

Ex-post Evaluation Report 2012-07

# Sri Lanka Road Rehabilitation Project

Loan Agreement No. : SRI-007-1996, SRI-011-2002

Year Month Date : 1996. 08. 14 (SRI-007-1996)

2003. 08. 06 (SRI-011-2002)

Country : Sri Lanka

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

EDCF Operations Evaluation Team

(Evaluated by Korea Development Policy Study Association)

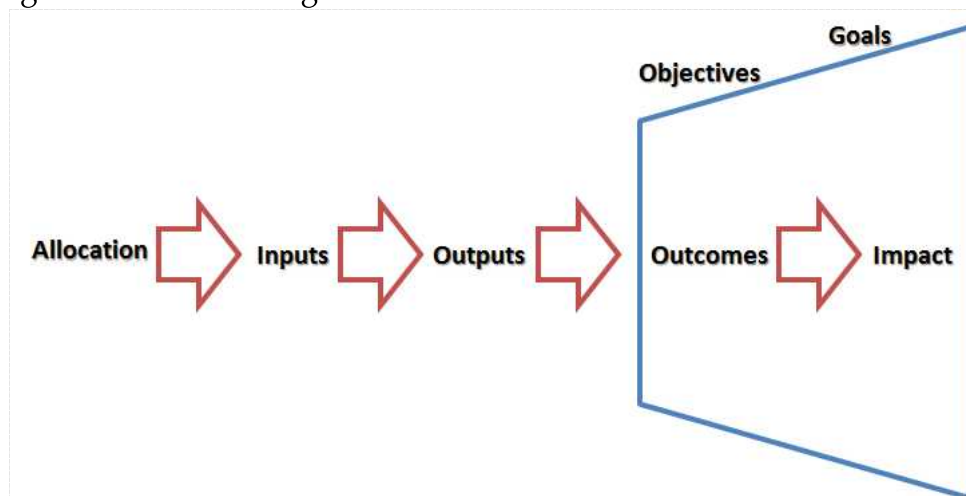
## I . Project Overview

- In June 1995, the Sri Lankan government applied for an EDCF loan to complete a road rehabilitation project in order to improve the accessibility of the southern inland corridor between Ratnapura and Bandarawela (98 km), which connects major cities and towns in the two southern provinces of Uva and Sabaragamuwa.
- The project was funded by the EDCF in August 1996 and was expected to contribute to Sri Lanka's social and economic development by strengthening its infrastructure. In addition, it was believed to improve the economic cooperation and mutual prosperity of both Sri Lanka and Korea. Thus, funding the project was considered relevant and appropriate in terms of the EDCF's purposes and loan policy. The total amount of the loan was USD 48 million.
- The highway connecting Colombo to Ratnapura (A04) is one of the busiest roads in Sri Lanka. The aim of this project was to extend the A04 beyond Ratnapura to reach Uva, one of the least developed provinces in Sri Lanka. Improving this road was expected to accommodate the growing traffic volume, support various economic activities in the region, and ultimately contribute to both regional and national development.
- The rehabilitation of two sections, Ratnapura-Balangoda and Balangoda-Bandarawela, were completed in September 2003 and November 2008, respectively. This evaluation study concluded that the project has achieved its intended objectives, such as reducing travel time and improving accessibility of the region, and also created certain socio-economic impacts and changed many aspects of people's lives in the region.

## II. Introduction to Impact Evaluation

- 'Impacts' are generally regarded as long-term and include spillover effects as a result of implementing a program, which separates it from a program's shorter-term direct and indirect effects. In other words, an impact is what comes after the outcomes, as illustrated in the result chain below.

Figure 2.1 Monitoring and Evaluation Framework: Result Chain



- Impact evaluation does not examine the project of interest or direct beneficiaries, but rather long-term effects such as policy change, environmental impact, and various socio-economic development in the region that may be affected by the project of interest.
- In general, an evaluation categorizes two types of data for analysis: qualitative and quantitative. Impacts can be estimated by using a specific qualitative data such as a region's population change over time.
- Specifically, impacts can be represented by differences between actuality and the counterfactual outcome, which represents a program's presumable outcome when assuming no program was implemented

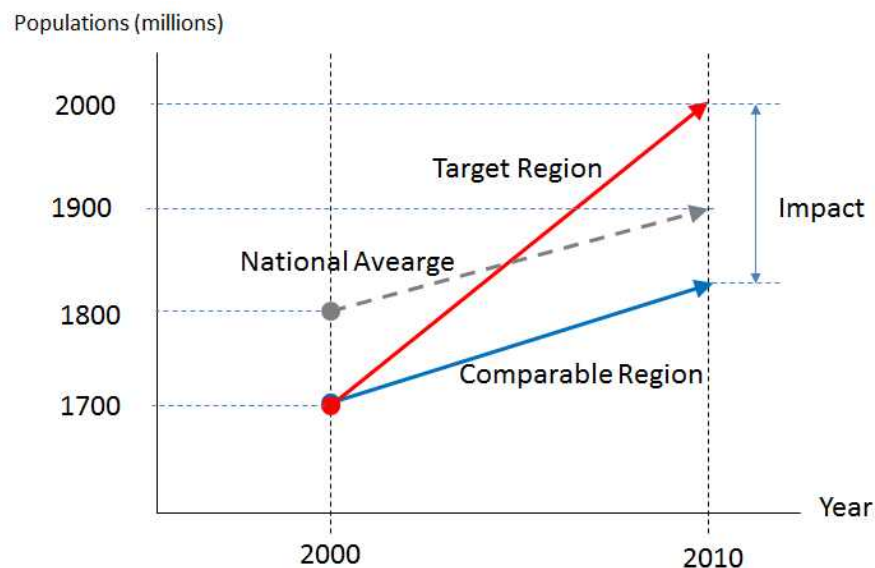
and subsequently there would be no impact. In other words, an impact evaluation is, in simple terms, a comparison between the case with the program and the same case without it.

$$\text{Impact} = \text{Actual Outcome} - \text{Counterfactual Outcome}$$

(= Case with the program - Case without it)

- The challenge is that ex-post evaluators commonly do not know the counterfactual outcome unless the project was planned and implemented to specifically investigate the counterfactual outcome. Thus, in many cases, one may need to find comparison groups or areas that can be used for a counterfactual comparison.
- The following figure illustrates the concept of a counterfactual framework based on a region's population change over time.

Figure 2.2. Counterfactual Framework: With-and-Without Comparison



The net population change of the target region is 300 million from 2000 to 2010, but the impact is 200 million, which is the difference between the population of the target region (actual) and that of the comparable region (counterfactual) in 2010.

### III. Impact Evaluation Method

- The objective of the project, the nature of the infrastructure project, characteristics of road rehabilitation, and absence of baseline data were the main factors that determined the evaluation methods employed for the current impact evaluation study.
- Most infrastructure projects may help create, both directly and indirectly, a wide variety of social, cultural, and economical changes in the affected region. Since the project had no baseline data or evaluation plan set up with specific foci, this evaluation project took a “shot-gun” approach (i.e., it covered a wide array of indicators) rather than a “zeroed-in” evaluation.
- However, given the constraints and the limited data available for evaluation, the impacts for many evaluation categories could not be assessed. Thus, this report only focused on the following evaluation categories when discussing the results.

Category	Sub-categories
Effects	1. Travel Time, 2. Safety, 3. Vehicle Operating Cost
Impacts	1. Accessibility, 2. Income, 3. Employment, 4. Other Economic Impacts, 5. Environment
Related DAC Items	1. Appropriateness, 2. Sustainability, 3. Effectiveness
Cross-Cutting Issues and Other Impacts	1. Women, 2. Education, 3. Millenium Development Goals

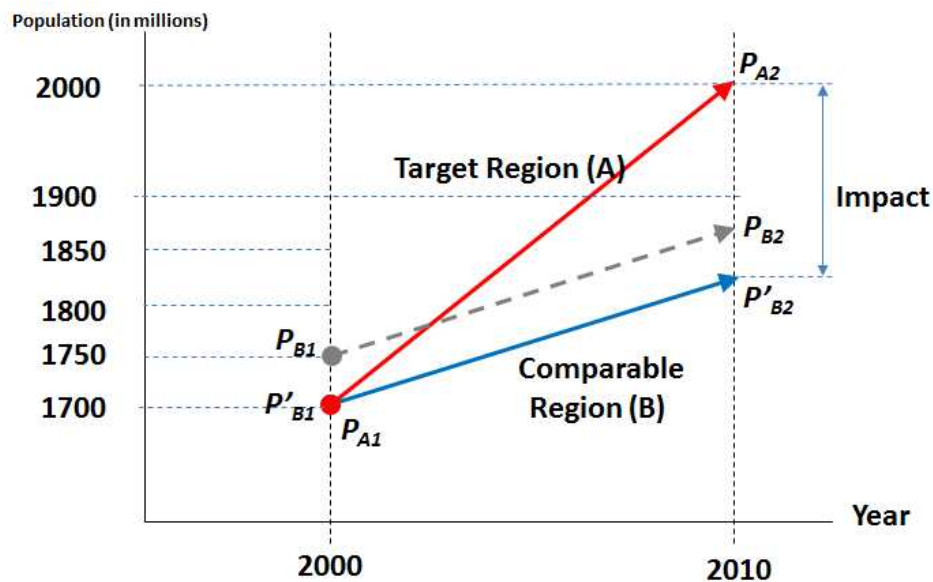
- In general, evaluations are categorized into two terms depending on the type of data used for the analysis: qualitative and quantitative. Note that evaluations of this type generally can and do use both data types for a multi-faceted analysis. Despite the limited resources and

ill-defined scope of this evaluation, the evaluation team concluded that this evaluation should utilize both data types, including Sri Lanka's district level socio-economic statistical data, survey data from local residents, and data from in-depth interviews and focus group discussions.

□ Analysis of Quantitative Data

○ Double-Difference (DD) Method using district level socio-economic indicators

- After reviewing data from all districts, two or more districts that happened to have similar figures right before the project began were selected for comparison.
- Double-Difference (or Difference-in-Difference) Method: Impacts can be computed using data from the project region and other comparable regions, as illustrated below.



$  \begin{aligned}  \text{DD Impact}^1) &= (P_{A2} - P_{A1}) - (P_{B2} - P_{B1}) \\  &= (2000 - 1700) - (1850 - 1750) \\  &= 200  \end{aligned}  $
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○ Impact Perception Scale (IPS): A scoring system developed to measure the magnitude of impacts that the local residents perceive. IPS produces an 'impact score' that can be regarded as a summary of the perceived impacts.

□ Analysis of Qualitative Data

○ Content analyses were conducted using data from in-depth interviews and focus group discussions that included both local residents and public officers. Interviews and focus group discussions provided detailed and specific cases of changes as a result (or impact) of the project. Qualitative analyses of such data also suggested evidence of impacts in most evaluation categories.

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1) The impacts assessed using the DD method are referred to as 'DD impacts' hereafter.

## VI. Results

- Impact evaluation using DD method revealed evidence of impacts in the project regions compared to multiple regions that were similar before the road project, in terms of selected socio-economic indicators. Such indicators included population, household income, poverty level, number of local businesses, and college admissions.

### 1. Impacts on Accessibility

- In short, the road rehabilitation project significantly enhanced the accessibility of the region and created noticeable improvements in many aspects of people's lives in the region.

- Enhanced accessibility by reduced travel time

- Rehabilitation has doubled the travel speed for most traffic. The average travel speed on the entire 100 km section increased from 20-30 km/h to 50-60 km/h.

- Such change helped local residents access the capital city of Colombo and other major cities, where there are more opportunities for jobs, education, medical services, and other needs. In some areas, travel to major cities would not be possible or very difficult otherwise, and residents can now travel relatively faster and cheaper.

- Increased traffic volume

The average daily traffic of the project road increased by 32%.

- Increased number of hotel rooms as a measure of accessibility



The number of visitors can be an indicator of enhanced accessibility. Due to the absence of required data, the accommodation demand in the region was considered and used as an indirect measure of the number of visitors.

- Balangoda and Haputale are two major towns located on the project road, and both are regarded as Highcountry, which showed a 28% increase in the number of hotel rooms between 2008 and 2011.
- This increase in these regions is significant compared to the national average, which was zero. The figures were particularly high in Balangoda and Haputale: 57% and 150%, respectively.

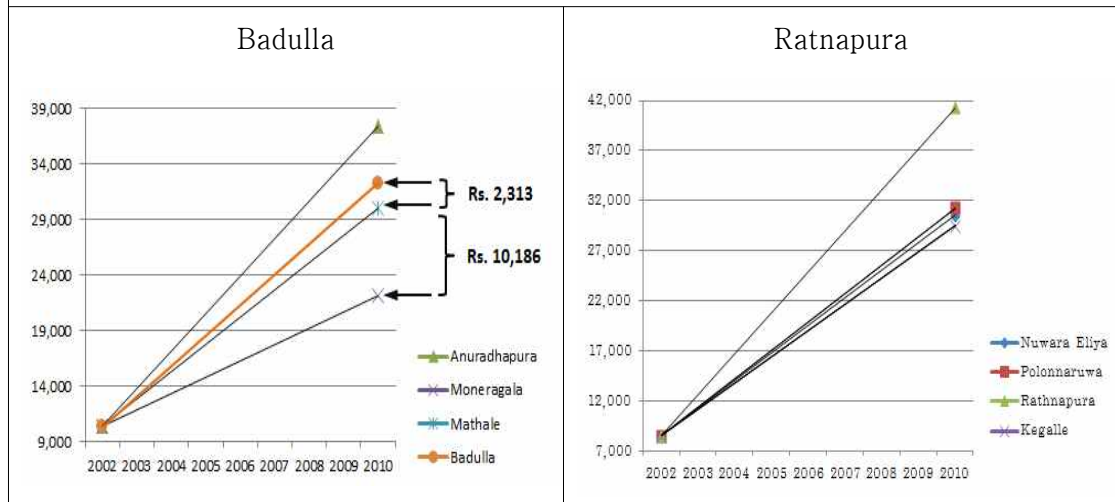
## 2. Economic Development Indicators

- Analyses of household income and number of local businesses have shown impacts when using the DD method. Impacts on employment, however, were not visible along with other socio-economic indicators such as production, of which analysis produced mixed results.
- Household income  
Impacts were observed in both Badulla and Ratnapura districts using the DD method. Both districts had incomes Rs. 10,000<sup>2)</sup> higher than comparable districts.
- Also, the majority of survey respondents and interviewees reported increases in household income for their own families and those around them. More than 60% of responses from the survey confirmed that the household income increase also deserved attention.

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2) Rs: Sri Lankan Rupee

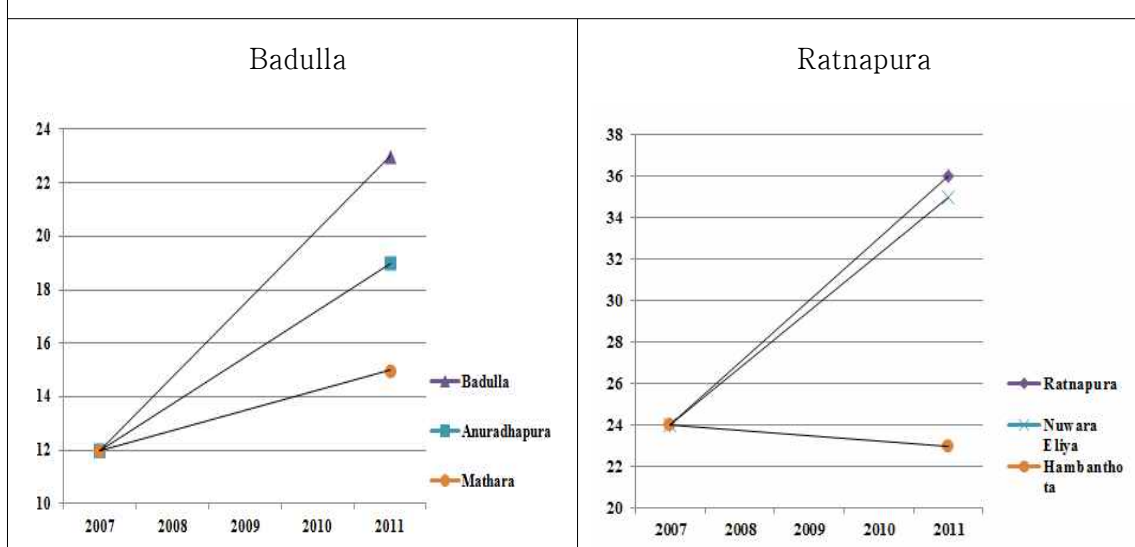
Comparison using DD Method: Household Income



□ Number of local businesses

○ The DD method also revealed a notable impacts in the increase of local businesses. However, the fact that the impact on Ratnapura’s local businesses might also be attributed to the city’s proximity to the capital city of Colombo should also be considered.

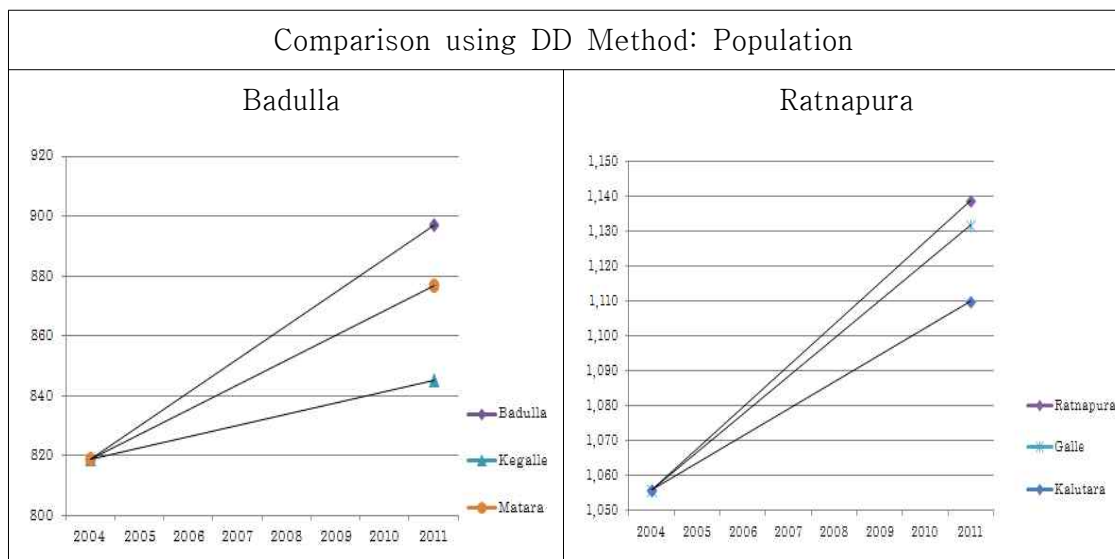
Comparison using DD Method: Number of Local Business



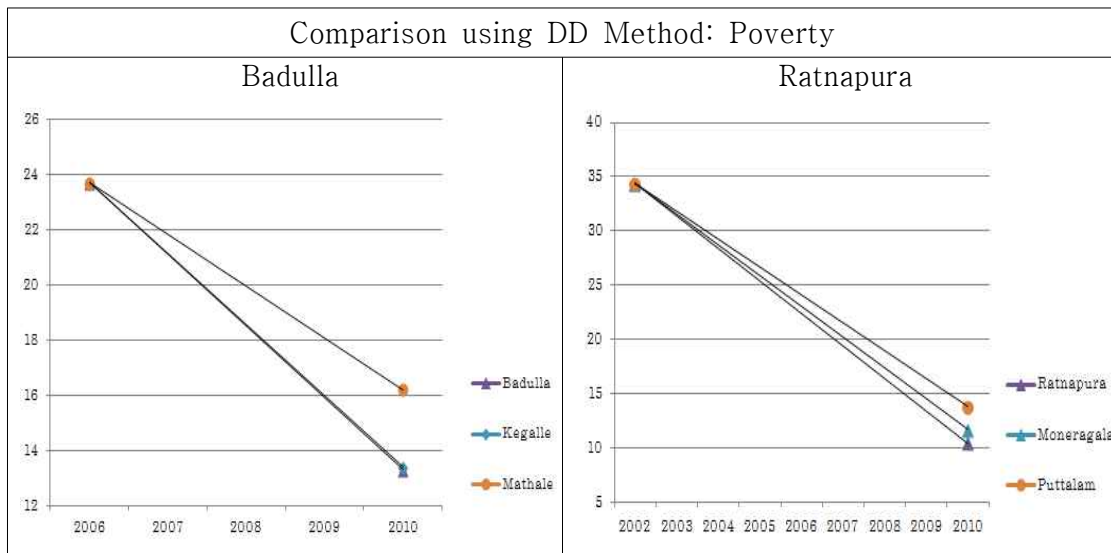
- Although the data collection point for the impact evaluation was within 2 years after the completion of the project, a few signs of the positive impacts have emerged. Note, however, that since impacts are seen as longer-term effects, more signs of impacts are expected in the years to come.

### 3. Social Development Indicators

- Most social development indicators selected for analysis have shown impacts, except for the number of schools, students (enrollment rate), teachers, and other educational institutions. Sri Lanka has one of the highest enrollment rates among developing countries. As a result, more than 97% of school-aged children are in school, and most of the population is literate. For this reason, the lack of visible change in education in this region cannot be used as evidence of an absence of impact.
- The population increased in both Badulla and Ratnapura. The DD method produced measurable impacts in both districts.

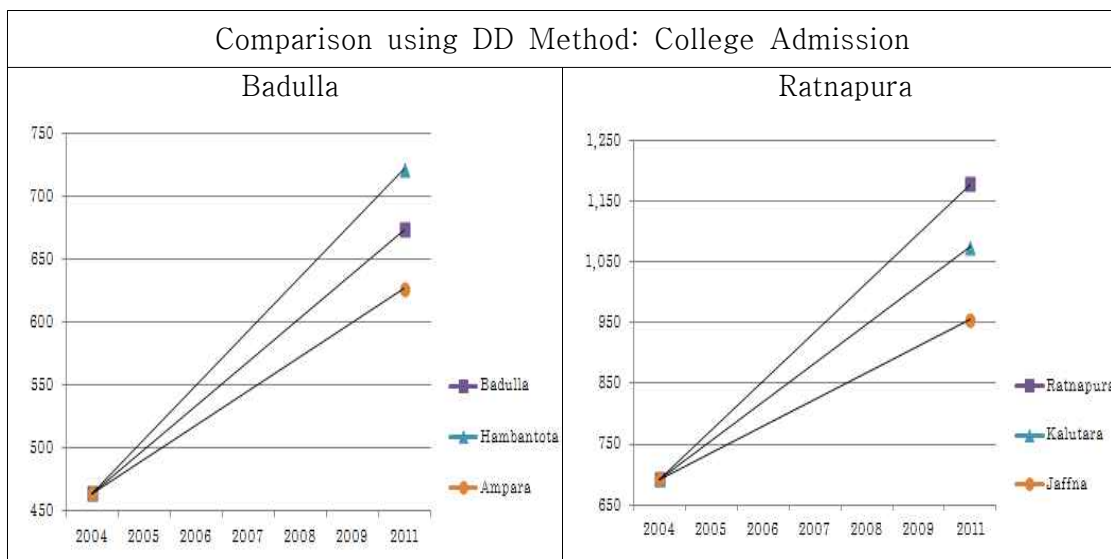


- Poverty has been declining nationwide in Sri Lanka over the last decade, presumably due to persistent efforts to develop its economy. Poverty (head count percentage under the national poverty line) was reduced from 40% in 2000 to less than 10% in 2011. Using the DD method, Badulla and Ratnapura districts displayed somewhat smaller impacts than other indicators.



□ College Admission

Recent economic development in Sri Lanka has created a growing demand in college education and thus the DD method could be used to measure impacts on the college admission numbers in both the Badulla and Ratnapura districts.



#### 4. Impacts Measured using Impact Perception Scale

- As an alternative method for measuring impacts of infrastructure projects, this evaluation study also employed a psychometric measurement instrument. The Impact Perception Scale (IPS) was developed and used as a part of the local resident survey. A total of 55 local residents responded, and the analysis of their responses summarized the impact scores for seven evaluation categories, using a scoring range from 1 (low) to 5 (high).
  
- The overall impact score was 3.81, implying a high level of perceived impacts among local residents in terms of accessibility, socio-economic development, and other aspects in the region.

## V. Lessons and Recommendations

### Implications from Evaluation Results

- Although the current impact evaluation study produced DD impacts for many selected aspects of regional socio-economic development, it should be noted that such impacts cannot be solely attributed to the road rehabilitation project. When considering the purpose and scope of impact evaluations in general, interpretation of the impact evaluation results requires a careful review of other possible factors and contextual characteristics.
- It is desirable to initiate future EDCF projects with a solid evaluation plan, spanning from evaluation and monitoring processes embedded in the project management system to impact evaluation.
- Active participation of the partner countries is crucial in order to ensure the effectiveness and efficiency of future evaluation projects. Also, sharing evaluation results and lessons would be helpful for cultivating collaboration and active participation of partner countries.
- The purpose of evaluation projects should include seeking future opportunities, as well as identifying and suggesting follow-up projects.

### Recommendations for Future Infrastructure Projects

Based on the review of evaluation results and other data collected during this evaluation project, the evaluation team would like make the following recommendations.

- There should be continued participation in high-impact projects that are closely tied to national development plans.
- Maintaining the quality of work to international standards should be continued.
- There should be continued participation in mobility-oriented

infrastructure projects, such as highway construction projects.

- Bypass roads should be considered for similar road rehabilitation projects, which include road sections that go through city centers.
- More safety measures should be put in place in order to improve the safety of road users, such as traffic signs, speed bumps, and sidewalks in residential areas.

#### Recommendations for Future Impact Evaluations

- Evaluation experts should be involved from the planning stage in most projects.
- Preliminary research such as needs assessments can be utilized in order to ensure the effectiveness and high impacts of planned projects.
  - An ex-ante evaluation can be employed as a preliminary research activity.
  - Baseline data collection and monitoring should be systematically planned and implemented.
- The EDCF and the counterpart organizations should collaborate for systematic monitoring and evaluation processes, for not only mutual interests in evaluation results but also improving regional competencies.