

Bosnia and Herzegovina

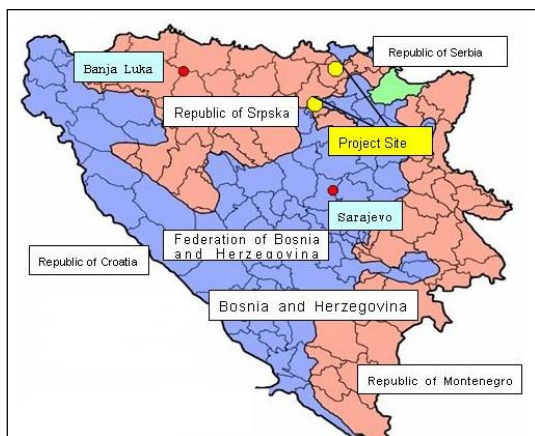
Ex-Post Evaluation of Japanese Grant Aid Project
**Project for Reconstruction of the Main Bridges on Road Network
(Doboj and Modrica Bridges)**

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

0. Summary

At the time of the ex-post evaluation, it is evident that the project is consistent with policies such as development of transport infrastructure and developmental needs such as development of road network and its expansion. Although the project period was as planned, the project cost slightly exceeded the planned. The detour situation for heavy vehicles (20t or more) and traveling speed (design speed) have progressed as planned at the time of the ex-ante evaluation. Additionally, the beneficiary survey results show the positive impacts on the living conditions of residents in the adjacent areas of both bridges as well as on the working condition of carriers. Furthermore, no major problems have been observed in the operation and maintenance (O&M). In light of the above, this project is evaluated to be highly satisfactory.

1. Project Profile



Project Locations



New Doboj Bridge

1.1 Background

Due to the interethnic conflicts that occurred between 1992 and 1995, the road network in

Bosnia and Herzegovina¹ (hereinafter referred to as “BiH”) was destroyed and fragmented, and its restoration and recovery became a major challenge since then. The Doboj Bridge is located along Highway Route M4-3 in the Republic of Srpska (hereinafter referred to as “RS”), which shares a border with the Federation of Bosnia and Herzegovina (hereinafter referred to as “FBiH”) at a point approximately five kilometers south of its bridge location. Meanwhile, the Modrica Bridge is located along Highway Route M5 (E73)² in RS, which runs southward from Budapest, the capital of Hungary, passes through Croatia, and finally connects to Sarajevo, the capital of BiH. These two bridges had taken on important functions as key junctions of passenger transportation and goods distribution between RS and FBiH. The Doboj Bridge was getting older and also suffered significant dilapidation such as cracks in the superstructure due to heavy military vehicle transit during the interethnic conflicts, free lime, corroded reinforcing bars, and concrete deterioration in the foundation. Thus, heavy vehicles were restricted to pass through the bridge. As for the Modrica Bridge, vibrations associated with the vehicle passage was so large due to significant damage of the superstructure that may have been caused by heavy military vehicle transit and impact from bombings, and thus, there was a risk of structural disorder and collapse of the bridge. Therefore, it was considered as an urgent issue to reconstruct both bridges to ensure safe and smooth transportation.

1.2 Project Outline

The purpose of the project is to improve the detour situation of heavy vehicle and transport velocity, by reconstructing Doboj and Modrica bridges where deterioration by the interethnic conflicts was remarkable; thereby contributing to promote exchange of people and smooth logistics and secure safe traffic both in RS and FBiH.

Grant Limit Amount / Actual Grant Amount		1,023 million yen / 1,002 million yen
Exchange Date of Signature		May 2004
Executing Agency		Public Company Republic of Srpska Roads
Project Completion Date		December 2006
Project's	Main Contractors	Obayashi Corporation

¹ BiH is composed of the two entities (FBiH and RS) and Brcko Administrative District which belongs to the aforementioned two entities. The main industries are forestry and mining.

² It is M5 in BiH, but E73 as international road (European main road).

Participants	Main Consultants	Nippon Koei / Central Consultant (JV)
Basic Design Study		October 2002 - July 2003
Detail Design Study		December 2003 – August 2004
Related Projects		N/A

2. Outline of the Evaluation Study

2.1 External Evaluator

Kenichi Inazawa, Evaluation Consultant, Octavia Japan Co., Ltd.

2.2 Duration of Evaluation Study

Duration of the Study: December 2010 – November 2011

Duration of the Field Study: March 13–18, 2011 (first study)

June 26–28, 2011 (second study)

2.3 Constraints during the Evaluation Study

N/A

3. Results of the Evaluation (Overall Rating: A³)

3.1 Relevance (Rating: ③⁴)

3.1.1 Relevance with the Development Plan of Bosnia and Herzegovina

In 1996, before the time of the ex-ante evaluation, BiH formulated the Emergency Transport Reconstruction Program (ETRP). Also, BiH had injected aid funds received from international organizations, such as the World Bank and EBRD, as well as donor countries, such as EU countries, the United States, and Japan, into the recovery and restoration of the transportation network. However, seventeen roads and bridges in the country (including Dobož and Modrica Bridges) could not be funded from the ETRP, and thus, further support and cooperation were required for the restoration of these roads and bridges.

Even at the time of the ex-post evaluation, the reconstruction and improvement of road network are still considered important. In RS, the Public Company Republic of Srpska Roads, the Executing Agency of this project, developed the “Mid-term Plan Regarding Road Maintenance, Conservation and Recovery (2011-2013)” in January 2011, in order to develop

³ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁴ ③: High, ② Fair, ① Low

and construct roads, bridges, tunnels, and so on. In addition, in the whole BiH, international aid agencies such as the World Bank, European Bank for Reconstruction and Development (EBRD), and European Investment Bank (EIB) have been financing to support streamlining the transportation infrastructure.

Since the development of transport development has been continuously recognized as important, consistency of policies and measures with this project both at the time of the ex-ante evaluation and the ex-post evaluation can be recognized.

3.1.2. Relevance with the Development Needs of Bosnia and Herzegovina

At the time of the ex-ante evaluation, the Doboj Bridge had become increasingly deteriorated and old, which led to the restriction of heavy vehicle passage. Meanwhile, the Modrica Bridge faced the risks of structural disorder and collapse due to the influences by the interethnic conflicts. As a result, development needs to ensure safe traffic on both bridges were high.

At the time of the ex-post evaluation, smoother traffic has been realized and the traffic volume of goods has been revitalized because the Doboj and Modrica Bridges⁵ have been reconstructed. On the other hand, the total road length of RS is approximately 3,870km with a road extension figure of 16.5km for every 100 km², which is still about half of neighboring Slovenia's 30.5km and Croatia's 31.0km (the European average is approximately 77.0km). Moreover, since approximately twenty percent of all its bridges⁶ are made of wood⁷, strength/durability and maintenance was still considered as serious issues. Thus, it can be said that development needs for a road network in RS have been continuously high.

Since the development of roads and bridges at the time of the ex-post evaluation in BiH (RS) has continuously been regarded as important, it can be said that this project is consistent with development needs both at the time of the ex-ante evaluation and the time of the ex-post evaluation.

3.1.3. Relevance with Japan's ODA Policy

At the "Ministerial Meeting on Peace Consolidation and Economic Development of the Western Balkans" jointly hosted with the EU which was held in April 2004 in Tokyo, Japan addressed "peace consolidation," "economic development," and "regional cooperation" as the

⁵ The population of Doboj City where the Doboj Bridge is located is approximately eighty thousand. The population of Modrica City where the Modrica Bridge is located is approximately forty thousand. Both bridges span the Bosnia River, Danube River system.

⁶ The total number of bridges is 702 at the time of the ex-post evaluation.

⁷ According to RS's "Mid-term Plan for Road Maintenance, Conservation, Recovery and Construction (2011-13)"

three major issues focused on the Western Balkans including BiH. While keeping in mind the conditions of economic development in BiH, based on the Poverty Reduction Strategy Paper (PRSP) and the three major issues, Japan decided to provide aid assistance to the sectors where the needs and impact as well as the comparative advantage of Japan were expected to be high. Among those, infrastructure development was regarded as a priority to promote the market economy. This project is to support the transportation infrastructure, which in turn leads to the recovery from interethnic war and the economic development of BiH. Therefore, it can be concluded that the project is consistent with the relevant policy of BiH as well as Japan's aid policy.

This project has been highly relevant with Bosnia and Herzegovina's development plan and development needs, as well as to Japan's ODA policy, therefore, its relevance is considered high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

Table 1 shows the planned and actual major outputs of the project. The outputs planned at the time of the ex-ante evaluation were implemented as planned. There is no additional output.

Table 1: Comparison of Planned and Actual Major Outputs of the Project

Plan at the Time of Ex-ante Evaluation	Actual at the Time of Ex-post Evaluation
【Japan's outputs】	
1) Dobož Bridge (total length including roads installed: 350m) 2) Modrica Bridge (total length including roads installed: 390m)	1) 2) As planned
【BiH's outputs】	
(Dobož Bridge) 1) Construction of connection road (length: 807m) 2) Construction of crossing road beneath railroad tracks (length: 43m) 3) Improvement and construction of intersection (one for each bridge)	(Dobož Bridge) 1) 2) 3) As planned
(Modrica Bridge) 1) Construction of connection road (length: 1,510m) 2) Improvement and construction of intersections (one for each bridge)	(Modrica Bridge) 1) 2) As planned

Source: JICA documents, Answers on questionnaires



Figure 1: Project Site

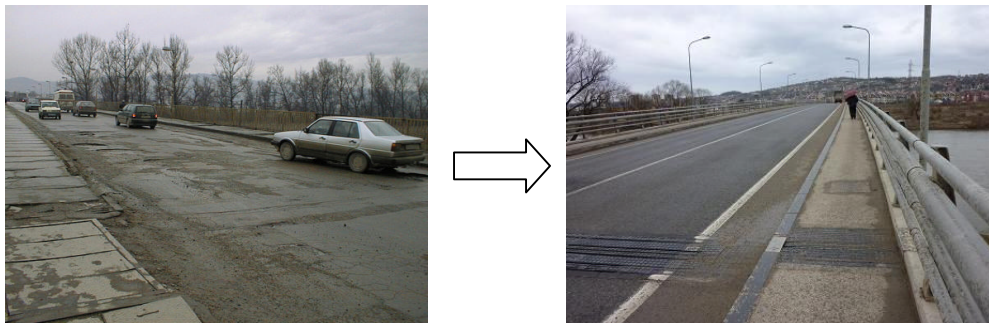


Figure 2: Change Before and After the Project Implementation (Doboj Bridge)



Figure 3: Change Before and After the Project Implementation (Modrica Bridge)

3.2.2 Project Inputs

3.2.2.1 Project Period

At the time of the ex-ante evaluation, the planned period was thirty-two months, while the actual period was exactly thirty-two months, from May 2004 to December 2006 (100% of the plan).

3.2.2.2 Project Cost

The E/N amount limit of this project was 1,023 million yen and the RS side planned to cover 273 million yen. The total planned project cost was 1,345 million yen. In fact, the actual amount of 1,002 million yen was used by Japan's side (98% of the plan) and RS side covered 343 million yen (125% of the plan). Therefore, the actual amount covered by Japan's side became lower than planned but the RS's amount increased. The reasons the amount covered by the RS increased slightly were because the amount necessary for land acquisition⁸ around both bridges became higher⁹ than estimated, and in addition there was the influences of Japanese yen's depreciation (Euro's appreciation).

Thus, the project period was as planned while the project cost was slightly higher than planned, therefore efficiency of the project is fair.

3.3 Effectiveness (Rating: ③)¹⁰

3.3.1 Quantitative Effects

3.3.1.1 Results from Operation and Effect Indicators

Regarding the effectiveness evaluation (quantitative evaluation) of this project, the results of detour situation for heavy vehicles (20t or more), traveling speed (design speed), number of vehicles retained as a result of waiting for the others to pass, and average daily traffic volume are examined as follows.

⁸ It was planned that the amount would be covered by the local municipality. Details will be mentioned later in "3.4.2.2 Land Acquisition and Resettlement".

⁹ Regarding this increase, the Executing Agency commented "The initial estimated budget for land acquisition was a rough estimation. As a result, the difference occurred."

¹⁰ The result of "Impact," the following section, is included in this "Effectiveness" for the purpose of rating.

Table 2: Respective Index Data Related to the Effectiveness Evaluation
(Quantitative evaluation)

At the time of the Ex-ante Evaluation			At the time of the Ex-post Evaluation		
1) Detour situation for heavy vehicles (20t or more) (Unit: yes/no)			1) Detour situation for heavy vehicles (20t or more) (Unit: yes/no)		
	2002	Target after completion		Upon completion (2007)	At the time of the ex-post evaluation (2011)
Doboj Bridge	Yes	No	Doboj Bridge	No	No
Modrica Bridge	No	No	Modrica Bridge	No	No
2) Traveling speed (design speed) ¹¹ (Unit: km/h)			2) Traveling speed (design speed) (Unit: km/h)		
	2002	Target after completion		Upon completion (2007)	At the time of the ex-post evaluation (2011)
Doboj Bridge	34	80	Doboj Bridge	60	60
Modrica Bridge	43	80	Modrica Bridge	60	60
3) Number of vehicles retained as a result of waiting for the others to pass (Unit: maximum number of vehicles per day)			3) Number of vehicles retained as a result of waiting for the others to pass (Unit: maximum number of vehicles per day)		
	2002	Target after completion		Upon completion (2007)	At the time of the ex-post evaluation (2011)
Doboj Bridge	14	0	Doboj Bridge	0	0
Modrica Bridge	0	0	Modrica Bridge	0	0
4) Average daily traffic volume ¹² (Unit: number of vehicles per day)			4) Average daily traffic volume (Unit: number of vehicles per day)		
	2003	Future forecast (2020)		2007	2008 ¹³
Doboj Bridge	6-7,000	7,100	Doboj Bridge	7,528	7,594
Modrica Bridge	7,700	15,100	Modrica Bridge	5,126	5,108

Source: JICA documents, Answers on questionnaires

Analysis of difference and review for the data mentioned above is explained as follows:

1) Detour Situation for Heavy Vehicles (20t or more)

As for the former Doboj Bridge at the time of ex-ante evaluation, heavy vehicles carrying

¹¹ The speed in 2002 was the average speed of passenger vehicles when passing through the bridge.

¹² According to JICA document (Basic Design Study Report), Doboj Bridge's traffic volume in 2003 was the estimated value supposing that the new bridge would be constructed in the future. Modrica Bridge's traffic volume was the observational result retrieved during the basic design study.

¹³ As for data after 2009, according to the Executing Agency, the data will be released in the Traffic White Paper, etc. later this year but should not be too different from the values in 2008.

loads of 20t or more had to take detours to other bridges 10km downstream. As a result of the new bridge construction, it is no longer necessary to take detours to other bridges, and smoother traffic has been realized.

2) Traveling Speed (design speed)

At the both bridges before the project implementation, the crank-shaped road alignment that curved almost at a right angle gave vehicles no choice but to reduce their speeds when passing through. However, it is no longer necessary to reduce the speed after the new bridges have been constructed. Although the traveling speed at both bridges was set at 80km/h upon completion, it is currently designated as 60km/h. This is because the Executing Agency has given consideration to the living environment and safety of residents since the bridges were both constructed quite close to the residential areas.

3) Number of Vehicles Retained as a result of Waiting for the Others to Pass

On the former Dobož Bridge before the project implementation, the road and bridge width were narrow, which caused vehicles to be retained on the bridge because of congestion. However, since the new bridge was constructed, the width of road and bridge has been widened and vehicles no longer must wait to cross.

4) Average Daily Traffic Volume

The traffic volume (actual figure) of 2007-2008 is not measured on the bridge and connection road, but it was rather calculated by averaging the values measured at respective traffic volume measuring points (closest to both bridges) set up by the Executing Agency. It should be noted that vehicles which pass the respective measuring points might have entered other roads prior to passing the bridges since the measuring points were set somewhat far from both bridges. On the other hand, since the actual values at the time of the ex-ante evaluation (2003) were based on the traffic volume study implemented in the vicinity of the bridge construction sites, it is difficult to compare with the traffic volume of 2007-2008 precisely. Furthermore, according to the Basic Design Study Report of this project, the future predicted value of the Modrica Bridge at the time of the ex-ante evaluation (15,100 vehicles per day) was considered the predicted values of 2020¹⁴, which also makes it difficult to conduct comparison and review in order to measure and analyze the effectiveness of this project.

¹⁴ Through interviews with the Executing Agency, it was confirmed that there is possibility of the reason that the increased predicted value is based on the consideration to construct a new major road in the future called "5C", almost parallel with M5 (E73) passing through Modrica Bridge.

3.3.2 Qualitative Effect (Ensuring smooth and safe traffic)

Through interviews with the local municipalities and police stations where Doboj and Modrica Bridges are located, positive comments were received, such as “Sending out ambulances, fire trucks and police cars in emergency situations became much easier. Although the bridges and connection roads were congested in the past due to heavy vehicles passing, traffic is much smoother now thanks to the construction of the new bridges. The transportation conditions in the areas nearby have also improved.” In addition, as indicated in the beneficiary survey results in the following section, it is assumed that the project has contributed to alleviate the burden of carriers and drivers and to reduce the traveling time thanks to the elimination of congestion.

Thus, based on the interview and beneficiary survey results, it can be considered that smooth and safe traffic has now been ensured.

As discussed above, this project has largely achieved its objectives, therefore its effectiveness is high.

3.4 Impact

3.4.1 Intended Impacts

3.4.1.1 Implementation of Beneficiary Survey

Through this survey, an interview-style beneficiary survey was conducted¹⁵, targeting for residents who live in the respective vicinities of Doboj and Modrica Bridges as well as drivers/carriers using both bridges. As shown in Figures 4 to 10, questions pertaining to level of satisfaction of the project, improvement of transport conditions, and so forth were asked, and respective answers were obtained.

As for the level of satisfaction regarding the construction of Doboj and Modrica Bridges as mentioned in Figure 4, all the respondents either replied that they were “Satisfied” or even more so. It is considered that the reason why quite a lot of them replied such as “Very satisfied” especially in regard to the Doboj Bridge is because prior to the project implementation, heavy vehicles had to take detours or were retained as a result of waiting for the others to pass, which had created significant congestion. In addition, as shown in Figures 5 and 6 which explain the reasons for high levels of satisfaction, since a lot of answers regarding elimination of congestion and safety improvement have been given, therefore it is judged that smooth and safe traffic has

¹⁵ Number of samples: 120 total for each of the 60 bridges (breakdown: 40 residents and 20 carriers/drivers). Random sampling was employed to draw out these figures.

been realized through this project.

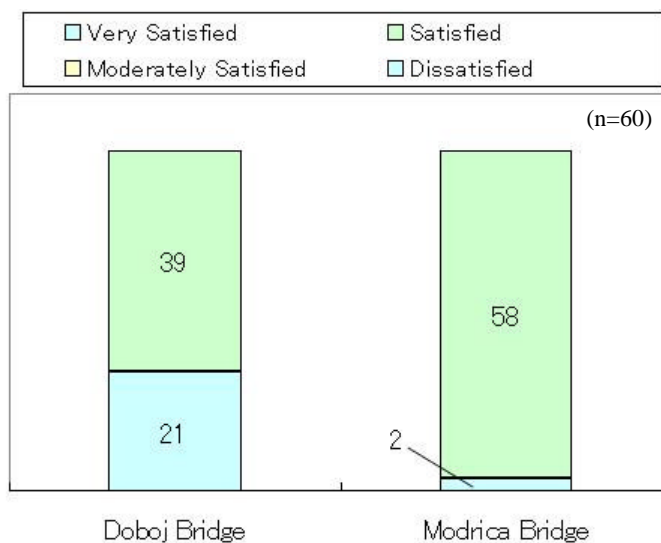


Figure 4: Are you satisfied with this project?

(Two or more answers included.)

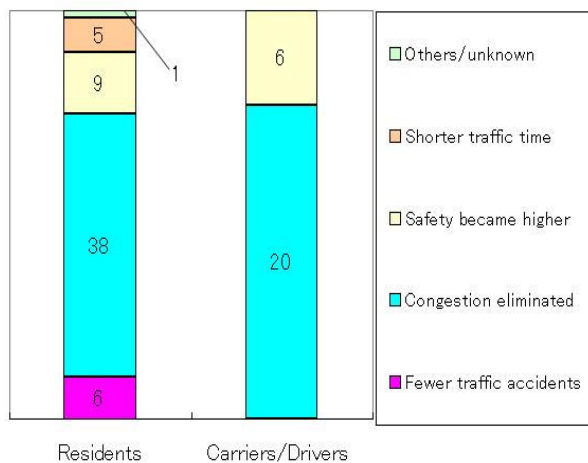


Figure 5: Reason why you chose “Very satisfied” or “Satisfied” in Figure 4 (Doboj Bridge)

(Two or more answers included.)

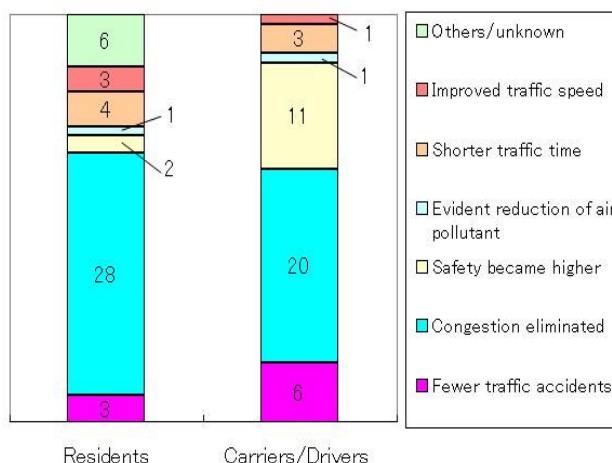


Figure 6: Reason why you chose “Very satisfied” or “Satisfied” in Figure 4 (Modrica Bridge)

With regard to the question to residents in Figures 7 and 8, many of the respondents replied “I don’t know.” This may have been a result due to the visiting places and the number of visits regarding the respondents. Nevertheless, there are few answers of “No” and the replies can be considered generally positive. In general, it is assumed that residents in Doboj and Modrica City have recognized the improvement of transport access between both FBiH and RS. As a special point to keep in mind, regarding “The construction of the bridges became a symbol of peace after the end of the interethnic conflicts” in 5), the majority of the respondents replied “I don’t

know.” It can be speculated that they may feel such a delicate question pertaining to ethnic and political issues difficult to answer or people’s awareness of restoration from interethnic conflicts has possibly become weaker because more than fifteen years have already passed since the interethnic conflicts ended. Some of the respondents did not know how to answer this question even during the interviews¹⁶. As for 7), a large percentage of the Dobož residents replied “Yes.” It can be speculated that the Dobož Bridge serves as a border with FBiH approximately 5km eastward on Route M4-3 and southward on Route M5(E73) and is considered a bridge in a good location not only by residents of RS but also by those of FBiH, thus, frequency of traffic of both residents may be relatively high. As a result of this project, it can also be speculated that interchange between both residents has also improved.

Even as to the questions to carriers and drivers under Figures 9 and 10, although many replied “I don’t know” to some of the question items, positive answers were obtained in general. There are many of the replies, “contributed to improve working condition” and “contributed to improve transportation access between RS and FBiH” for both bridges. It can be speculated the respondents are satisfied with traffic conditions for the flow of goods along with its access improvement. Simultaneously, it can be speculated that they recognize the revitalization of goods transportation between both entities.

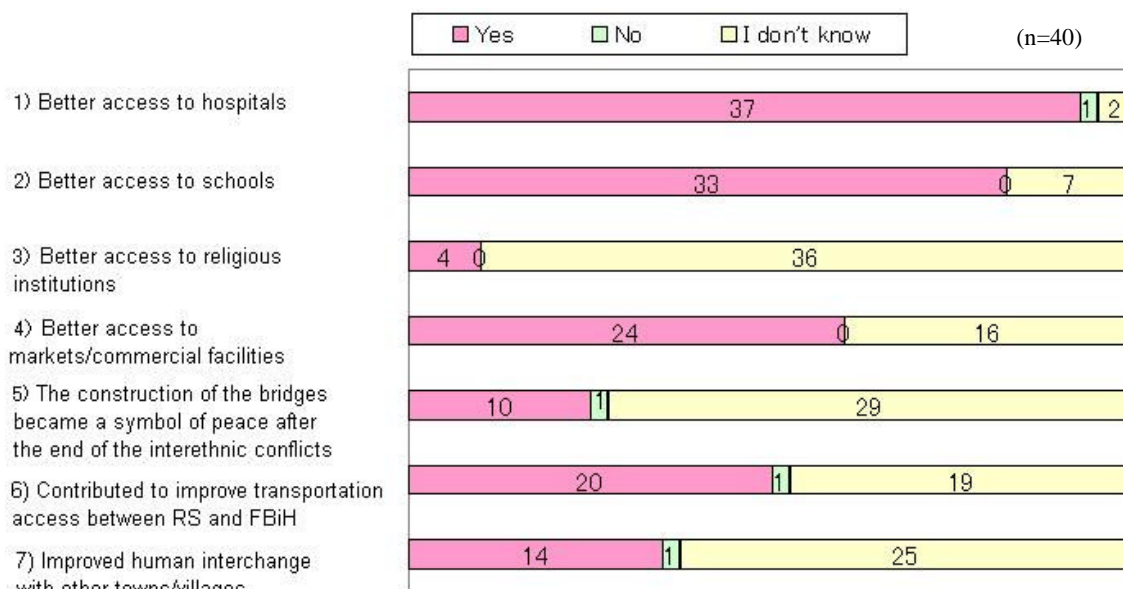


Figure 7: Impacts on Living Environments (questions to residents: Dobož Bridge)

¹⁶ Impressions of respondents during the interviews conducted at the actual sites are as follows: 1) “Cannot/do not want to answer because ethnic/political issues are delicate matters” and 2) “It is difficult to speculate the relationship between bridge construction and ethnic collaboration/peace establishment because fifteen years have already passed since the end of the interethnic conflicts”

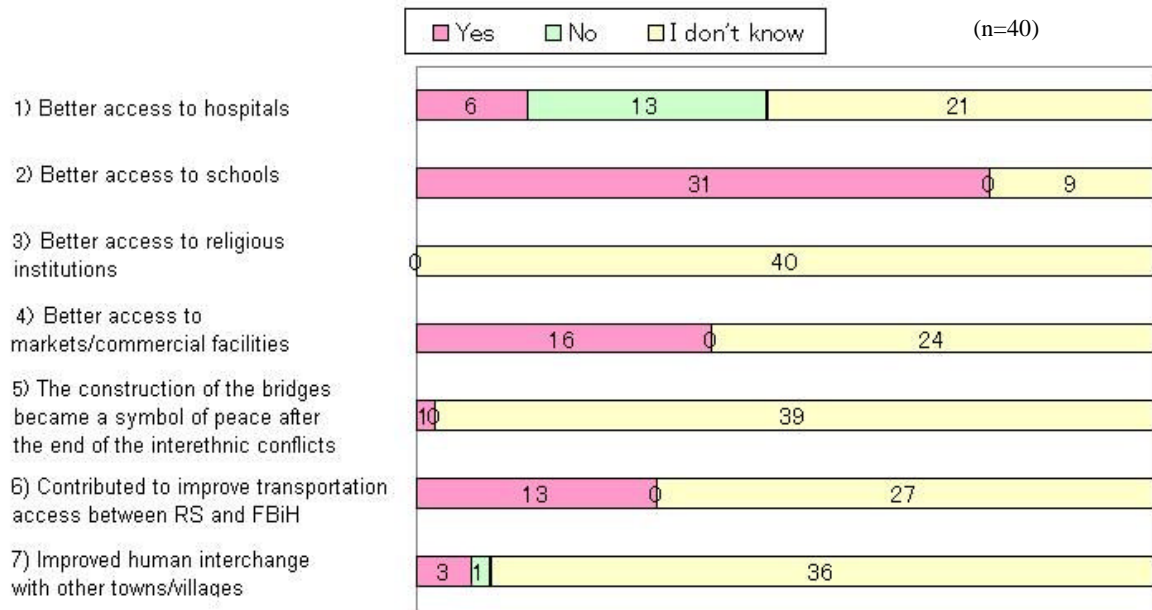


Figure 8: Impacts on Living Environments (questions to residents: Modrica Bridge)

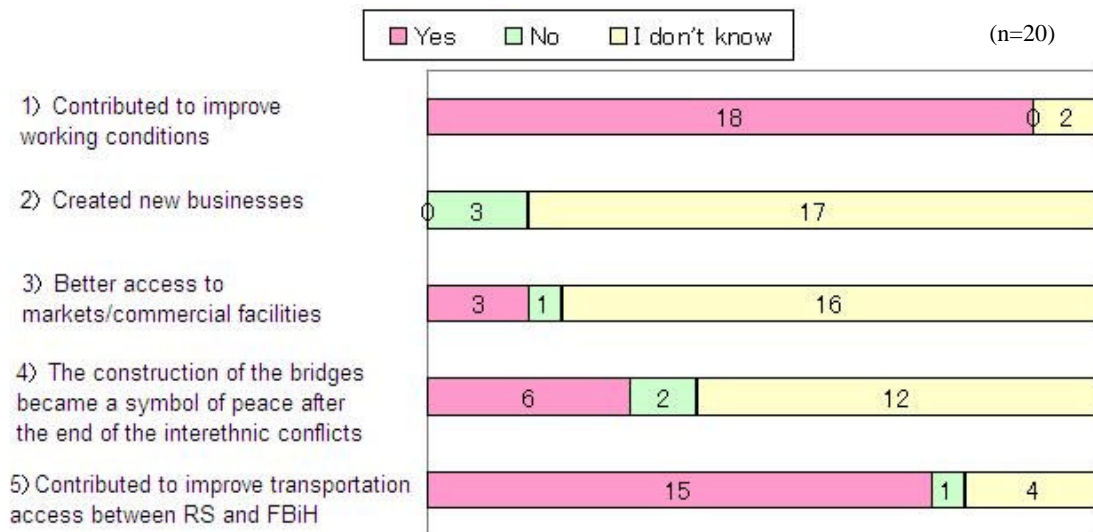


Figure 9: Impacts on Corporate Operations and Convenience (questions to carriers/drivers: Doboj Bridge)

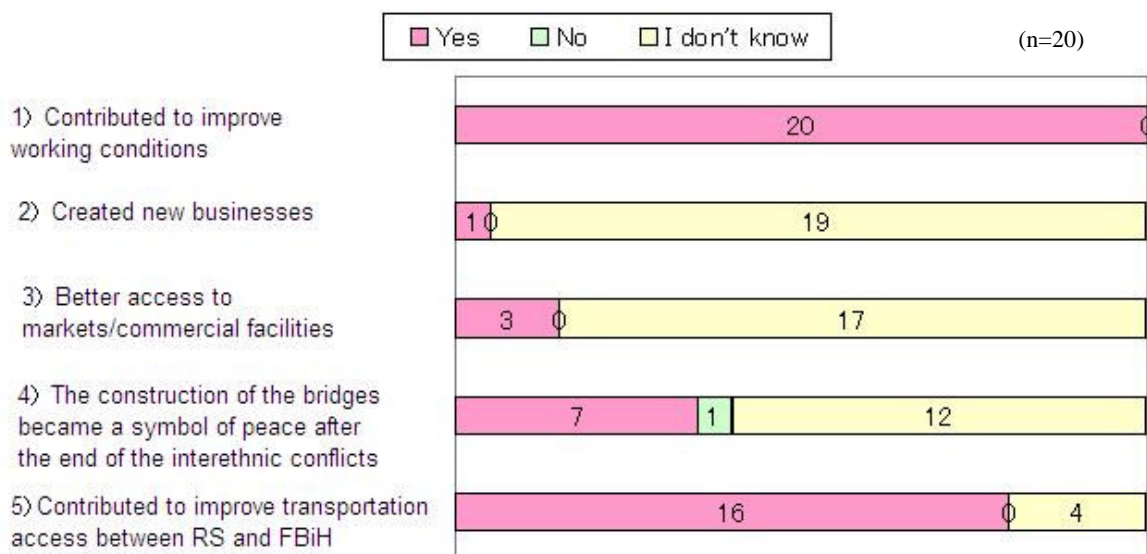


Figure 10: Impacts on Corporate Operations and Convenience (questions to carriers/drivers: Modrica Bridge)

3.4.2 Other Impacts

3.4.2.1 Impacts on the Natural Environment

There is not any negative impact on the environment regarding this project. During this ex-post evaluation survey, interviews to the Executing Agency, local municipalities and police stations were conducted, in addition to visiting the project sites. Then, no negative impact was particularly found in regards to the natural environment as a result of the bridge construction.

With regard to the environmental monitoring system of road and bridge facilities, the Traffic Planning/Environmental Conservation Department of the Executing Agency (Public Company Republic of Srpska Roads) is in charge. Periodically, the department implements testing and monitoring. The Environmental Impact Assessment (EIA) for both bridges was conducted in February 2004¹⁷.

3.4.2.2 Land Acquisition and Resettlement

In this project, resettlement did not occur, but as shown in Table 3, land acquisition occurred, targeting farmlands and hybrid zones along the roads connected to the bridges. The Executing Agency came up with the land acquisition plan and local municipalities (Doboj and Modrica city governments) were in charge of the acquisition procedures and paid the compensations. Compensations were paid from the governmental budgets to the land owners, because the local

¹⁷ The EIA was approved by the Residential Planning and Civil Engineering Department, Ministry of Environmental Conservation, Republic of Srpska.

governments were also considered beneficiaries of the project. According to the governments, the land owners were generally satisfied with the amounts of the compensations. Moreover, negotiations and procedures pertaining to the sales were also conducted smoothly.

Table 3: Land Acquisition of the Project

	Number of the Land Owners	Acquired Area	Compensation Amounts Paid from the Local Governments to the Land Owners
Doboj Bridge	20 residents	26,835 m ²	700,000KM (approx. 350,000 euro)
Modrica Bridge	Approx. 40 residents ¹⁸	52,493 m ²	450,000KM ¹⁹ (approx. 225,000 euro)

Source: Documents from Doboj and Modrica Cities

3.4.2.3 Other Indirect Impacts (contributions to revitalization of economic relationship)

Table 4 indicates the amount of RS and FBiH's gross regional domestic product (GRDP) while Table 5 reveals the data pertaining to the traffic volume of goods transported on RS roads²⁰. Since the project commencement (2004), both the GRDP and traffic volume of goods have been basically demonstrating an upward trend. However, between 2008 and 2009, it declined due to influences of the world financial crisis. As it is assumed that the data regarding the GRDP and traffic volume of goods is also affected by other factors other than the project, direct economic impacts cannot be verified. However, it can still be speculated that the project has at least realized the promotion of smooth traffic and distribution of goods as well as has supported the economic relationship of both regions.

¹⁸ The number of co-ownership representatives with whom Modrica City negotiated and whom the city paid compensations. This indicates that there were quite a few co-ownerships in the areas of land acquisition (i.e., a number of landowners per piece of land). Accurate information pertaining to the number of landowners could not be obtained.

¹⁹ The acquisition price was cheaper even though the acquired area around the Modrica Bridge compared to Doboj Bridge was larger, because the actual market prices of the respective lands near the bridges were not the same. Doboj City is larger in terms of its urban area and population size. Thus, the roadside value per square meter is also more expensive. Therefore, this fact affects the amount of appraisal regarding farmlands and hybrid zones and, in comparison, they become more expensive.

²⁰ Data of FBiH could not be obtained.

Table 4: Gross Regional Domestic Product (GRDP)

(Unit: million KM)

	2004	2005	2006	2007
RS	5,116	5,763	6,544	7,351
FBiH	10,350	10,945	12,261	13,879
	2008	2009	2010	
RS	8,489	8,223	N/A	
FBiH	15,647	15,231	N/A	

Sources: Documents from the Bureau of Statistics of RS, Statistics White Paper of BiH

Table 5: Traffic Volume of Goods Transported on RS Roads

(Unit: thousand tons)

2004	2005	2006	2007	2008	2009
506	576	960	1,310	1,548	1,397

Source: Documents from the Bureau of Statistics of RS

3.5 Sustainability (Rating: ③)

3.5.1 Structural Aspects of Operation and Maintenance

The Public Company Republic of Srpska Roads is the Executing Agency at the time of the ex-post evaluation. As the Public Road Law was revised in 2004, the Road Department, Ministry of Transport until then was abolished and the Public Company Republic of Srpska Roads was established²¹. According to the Executing Agency, this organizational change was implemented without any major confusion or problem.

The organizational structure of the Executing Agency is comprised of three bureaus (Financial Bureau, Technical Bureau, and Legal Affairs Bureau) and twelve departments (Construction Department, Maintenance Department, Traffic Planning and Environmental Conservation Department, Finance Department, Accounting Department, and others) that are all under the Head of the Executive Bureau. The number of total staff is sixty-two at present, while it was fifty-nine at the time of the ex-ante evaluation.

Five staffs from the Maintenance Department are in charge of the maintenance work for the Doboj and Modrica Bridges. However, the actual maintenance work has been conducted by a private maintenance service company tasked by the department. The company's engineering

²¹ The government of RS plays a role in the management of the council, the Executing Agency's decision-making body. Board members are appointed for the council that governs the personal affairs of the Head of the Executive Bureau.

supervisor is in charge of inspecting the work conditions²². Every four years, the Maintenance Department selects a private maintenance service company to improve maintenance work and quality.

Based on the above, it can be judged that there are no major concerns regarding the O&M structure of Dobož and Modrica Bridges.

3.5.2 Technical Aspects of Operation and Maintenance

The staff of the Public Company Republic of Srpska Roads has abundant work experience regarding O&M. They have participated in training programs once or twice a year that feature road O&M as well as the latest civil engineering theories and practices²³, and have strengthened their work abilities so far. Additionally, OJT training for new staff is also conducted on an as-needed basis.

Based on the above, it can be judged that the technical level of the Executing Agency with regard to O&M is sufficient and there is no problem.

3.5.3 Financial Aspects of Operation and Maintenance

Table 6 indicates the Public Company Republic of Srpska Roads' actual maintenance costs for the last three years while the profit-and-loss statement (P/L) is shown in Table 7. In recent years, the actual maintenance costs tend to increase. According to the Executing Agency, there are sufficient funds in the budget²⁴ to conduct maintenance works for the Dobož and Modrica Bridges.

According to the P/L statement, the last three years have ended in the black. The maintenance costs mentioned above have been paid out of the operating expenses. Since profits (current term net profit: 9,134,000 KM) have still been secured even if the costs are paid out, it can be considered that there is no financial problem in this organization²⁵.

²² Currently, all RS road maintenance works are being outsourced.

²³ Sponsors are mainly consulting firms and government ministries. Four staff in 2009 and six staff in 2010 participated in the respective two to three-day training courses.

²⁴ In RS, the law states that 4% of the indirect tax revenues must become the budget of the Executing Agency. Additionally, vehicle registration tax revenues and so forth are also deemed as financial resources.

²⁵ The amount of indirect tax revenues/operating income was high in 2008 because the special subsidy (20,521,000 KM) was paid by the RS government. This subsidy was used to construct and repair local roads in RS (a joint project with the local municipalities). As a result, it can be considered that the relevant year's operating and other expenses were also relatively high (100,848,000 KM).

Table 6: Record of the Public Company Republic of Srpska Roads' Maintenance Costs

(Unit: thousand KM)

2008	2009	2010
59,000	62,396	67,426

Source: Answers on questionnaires

Table 7: Public Company Republic of Srpska Roads' Profit-and-Loss Statement

(Unit: thousand KM)

	2008	2009	2010
Indirect tax revenues/operating income	87,431	76,406	72,865
Non-operating income/other earnings	22,552	16,298	14,598
Operating expenses/financial expenses	100,849	88,707	81,883
Current term net profit or loss	9,134	3,997	5,580

Source: Executing Agency's documents

Therefore, it can be judged that there is no special problem regarding the maintenance costs and organizational finances, and the finance level of O&M for the Executing Agency has no problems.

3.5.4 Current Status of Operation and Maintenance

There is no problem regarding the maintenance condition of the Dobož and Modrica Bridges. As stated previously, the maintenance works for both bridges are being conducted regularly by a private maintenance service company²⁶. Their work performance and experience are sufficient. As a general rule, sewerage cleaning and side-ditch repairs of the connection roads to the bridges and the bridges themselves as well as asphalt repairs are conducted in the beginning and latter part of the winter season (a total of two times). Additionally, if the need arises, the asphalt is repaired and traffic lane lines are painted again (damaged guardrails as a result of accidents are dealt with immediately to the utmost extent). Maintenance and cleaning of ODA plaques, road signs are being conducted on a timely basis.

Equipment and spare parts of the bridges have been obtained appropriately whenever they need to be exchanged and repaired. The equipment and parts are not always kept in stock, but procured on an as-needed basis. Moreover, the maintenance manual is kept and utilized by the staff of the private maintenance service company.

In relation to the above, no major problems have been observed in the operation and maintenance system, therefore sustainability of the project effect is high.

²⁶ The employees of the private maintenance service company are in charge of the maintenance works of the roads and bridges, on a three-shift, twenty-four-hour system.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

At the time of the ex-post evaluation, it is evident that the project is consistent with policies such as development of transport infrastructure and developmental needs such as development of road network and its expansion. Although the project period was as planned, the project cost slightly exceeded the planned. The detour situation for heavy vehicles (20t or more) and traveling speed (design speed) have progressed as planned at the time of the ex-ante evaluation. Additionally, the beneficiary survey results show the positive impacts on the living conditions of residents in the adjacent areas of both bridges as well as on the working condition of carriers. Furthermore, no major problems have been observed in the operation and maintenance (O&M). In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

None

4.3 Lessons Learned

Traffic volume data is important as a quantitative index in order to measure project effects of roads and bridges. Although future traffic volume was predicted for the Modrica Bridge at the time of ex-ante evaluation, it was not appropriate for this ex-post evaluation because the predicted figure is for 2020. Furthermore, as there is a difference between the measurement method on traffic volume at the time of the ex-ante evaluation and the method which the Executing Agency is now applying, it has been difficult to know the change of traffic volume referring the respective results. Therefore, at the time of ex-ante evaluation, it is desirable to set practical indicators considering the implementation of ex-post evaluation and the possibility of continuous measurement.