Evaluation Report
2014-3

Ex-Post Evaluation on Bolivia Pailón - San José Highway Construction Project (Component 2)

The Export-Import Bank of Korea
(Government Agency for EDCF)

EDCF Evaluation Team
(Evaluated by Inha University)

This evaluation was entrusted to *Inha University* by EDCF for the purpose of independent evaluation research.
The opinion, findings and conclusion or recommendations expressed in this report are those of the external evaluator and do not necessarily reflect the view of EDCF.

Executive Summary

I. Introduction

This evaluation is the ex-post evaluation of the Bolivia Highway Bridge Construction Project (Pailon – San Jose Highway Construction Project – Component 2). The purpose of this evaluation is to draw lessons learned and to make recommendations based on the assessment of the project performance results.

The road system serves a very important role in Bolivia since it makes up 82% of total flows over recent years. Despite the importance of the role, the road system was in very poor conditions in terms of quantity and quality. Access to roads was very limited in the vast area of the country and only 32% of roads were paved. The Bolivia Highway Bridge Construction Project was proposed as part of EDCF's response to Bolivia's need for more and better roads.

The project aimed to revitalize the domestic economy by constructing a highway bridge passing through the central region of Bolivia to connect the traffic networks between the east and the west of Bolivia, which will enhance the domestic flows of distribution/logistics and reduce costs.

By constructing the bridge, the project significantly shortened travel time and improved safety. When the project began, road conditions were worse than those in other areas of Bolivia and it was almost impossible to drive through during the wet season (from November until March) due to unpaved roads. It took more than 40 hours to drive through the area even during the dry season. Furthermore, there were no automobile and pedestrian passage bridges. Instead, a railroad bridge was covered with boards during the hours when trains did not pass. Vehicles, trucks and pedestrians all had to cross over the railroad bridge. To make matters worse, this makeshift bridge was available only during a limited period of time (about 30 minutes each time) and very dangerous.

This project contributed to the enhancement of foreign trade in Bolivia. The effect on foreign trade enhancement was visible as the bridge played a vital role in international logistics transport networks in Bolivia, which is a landlocked country. It connected two major traffic networks between the east and the west, which pass through the central region of Bolivia. It also significantly contributed to the revitalization of domestic logistics transport as well as the domestic economy through cost reductions. .Moreover, the separation of the railroad bridge and vehicle passage bridge substantially enhanced the smooth passage of traffic and reduced driving time. The completed road and bridge secured the traffic safety of local residents by creating safety measures such as side roads which also significantly reduced casualties and material losses caused by traffic accidents.

II. Evaluation Outline

1. External Evaluator

A team of researchers from Inha University was hired as the external evaluator.

2. Duration of Evaluation

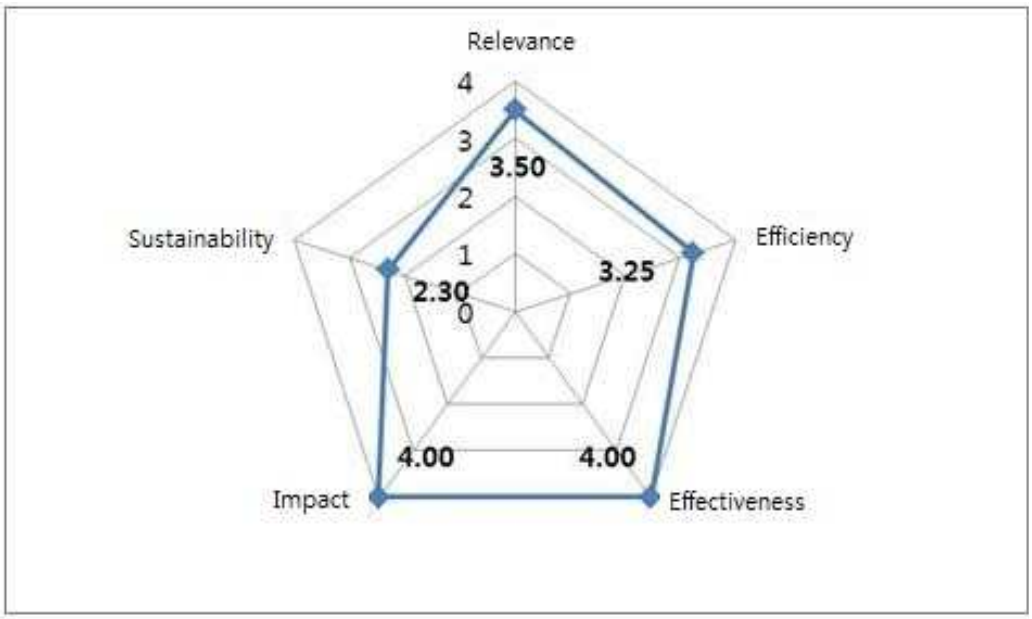
The evaluation was carried out from June 2014 to October 2014.

3. Data Collection and Analysis

The project was evaluated according to the OECD DAC's five evaluation criteria (Relevance, Efficiency, Effectiveness, Impact, and Sustainability). For each criterion, necessary data were collected through literature review, stakeholder interviews and field visits.

III. Evaluation Results

The evaluator concluded that the Bolivia Highway Bridge Construction project was a ‘successful’ project (3.41 out of 4.00) based on the ratings from the DAC's five evaluation criteria.



This project scored highly in *relevance, effectiveness* and *impact* since the project was relevant to the national development strategy of Bolivia.

The scope and aim of the project also responded well to the needs of local and national stakeholders in a timely manner. The project, therefore, effectively produced successful results, contributing to the development of the local economy and improvement of the quality of life in the project area. The lowest rating was given in “efficiency” due to the delays in administrative procedures and adjustment to the budget as a result of changes in the design after commencing the bridge construction. However, the project was still rated as “efficient” since the actual construction duration duly observed the anticipated construction period (37 months) and the changed project scope was more effective.

Ratings of each criterion are presented in the following table.

Evaluation Criterion	Weighted Value	Classification	Rating
Relevance	20%	Relevant	3.5
Efficiency	20%	Efficient	3.25
Effectiveness	20%	Highly Effective	4.0
Impact	20%	High Impact	4.0
Sustainability	20%	Sustainable	2.3
Total Evaluation Score		**Very Successful**	**(3.41/4.0)**

1. Relevance

The project was deemed to have an appropriate level of relevance because it was planned and implemented as part of the overall national development strategy. Moreover, this project responded in a timely manner to the growing demands for better transport as part of establishing the road infrastructure in Bolivia.
The project responded to the Bolivian government's top priority in its development of the national economy. In particular, the bridge construction was the most critical part of the highway construction project. In terms of site selection, the project scope for the construction of the bridge connecting the Pailon and Pailas was evaluated as "highly appropriate."

The project plan was redesigned because the preliminary feasibility study overlooked the need for an overpass which was required due to the intersection of the existing railroad and bridge.

There was no difficulty in the construction process as the Korean company had considerable experience in bridge construction using the pushed

method. However, an accident where steel wires broke during construction and the slightly delayed construction period due to the failure to conduct the pile load test as planned were pointed as areas of improvement.

2. Efficiency

The project was efficient in terms of duration, cost, and coordination. However, the project went through several changes since an additional overpass was needed and the length and number of stakes supporting the bridge posts had to be adjusted.

The budget was also adjusted, adapting to changes in the construction plans. The Bolivian government was able to obtain support from Corporación Andina de Fomento (CAF) pursuant to the terms of the L/A for the increased cost to complete the construction without additional loans from EDCF.

The delay in the administrative procedure during the project planning phase was identified as a problem. However, this delay did not affect the duration of the construction.

In terms of cost-benefit analysis, this project's benefit far exceeded its cost; the bridge constructed in this project served an extremely positive role in improving logistics movements and the growth of the city.

3. Effectiveness

This project was rated as “highly effective” as it increased the mobility of the nation as a whole (between Pailon – San Jose and the entire country). It is deemed that the bridge largely contributed to the revitalization of Bolivia’s domestic economy by serving as the central node of Bolivia.

Although the construction period took longer than the planned period due to changes in the designs, project goals were more effectively achieved by such adjustments. The alternative design utilized existing roads as much as possible and the route was changed so that it did not pass through the forest. This minimized the damage to the surrounding ecological system. Furthermore, the modified plan was evaluated to be highly effective since it provided local residents with access to both railroads and automobile roads.

4. Impact

The evaluation team concluded that the project created a “high impact” on the economic changes in Pailon and neighboring cities, especially on the production of agricultural products and development of the livestock farming industry.

The project was evaluated to have served an important role in the economic growth of Santa Cruz. Santa Cruz is the largest agricultural producing city in Bolivia. There has been a significant increase in the output of agricultural products and steady growth of the agricultural industry since the completion of the project.

This project was evaluated to have driven the expansion of the city of Santa Cruz and the development of the local economy. The bridge construction project increased the influx of industries and people into Santa Cruz and reinforced the city's growth by significantly enhancing regional accessibility. Since the importance of Santa Cruz as the pillar of regional growth has been growing, the city is further expanding with the increasing development in the surrounding areas.

5. Sustainability

The project was deemed to be "sustainable" given the existence of the government's awareness and institutions regarding road construction and maintenance, availability of and support for human resources specializing in related fields, and provision of road repair and maintenance services.

In order to properly maintain the roads, obtaining an enough number of qualified personnel is essential. At the time of evaluation, the repair and maintenance of roads were outsourced to specialized companies by the Administradora Boliviana de Carreteras (ABC) offices of each area. But ABC was also running training programs on road maintenance and management to nurture their own workforce.

The ABC of Santa Cruz recognized the need for road repair and maintenance and set up a repair plan for the bridge. However, the evaluation found that the device to regulate the overloaded vehicles at the entry of the bridge needs to be installed as a fundamental solution to prevent damages to the bridge.

At the time of evaluation, the ABC of Santa Cruz could not properly carry out road maintenance and management although it was one of its duties since the expansion of the road was a higher priority at that stage of development in Bolivia. However, in order to sustain the infrastructure, including the output of this project, greater priority should be given to road maintenance.

6. Cross-cutting Issues

The project's impact on the environment and vulnerable group was examined in this evaluation.

Prior to the project, vehicles had to pass the railroad bridge after covering the rail track with boards. As a result, the drive between Pailon and Puerto Suarez took 40 hours, which caused excessive exhaust emissions from vehicles standing-by and large volumes of trash thrown away by drivers. It was found that this project contributed to a cleaner environment in the Pailon and Pailas areas as the problem of exhaust fume emissions was resolved by significantly reducing travel time and relieving traffic congestion.

Interviews with local residents revealed that consideration was given to socially disadvantaged groups. The income of the nearby local residents decreased because there were no more traffic congestions as a result of the bridge construction. However, the decrease in income was not a significant issue according to the interviewees since they received compensation from the government. Furthermore, the residents responded that they were very satisfied with the bridge construction since it made transportation more convenient and safer than before.

IV. Lessons Learned and Recommendations

1. Lessons Learned

A. Success Factors

There were several factors which contributed to the success of the projects.

The project largely improved the traffic environment in Bolivia as it was highly relevant to the country's national strategy. Furthermore, it improved the country's connectivity at both national and international levels, creating sizable economic impact. As a result, it contributed to achieving the country's high-level objectives.

Complementing the design prior to commencing the project by giving due consideration to the surrounding environment was found to be highly effective. The modified design enabled using existing roads as much as possible and building a bypass around the woods, minimizing impact on the ecological system. As a result the modification, people were enabled to use both existing railroads and new roads.

The project was evaluated as highly effective in paving the way for the development of various sectors in Bolivia by contributing to the country's improved mobility and safety. This led to increased exchanges resulting in better movements of agricultural products and development of the livestock farming industry in surrounding areas. Hence, the project has contributed not only to expanding the boundaries of the city but also to the growth of the entire nation.

B. Areas Requiring Improvement

The construction took slightly longer due to an accident where steel wires broke during the bridge construction as well as a delay in the pile load test. These indicate that construction companies participating in the project need to take proper measures in every stage of the project to ensure efficient project implementation. EDCF also needs to select companies by fully considering this aspect.

There were some confusion and duplication in activities due to the discrepancy in the administrative standards between Bolivia and EDCF. For instance, the F/S was performed twice. The first F/S done by the Bolivian government did not meet the standards of EDCF, and therefore, the second F/S was carried out. As a result, Bolivia hired a consultant and redesigned the bridge. Although the changes to the design improved the adequacy of the bridge design and stepped up project effectiveness, the process resulted in increased project period. EDCF then resolved this problem by providing free support for F/S.

It is necessary for the partner country's government to set up a system to properly carry out road repair and maintenance works after the completion of the project. It was shown that many spots of the current highway leading to the bridge were dented or caved in. Although the ABC of Santa Cruz was in charge of road management and maintenance, it was found that roads were not being properly maintained. It was deemed that ABC needed to thoroughly manage the roads, secure human resources and budget for the adequate maintenance and repair of the roads to ensure the sustainability of the infrastructure.

2. Recommendations

Based on the factors which contributed to the project's success and identified areas of improvement, the following recommendations were made:

1) Before commencing the project, it is highly recommended that systematic project planning be carried out, taking into full account the project's impact on the surrounding environment. Changes to the project such as the modification of the designs after commencing the construction result in inefficiencies such as project delay or budget adjustment.

2) Measures to enhance the efficiency in the administrative process of the project such as preliminary investigations need to be developed. Currently, EDCF provides feasibility studies (F/S) free of charge to partner countries that lack technical capacity and financing. The expansion of free F/S support can further increase the efficiencies in time and cost spent in preliminary investigations.

3) It is recommended that the effectiveness of the project be strengthened through a systematic management of the construction firms and

consultants participating in the project. They are critical components for obtaining successful project results and will also be helpful in building a positive image of the donor country to the partner country.

4) Development-oriented and environmentally-friendly projects should be pursued. The desire for development may override some environmental concerns. However, environmental concerns should be addressed in every development project to ensure sustainable, long-term development and prevent the environment from being polluted as a result of development.

5) Systematic follow-up management by the partner country after project completion needs to take place to improve the sustainability of the project. The project will fail to achieve its long-term objectives without continuous follow-up management. To enable this, the partner country government needs to keep paying close attention to the project results and systematically set up relevant institutions, secure budget and develop human resources.