

The Socialist Republic of Viet Nam

FY2022 Ex-Post Evaluation Report of

Japanese ODA Loan Project

“Second Transport Sector Loan for National Road Network Improvement”

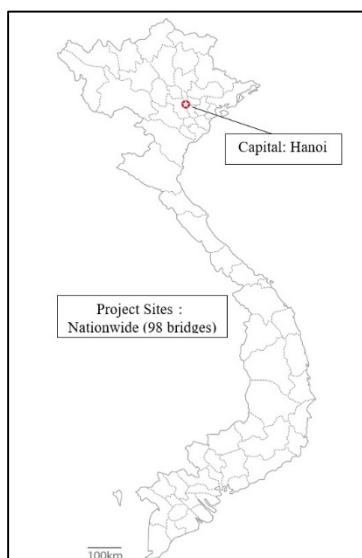
External Evaluator: Kenichi Inazawa, Octavia Japan, Co., Ltd.

0. Summary

This project aimed to respond to traffic demand and improve safety by repairing and replacing fragile bridges on national and provincial roads, thereby contributing to socio-economic development in the targeted areas. With regard to relevance, it is “consistent with the development plan” and “consistent with the development needs.” Concerning coherence, while it is “consistent with Japanese ODA policy,” no concrete cooperation or synergy effect has been observed in terms of “internal coherence” and “external coherence.” On the other hand, it is consistent with the goals of the international framework (Sustainable Development Goals (SDGs)). Therefore, the relevance and coherence are high. With respect to outputs, the initial plan involved 82 bridges, which was expanded to 98 bridges. While the project cost was within the plan as a cost reduction was achieved with meticulous project management, the project period significantly exceeded the plan, as coordination and land acquisition procedures associated with the change in the number of bridges required considerable time. Therefore, the efficiency is judged to be moderately low. Regarding the quantitative effect indicators, the “daily traffic volume” generally increased for the bridges which were targeted to be repaired and replaced. As for “travel time,” while the target values could not be achieved for some bridges due to the congestion and longer travel time resulting from the elevated traffic volume, other bridges have come close to the target values. Interviews confirmed that driving safety, comfortability and durability are high on the bridges. It was also corroborated that this project has contributed to the socio-economic development of the areas near the target bridges and to the efficiency of the logistics network. Therefore, the effectiveness and impact are high. No major concerns are observed with regard to the sustainability of the effects produced by this project; thus, the sustainability of this project is very high.

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

1. Project Description



Project Locations (Source: JICA)



Tan An Bridge (Long An Province)
(Source: Photographed by the evaluator)

1.1 Background

Prior to the start of this project, the transportation infrastructure in Vietnam had been continuously developed. However, due to constraints on the government budget, the development could not keep pace with the rapid increase in traffic associated with the economic growth. While traffic volume was rapidly increasing on the highways and bridges connecting large cities and regional cities, maintenance and repair had been insufficient for many years. Therefore, it was necessary to repair and repave bridges on national and provincial roads. In addition, some bridges had become old and/or lacked strength, forming a bottleneck for transportation and logistics. Furthermore, during the rainy season, vehicles often could not cross bridges on national and provincial roads in rural areas because of flooding and flood damage. This was causing problems with vehicle traffic, negatively impacting the lives of local residents. It also hindered the promotion of local industries and foreign investment. Therefore, addressing the issue of aging bridges on national and provincial roads was an urgent matter.

1.2 Project Outline

The objective of this project is to respond to traffic demand and improve safety by repairing and replacing fragile bridges on national and provincial roads, thereby contributing to efficient logistic networks, including the connectivity of the Association of Southeast Asian Nations (ASEAN) and Mekong region, and to socio-economic development in the targeted areas.

Loan Approved Amount / Disbursed Amount	24,771 million yen / 21,522 million yen
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Exchange of Notes Date / Loan Agreement Signing Date	March 22, 2013 / March 22, 2013
Terms and Conditions	<p>Main:</p> <p>Interest rate: 1.40%</p> <p>Repayment period: 30 years (Grace period: 10 years)</p> <p>Conditions for procurement: General untied</p> <p>Consulting service:</p> <p>Interest rate: 0.01%</p> <p>Repayment period: 30 years (Grace period: 10 years)</p> <p>Conditions for procurement: General untied</p>
Borrower / Executing Agency	Government of the Socialist Republic of Viet Nam / Ministry of Transport (hereinafter referred to as the “MOT”) ¹
Project Completion	June 2020
Target Area	Nationwide
Main Contractor (Over 1 Billion Yen)	None with a contract of 1 billion yen or more
Main Consultants (Over 100 Million Yen)	Oriental Consultants Global Co., Ltd. (Japan) / Katahira & Engineers Inc. (Japan) / Transport Engineering Design Incorporated-South (Vietnam) JV
Related Studies (Feasibility Studies, etc.)	Feasibility Study, MOT (2012)
Related Projects	<p>[Technical cooperation]</p> <ul style="list-style-type: none"> - Development study “The Comprehensive Study on the Sustainable Development of Transport System in Vietnam” (VITRANSS2) (2007-2010) - “The Project for Capacity Enhancement in Road Maintenance (Phase 1 and 2)” (2011-2018) <p>[ODA loan]</p> <ul style="list-style-type: none"> - “Transport Sector Loan for National Road Network Improvement (I)” (March 2004) - “Transport Sector Loan for National Road Network Improvement (II)” (March 2009)

2. Outline of the Evaluation Study

2.1 External Evaluator

Kenichi Inazawa (Octavia Japan, Co., Ltd.)

2.2 Duration of Evaluation Study

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

¹ The executing agency at the start of the project was the Directorate for the Roads of Vietnam (hereinafter referred to as the “DRVN”), which was transferred to the MOT in August 2013. During the implementation of this project, Project Management Unit No. 6 (PMU6) under the DRVN oversaw the bidding procedures and construction supervision of civil engineering works. With regard to the operation and maintenance systems, the Department of Transport (DOT) in each province is responsible for their supervision, while the Road Management Center (RMC) under the DOT and the Regional Road Management Unit (RRMU) under the DRVN are in charge of the actual works.

Duration of the study:	September 2022-October 2023
Duration of the field study:	December 3-23, 2022, and April 22-30, 2023

2.3 Constraints During the Evaluation Study

None

3. Results of the Evaluation (Overall Rating: A²)

3.1 Relevance/Coherence (Rating: ③³)

3.1.1. Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Vietnam

Prior to the start of this project, the Vietnamese government had formulated the *Ninth Five-Year Socio-Economic Development Plan (2011-2015)*, which positioned further development of the infrastructure system, including transportation infrastructure, as the most important issue. In order to realize this, a development strategy for the transportation sector, the *Transport Development Strategy up to 2020 with a Vision Toward 2030* (Decision No. 35 of the Prime Minister in 2009), was outlined; its main strategy was to build a safe and low-cost transportation network. This strategy stated that establishing a nationwide transportation network including urban and rural areas was essential; it also stipulated the need to develop a smooth and safe transportation network connecting neighboring ASEAN countries and the Greater Mekong Subregion by 2030.

At the time of the ex-post evaluation, the Vietnamese government has outlined the *Five-Year Socio-Economic Development Plan (2021-2025)* and the *Ten-Year Social Economic Development Strategy (2021-2030)*. These documents stipulate measures to accelerate the rate of economic growth, improve the quality of the socialist market economy, develop highly educated human resources, and build the infrastructures necessary for transportation, energy, digitalization, urbanization and climate change. In addition, the Vietnamese Prime Ministry issued Decision 355/2013/QĐ-TTg, approving the *Adjusted Strategy for Vietnam's Transport Development Towards 2020, and the Orientation Towards 2030*. This decision aims at the harmonious and rational development of transportation methods, stipulating that developing and promoting transportation infrastructure centered on the north-south axis while considering the balance between urban and rural areas is a priority, looking ahead to the potential of major economic regions.

Based on the above, it is clear that prior to the start of this project and at the time of the ex-post evaluation, Vietnam attached great importance to the efforts to the development of the transportation infrastructure that is necessary for economic development. Therefore, its national

² A: highly satisfactory, B: satisfactory, C: partially satisfactory, D: unsatisfactory.

³ ④: very high, ③: high, ②: moderately low, ①: low.

and sector plans were consistent with the policies and measures both at the time of the appraisal and at the ex-post evaluation.

3.1.1.2 Consistency with the Development Needs of Vietnam

Prior to the start of this project, due to the budget constraint of the Vietnamese government, development could not keep pace with the rapid increase in traffic associated with the economic growth. While the traffic volume was rapidly increasing on the highways connecting large and regional cities, maintenance and repair had been insufficient for many years; bridges over national and provincial roads required repairing and repaving. The deterioration and insufficient strength of bridges were hindering transportation and logistics. In addition, during the rainy season, vehicles often could not cross bridges along national and provincial roads in rural areas due to flooding and flood damage. Therefore, it was deemed necessary to address the deteriorating bridges (i.e., through repair and replacement) on national and provincial roads.

At the time of the ex-post evaluation, the transportation sector plays a part in supporting economic growth in Vietnam. In this sector, there continues to be a high need for the development and renewal of roads/bridges so as to improve the efficiency of logistics and transportation. According to the MOT, approximately 1,074 km of high-standard roads were constructed between 2011 and 2020, while aging bridges are being replaced and repaired. However, the MOT thinks that inter-regional transportation connectivity remains low, and they need to continue improving transportation efficiency.

Based on the above, there was a need to respond to the increasing transportation capacity prior to the start of this project, and this continues to be the case at the time of the ex-post evaluation; thus, there is a high need for road and bridge development and renewal. Therefore, the project is consistent with the development needs at both the appraisal and the ex-post evaluation.

3.1.1.3 Appropriateness of the Project Plan and Approach

As part of the consulting service of a former project, the “Transport Sector Loan for National Road Network Improvement (II),” support was given to the operation of the bridge management database system (hereinafter referred to as the “BMS”) which is used to make long-term maintenance plans, with the aim of establishing an operation and maintenance system. A lesson was drawn from such a process that in order to identify bridge structures and the status of maintenance performed by field staff quickly and systematically, the following are useful: system support for the introduction of the BMS, assistance in the development of practical operation manuals, and support for the operation establishment, such as BMS operation training for field staff. In the case of this project, as will be discussed in “3.2.1 Project Outputs,” support for the establishment of BMS operation was provided through its consulting service. As a result, the inspection status of bridges can now be identified quickly, while the operation quality has been

standardized across all the target provinces as their maintenance departments utilize the same database system. It has also equipped field staff with the ability to determine priorities for repair. Based on the above, it can be judged that there are no particular problems with the planning of this project, nor with its policies/approach/ensuring the fairness of the project effects.

3.1.2 Coherence (Rating: ②)

3.1.2.1 Consistency with Japanese ODA Policy

The Japanese Ministry of Foreign Affairs formulated the *Country Assistance Policy for the Socialist Republic of Viet Nam* in December 2012. In this policy, the “promotion of economic growth and strengthening international competitiveness” was listed as a priority, stating that “Japan supports Vietnam to develop arterial traffic and urban transportation network, in order to meet the demands for economic infrastructure which is increasing along with the economic growth.” The ministry also formulated a rolling plan, which stated: “For achieving sustainable economic growth, Vietnam should deal with increasing demand for transportation and rapid urbanization. Further, it requires improvement of transportation network that contributes to smooth and safe distribution of goods as well as human mobility.”

This project is consistent with the *Country Assistance Policy for the Socialist Republic of Viet Nam*, and is designed to contribute to Vietnam’s transportation capacity enhancement and regional economic development. Therefore, it is consistent with Japanese ODA policy.

3.1.2.2 Internal Coherence

By the commencement of this project, Japanese ODA loan projects titled “Transport Sector Loan for National Road Network Improvement (I)” and “Transport Sector Loan for National Road Network Improvement (II)” had been implemented. The purpose of these projects was to respond to traffic demand in the target areas by repairing and replacing bridges—the same objective as this project. According to the questionnaire, etc., no concrete cooperation or synergistic effects were identified.

3.1.2.3 External Coherence

Prior to the start of this project, the World Bank had supported the development of national roads, regional ports and inland water transportation in the Mekong region through its “Mekong Delta Transport Infrastructure Development Project.” The Asian Development Bank had also implemented the “Noi Bai-Lao Cai Highway Project” and “Central Region Transport Networks Improvement Sector Project” with a focus on promoting low-carbon public transportation. However, these projects did not focus on the repair and replacement of bridges on national and provincial roads as in the case of this project, and thus there was no cooperative system, collaboration or synergistic effect with this project.

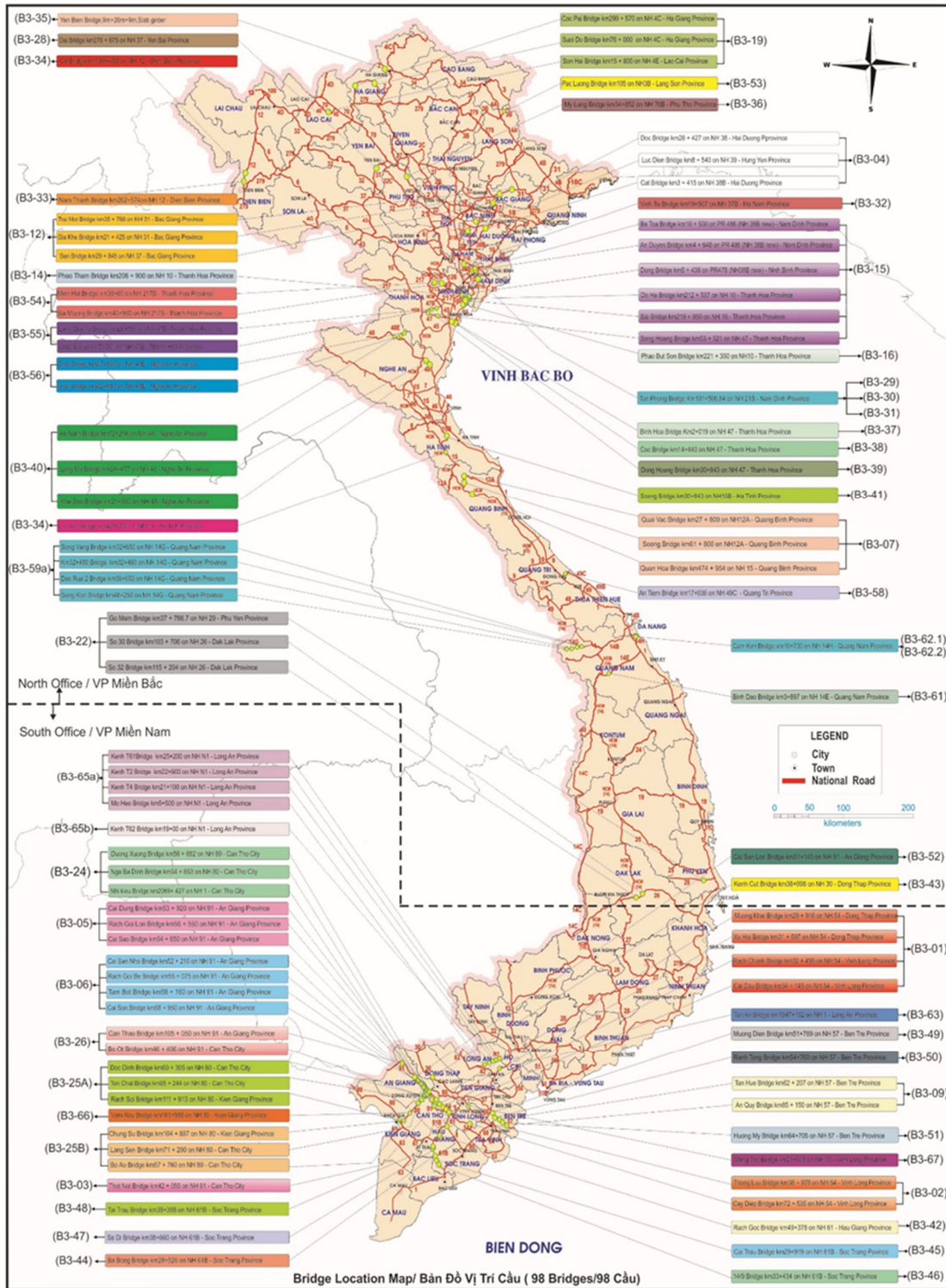
With regard to international frameworks, this project is in line with one of the Sustainable Development Goals (SDGs), “9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation,” in the sense that it contributes to economic revitalization by accomplishing smooth traffic and alleviating congestion.

<Summary of Relevance and Coherence>

This project is relevant as it is “consistent with the development plan” and “consistent with the development needs.” Regarding coherence, while it is “consistent with Japanese ODA policy,” concrete cooperation or synergy effects could not be identified in terms of “internal coherence” or “external coherence.” Nevertheless, it is in line with the goals of the international framework (SDGs). Therefore, its relevance and coherence are high.

**THE SECOND TRANSPORT SECTOR LOAN FOR NATIONAL ROAD NETWORK IMPROVEMENT
 DỰ ÁN TÍN DỤNG NGÀNH GTVT ĐỂ CẢI TẠO MẠNG LƯỚI ĐƯỜNG QUỐC GIA LẦN THỨ 2**

KEI - OC - TEDI in Joint Venture



Update 18/6/2020

(Reference) Figure 1: Locations of Project Sites
 (98 Bridges That Have Been Repaired or Replaced)
 (Source: Project Completion Report)

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

In this project, bridges were repaired and replaced with the aim of responding to traffic demand and improving driving safety on national and provincial roads. It has achieved an expanded bridge width (from 6 m to 12 m or wider) made of prestressed concrete (PC), increased traffic lanes (from one lane on one side to two lanes), enhanced the design load capacity (from H13 to HL93)⁴, and taken into account design considerations to accommodate flood frequencies and to meet the demands of waterway transportation. Table 1 shows the planned and actual main outputs of this project.

Table 1: Planned and Actual Main Outputs of This Project

Initial Plan	Actual
1) Civil Engineering Work Repair and replacement of targeted bridges (82 bridges)	1) Civil Engineering Work → Increased from the initial plan (98 bridges)
2) Consulting Service - Detailed design review, bidding assistance, construction supervision - Bridge inspection - Support for the establishment of BMS operation and training	2) Consulting Service → Implemented largely as planned

Source: JICA's document (initial plan), project completion report/answers to the questionnaire/interviews with PMU6 (at the time of the ex-post evaluation)

1) Civil Engineering Work

The initial plan was to repair and replace 82 bridges. After the start of the project, (1) 31 bridges were excluded from the scope of the project. In addition, (2) 24 bridges were additionally targeted for repair/replacement in 2014 and 23 bridges were further added in 2018. As a result, the actual number became 98 bridges (initial plan of 82 - 31 + 47 = 98 bridges).

The reasons why some bridges were excluded from the project scope (as stated in (1) above) are the following: the Vietnamese government had reduced the national budget to improve the efficiency of project investments in 2013. That is, some bridges were not repaired/replaced; it was limited to the technical improvement of repair and reinforcement as per the government's policy. In addition, some of the bridges were repaired/replaced as part of the National Highway Route 1 expansion project, which was also underway simultaneously with this project.⁵

A total of 47 bridges were additionally targeted in 2014 and 2018 as stated in (2) above because many bridges on arterial and national roads were in need of repair/replacement. The Vietnamese

⁴ The American Association of State Highway and Transportation Officials (AASHTO) indicates a unit of design criteria for the design load capacity; HL93 indicates increased load carrying capacity and length of the bridge.

⁵ This is because the road and bridges between Thanh Hóa and Can Tho on the National Highway Route 1 had to be completed by the end of 2015.

side prioritized fragile bridges in urgent need of repair/replacement in their selection, and JICA agreed to repair/replace the selected bridges. Another reason for the increase in the number of targeted bridges was that the costs of designing, bidding and construction packages had reduced due to exchange rate fluctuations. As there were some surplus funds, these were utilized and as a result, the number of targeted bridges increased. This was influenced by the fact that the traffic demand for large vehicles with a significant body weight had rapidly grown, necessitating that safety measures be taken for passing vehicles. Considering the project's initial objective, the change in the number of bridges is deemed appropriate.

2) Consulting Service

The consulting service was implemented largely as planned. The questionnaire and interviews with PMU6 confirmed that there had been no major problems with quality assurance, execution/process control and project supervision even though the period was extended as the construction took longer. It is worth noting that support was provided to the establishment of the BMS through the consulting service, as discussed in “3.1.1.3 Appropriateness of the Project Plan and Approach.” Technical improvement of the BMS and software development were part of this project, following the previous project. Normally in Vietnam, when formulating an operation plan for a road project, the managing and tracking of the traffic volume, handling of traffic accidents on arterial roads, management of driving speed and cargo loads, etc., are carried out, based on which monitoring is performed on the deterioration of road surfaces and structures as well as on the conditions of bridges and roads after adverse weather (storms, floods, heat waves). Based on the collected information and data, improvement measures are proposed, such as speed and load limits so as to prevent structural deterioration; budgets for necessary repairs and maintenance are also calculated. In principle, a maintenance plan is formulated based on the above. In this context, the construction supervision consultant of this project supported the operation by incorporating these into the formulation of maintenance plans through the technical improvement of the BMS and development of software. Bridge inspections are conducted annually by trained⁶ field personnel of the DRVN-affiliated organization (RRMU). The utilization of improved software has enabled the constant monitoring of bridges and inspections status. In some cases, the priority of repairs changes based on the technical condition and the extent of wear and tear of bridges.⁷ In other words, the DRVN-affiliated organization (RRMU) has become able to identify the order of priority for bridge repairs and to judge whether replacement is necessary. It is thought that the usage of the BMS has contributed to proper maintenance.

⁶ The topics covered were measurement data, images and the inspection of indicators including standard-based evaluation methods, and processes for inputting the data into software.

⁷ It is also possible to calculate the preliminary cost for repair by using the software.

<Selection of Pilot Bridges and Visiting the Bridges During This Evaluation Survey>

At the time of the appraisal, 10 bridges⁸ had been selected as pilot bridges for the measurement of the effectiveness/quantitative effect indicators (daily traffic volume and travel time). It is possible the selection was based on the balance between the northern, central and southern regions of Vietnam, connectivity with other arterial roads, and the importance of economic development; however, specific and clear standards could not be identified from the interviews with project stakeholders or the existing documents.

As mentioned above, many bridges were excluded from the project scope (canceled), while others were additionally targeted for repair/replacement. Of the 10, four pilot bridges (Soong, Sen, Cay Diep and Tan Hue) remained from the time of the appraisal to the project completion. None were added to the list of pilot bridges (to replace the canceled six) when the change was made to the targeted bridges. In addition to the four pilot bridges above, four additional locations⁹ (Cat Bridge, An Tiêm Bridge, Binh Hoa Bridge, and Tân An Bridge) were selected during this evaluation survey (i.e., eight locations in total) based on their locations (i.e., bridges on national highways that are closest to the National Highway Route 1 (NH1), a major arterial road, and bridges that are gateways to accessing neighboring provinces) while taking into consideration the balance between the northern, central and southern regions. Information was collected and interviews were conducted on the status of bridges, project effects and maintenance.

3.2.2 Project Inputs

3.2.2.1 Project Cost

Initially, the project cost was planned to be 29,908 million yen (of which 24,771 million yen was to be covered by an ODA loan). The actual total cost was 28,799 million yen (of which 21,552 million yen was covered by the ODA loan), which was within the plan (approx. 96% of the plan). This is because cost-efficient contracting and cost reductions were realized as contractors were selected through competitive bidding, even though there was a possibility for the cost to rise due to the cancelation/change/addition of the targeted bridges after the project began. In other words, while the project outputs had increased from the initial plan, cost consciousness resulted in efficient project operations.

3.2.2.2 Project Period

Table 2 shows the initially planned and actual periods of the project. At the time of the appraisal, the project was planned to take place from March 2013 to July 2017 for four years and five months

⁸ The 10 bridges were Ghep Bridge (Thanh Hóa Province), Truoi Bridge (Thừa Thiên Huế Province), O Song Bridge (Quảng Ngãi Province), Song Van Bridge (Phu Yen Province), Nam Dong Ba Thin Bridge (Khánh Hòa Province), Tri Chinh Bridge (Ninh Bình Province), Soong Bridge (Quảng Bình Province), Sen Bridge (Bắc Giang Province), Cay Diep Bridge (Vĩnh Long Province) and Tan Hue Bridge (Bến Tre Province).

⁹ During the field survey, the sites to be visited were selected through discussion with PMU6.

(53 months).¹⁰ However, it was actually implemented from March 2013 to June 2020 for eight years and four months (88 months), which significantly exceeded the plan (approx. 166% of the plan). This is because the target bridges were canceled/changed/added after the project began as mentioned above, which expanded the needed procedures and adjustments, impacting the construction period. At the same time, the cancelations/changes/additions of the targeted bridges lengthened the time needed to coordinate and process the land acquisition. Considering the fact that the project period was extended, this project was not necessarily efficient even though the outputs had increased from the initial plan.

Table 2: Initial Plan and Actual Project Period

	Initial Plan	Actual
(Project as a Whole)	March 2013-July 2017 (53 months)	March 2013-June 2020 (88 months)
1) Selection of Consultant	March-August 2013 (Six months)	March-December 2013 (10 months)
2) Consulting Service	September 2013-August 2017 (48 months)	January 2014-June 2020 (78 months)
3) Land Acquisition and Resettlement	March 2013-July 2015 (29 months)	March 2013-April 2020 (86 months)
4) Bidding and Contracting	May 2013-June 2015 (26 months)	January 2014-June 2015, April 2016-March 2017, March 2019-February 2020 (a total of 42 months)
5) Construction	September 2013-July 2017 (47 months)	June 2014-June 2020 (73 months)

Source: Documents provided by JICA (initial plan), the Project Completion Report, answers to the questionnaire (actual)

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

Economic Internal Rate of Return (EIRR)

At the time of the appraisal, the economic internal rate of return (EIRR) of this project was calculated to be 31.5%, when regarding the reduction in travel time and the reduction in driving cost as “benefits,” and the project cost and the cost of operation and maintenance as “costs,” with a project life of 25 years. In this evaluation, a recalculation was attempted by identifying the specific assumptions and calculation models used at the time of the appraisal. During the ex-post evaluation, such data were difficult to obtain, in addition to which some target bridges were canceled/changed/added after the project began but the preconditions for the EIRR calculation were not calculated at that time (i.e., estimated benefits for each bridge were not calculated); therefore, the EIRR was not recalculated.

¹⁰ At the time of the appraisal, the completion date for this project was defined as “when the facilities are put into service.”

Financial Internal Rate of Return (FIRR)

At the time of the appraisal, the FIRR was not calculated as no financial revenue such as from tolls was anticipated. It was also not recalculated at the time of the ex-post evaluation.

<Summary of Efficiency>

The outputs increased while the project cost was within the plan; however, the project period significantly exceeded the plan. Therefore, the efficiency of the project is moderately low.



Picture 1: An Tiem Bridge
(Quảng Trị Province)
(Source: Picture taken by the evaluator)



Picture 2: Soong Bridge
(Quảng Bình Province)
(Source: Picture taken by the evaluator)

3.3 Effectiveness and Impacts¹¹ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

At the time of the appraisal, it was expected that the repair and replacement of the fragile bridges on national and provincial roads would address the traffic demand in the target areas, improving safety. As discussed in “3.2.1 Project Outputs,” 10 bridges were selected as pilot bridges during the appraisal to measure project effects. However, in this evaluation survey, information and data on daily traffic volume and travel time were collected for a total of eight bridges, which was used to analyze the project effects. Table 3 shows the baseline, target and actual values of the quantitative effect indicators of this project, which were the daily traffic volume and travel time. For reference, the locations of the eight bridges visited during this survey are presented in Figure 2, while those of the 10 pilot bridges that had been set at the appraisal (2013) are depicted in Figure 3.

¹¹ When providing the sub-rating, effectiveness and impacts are to be considered together.

Table 3: Quantitative Effect Indicators of This Project (Baseline, Target and Actual Values)

(1) Daily Traffic Volume (Unit: Number of Vehicles/Day)

Bridge Name (Province)	Baseline Value (2012)	Target Value (2019) [2 Years After Completion]	Actual Value (2021) [2 Years After Completion]
[Pilot Bridges]			
a) Soong Bridge (Quảng Bình Province)	3,652	6,785	10%-15% increase every year after completion (concrete figure is unavailable)
b) Sen Bridge (Bắc Giang Province)	2,201	3,981	10,315
c) Cay Diep Bridge (Vĩnh Long Province)	4,452	5,647	Significant increase after completion (concrete figure is unavailable)
d) Tan Hue Bridge (Bến Tre Province)	6,814	9,951	11,521
[Non-Pilot Bridges]			
e) Cat Bridge (Hải Dương Province)	N/A (not set)	N/A (not set)	Increase after completion (concrete figure is unavailable)
f) An Tiêm Bridge (Quảng Trị Province)	N/A (not set)	N/A (not set)	Increase after completion (concrete figure is unavailable)
g) Binh Hoa Bridge (Thanh Hóa Province)	N/A (not set)	N/A (not set)	10,357 (2018) 12,083 (2021) (or approx. 100% increase in 5 years after completion)
h) Tân An Bridge (Long An Province)	N/A (not set)	N/A (not set)	42,368 (or approx. 200% increase after completion)

(2) Travel Time (Unit: Minute)

Bridge Name (Province)	Start Point (Road Name)	End Point (Road Name)	Distance (km)	Baseline Value (2012)	Target Value (2019)	Actual Value (2021)
[Pilot Bridges]						
a) Soong Bridge (Quảng Bình Province)	National Highway Route 12A (Km 134+800) with NH1A	National Highway Route 12A (Km 56+800) with Ho Chi Minh	78	146.4	66.9	97.0

		path				
b) Sen Bridge (Bắc Giang Province)	National Highway Route 37 with National Highway Route 31 in Doi Ngo Town	National Highway Route 279 with National Highway Route 31	37	156.2	31.7	77.0
c) Cay Diep Bridge (Vĩnh Long Province)	National Highway Route 60 with National Highway Route 54 (Km 36+835)	National Highway Route 80 with National Highway Route 54 (Km 146+835)	110	245.2	94.3	167.0
d) Tan Hue Bridge (Bến Tre Province)	National Highway Route 48 with Asian Highway 1 (AH1) (Km 428+270)	National Highway Route 45 with AH1 (Km 337+270)	46	198.0	39.4	80.0
[Non-Pilot Bridges]						
e) Cat Bridge (Hải Dương Province)	National Highway Route 38 (not set)	Unknown (not set)	Unknown (not set)	Unknown (not set)	Unknown (not set)	Unknown
f) An Tiêm Bridge (Quảng Trị Province)	National Highway Route 49C (not set)	Unknown (not set)	Unknown (not set)	Unknown (not set)	Unknown (not set)	Unknown
g) Binh Hoa Bridge (Thanh Hóa Province)	National Highway Route 47 with QL1A	National Highway Route 47 with đường Trần Hưng Đạo/TP Sầm Sơn	20.2	29.0	20.0	23.0
h) Tân An Bridge (Long An)	National Highway	National Highway	33	48.0	43.0	43.0

Province)	Route 1A with ĐT816 huyện Bến Lức	Route 1A/Ngã ba Trung Lương				
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Source: JICA's documents (baseline, target values), answers to the questionnaire, interviews and actual measurement by driving a car during the field survey (actual values)

Note: a) to d) are the pilot bridges initially selected during the planning, while e) to h) are the bridges selected for site visits during this evaluation survey, among those additionally selected for repair/replacement during the project implementation.

(1) Daily Traffic Volume

Actual values could be obtained for Sen Bridge, Tan Hue Bridge and Binh Hoa Bridge. As for the other bridges, there were no records of the actual value data; thus, the changes in the target values and actual values had to be checked by interviewing the DOT of each province, the RMC under the DOT and the RRMU under the DRVN responsible for maintenance, as well as the outsourced companies that carry out the actual bridge maintenance. A significant increase in traffic volume was observed on all eight bridges that were visited. The reason for this is believed to be that the Vietnamese economy has been revitalized flourishing since prior to this project; the number of companies entering and reinvesting is on the rise. Industrial parks are often built close to bridges, and the number of distribution trucks and commuter vehicles has been increasing. In Bắc Giang Province, in which Sen Bridge is located, several industrial parks have been established, and the number of vehicles that use the bridge has risen significantly. Therefore, it is highly likely that the traffic volume has grown considerably on the bridges that were repaired and replaced during this project.

(2) Travel Time

Based on the answers to the questionnaire, travel time was measured by driving a vehicle between the start and the end points during the field survey. As can be seen from the actual values shown in Table 3, the target values have not been achieved for the four pilot bridges. The reason for this is that the number of vehicles and people has grown significantly in the targeted provinces due to the expansion of industrial parks and economic revitalization, regardless of whether it is morning, evening or daytime. In particular, congestion is serious on national highways, which is slowing down the passing vehicles while increasing travel time. The targeted bridges are no exception; the overall travel time has not been shortened. Despite this fact, if this project had not been implemented, it is quite possible that the travel time would have even exceeded the baseline values that had been set at the time of the appraisal, considering the poor quality of the existing bridges (e.g., narrow widths, restricted loading weight for heavy vehicles, structural problems in terms of safety and durability due to aging, etc.). Therefore, the project effect is not necessarily low.

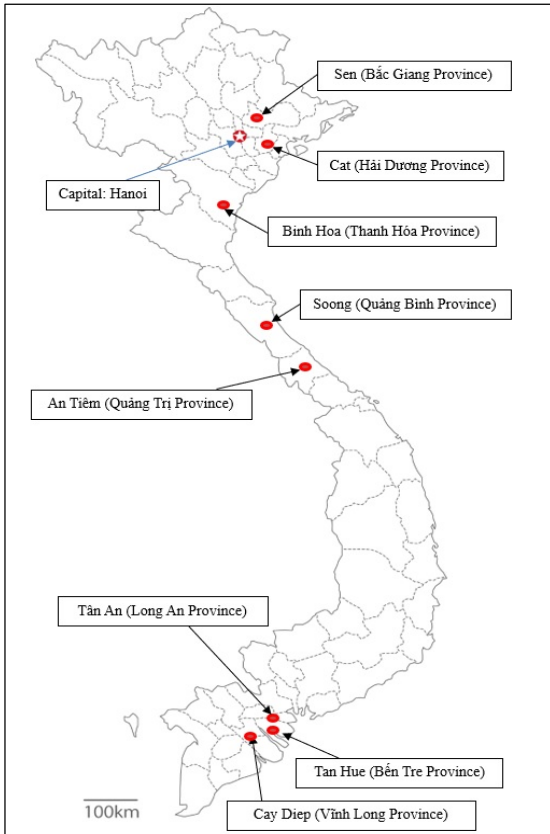
Of the four non-pilot bridges, it was not possible to measure travel time for Cat Bridge and An Tiêm Bridge because the start and end points were not fixed. As for Binh Hoa Bridge and Tân An Bridge, the actual values were measured as a reference not only because the start and end points were clear, but the baseline and target values were also known. It was confirmed that the travel time was mostly in line with the target values through measurement by driving a car, although it was difficult to determine whether this was an effect of this project.

3.3.1.2 Qualitative Effects (Other Effects: Improved Driving Safety, Etc.)

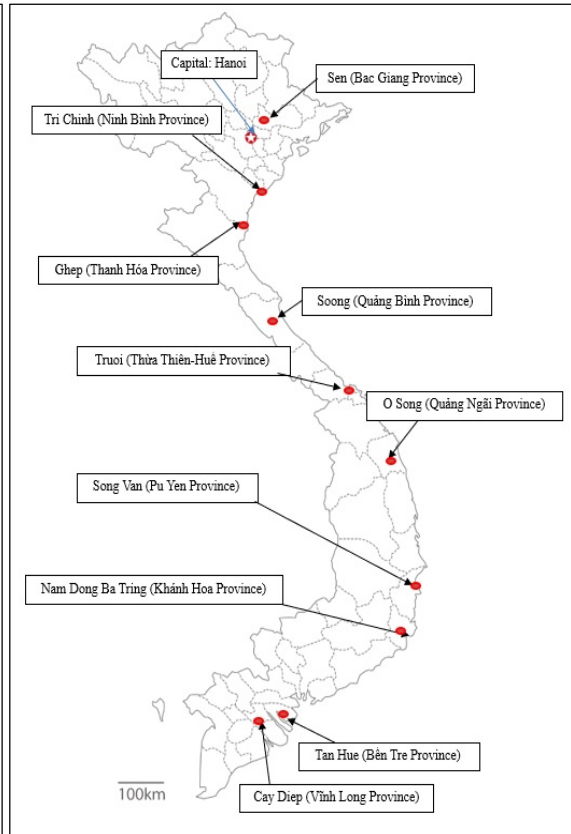
From the questionnaire and interviews with staff of the DOT of each province, the RMC and the RRMU in each province, as well as the outsourced companies that carry out the actual maintenance and residents near the bridges, the following comments were received regarding the bridges that were visited during this survey.

- “There are no problems with the pavement condition and strength of the bridges because they have just been repaired.”
- “The load capacity is more than that of the previous bridges. We are not worried even if heavy vehicles cross the bridges.”
- “The bridge widths have been expanded and drivers can now drive with peace of mind.”
- “The bridge girder, which was close to the river surface before the replacement, has been raised as part of this project. The height is sufficient, and there is less concern about flooding during heavy rain. Some bridges which were not covered by this project had been submerged due to rising river water levels (e.g., Picture 4).” (The above comments are from the staff of the DOT of each province, the RMC, the RRMU and the outsourced companies)
- “Because the width of the bridge has expanded, we do not feel anxious when crossing the bridge.”
- “As the height of the bridge has been raised, drivers slow down when they approach the bridge as they need to climb up a gentle slope. Therefore, I think the number of accidents has reduced before the bridge as well as on the bridge.” (Residents near the bridge)

Based on the above, it is considered that drivability, safety and durability have improved on the target bridges as a result of the repair and replacement under this project.



(Reference) Figure 2: Locations of the Eight Bridges Visited During This Evaluation Survey (2022)



(Reference) Figure 3: Locations of the 10 Pilot Bridges Selected at the Time of the Appraisal (2013)



Picture 3: Cat Bridge (Hai Duong Province)
(Source: Photographed by the evaluator)



Picture 4: Flood on the Bridge That Was Not Rehabilitated (Outside the Scope of This Project) (Quang Binh Province)
(Source: DOT in Quang Binh Province)

3.3.2 Impacts

3.3.2.1 Intended Impacts

1) Improving the Efficiency of the Logistics Network, Including the Enhancement of Connectivity Within the ASEAN and Mekong Region and the Contribution to Socio-Economic Development in the Target Regions

Of the pilot bridges, Table 4 shows the gross regional domestic product (GRDP) of Bắc Giang Province, where the Sen Bridge is located, for reference. As discussed above, economic revitalization due to the formation of multiple industrial parks has been remarkable in recent years, which is a factor in the large rise in GRDP. Table 5 illustrates the GRDP of Vĩnh Long Province (Mekong Delta region) where the Cay Diep Bridge is located. The changes in Vietnam's national gross domestic product (GDP) are presented in Table 6, which demonstrated an increase of approx. 1.6 times during the project implementation period, while it was of approx. 3.5 times in Bac Giang Province (Table 4), and approx. 1.8 times in Vĩnh Long Province (Table 5); the growth rates of these two provinces are larger than that of the national GDP. Although it is difficult to prove there is a direct correlation, it is quite possible that this project has led to the increased transportation of goods and people and improved costs for distribution and transportation, thereby supporting the revitalization of the regional economy and industry.

(Reference) Table 4: GRDP of the Sen Bridge (Bắc Giang Province)

(Unit: 1 billion VND)

2013	2014	2015	2016	2017	2018	2019	2020
2,636	3,012	3,553	4,509	6,138	8,496	9,698	9,200

Source: Bắc Giang Province People's Committee

(Reference) Table 5: GRDP of the Cay Diep Bridge (Vĩnh Long Province)

(Unit: 1 billion VND)

2013	2014	2015	2016	2017	2018	2019	2020
30,464	33,871	36,396	39,309	42,765	46,221	50,859	55,095

Source: Vĩnh Long Province People's Committee

(Reference) Table 6: GDP of Vietnam

(Unit: 1 billion VND)

2013	2014	2015	2016	2017	2018	2019	2020	2021
3,246,870	3,455,392	3,696,826	3,944,144	4,217,875	4,521,444	4,844,733	4,987,354	5,115,805

Source: International Monetary Fund (IMF)

To determine whether the project is contributing to revitalization of the local economy, pilot and non-pilot bridges (eight locations in total) were visited where interviews were conducted with residents living near the bridges, in addition to staff from the DOT of each province, the RMC and the RRMU as well as contracted companies responsible for maintenance.¹² The following are

¹² These were conducted in the form of individual interviews.

the comments received.

- “In Bắc Giang Province, the manufacturing of electrical appliances is thriving. Over the past few years, there has been an increasing number of industrial parks and an influx of people from outside the province. Interactions with other provinces are becoming more active compared to 10 years ago, prior to the start of this project. This province is also close to Hai Phong Port, which is the country’s largest in scale; it is superior to other provinces in terms of its convenient location (i.e., close to the capital Hanoi and the Chinese border) and low cost for the transportation of goods. In particular, the Sen Bridge has become safe for vehicles, resulting in smooth traffic, thereby supporting the manufacturing industry and the local economy.” (Interviews in Bắc Giang Province)
- “In Quảng Trị Province, the volume of transportation of goods and traffic has been increasing year by year. If the An Tiêm Bridge was not repaired, I think that the traffic bottleneck would not have been resolved, and that it would have been a hindrance to economic revitalization.” (Interviews in Quảng Trị Province)
- “In Long An Province, industrial parks have been expanding for some time. Domestic and foreign investment is also increasing. Many trucks transport goods to the industrial park, to which many workers commute by car. In addition to Ho Chi Minh City and other parts of Mekong Delta region, this province is also close to Cambodia; cross-border transportation has been increasing year by year. The Tân An Bridge is important as a transportation hub, and I believe it is supporting the promotion of logistics.” (Interviews in Long An Province)

Based on the aforementioned comments combined with the situations indicated by the statistical data in Tables 4 to 6, it can be said that this project is supporting the economy and industry of the target areas.

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

This project was classified as Category FI in the *JICA Guidelines for Environmental and Social Considerations* (promulgated in April 2010).¹³ In addition, the questionnaires, interviews and site visits confirmed that there were no particular negative impacts on the target bridges and the natural environment (air pollution, water pollution/wastewater, noise/vibration, impact on the ecosystem, etc.) during or after the project’s completion.¹⁴ During the implementation of this

¹³ At the time of appraisal, subprojects (bridges) of Category A projects were excluded from the selection criteria, and no bridges were Category A projects during the implementation of this project.

¹⁴ During project implementation, consideration was given, such as prohibiting the use of horns when construction vehicles passed through residential areas and restricting construction work at night. In addition, in order to prevent dust as much as possible, the roads connecting to the bridge were sprinkled with water, and vehicles transporting materials were covered with hoods.

project, the Department of Science, Technology and Environment of the MOT and the Department of Science, Technology, International Cooperation and Environment of the DRVN were jointly responsible for environmental monitoring, while the construction supervision consultant was charged with the actual monitoring (The consultant periodically monitored and reported to PMU6 necessary environmental indicators). Since the completion of this project, specific monitoring has not been carried out. If there are some negative environmental impacts on the target bridges, or if there are objections or complaints from residents, a system is in place for the DOT of each province to deal with them. The interviews and questionnaires confirmed that no particular measures have been implemented as there had been no special objections or complaints by the time of the ex-post evaluation.¹⁵

2) Resettlement and Land Acquisition

The compensation committees in the respective administrative districts of each province were responsible for land acquisition and resettlement in relation to the bridges that were repaired or replaced. They were implemented based on the land acquisition plan.¹⁶

The compensation paid for all 98 bridges was 805.05 billion VND.¹⁷ Each administrative district compensation committee made a request to the PMU6, who processed the payment and sent it to the committees. This amount is the sum of what was paid by the committees to those who were subject to the land acquisition and resettlement.¹⁸ During this evaluation survey, it was difficult to gather information¹⁹ regarding the number of people, acquired area, number of affected households, etc.; information for some bridges could not be obtained. Of the total 98 bridges, data were available for 87 bridges, with a total of 3,070 households affected, a total of 714,440 square meters acquired, and a total of 176 households resettled. From an early stage during project implementation or before the start of the project, a system should have been established among project stakeholders to regularly collect information on land acquisition and resettlement, and the progress should have been monitored. As it was a project covering a wide area in the form of a sector loan, many institutions (with the compensation committees of each provincial administrative district as the working units) were involved in the compensation procedures. Therefore, it would have been feasible to establish a system for compiling information for the

¹⁵ During this evaluation survey, we drove around the bridges to visually confirm that there were no particular phenomena such as an increase in exhaust gas, concerns about noise or a serious impact on the ecosystem.

¹⁶ In Vietnam, compensation for land acquisition and resettlement is paid according to the law. In addition, the roles of PMU6 and each provincial and administrative district compensation committee must comply with the laws of the country. Furthermore, it is necessary to follow the *JICA Guidelines for Environmental and Social Considerations*.

¹⁷ According to the exchange rate (JICA rate) in January 2023, this can be calculated as approx. 4,535 million yen.

¹⁸ According to PMU6, necessary compensation procedures were followed in accordance with the *JICA Guidelines for Environmental and Social Considerations* and other agreed details when the loan was signed for this project (2013). In addition to JICA, projects supported by other donors such as the World Bank, Asian Development Bank and Korea International Cooperation Agency had also followed the agreed procedures and made compensation payments.

¹⁹ In this survey, although inquiries were made to the administrative district compensation committees in each province via PMU6, some provinces did not respond; thus, data could not be collected for all the bridges.

executing agency and construction supervision consultants at an early stage.

On the other hand, it was confirmed through interviews with PMU6 that there had been no complaints or dissatisfaction regarding compensation payments or relocation, nor were there pending cases. The compensation committees in each administrative district provided sufficient and courteous explanations of the procedures and amount of compensation to those subject to land acquisition and resettlement.²⁰

3) Gender Equality, Marginalized People, Social Systems and Norms, Human Well-Being and Human Rights

Prior to the start of this project, many bridges on national highways and provincial roads were deteriorating. Flooding during the rainy season and damage from natural floods made the road impassable, interfering with the lives of local residents. Repairing and replacing bridges through this project has improved the traffic access for local residents, ensuring safe passage; it is thought that residents now have better access to economic activities, as they can use the repaired/replaced bridges. In interviews with residents living near the visited bridges, the following comments were received: “The bridge over the main road has been repaired. Many trucks are transporting materials while vehicles are transporting daily necessities. I own a small shop (which sells drinking water, sweets, daily goods, etc.); the sales have increased as the number of vehicles increased,” and “New lighting has been installed on the bridge. Walking at night feels safe.” Therefore, it is believed that this project is contributing to better livelihoods of local residents while ensuring their safety and security. It is also thought that this project is playing a role in providing people (including the vulnerable) and local businesses with enhanced opportunities and benefits for social participation widely and equally, increasing choices in their lives while creating events that lead to contentment.

<Summary of Effectiveness and Impacts>

While the expected outcomes and impacts of the implementation of this project were largely achieved as planned, it can be said that there are almost no negative impacts on society (including human rights and gender equality), environment and economy in the long term. This project has achieved its objectives. Therefore, the effectiveness and impacts of the project are high.

²⁰ According to PMU6, as livelihood recovery support for resettled residents, those who had to give up their land and resettle are provided with new jobs and training in accordance with Decree 47/2014/ND-CP (Articles 20 and 21) and Article 83 of the Land Law. In reality, it is apparently the people’s committees of each province that stipulate the specific levels of assistance and provide livelihood recovery assistance in consideration of the need; however, the actual situation could not be confirmed during this evaluation survey.

3.4 Sustainability (Rating: ④)

3.4.1 Policy and System

The Vietnamese government, in its *Ten-Year Social Economic Development Strategy (2021-2030)*, has set a policy goal of revitalizing its economy through responding to the transportation sector and developing necessary infrastructures. In addition, through the *Assessment of the Implementation Results of Socio-economic Development for the Period 2016-2020* and a *Report on the Direction of the Socio-economic Development Tasks for the Period 2021-2025*, the government aims to move out of the “lower middle-income country” category by 2025. At the time of the ex-post evaluation, this project is consistent with the policies and directions of the Vietnamese government.

3.4.2 Institutional/Organizational Aspect

The executing agency for this project is the MOT. The DOT of each province supervises and is responsible for the operation and maintenance of the target bridges, while the RMC under the DOT and the RRMU under the DRVN are in charge of the implementation. While the RRMU and the DOT of each province have an established cooperative system for working on the conservation and maintenance of roads, the actual maintenance work is handled by outsourced companies, who are selected through bidding handled by the DOT of each province.²¹ The RMC supervises the outsourced companies, and these regularly report on their work progress to the DOT and RMC. In this survey, in addition to questionnaires, interviews were conducted with the DOT of each province, the RRMU, the RMC and the outsourced companies in the visited provinces, based on which the implementation system and the number of staff engaged in the maintenance of the target bridges seemed to be sufficient.

Bridge maintenance includes periodic inspections, as well as retightening the bolts of the connecting parts of bridge bodies, repainting balustrades, drawing white lines on the road, and weeding and cleaning around the bridges. During the site inspections, it was confirmed that there were no bridges with problems or advanced wear and tear. In interviews with the outsourced companies, many staff made comments such as: “It has not been long since the repair/replacement was completed. Although little work (inspections, weeding and cleaning) is required at the moment, we will respond appropriately by preparing ourselves for maintenance work that is likely to increase in the near future.”

In light of the above, it is judged that there are no major problems with the institutional aspect of the operation and maintenance of this project.

²¹ Winners are selected based on the technical and financial evaluations. Outsourced companies normally sign a three-year contract with the RMC.

3.4.3 Technical Aspect

Site inspections and interviews confirmed that many of the outsourced companies responsible for maintaining the target bridges have employees with extensive work experience. Outsourced companies have bridge maintenance manuals, which are referred to as necessary to conduct their work. It was also confirmed that maintenance work was recorded in the bridge maintenance record book and that periodic inspections were conducted.²²

The DOT of each province, the RRMU and the RMC also have many employees with extensive work experience.²³ Although there are not many training opportunities for their staff, training to improve technical and management capabilities (training on technology, management and software usage) is available. On-the-job training (OJT) is also conducted for newly hired staff.

As part of the consulting service of the previous project, “Transport Sector Loan for National Road Network Improvement (II),” the operation and maintenance system was strengthened through BMS operation support (bridge data collection and maintenance, database operation manual creation, etc.) which is required for long-term maintenance plan formulation. As discussed in “3.2.1 Project Outputs,” the construction supervision consultant for this project worked on the formulation of a maintenance plan, incorporating the technical improvements of the BMS and software development. This software enables the real-time monitoring of conditions through bridge inspections. A list of bridges that need to be repaired or replaced is created, with a clear order of priority. Inspections can be carried out based on this list; it is possible to decide whether it needs to be replaced or repaired. The technical improvement of the BMS and development of the software play a role in efficient inspection and proper maintenance.

In light of the above, it is judged that there are no major problems with the technical aspect of the operation and maintenance of this project.

3.4.4 Financial Aspect

Table 7 shows the amount of investment (maintenance and road development, including bridges) in the road sector in Vietnam and their respective shares for reference.

²² Refer to Picture 6.

²³ The average term of service is about 10 years.

(Reference) Table 7: Road Sector Investment (Maintenance and Improvement Including Bridges) and Ratios of Investment (2012-2020)

	Investment in the Road Sector (Unit: million VND)		Ratios of Road Sector Investment (Unit: %)	
	Investment in Maintenance	Investment in Road Development	Share of Maintenance	Share of Road Development
2012	2,671,000	23,466,869	10.22	89.78
2013	4,667,990	23,865,450	16.36	83.64
2014	5,784,289	34,744,114	14.27	85.73
2015	6,791,435	38,712,601	14.92	85.08
2016	7,603,159	26,495,793	22.30	77.70
2017	7,877,915	25,627,050	23.51	76.49
2018	8,317,000	14,761,594	36.04	63.96
2019	9,353,840	22,224,546	29.62	70.38
2020	9,986,000	29,487,728	25.30	74.70

Source: MOT

Comparing the ratio of investment in maintenance and road improvement, investment in maintenance has been increasing its share year by year. This indicates that as road infrastructure facilities including bridges are developed, the number of maintenance targets has grown. According to the MOT, the importance of maintenance of roads and bridges will continue to rise in the future, and that the maintenance budget will be appropriately allocated.

Regarding the bridges that had been repaired or replaced, little of the maintenance budget has been spent up to the time of the ex-post evaluation as these bridges do not have complicated construction methods and it has not been long since the completion. So far, no bridges need medium- or large-scale repair or restoration. However, in the event of a natural disaster or unexpected event (heavy rain, typhoon, flood, unexpected accident, etc.), the DOT of each province, RRMU and RMC will carry out the repair and reconstruction by immediately confirming the extent of the damage and securing an additional budget.

Regarding each bridge visited in this survey, it was confirmed through interviews with outsourced companies responsible for maintenance that no work had stagnated due to the lack of a maintenance budget. The DOT of each province, the RRMU and RMC use the BMS to determine the budget necessary for maintenance, which is requested from the MOT and the DRVN, who allocate it.

In light of the above, it is judged that there are no major problems with the financial aspect of the operation and maintenance of this project.

3.4.5 Environmental and Social Aspect

No environmental or social mitigation measures have been taken in particular; no negative impacts on the natural environment are expected for the time being. As discussed in “3.3.2.2 Other Positive and Negative Impacts, 1) Impacts on the Environment,” no major negative impacts on

the environment had occurred by the time of the ex-post evaluation.

3.4.6 Preventative Measures to Risks

During the project implementation, no risks, external conditions or events needed to be controlled. There was also no case in which the construction period was affected by a large-scale natural disaster. No risks that had not been anticipated at the time of the appraisal occurred during the project implementation.

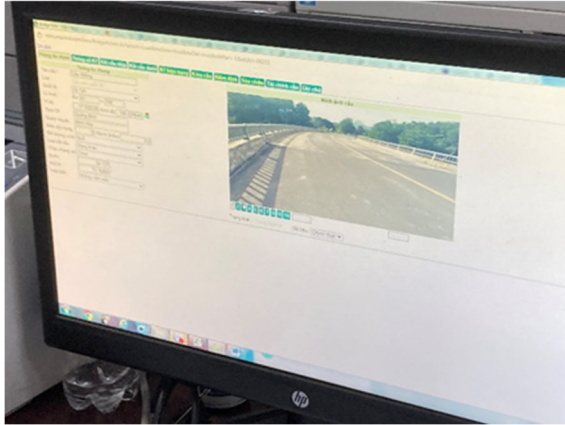
3.4.7 Status of Operation and Maintenance

Outsourced companies are responsible for the maintenance of bridges that had been repaired/replaced by this project. As mentioned in “3.4.2 Institutional/Organizational Aspect,” regular inspections include retightening the bolts of the connecting parts of bridge bodies, repainting balustrades, drawing white lines on the road on bridges, weeding and cleaning around bridges, etc. The DOT of each province, the RRMU and the RMC supervise and monitor the maintenance work performed by outsourced contractors.

During this evaluation survey, on-site inspections and interviews with maintenance staff (outsourced companies) who were at the sites confirmed that there were no damages or deficiencies related to the bridge framework, road surface or road shoulders on the bridges that could adversely affect the project effects. While not much time has passed since the renovation/replacement, the overall operation and maintenance situation seemed to be good.

At the time of the ex-post evaluation, there was no need for spare parts in relation to the target bridges. If purchases are necessary in the future, the outsourced companies report the situation to the DOT of each province, the RRMU and the RMC and handle the procurement after obtaining their approvals. It does not take a long time to purchase a part from a local supplier and have it delivered.

No issues have been observed in the policy/system, institutional/organizational, technical, financial, and environmental and social aspects, including the current status of operation and maintenance. Risks have been well mitigated. Therefore, sustainability of the project effects is very high.



Picture 5: BMS Information Input Screen
(Source: Photographed by the evaluator)



Picture 6: Bridge Maintenance Record Book
and Maintenance Manual
(Source: Photographed by the evaluator)

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed to respond to traffic demand and improve safety by repairing and replacing fragile bridges on national and provincial roads, thereby contributing to socio-economic development in the targeted areas. With regard to relevance, it is “consistent with the development plan” and “consistent with the development needs.” Concerning coherence, while it is “consistent with Japanese ODA policy,” no concrete cooperation or synergy effect has been observed in terms of “internal coherence” and “external coherence.” On the other hand, it is consistent with the goals of the international framework (SDGs). Therefore, the relevance and coherence are high. With respect to outputs, the initial plan involved 82 bridges, which was expanded to 98 bridges. While the project cost was within the plan as a cost reduction was achieved with meticulous project management, the project period significantly exceeded the plan, as coordination and land acquisition procedures associated with the change in the number of bridges required considerable time. Therefore, the efficiency is judged to be moderately low. Regarding the quantitative effect indicators, the “daily traffic volume” generally increased for the bridges which were targeted to be repaired and replaced. As for “travel time,” while the target values could not be achieved for some bridges due to the congestion and longer travel time resulting from the elevated traffic volume, other bridges have come close to the target values. Interviews confirmed that driving safety, comfortability and durability are high on the bridges. It was also corroborated that this project has contributed to the socio-economic development of the areas near the target bridges and to the efficiency of the logistics network. Therefore, the effectiveness and impact are high.

No major concerns are observed with regard to the sustainability of the effects produced by this project; thus, the sustainability of this project is very high.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

None

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

The Necessity of Making Steady Efforts to Collect Appropriate Information on Project Effects

At the time of the appraisal, 10 pilot bridges were selected from among the bridges to be repaired/replaced in order to measure the quantitative effect indicators (daily traffic volume, travel time). After the project began, many changes occurred in terms of the target bridges. As a result, only four bridges remained; no additional pilot bridges were selected. In the case of a project in which outputs (bridges) are widely spread all over the country, both the assistance recipient side and the assistance provider side should identify as many pilot bridges as possible (for example, 10 pilot bridges should be secured) and set targets for quantitative effects such as daily traffic volume and travel time, thereby properly monitoring and steadily establishing an information-gathering system.

The Importance of Building a System for Sharing and Collecting Information on Land Acquisition and Resettlement at an Early Stage in Wide-Area/Sector Loan Projects to Ensure Steady Implementation

Regarding land acquisition and resettlement, as it was a sector loan project covering a wide area, it was difficult to obtain information on the specific number of people affected, the area acquired and the number of affected households. It would have been better for the executing agency, construction supervision consultants and local units (compensation committees for each provincial administrative district in the case of this project) to have solid information at an early stage of project implementation or prior to the start of the project, by establishing a system for sharing and collecting information on land acquisition and resettlement regularly. When implementing similar projects in the future, it is desirable to establish a mechanism that facilitates the sharing and collection of information as early as possible for steady implementation.

The Importance of Introducing an Effective Maintenance System and Providing Operational Support When Implementing Wide-Area/Sector Loan Projects Focused on Roads and Bridges

In the previous project titled, “Transport Sector Loan for National Road Network Improvement (II),” support was given through its consulting service to the operation of the BMS, which is essential for long-term maintenance planning. In this project, for the purpose of systematically comprehending the status of bridges and maintenance performed by field staff for timely maintenance, following the introduction of the BMS, support for the establishment of BMS operation was provided including system support, as well as assistance for creating practical operation manuals and training. It is worth noting that the technical improvement of the BMS and software development of the BMS have made it possible to capture the technical aspects and inspection status of bridges, thereby identifying the priority of maintenance and repair. This software has made a significant contribution as a tool for proper maintenance. Therefore, when implementing wide-area/sector loan projects centered on roads and bridges, the introduction of such a system and providing operational support is believed to generate qualitative improvements and efficiency in maintenance; such efforts are worthy of consideration.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

This project entailed the technical improvement of the BMS and software development. It has enabled the monitoring of bridges and road conditions on bridges after storms and floods. The DOT of each province, the RRMU and the RMC can now determine the order of priority for bridge maintenance and identify the necessity of repair or replacement. In other words, it is a highly effective maintenance planning tool. It is beneficial to improve what was accomplished in the previous project in the follow-on project for national application. This can be seen as evidence of uninterrupted communication and a cooperative relationship among the project stakeholders.

5.2 Additionality

None

(end)

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs	<p>1) Civil Engineering Work Repair and replacement of targeted bridges (82 bridges)</p> <p>2) Consulting Service - Detailed design review, bidding assistance, construction supervision - Bridge inspection - Support for the establishment of BMS operation and training</p>	<p>1) Civil Engineering Work Increased from the initial plan (98 bridges)</p> <p>2) Consulting Service Implemented largely as planned</p>
2. Project Period	March 2013-July 2017 (53 months)	March 2013-June 2020 (88 months)
3. Project Cost		
Amount Paid in Foreign Currency	12,163 million yen	20,200 million yen
Amount Paid in Local Currency	17,745 million yen	8,599 million yen
Total	29,908 million yen	28,799 million yen
ODA Loan Portion	(24,771 million yen)	(21,552 million yen)
Exchange Rate	<p>1 USD = 78.7 JPY 1 USD = 20,828 VND (as of October 2012)</p>	<p>1 USD = 108.97 JPY 1 USD = 22,118.09 VND (average for the period 2013-2020 in which costs for major project outputs were incurred based on IMF International Financial Statistics (IFS))</p>
4. Final Disbursement	July 2020	