisted of the three Working Groups each of which evaluated different projects. This project was evaluated by the Railway Group joined by the following members: Nguyen Thanh Bin, Le Van, Cao Minh, Tong Quang Vinh, Nguyen Ngoc Son (Vietnam Railways), Tran Duc Toan, Dang Viet Dung (Ministry of Planning and Investment); Nguyen Ngoc Hai (Ministry of Transport); Do Trong Hieu (Transport Development and Strategy Institute); Mai The Cuong (National Economic university); Keishi Miyazaki (OPMAC).

<sup>2</sup> They are (1) Hanoi-HCMC line (1,726km), (2) Hanoi-Hai Phong line (102km), (3) Hanoi-Lao Cai line (296km), (4) Hanoi-Lang Son line (150km), (5) Hanoi-Quan Trieu line (75km), (6) Hanoi-Kep-Hai Chai line (170km), and (7) Kep-Quan Trieu line (55km).

<sup>3</sup> Previously it was called the Hanoi-Saigon line.

<sup>4</sup> The construction periods of Hanoi-HCMC line were: Hanoi-Vinh section (1899-1905), Vinh-Hue section (1913-1927), Hue-Nha Trang section (1930-1936), and Nha Trang-Saigon (HCMC) section (1905-1913).

overall efficiency in the railway transport. Under such circumstances, the Vietnamese government put its first priority on rehabilitation of the railway bridges on the Hanoi-HCMC line to be implemented urgently.

## 1.2 Objective

The objectives of the project are to provide safe and reliable train services and to improve the transport efficiency by replacement or reinforcement of deteriorated nine (9) railway bridges in Hanoi-Ho Chi Minh City railway line which will endanger train movement unless proper countermeasures are urgently taken, thereby improving the passenger and cargo loads between the north and south and contributing to development of national economy.

## Logical Framework Applied for Ex-Post Evaluation

Goal	1. Improvement of the passenger and cargo load between north and south 2. Regional development along the Hanoi-HCMC line 3. Improvement of people's living standards
Purpose	1. Improvement of safety and reliability of train service on the Hanoi- HCMC line. 2. Improvement of transport efficiency on the Hanoi-HCMC line
Outcomes	1. Increase in passenger and cargo volume 2. Increase in running train 3. Reduction in running hour 4. Increase in speed limits of bridges 5. Reduction in train accidents
Outputs	1. Replacement or reinforcement of deteriorated nine (9) bridges in Hanoi-Ho Chi Minh City railway line 2. Consulting services
Inputs	Project Period: January 1994 – December 1999 (Plan) Project Cost: 13,456 million Yen (Plan)

## 1.3 Borrower/Executing Agency

Government of Socialist Republic of Vietnam/Vietnam Railways Corporation

## 1.4 Outline of Loan Agreement

	Phase 1 (VNI-6)	Phase 2 (VNII-6)	Phase 3 (VNIII-6)
Loan Amount / Disbursed Amount	4,042 Million Yen / 3,980 Million Yen	54 Million Yen / 53 Million Yen	7,341 Million Yen / 5,299 Million Yen
Date of Exchange of Notes / Date of Loan Agreement	28 January 1994 / 28 January 1994	18 April 1995 / 18 April 1995	29 March 1996 / 29 March 1996
Terms and Conditions			
- Interest Rate	1.0% p.a.	1.8% p.a.	2.3% p.a.
- Repayment Period (Grace Period)	30 years (10 years)	30 years (10 years)	30 years (10 years)
- Procurement	General Untied	General Untied	General Untied
Final Disbursement	07 February 2002	14 September 2000	26 July 2005

Date	
Main Contractor	(a) J/V of Rinkai Construction Co., Ltd. (Japan) – Matsuo Bridge Co., Ltd. (Japan) – Civil Engineering Construction Corporation No. 1 (CIENCO 1)(Vietnam) (b) J/V of Mitsui Construction Co., Ltd. (Japan) – Mitsui Engineering & Shipbuilding Co., Ltd. (Japan) – Mitsui & Co., Ltd. (Japan) - Thang Long Construction Corporation (Vietnam) (c) J/C of CIENCO 1 (Vietnam) - Thang Long Construction Corporation (Vietnam).
Consulting Services	J/V of Pacific Consultants International (Japan) – Japan Transportation Consultants. Inc. (Japan)
Feasibility Study	September 1993, JBIC SAPROF Team

## 2. Results of Evaluation (Rating: A)

### 2.1 Relevance (Rating: a)

The project was planned and implemented in a way that was consistent with Vietnam’s development policies/programs and needs both at the times of appraisal and ex-post evaluation. Therefore, relevance of this project is high.

#### 2.1.1 Consistency with Vietnamese Development Policies

The project objective is in the same direction as those of Vietnam’s Socio-Economic Development Plans both project appraisal and ex-post evaluation periods, as well as with the Master Plan on the Development of Vietnam Railway Transport Sector till 2020 and Comprehensive Poverty Reduction and Growth Strategy (CPRGS).

#### 2.1.2 Consistency with Needs

High needs for rehabilitation of railway bridges on the Hanoi-HCMC line were seen in the railway transport safety issue as well as increasing passenger and cargo demands both at appraisal and ex-post evaluation.

At the time of appraisal, many railway bridges on the Hanoi-HCMC line were in a critical condition due to the fact that they were over 60 years old, damage of the Vietnam War, and insufficient investment and maintenance, which threatened the safety operation of railway system. Railway bridge rehabilitation was urgent. Even now, there are still many aged and weak bridges on the Hanoi-HCMC line which require urgent rehabilitation or reinforcement.

Also, the Hanoi-HCMC line has been playing an important role for passenger and cargo transport in the railway system in Vietnam. At the time of appraisal, 82% of passenger<sup>5</sup> and 66% of cargo<sup>6</sup> in the entire railway system in Vietnam were transported by the Hanoi-HCMC line. At present, the Hanoi-HCMC line transports 85% of passengers and 60% of cargo volume in the entire railway system in 2007. The importance of the

<sup>5</sup> Unit of passenger volume is “million person-km.”

<sup>6</sup> Unit of cargo volume is “million ton-km.”

Hanoi-HCMC line in the Vietnamese railway transport system has been very high, and improving the capacity of railway passenger and cargo transport of the line has been rational. As a continuous effort followed by this project, replacement of 44 severely age-worn railway bridges on the Hanoi-HCMC line has been carried out by Japanese ODA<sup>7</sup>.

## 2.2 Efficiency (Rating: a)

Although the actual project duration was delayed due to the expansion of project outputs, the project duration for the original scope was almost as the planned duration and the actual project cost was less than the planned cost. Therefore, efficiency of the project is evaluated at moderate.

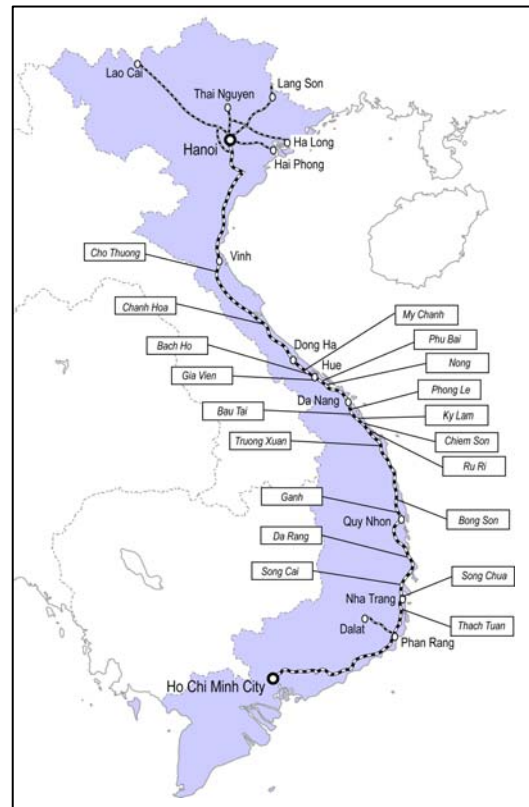
### 2.2.1 Outputs

Planned outputs (i.e. rehabilitation of nine bridges) were all completed except Binh Loi Bridge and additional outputs (i.e. rehabilitation of 11 bridges and additional works) were implemented utilizing the residual funds (Table 1). The additional rehabilitation of 11 bridges includes restoration of Bau Tai Bridge in Da Nang which was destroyed by floods in November 1998. Also the work volume of consulting services was increased to 1,035 M/M in comparison with 1,034 M/M in plan and 2,069 M/M in actual, which was twice as big (200%) than the original plan.

The reason for the cancelation of Binh Loi Bridge was that rehabilitation of Binh Loi Bridges was excluded from the project scope at the JBIC's appraisal in 1996 for Phase 3 of the project due to the change of Ho Chi Minh City master plan<sup>8</sup>. The restoration of destroyed Bau Tai Bridge was included in the project scope in the view of an emergency measure.

The rest of additional 10 bridges which were surveyed by the JBIC's study<sup>9</sup> in 1993 were

Figure 1: Project Site Map



<sup>7</sup> Hanoi-HCMC Railway Line Bridge Safety Improvement Project (I)(II) (2004-2012) financed by JBIC. The main project outlines are: (a) replacement of 44 railway bridges and improvement of bridge approaches, (b) construction of appurtenant facilities including removal of road crossings and building of overpasses, (c) procurement of equipment for operation and maintenance, and (d) consulting services for tender assistance and construction supervision, etc. Total project cost is 23,868 mill. yen (Yen loan amount: 11,737 mill. yen).

<sup>8</sup> Since the master plan of Ho Chi Minh City proposed to relocate Saigon Station out of the city centre in order to cope with the traffic congestion, the rehabilitation of Bin Loi Bridges located near Saigon Station became needless. Its cancellation was requested by Ho Chi Minh City Peoples Committee.

<sup>9</sup> Special Assistance for Project Formulation (SAPROF) for Hanoi-HCMC Railway Bridge Urgent Rehabilitation Project in the Socialist Republic of Vietnam (September 1993). In the SAPROF study, a feasibility study on the rehabilitation of selected 18 railways bridges requiring urgent improvement on the Hanoi-HCMC line were conducted.

also rehabilitated from the viewpoint of priority and emergency using the remaining credit balance by request of Vietnam Railways. The reason for increase of consultants' work volume was the expansion of the number of target bridges for rehabilitation, but the scope of consulting services such as detailed design, assistance for tender and contracts, and construction supervision was not changed.

Table 1: Comparison of Planned and Actual Project Outputs

	Plan	Actual	
<b>Rehabilitation and replacement of bridges (name of bridge)</b>	<b>&lt;9 bridges&gt;</b> 1. Cho Thuong 2. Chanh Hoa 3. Bach Ho 4. Gia Vien 5. Truong Xuan 6. Ganh 7. Da Rang 8. Song Cai 9. Binh Loi	<b>&lt;Original 8 bridges&gt;</b> 1. Cho Thuong 2. Chanh Hoa 3. Bach Ho 4. Gia Vien 5. Truong Xuan 6. Ganh 7. Da Rang 8. Song Cai	<b>&lt;Additional 11 bridges&gt;</b> 9. Bau Tai 10. My Chanh 11. Phu Bai 12. Nong 13. Phong Le 14. Ky Lam 15. Chiem Son 16. Ru Ri 17. Bong Son 18. Song Chua 19. Thach Tuan *Additional works
<b>Consulting service</b>	Total: 1,034 M/M a) Foreign: 218 M/M b) Local: 816M/M	Total 2,069 M/M a) Foreign: 393 M/M b) Local: 1,676M/M	

(note) \*Additional works include: improvement of the bridge span and substructure; installation of the automatic warning system and barriers; construction of the underpass; river protection, and so on.

### 2.2.2 Project period

The project was delayed by six years which was 200% of the planned duration. But for the comparison of project duration for the original project scope, it was delayed by seven months which was 110% against the planned duration (Table 2).

Table 2: Comparison of Planned and Actual Project Period

Plan	Actual
January 1994 – December 1999 (6 years) (at appraisal of Phase 1 (VNI-6) in 1993)	<b>&lt;Project duration for original scope&gt;</b> January 1994 – July 2000 (6 years 7 months) * 6 months delay against plan (=110%) <b>&lt;Project duration including additional scope&gt;</b> January 1994 – December 2005 (12 years) * 6 years delay against plan (=200%)

Note: The project period is assumed from the signing L/A to the completion of civil works.

The delay of the project including additional scope was mainly caused by implementation of additional works for rehabilitation of another 11 bridges. The other reasons were: (i) prolonged procurement process for consultant and contractors; (ii) the prolongation of the detailed design due to insufficient capability of design consultant; (iii) slow procedures of Railway Project Management Unit's (RPMU) project implementation and administration due to RPMU's unfamiliarity with project management as well as JBIC loan procedure and guideline; (iv) delay caused by the financial difficulty of the contractors in the terminal stage<sup>10</sup> and (v) bad weather and natural disaster such as floods which occurred during the project implementation.

<sup>10</sup> Since this project was the first Yen-loan project in the railway sector in Vietnam, many local contractors competed and submitted a bid for contract with low price. Because of this, some of them met the financial difficulties then it affected their provision of services in the terminal stage. This event was partially ascribed to lack of experience and capacity of Vietnam Railways in tender operation based on the international standard and practice.

### 2.2.3 Project Cost

The actual project cost was 11,020 million JPY against the planned cost of 13,456 million JPY, which was 82% of the planned cost (Table 3).

Despite additional project scopes and increase of work volume of consulting services, the actual project cost was

lower than the planned cost. Its main reasons were: (i) cost saving for civil works as a result of the competitive bidding, and (ii) decrease of yen-denominated project cost due to appreciation of the Japanese yen against Vietnamese Dong between the time of cost estimation and ex-post evaluation.

Table 3: Comparison of Planned and Actual Project Cos

	Plan (million JPY)	Actual (million JPY)
1. Construction	10,058	8,303
2. Physical contingency	1,109	0
3. Consulting service	1,264	1,791
4. Land acquisition & resettlement	254	320
5. Tax and duty	771	174
6. Administration	0	433
Total	13,456	11,020

Note:

1) Planned project cost refers appraisal of Phase 3 (VNIII-6) in 1996.

2) Exchange rate used for planned cost: 1VND =0.01JPY (1993)

3) Exchange rate used for actual cost: 1VND =0.008JPY (1994-2005 average)

### 2.3 Effectiveness (Rating: a)

The implementation of the project realized the expected outcomes mostly as planned. Therefore, effectiveness of the project is high.

#### 2.3.1 Improvement of safety and reliability of railway service

Making a comprehensive assessment on the results of outcome indicators such as reduction in running hours, increase of speed limits on the bridges, number of train accidents, and the result of the beneficiary survey, the project objective “improvement of safety and reliability of railway service on the Hanoi- HCMC line” is achieved.



Cho Thuong Railway Bridge  
(Ha Tinh Province)

#### (1) Reduction in Running Hours

Running hours of passenger train between Hanoi and HCMC were shortened by 7 hours from 36 hours in 1994 to 29 hours in 2007. Running hours were reduced by about 20% after the project.

#### (2) Increase of Speed Limits on the Bridges

Before the project, most of the project target bridges set their speed limits at around 15 to 30km/h, but after the project they were dramatically improved around to 60 to 80km/h<sup>11</sup>. It is a contribution factor for the reduction in running hours between Hanoi and HCMC (Table 4).

Table 4: Speed Limit of Project Target Bridge

	Bridge	Location (Km)	1994 (Km/H)	2007 (Km/H)
1	Cho Thuong	338+020		
2	Chanh Hoa	511+298	40	80
3	Bach Ho	687+300	15	60
4	Gia Vien	687+680	30	60
5	Bau Tai	818+450	60	70
6	Truong Xuan	926+648	15	70
7	Ganh	1088+540	15	80
8	Da Rang	1199+868	15	80
9	Song Song Cai	1311+125	15	80
10	My Chanh	561+084	30	70
11	Phu Bai	706+752	30	70
12	Nong	708+743	30	70
13	Phong Le	800+639	30	70
14	Ky Lam	817+037	15	70
15	Chiem Son	819+082	15	70
16	Ru Ri	838+191	30	80
17	Bong Son	1017+953	15	70
18	Song Chua	1198+645	15	80
19	Thach Tuan	1212+227	30	80

Source: Vietnam Railways Corporation

<sup>11</sup> The design speed of the bridge for the passenger train is 110km/h.

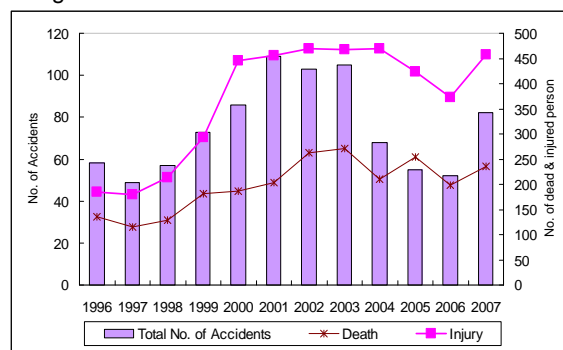
### (3) Reduction in Train Accidents

The number of accidents on the Hanoi-HCMC line has tended to decline after 2004 (Figure 2). According to the Railway Safety Department of Vietnam Railways, most accidents are train crashes against vehicles and persons at level crossings by dangerous and illegal level crossings. Also de-railing caused by speeding by train drivers is one common reason. The fundamental causes for such accidents can be ascribed to the backwardness of the railway infrastructure such as rail tracks, bridges, level crossings, signal system, and human resources. However, Vietnam Railways claims that even before and after the project, accidents on the railway bridges have rarely occurred.

A contributory factor for the recent declining railway accidents is that Vietnam Railways has adopted safety measures since 2004 including: (a) public awareness campaign for railway safety through mass-media and publications; (b) construction of fences and barriers at critical level-cross in major cities; (c) mobilization of Youth Union and student volunteers at train stations and level crossings for traffic control during holiday

seasons; and (d) improvement of safety facilities by installation of auto-signal systems at 200 locations, construction of flyover and underpass at level crossing and so on. Some of the project target bridges provide underpasses for the local residents; in this sense, the project has some direct impact on decrease of railway traffic accidents, but its degree of contribution seems to be limited. A series of efforts and initiatives by Vietnamese Railways since 2004 is rather a key for the recent improvement in train accidents.

Figure 2: Train Accidents on Hanoi-HCMC Line



Source: Vietnam Railways Corporation

However, it should be stressed that security and reliability of the target 19 bridges which used to be in a critical condition were assured by the project. From the viewpoint of securing the safe service of Hanoi-HCMC line, this project made a large contribution.

#### 2.3.2 Transport Efficiency

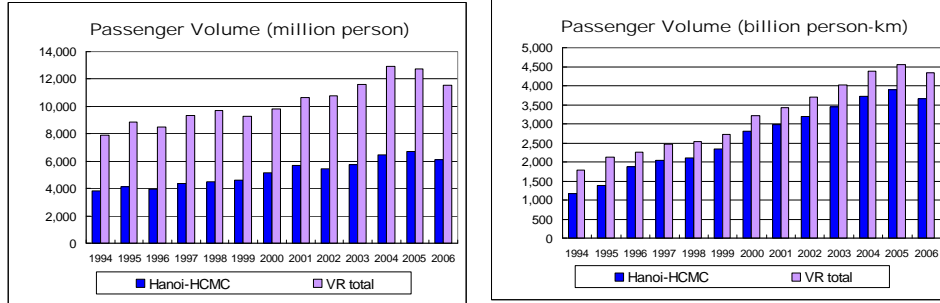
Making a comprehensive assessment the results of outcome indicators such as passenger and cargo volume, no. of trains and locomotives, and the results of the beneficiary survey, the project objective “improvement of transport efficiency on the Hanoi-HCMC line” is realized. The Hanoi-HCMC line has been playing an important role for both train passenger and cargo transport in Vietnam.

##### (1) Increase in Passenger and Cargo Volume

Passenger volume on a passenger numbers base of the Hanoi-HCMC line has increased by 1.6 times during 1994-2006, and its average annual growth rate in this period was 3.9%. Also, passenger volume on a person-km base of the Hanoi-HCMC line has increased by 3.1 times during 1994-2006, and its average annual growth rate was 9.9% (Figure 3).

Figure 3 shows the Hanoi-HCMC line carries almost half of total train passengers in Vietnam on a passenger numbers base, but in person-km base it transports about 85% of train passengers in the country.

Figure 3: Passenger Volume (1994-2006)

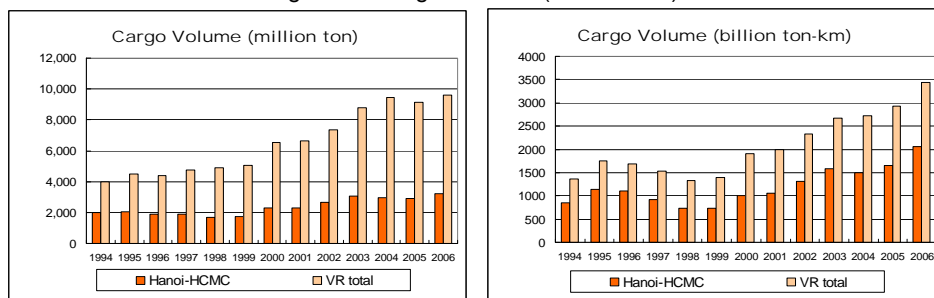


Source: Vietnam Railways Corporation

Source: Vietnam Railways Corporation

Cargo volume on a ton base of the Hanoi-HCMC line has increased by 1.6 times during 1994-2006, and its average annual growth rate in this period was 4.1%. Also, cargo volume in ton-km base of the Hanoi-HCMC line has increased by 2.4 times during 1994-2006 and its average annual growth rate was 7.6% (Figure 4). Likewise, figure 4 indicates that the Hanoi-HCMC line carries about 35% of total train cargo in Vietnam on a ton base, but on a ton-km base it transports about 60% of train cargo in the country.

Figure 4: Cargo Volume (1994-2006)



Source: Vietnam Railways Corporation

Source: Vietnam Railways Corporation

(2) Increase in Running Trains

Frequency of passenger train between Hanoi and HCMC increased by three times from four pairs of trains per day in 1993 to 12 pairs of trains per day in 2007. Whilst frequency of cargo train between Hanoi and HCMC declined from eight pairs of trains per day in 1993 to six pairs of trains per day in 2007 (Table 5). According to Vietnam Railways, they put priorities on increasing the frequency of passenger train for Hanoi-HCMC route in order to meet the steadily growing demands of train passengers. But for all routes of Vietnam Railway including long, medium and short distance, frequency of cargo train increased from 50 pairs of trains per day in 1993 to 70 pairs of trains per day in 2007.

Table 5: No. of Running Train (Hanoi-HCMC)

	1993	2007
Passenger train	4 pairs of trains/day	12 pairs of trains/day
Cargo train	8 pairs of trains/day	6 pairs of trains/day

Source: Vietnam Railways Corporation

Note: In Vietnam, no. of train/day is calculated by no. of pairs of trains/day which is for two-directions from Hanoi to HCMC and from HCMC to Hanoi.



Vietnam Railways has increased transport capacity by replacing the old locomotives and passenger and cargo trains time to time as well as purchasing the new equipments. During 1994-2007, the number of locomotive slightly decreased, but numbers of passenger trains (324) and numbers of cargo trains (262) have been increased during the period (Table 6). It also contributed to an increase in running trains between Hanoi and HCMC.

Table 6: No. of Locomotives and Trains owned by Vietnam Railways

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Locomotive	371	349	359	361	339	392	398	427	385	382	371	330	336	336
Passenger train	774	780	796	746	784	856	880	903	958	1,003	1,050	1,063	1,068	1,098
Cargo train	4,861	4,838	4,673	4,712	4,702	4,530	4,308	4,329	4,403	4,613	4,920	4,984	5,023	5,123

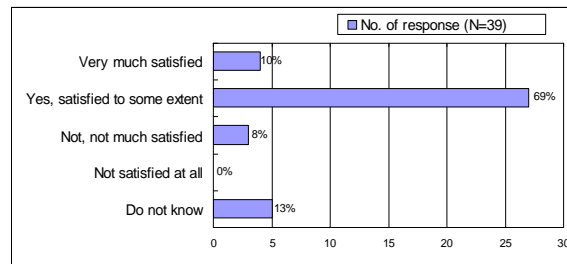
Source: Vietnam Railways Corporation

### 2.3.3. Perception of Beneficiaries on the Project Effects<sup>12</sup>

#### (1) Perception of Railway Passengers

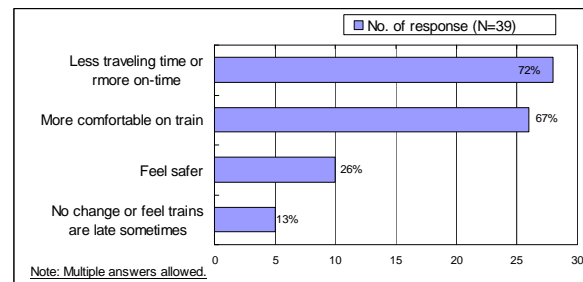
According to the results of beneficiary survey of railway passengers on their satisfaction level for railway services, 10% of respondents (four respondents) rated “very much satisfied and 69% of respondents (27 respondents) answered “Yes, satisfied to some extent.” The satisfaction level of railway passengers is high (Figure 5). Overall, 93% of interviewed passengers were satisfied with the current railway services.

Figure 5: Satisfaction Level of Railway Passengers



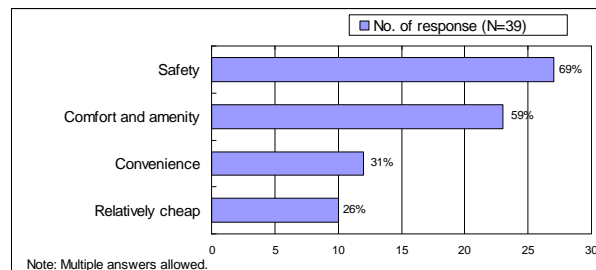
Almost all of interviewed passengers did not know about the project; however, they clearly recognized positive changes in the recent railway services. Seventy-two percent of passengers perceived that they spent less travelling time or trains were more on-time than before. sixty-seven percent of passengers said that comfort<sup>13</sup> on trains was improved and 26% of passengers recognized that they felt safer in railway travelling (Figure 6).

Figure 6: Perception of Railway Passengers



Regarding the reasons why they use the railway for travelling, major responses were safety (69%), comfort and amenity (59%), convenience (31%), and the

Figure 7: Reasons for Using Railway for Travel



<sup>12</sup> The outline of the beneficiary survey is provided in Box 1: Overview of the Beneficiary Survey.

<sup>13</sup> Comfort is associated with lack of noise, vibration and cleanness in the cabin, availability of bed facilities on train (sleepers), scenery seen from a train window, easy access to buying tickets, capacity for group tours, etc.

relatively cheap price (26%). The listed reasons are considered to be advantages of passenger transport by railway among different types of transport modes. In particular, the social issue of growing road traffic accidents in Vietnam promotes the safety consciousness of people; safety is put as the first priority for choosing the transport means (Figure 7).

(2) Perception of provincial governments and companies  
Five interviewed provincial governments<sup>14</sup>, two cargo transport companies, and Da Nang branch of Vietnam

Chamber of Commerce and Industry (VCCI) well recognized the major project effects such as improved safety and reliability, reduction in running times, and increase of passenger and cargo volume.



Gia Vien Railway Bridge (Hue)

## 2.4 Impact

### 2.4.1 Impact on Improvement of the Passenger and Cargo load between the North and South of Vietnam

As shown in the previous section of “2.3.2 Transport Efficiency” with Figure 3 and 4, the passenger and cargo load between Hanoi and HCMC was steadily expanded during the period between 1994 and 2006.

Many of the interviewed provincial governments expressed that Hanoi-HCMC railway line has played an important role in transport in Vietnam.

Some change and diversification of transported commodity type by railway between Hanoi and HCMC was observed<sup>15</sup>. But the link between its change and diversification and the project is not clear. Impact on “improvement of the passenger and cargo load between the north and south of Vietnam” seems positive.

At the same time, it becomes apparent that there is room for enhancing the capacity of railway passenger and cargo transport as well as realizing much safer and faster railway operations. The results of the beneficiary survey suggest that there are more demands for railway passenger and cargo transport in Vietnam, but due to the existing limited capacity of railway infrastructures such as existing old and weak railway bridges<sup>16</sup>, single-track lines, poor loading facilities, old cargo wagons and poor connections to major sea ports, Vietnam Railways cannot cope with the increasing demands. In addition, the poor management of Vietnam Railways was pointed out. These issues and constraints need to be settled by the efforts of Vietnam Railways as well as the Vietnamese government.

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<sup>14</sup> Interviewed five provinces are Quang Nam Province, Khanh Hoa Province, Binh Dinh Province, Binh Thuan Province and Ho Chi Minh City.

<sup>15</sup> In 1991, the main commodities were cereal (22%), chemical fertilizer (20%), cement (9%), mineral phosphate (7%), and coal (6%)<sup>15</sup>. Although there is no statistical data, according to Vietnam Railways at present the main commodities transported by railway from Hanoi to HCMC are glass powder, chemical fertilizer, general consumable goods, and cement, and main commodities from HCMC to Hanoi are rice, general consumable goods, and fish sauce.

<sup>16</sup> According to Vietnam Railways, there are about 1,300 railway bridges between Hanoi and HCMC, but still 278 old and weak bridges require major rehabilitation.

#### 2.4.2 Impact on Regional Development

In general, regional development is positive in the provinces along the Hanoi-HCMC line in last two decades. For instance, the average Provincial GDP in 21 provinces<sup>17</sup> along the Hanoi-HCMC line was 7-13% during 2000-2003. The average annual growth rate of industrial outputs in the provinces is 15-31%, and the average annual growth rate of agricultural outputs in the provinces is 2-7% during 1995-2006 except in urban areas like Da Nang (-0.1%) and Ho Chi Minh City (1.4%). The cargo handling volume at major sea ports along the Hanoi-HCMC line has been expanded between 2003-2006 (Table 7). One of the outstanding changes is the rapid industrial development in the region. At present, total 46 industrial parks are in operation, and 24 industrial parks are under preparation or construction in 21 provinces along the Hanoi-HCMC line.

These remarkable achievements are supported by many factors such as the government economic and industrial policies including FDI promotion and active investment for the economic and social infrastructures including road network, sea ports, electricity, telecommunication, and so on. Investment for railway infrastructure might be one contribution to the achievements, but the link between the regional development and the project seems marginal.

Table 7: Volume of Cargo Handling at Major Sea Ports along Hanoi-HCMC railway line

(unit: 1,000 ton)

Port Region	2003	2004	2005	2006
Hai Phong	12,732	13,207	14,043	17,207
Saigon	44,599	47,888	53,299	59,247
Danang	4,756	4,958	4,734	5,093
Nghe An	849	1,018	1,375	1,310
Quy Nhon	2,844	3,402	3,523	3,965
Nha Trang	3,464	4,189	4,037	3,769
Can Tho	676	1,010	1,365	1,183
Quang Ninh	14,634	19,387	22,717	28,100
Total	84,556	95,060	105,094	119,874

Source: VinaMarine

However, the project promoted new business opportunities in the railway sector. For example, a new tourist train service (5 Star Express) between HCMC and Nha Trang where is a famous beach resort in the southern Vietnam was introduced in December 2006 by a private operator. Also a cargo transport service by a private sector between Hanoi and HCMC was started under a concessional agreement with Vietnam Railways supported by a new railway law in 2006 which aimed to open the railway sector and to promote private participation. Also, the beneficiary survey to the provincial governments suggests that the tourist development in the south central coastal areas including Khanh Hoa Province and Binh Thuan Province was promoted due to reduction of travelling time between the area and HCMC by a railway as well as by a national highway<sup>18</sup>.

#### 2.4.3 Impact on Improvement of People's Living Standard

Twenty-one provinces along the Hanoi-HCMC line are located at red river delta, north central coast, south central coast, and southeast regions. All of the regions in Vietnam show the improvement of the poverty rate between 2002 and 2004. Average income per capita in Vietnam as well as by region was also increased. The beneficiary survey of the provincial governments confirmed that their economic conditions and the living standards

<sup>17</sup> Hanoi, Ha Tay, Ha Nam, Nam Dinh, Ninh Binh, Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, Thua Thien-Hue, Da Nang, Quang Nam, Quang Ngai, Binh Dinh, Phu Yen, Khanh Hoa, Ninh Thuan, Binh Thuan, Dong Nai, Ho Chi Minh City.

<sup>18</sup> The roads and bridges on National Highway No.1 from Lang Son to Ca Mau were also rehabilitated by the cooperation of JBIC, World Bank and Asian Development Bank.

of the people were improved. But this is mainly attributed to the economic growth and development of the county as well as each region.

Table 8: Poverty Rate

(Unit: %)

	2002	2004
Whole Country	28.9	19.5
By region		
Red River Delta	22.4	12.1
North East	38.4	29.4
North West	68.0	58.6
North Central Coast	43.9	31.9
South Central Coast	25.2	19.0
Central Highlands	51.8	33.1
South East	10.6	5.4
Mekong River Delta	23.4	19.5

Source: General Statistic Office (GSO)

Table 9: Average Income per Capita

(Unit: 1,000 VND)

	1999	2002	2004
Whole Country	295.0	356.1	484.4
By region			
Red River Delta	280.0	353.1	488.2
North East	210.0	268.8	379.9
North West	n.a.	197.0	265.7
North Central Coast	212.4	235.4	317.1
South Central Coast	252.8	305.8	414.9
Central Highlands	344.7	244.0	390.2
South East	527.8	619.7	833.0
Mekong River Delta	342.1	371.3	471.1

Source: General Statistic Office (GSO)

Note: Current price.

#### 2.4.4 Impact on Natural Environments

Since most of the works were rehabilitations of the existing railway bridges, no particular negative impact on the natural environment was observed during and after the project.

#### 2.4.5 Impact of Land Acquisition and Resettlement

Total 329,305m<sup>2</sup> of land was acquired by the project as planned. Also, a total of 31 households (20 households near Bach Ho bridge and 11 households near Ganh bridge) were resettled. According to Vietnam Railways, the resettlement process was executed under the respective laws and regulations, taking into account maintaining the living standards of the affected people. No particular negative impact is reported.

#### 2.4.6 Impact on Capacity Building for Workers in Bridge Construction

Many new technologies and know-how<sup>19</sup> were introduced to Vietnam, and about 2,500 engineers have been trained on the professional job through the project including overseas training for about 20 engineers.

<sup>19</sup> For example, the introduced technologies and know-how by the project were: (i) know-how of project management with international practices by setting up PMUs; (ii) process, procedures, technical standards of Japan and of some other countries for improvement of work quality; and (iii) construction technology of bored piles with big diameters, PC girder, cable-stay bridges, PC bridges, methods of design and construction of Shinso piles, and super T girders.

## Box 1: Overview of Beneficiary Survey

The ex-post evaluation team (GoV and JBIC joint team) conducted the following types of beneficiary survey of the people's committees in five provinces and cities along Hanoi-HCMC railway line, cargo transport companies, and railway passengers.

### 1) Semi-Structured Interview (SSI) with Provincial People's Committees

Five Provincial People's Committees of Quang Nam Province, Khanh Hoa Province, Binh Dinh Province, Binh Thuan Province and Ho Chi Minh City were interviewed. Many interviewees acknowledged positive change in railway services such as reduced travelling time, increased velocity and improved reliability. Although not all interviewees were not clearly aware of the direct impact of the project in their provinces, many of them recognized the important role of the Hanoi-HCMC line in the north-south transport network in Vietnam.

The provinces in the south east regions such as Binh Thuan Province and Ho Chi Minh City identified the positive impact of the project on promotion of tourism. They analyzed the reduction of travelling time between Phan Thiet (a capital city of Binh Thuan Province and a famous beach resort in the south of Vietnam) and Ho Chi Minh City from six to four hours and that more tourists came to use the railway service than before. At the same time, improvement of National Highway No. 1 which ran down the country from Lang Son to Ca Mau also made a great contribution to the tourism development in the region as well. One good example is that a private railways service operator started a luxury train service between HCMC and Nha Trang using infrastructure of Vietnam Railways. Also Binh Thuan Province plans to rehabilitate and expand the existing railway station in Phan Thiet in cooperation with a railway company and will invest 20-25 million VND in the construction of access roads to the station.



Interview of Binh Thuan Province People's Committee

### 2) Semi-Structured Interview (SSI) with companies

Two cargo transport companies (one of the two companies was under Vietnam Railways Group) and Vietnam Chamber of Commerce and Industry (VCCI), Da Nang Branch were interviewed. Interviewed companies firmly recognized the project effects such as improvement of safety and reliability of railway services, shortening of travelling time and increase of trips. Enjoying such benefits of the project, they expanded their business, got more clients, and increased the revenues. At the same time the existing constraints of railway system such as inadequate railway infrastructure and poor management were pointed out.



Interview to a railway cargo transport company in HCMC

### 3) Semi-Structured Interview (SSI) with railway passengers

A total of 39 railway passengers were interviewed by SSI at four major railways stations along the Hanoi-HCMC line including 10 passengers at Hanoi station, six passengers at Hue station, 13 passengers at Da Nang station, and 10 passengers at Saigon station.

Initially Focus Groups (FG) of local residents in selected provinces along the Hanoi-HCMC line were planned as a part of beneficiary survey. However, the evaluation team found that implementation of FG was difficult since the local residents were not necessarily railway users. Alternatively SSI to railway passengers was conducted to grasp the direct changes of railway services after the project.



Interview of a railway passenger at Hue station

## 2.5 Sustainability (Rating: b)

In general, no major problems are seen in the institutional and technical capacity of executing agency and O&M agency, but budgetary constraints will be a risk in the long term. The present condition of the project facilities is good. Therefore, the sustainability of the project can be assessed as moderate.

### 2.5.1 Executing Agency and Operation and Maintenance Agencies

No particular problems are seen in the organizational structure for O&M agency. Ten railway management companies (RMC) directly engage in maintenance of project bridges on the Hanoi-HCMC line under the supervision of Infrastructure Management Department of Vietnam Railways' headquarter. Division of roles and decision-making flow are clear and based on government regulations.

Recently Vietnam Railways plans to reform the existing organization into five company groups by 2009 as: (i) Hanoi and Saigon railway passenger transport companies group; (ii) cargo transport joint stock company group; (iii) 20 railway management companies group; (iv) locomotive manufacturing companies group; and (v) other railway service companies group including construction and tourist companies. The rest of the existing organizations and functions will belong to Vietnam Railways' headquarters. In the future organization, each company group will come to have more independent management and a commercially-based organization; the headquarters will function as a shareholding company of the five company groups and control the groups through capital and financial management. The railway management company group will continue to be responsible for O&M of the project bridges, and its O&M budget will be allocated by the Vietnamese government through the headquarters of Vietnam Railways.

### 2.5.2 O&M Technical Capacity

Sufficient training is provided to O&M staff for maintaining the project facilities. At present total 6,505 staff are working in 10 railway management companies (RMC): i.e. 775 (Ha Ninh), 640 (Thanh Hoa), 749 (Nghe Tinh), 579 (Quang Binh), 927 (Quang Tri), 744 (Quang Nam), 822 (Nghia Binh), 518 (Thuan Hai), 869 (Phu Khanh), and 662 (Sai Gon). They are required to participate in technical training course of Vietnam Railways. According to self assessment by Vietnam Railways, the existing technical capacity of RMC does not have particular problems.

### 2.5.3 Financial Status of O&M

Approximately 60% of the required budget is allocated for O&M. Principally, 90% of maintenance fund comes from the government; the other 10% comes from revenue of Vietnam Railways. Revenues used for maintenance funds come from 80% of total revenue of advertisement, rental fees for private operators, and rental fees for station facilities such as Kiosk. Revenue from passenger and cargo transport service is not linked to maintenance fund. According to Vietnam Railways, they are obliged to conduct O&M activities under the limited amount of budget by prioritizing the work, but always confront budget issue. This will be a risk for deteriorating O&M capacity of Vietnam Railways in the long term.

#### 2.5.4 O&M Status

All project bridges are maintained in good condition. According to self assessment by Vietnam Railways and a visual observation of selected bridges by the evaluation team during the field survey, a physical condition of target 19 railway bridges are in good condition. Vietnam Railways and RMC conduct maintenance activities including daily, periodic, large-scale and emergency maintenance based on the national standards set by Ministry of Transport. So far no particular problems are seen in contents and practice of the maintenance plan.

### 3. Conclusion, Lessons Learned and Recommendations

#### 3.1 Conclusion

From the findings described above, this project can be evaluated as highly satisfactory.

#### 3.2 Lessons Learned

##### 3.2.1 Investment preparation and design:

Since the feasibility study of the project was prepared in a short period, it resulted in a lot of amendment, changes, and additions for project scope during the implementation.

##### 3.2.2 Procurement

How to procure qualified consultants and contractors is key to ensure the smooth implementation of the project as well as quality of products and services.

##### 3.2.3 Land acquisition

Site preparation and land acquisition need to be carried out earlier because they are one of the critical factors behind project delay.

##### 3.2.3 Procedure and regulations

Understanding the legal procedures of Vietnam as well as regulations and guidelines of donors is very important to implement the projects.

#### 3.3 Recommendations

##### 3.3.1 Investment preparation and design

The Vietnamese railway technical standard should be upgraded to meet the international standard in order to shorten the time of evaluation and appraisal of detail design.

##### 3.3.2 Procurement

The Vietnam Railways need to improve the procurement operation capacity through the development of procurement guideline and procedure based on the international standard and practice as well as training of the staff.

##### 3.3.3 Harmonization

Ministry of Transport (MOT), Vietnam Railways and Ministry of Planning and Investment (MPI) need to recognize that there is a need to harmonize the Vietnamese legal policy and procedures of ODA projects with the donor's guidelines.

#### 3.3.4 Maintenance

(To MOF, MOT) To ensure sustainability, MOF and MOT should continue to make efforts to secure the appropriate O&M budget for railway sector.



### Comparison of Original and Actual Scope

Item	Plan	Actual
1) Outputs (a) Rehabilitation and replacement of bridges	<Target bridges: 9 bridges> 1. Cho Thuong 2. Chanh Hoa 3. Bach Ho 4. Gia Vien 5. Truong Xuan 6. Ganh 7. Da Rang 8. Song Cai 9. Binh Loi	<Original: 8 bridges> 1. Cho Thuong 2. Chanh Hoa 3. Bach Ho 4. Gia Vien 5. Truong Xuan 6. Ganh 7. Da Rang 8. Song Ca  <Additional: 11 bridges> 9. Bau Tai 10. My Chanh 11. Phu Bai 12. Nong 13. Phong Le 14. Ky Lam 15. Chiem Son 16. Ru Ri 17. Bong Son 18. Song Chua 19. Thach Tuan  Additional Works
(b) Consulting service	Total: 1,034 M/M a) Foreign: 218 M/M b) Local: 816M/M	Total: 2,069 M/M a) Foreign: 393 M/M b) local: 1,676M/M
2) Project Period	January 1994 – December 1999 (6 years)  <i>Note: Planned project period is based on the appraisal of Phase I (VNI-6) in 1993.</i>	< For original scope> January 1994 – July 2000 (6 years 7 months)  <Including additional outputs> January 1994 – December 2005 (12 years)
3) Project Cost Foreign Currency Local Currency  Total ODA Loan Portion Exchange Rate	9,980 Million Yen 3,476 Million Yen (347,600 Million VND) 13,456 Million Yen 11,437 Million Yen 1 VND= 0.01Yen (As of 1993)  <i>Note: Planned project cost is based on the appraisal of Phase 3 (VNIII-6) in 1996.</i>	5,530 Million Yen 5,490 Million Yen (686,250 Million VND) 11,020 Million Yen 9,332 Million Yen 1 VND = 0.008 Yen (1994-2005 Average)