

Ex-post Evaluation Report 2011-2-3

**Road Rehabilitation Project
from Balangoda to Bandarawela, Sri Lanka**

Country: Democratic Socialist Republic of Sri Lanka

Loan Contract Number: SRI-11

Loan Approval Date: December 11, 2002

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

EDCF Evaluation Team

(Evaluated by : **Korea Expressway Corporation**)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

I. INTRODUCTION

1. Basic Project Information	1
2. Map of the Project Area	2
3. Evaluation Overview and Procedures	3

II. PROJECT DESIGN and IMPLEMENTATION

1. Project Formulation	3
2. Rationale	5
3. Cost, Financing, and Execution	5
4. Outputs	6

III. EVALUATION BY CRITERIA

1. Assessment Items and Results	6
2. Relevance	7
3. Efficiency	8
4. Effectiveness	9
5. Impact	11
6. Sustainability	14

IV. LESSONS LEARNED and RECOMMENDATIONS

1. Lessons Learned	15
2. Recommendations	16

Executive Summary

Investment in transport has been one of top priorities of the Sri Lankan government. Because shipping and transport sectors account for 11.7% of Sri Lanka's total GDP and 20.3% of the country's service industry, the country has been pursuing road development plans to upgrade road services such as maintenance projects and road construction for development of rural areas. The nation's road network is a key component to national economic development and accommodates 92% of passenger and 98% of freight transport needs.

The project aimed to improve a major section of Road No. 4 and No. 16, roads connecting Balangoda and Bandarawela and serving key cities in the central, southern, and eastern regions of Sri Lanka. The total project cost was KRW 29.4 billion. Of this amount, KRW 19 billion or 64.6% was financed by EDCF while the remaining cost of 10.3 billion was financed by the Sri Lankan government. Through road improvements, the project aimed to accommodate the growing volume of freight transportation, enhance road safety, and promote balanced development of surrounding regions. The overall goal of this project was to improve road conditions and durability to reduce travel times and enhance safety.

For accurate and objective ex-post evaluation project assessment, we split items into qualitative and quantitative categories in compliance with EDCF Ex-post Project Evaluation Guidelines. Quantitative items were assessed based on analysis of related data and qualitative items on interviews and surveys. Comprehensive assessment of quantitative effects observed after completion and qualitative effects experienced by the recipient country showed that the project was a success, suggesting that the project objectives were met effectively.

Relevance with recipient country's development policies, EDCF assistance policies, route selection, and project scope were found to be high. Although the project exceeded the planned project period, project implementation was deemed efficient. The project was effective in terms of meeting its objectives and made substantial economic, social, and cultural impacts. Moreover, project sustainability was also deemed positive considering resources and budget required for operation and maintenance.

The project executing agency of the Road Development Authority of Sri Lanka expressed its satisfaction with the successful completion of the project and smooth operation of the road to date. Traffic volume increased significantly after the project, and the project brought substantial socio-economic improvement.

I. INTRODUCTION

1. Basic Project Information

Loan Information

Loan Agreement No.	Loan Type	Approved Amount	Approval Date
SRI-11	Development Project Loan	USD 17,635, 000	December 11, 2002

Project Cost (in USD thousands)

Component	Expected	Actual	Difference
Total Cost	27,335	27,335	-
EDCF Loan	17,635	17,635	-

Key Dates

Major Activities	Expected	Actual
Loan Request	April 6, 2002	April 6, 2002
Loan Approval	December 11, 2002	December 11, 2002
Loan Agreement	August 5, 2003	August 5, 2003
Loan Agreement Effective Date	December 2, 2003	December 2, 2003
Completion	January 31, 2008	May 31, 2008
Final Disbursement	June 2, 2008	December 12, 2008
Project Completion Report	December 2, 2008	January 8, 2009
Project Period *	50 months	54 months

* Project Period: from the effective date of loan agreement to project completion.

Borrower: Ministry of Finance (MOF) of Sri Lanka

Executing Agency: Road Development Authority (RDA) of Sri Lanka

2. Map of the Project Area

□ Map of the Country



3. Evaluation Overview and Procedures

- Members of the Ex-Post Evaluation Team (KEC)
 - Team Leader: Dr. Seung-kirl Baek (Expressway and Transportation Research Institute, Korea Expressway Corporation)
 - Staff: Dr. Yoon-hyuk Choi (Transportation Policy Team, Expressway and Transportation Research Institute, Korea Expressway Corporation), Dr. Sang-yeon Hong (Transportation Policy Team, Expressway and Transportation Research Institute, Korea Expressway Corporation), Manager Won-Yeel Hwangbo (Overseas Project Division, Korea Expressway Corporation)

- Evaluation Methodology
 - References: Feasibility Study Report, Review Report, Project Completion Report, Loan Agreement, Project Completion Checklist, documents provided by the Sri Lanka government and Central Bank of Sri Lanka, and other relevant documents
 - Interviews: Project Implementation Entity, related officials*, related Korea-affiliated institutions in Sri Lanka**, Keang Nam Enterprises, KCI, local residents***
 - *Road Development Authority, External Resources Department of Ministry of Finance, Central Environment Authority, and Board of Investment
 - ** Korean Embassy in Sri Lanka
 - *** Staff and users of service areas near the project site from Balangoda to Bandarawela
 - Site Surveys: Balangoda to Bandarawela and surrounding areas

II. PROJECT DESIGN AND IMPLEMENTATION

1. Project Formulation

- Purpose of the Project

The project aimed to rehabilitate and improve a major section of Road No. 4 and No. 16, roads connecting Balangoda to Bandarawela and serving key cities in central, southern, and eastern regions of Sri Lanka. It aimed to address the growing volume of freight transportation, enhance road safety, and promote balanced development of surrounding regions.

The transport sector accounts for 11.7% of Sri Lanka’s total GDP and 20.3% of the country’s service industry. Roads are a major infrastructure of the country, serving 92% of passenger transport and 98% of freight transport, and are a key component of the country’s economic development. Accordingly, investment in transport has been one of the top priorities of Sri Lanka’s government. The country has been pursuing road development plans to upgrade road service levels that include maintenance projects and road construction for development of rural areas.

□ Project Area

The project site extended from Balangoda, a strategic inland location in south central Sri Lanka 140km east of Colombo, to Bandarawela, a major producing area of tea. The project sought to improve deteriorated roads and straighten roads to enhance travel efficiency, safety, and durability.

□ Project Scope

The project encompasses consulting services and civil works including improvement of two-lane roads and installation of auxiliary facilities.

- Civil Works: rehabilitation of two-lane roads (5.0m wide and 55.4km long), construction of bridges, and installation of auxiliary facilities.

Consulting Services: design review, preparation of bidding documents, and construction supervision (detailed design was done by the project executing agency with its own resources and equipment).

Table 1. Scope of Balangoda to Bandarawela Road Improvement Project

Component	Details	Plan	Actual	Remark
Road	Length	57km	55.4km	
	Width	3.05m per lane/two lanes	3.10m per lane / two lanes	
	Shoulder	Unpaved	Paved /1.2m-wide	Road safety
Bridge	EA	34	13	Insufficient fund

Source: p.5, Completion Checklist

2. Rationale

EDCF loans for this project was approved in August 1996, but project scope was reduced when the Korean won depreciated following the Asian financial crisis in 1997. Improvement of the Colombo-Ratnapura section was completed in 1995 with a loan from the ADB. A 43km section of roads from Ratnapura-Balangoda were also improved in 2003 with an EDCF loan. Improvement of the Balangoda to Bandarawela section was necessary to reinforce road integrity and maximize the effects of other road improvement projects.

3. Cost, Financing, and Execution

Total project cost was KRW 29.4 billion, of which EDCF loans supported KRW 19 billion or 64.6% and KRW 10.3 billion was financed by the Sri Lanka government. Details of EDCF loan disbursement for the project is provided in Table 3. Undisbursed portions of consultant service fees and contingency funds were reallocated to cover civil engineering costs and disbursed in full.

Table 2. Fund Disbursement

(in KRW millions)

Component	Plan ¹⁾ (Total Cost)	E D C F		
		Loan Ceiling ²⁾	Actual	Difference
Civil Works	19,164	14,707	17,155	2,448
Consulting Services	2,737	2,564	1,829	Δ735
Taxes and Duties	2,694	-	-	0
Other Expenses	2,105	-	-	0
Contingencies	2,676	1,713	-	Δ1,713
Service Charge	19	19	19	0
Total	29,395	19,003	19,003	0

1) As reported in the Review Report

2) As reported in the L/A

The project was scheduled for completion in January 31, 2008, 50 months after the Loan Agreement took effect, but the project was actually completed in May 31, 2008, 54 months after the L/A, due to changes in pavement width and thickness, additional bridge construction, and construction of landslide prevention fences. These changes resulted in increased construction volume and design revision. Overall, project completion was delayed by four months. The recipient and project executing agency issued the Taking-over Certificate on May 31, 2008. The final disbursement was provided on December 12, 2008, upon which the project was officially concluded in success.

4. Outputs

According to project assessment, project objectives were met as planned and the project was being maintained and managed properly after completion. It was found that the project contributed greatly to promoting the local economy and raising income levels, as evidenced by lower poverty ratios by region and higher income levels by household. The project executing agency, the Road Development Authority of Sri Lanka, expressed its satisfaction with successful completion of the project and assured smooth operation of the road to date. Traffic volumes increased significantly after the project and the project brought substantial socio-economic improvement.

III. EVALUATION BY CRITERIA

1. Assessment Items and Results

For accurate and objective Ex-post Evaluation, we split assessment items into qualitative and quantitative categories. Assessment items were selected in compliance with EDCF Ex-Post Project Evaluation Guidelines. Quantitative items were assessed based on analysis of related data and qualitative items on interviews and surveys.

Comprehensive assessment of qualitative effects observed after completion and quantitative effects experienced by the recipient country showed that the project was a success, suggesting

that the project objectives were met effectively.

Relevance with the recipient country’s development policies and EDCF loan policies, as well as that of route selection and project scope were assessed to be high. Project implementation was deemed efficient although project completion was delayed. The project was evaluated to have effectively met its objectives and have had significant economic, social, and cultural impacts. Moreover, project sustainability was deemed positive with consideration to resources and budget for maintenance.

Criteria	Weight	Quantitative Assessment		Qualitative Assessment		Final Result
		Description	Point	Description	Point	
Relevance	20%	Highly Relevant	4	Relevant	3.3	3.7
Efficiency	20%	Efficient	3	Efficient	3	3.0
Effectiveness	20%	Highly Effective	4	Effective	3.3	3.7
Impact	20%	Highly Influential	4	Influential	3.4	3.7
Sustainability	20%	Positive	3	Likely	3.3	3.2
Overall Rating: Successful 3.4						

2. Relevance

Quantitative assessment was conducted on whether the project is in accordance with the recipient country’s development policies and EDCF assistance policies; whether route selection, timing of loans, and project plan are appropriate; and whether the project addresses demands of local residents and businesses. The project was assessed to be highly relevant (4 points). In Sri Lanka, the transport sector accounts for 11.7% of total GDP and 20.3% of the nation’s service industry¹⁾. Roads are the backbone of the transport system, serving 92% of passenger transport and 98% of freight transport and playing a key role in national economic development. Accordingly, investment in transport has been a top priority for Sri Lanka. The country has road development plans to upgrade road service levels including maintenance projects and road construction for development of rural areas. Therefore, the project was deemed to be in line with the country’s development policies²⁾.

After surveys and interviews on appropriateness of the project, loan, route selection, project scope, and alignment with national policies and local community's demands, project relevance was deemed 3.33. The Road Development Authority of Sri Lanka responded that the project and the timing of financing were highly relevant, while the External Resources Department of the Ministry of Finance, the recipient, expressed its hope for further EDCF loans on road projects as roads are a core infrastructure for national development.

3. Efficiency

Project implementation efficiency was assessed based on project implementation period and cost. Project implementation was deemed efficient considering that delays were not significant and costs did not exceed plans. Although there were some discrepancies in project implementation and budget planning three points for project implementation period and three points for project costs were awarded. The project was initially expected to take 50 months after the loan agreement took effect, including design, consultant contract, builder selection and construction. However, the project took 56 months due to changes in project scope, etc. The overall project scope was implemented as planned in the review stage, except for minor changes in project section and road width selection. In addition, the cost did not exceed the budget and did not exhaust contingency funds despite additional construction works being implemented. Increase in costs were attributable to increased construction costs per unit distance, expansion of lane per-lane width (3.05m to 3.10m) of two-lane roads except for the Balangoda roundabout (4-lane) section, and partial paving of unpaved shoulders (unpaved shoulder: 1.2 to 1.8m shortened to 0.55m) for road safety.

Based on surveys and interviews on the project implementation period and efficiency of the implementation system, we graded the project's efficiency to be 3, considering that delays from design changes were inevitable and there was no conflict over the implementation process³⁾. As for questions regarding conflicts and solutions regarding EDCF and consultants during the project, respondents stated there was no conflict and the process was very satisfactory.

4. Effectiveness

To assess the project's effectiveness, EDCF examined engineering aspects including travel time, traffic volume, driving speed, congestion, and traffic accident records. The project received a score of four. Road construction was completed according to plan and no notable issues regarding operation has arisen to date. After rehabilitation of the Balangoda-Bandarawela section, average travel times decreased by one hour from 2.5 to 1.5 hours and travel costs decreased as well. In addition, there were fewer traffic accidents owing to more safety measures such as wider lanes and paved shoulders. Maintenance and management costs were also reduced as a result of improved road conditions.

A field survey was conducted and data provided by the Planning Division of Road Development Authority was analyzed to assess traffic on the project road. Data indicated that an average of 1,500 vehicles traveled during the day along the Balangoda-Bandarawela section of Road No.4 and Road No.16 at Haldemulla (180km point on No.4) and 1,900 vehicles at Haputale (4km point on Road No. 16).

Table 3. Average Daytime Traffic Volume on the Project Road (Number of Vehicles/Day)

Point	Province	Milepost	Location	Traffic Volume	Remark
A4	Uva	180	Haldemulla	1,504	Traffic for 12 hours
A16	Sab	7	Haputale	1,894	Traffic for 12 hours

Source: RDA, September 18, 2008

In the traffic survey, the assessment team found that hourly traffic was 198 vehicles/hour from Balangoda to Beragala and 250 vehicles/hour from Beragala to Bandarawela, which correspond to 2,376 and 3,000 vehicles/day respectively when converted to 12-hour daytime traffic. The figures are higher than RDA data, indicating increased traffic volumes after the road improvement project. It should be noted that the day of the field survey, June 15, 2011, was a national holiday in Sri Lanka (Poson and Poya Day⁴). As such, the data reflected weekend leisure and tourist traffic rather than commuter and business traffic of an average weekday and left room for possible discrepancies from accurate daily traffic volumes.

Table 4. Traffic Survey Result

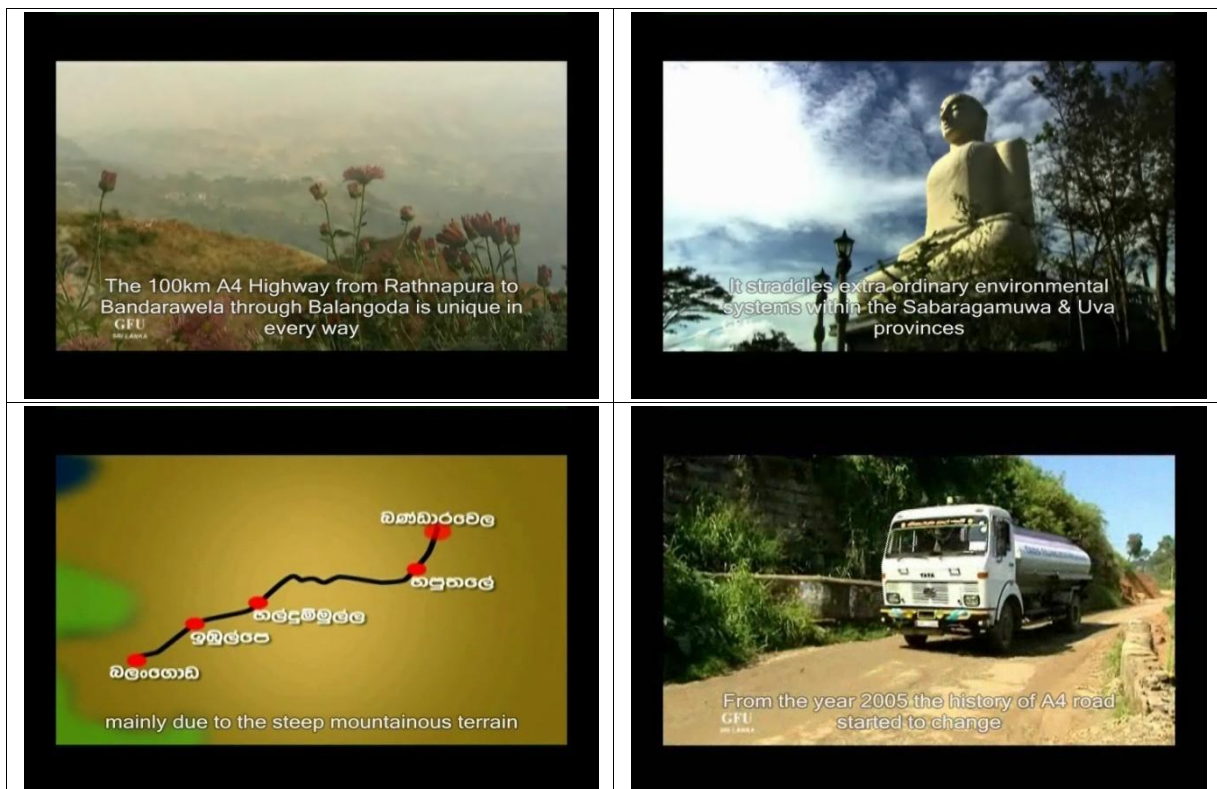
(Vehicles/Hour)

Section	Two-Wheeled	Three-wheeled	Passenger Car	Van	Bus	Truck		Total
	Bicycle	Bajaj				Small	Large	
Balangoda to Beragala	24	76	28	44	4	12	10	198
Beragala to Bandarawela	30	90	35	55	6	15	13	250

Note) Hourly traffic, on-site survey conducted on June 15, 2011

In terms of effectiveness in satisfying the objectives and enhancing accessibility and mobility, the project was scored 3.29 based on surveys and interviews. The project was found to be effective in improving accessibility and mobility, and local residents expressed high satisfaction with reduced travel times and increased traffic capacities.

Figure 1. Promotional Video of Government Film Unit





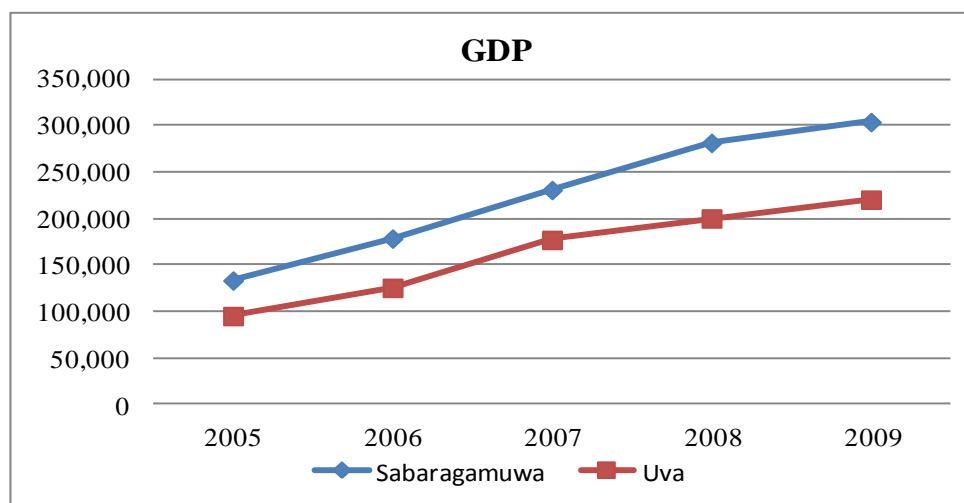
Source: Keangnam

5. Impact

In assessing economic, socio-cultural, and environmental impacts, the project is deemed to have made significant impacts as a whole (4 points). The regions of Sabaragamuwa and Uva, which were affected by the project, experienced steady GDP growths after 2005 when their respective road sections were completed, resulting in promotion of local economies and higher income levels.

According to the Department of Census and Statistics of Sri Lanka, the regions of Badulla, Monaragala and Ratnapura, which are affected by the project, were the poorest regions in Sri Lanka in 2006.

Figure 1. GDP Growth Trend of the Project Site (2005 to 2009)



Source: Central Bank of Sri Lanka, 2011

Table 5. Poverty by District

District	1990/1991	1995/1996	2002	2006/2007	2009/2010
Colombo	16.2	12.0	6.4	5.4	3.6
Gampaha	14.7	14.1	10.7	8.7	3.9
Kalutara	32.3	29.5	20.0	13.0	6.0
Kandy	35.9	36.7	24.9	17.0	10.3
Matale	28.7	41.9	29.6	18.9	11.5
Nuwara-Eliya	20.1	32.1	22.6	33.8	7.6
Galle	29.7	31.6	25.8	13.7	10.3
Matara	29.2	35.0	27.5	14.7	11.2
Hambantota	32.4	31.0	32.2	12.7	6.9
Jaffna					16.1
Vavuniya					2.3
Batticaloa				10.7	20.3
Ampara				10.9	11.8
Trincomalee					11.7
Kurunegala	27.2	26.2	25.4	15.4	11.7
Puttalama	22.3	31.1	31.3	13.1	10.5
Anuradhapura	24.4	27.0	20.4	14.9	5.7
Polonnaruwa	24.9	20.1	23.7	12.7	5.8

Badulla	31.0	41.0	37.3	23.7	13.3
Moneragala	33.7	56.2	37.2	33.2	14.5
Ratnapura	30.8	46.4	34.4	26.6	10.5
Kegalle	31.2	36.3	32.5	21.1	10.8

Upon completion of the project however, poverty ratios of affected regions decreased by over 50% by 2009⁵. Ratnapura, in particular, which can be directly accessed via the project road, enjoyed increases in imports by 81.6% compared to 2006, indicating that the project, including the Ratnapura-Bandarawela road section, made significant economic impacts to the region.

Table 6. Household Income and Expenditure Survey

Sector/Province/ District	Mean (Rs.)		Median (Rs.)	
	2009/10	2006/07	2009/10	2006/07
Sri Lanka	36,451	26,286	23,746	16,735
Urban	47,783	41,928	31,000	23,642
Rural	35,228	24,039	23,126	16,379
Estate	24,162	19,292	17,366	10,480
Western	47,118	34,282	30,600	21,686
Colombo	51,070	42,825	34,186	24,711
Gampaha	48,870	29,038	29,821	20,564
Kalutara	35,780	27,721	27,511	18,500
Central	31,895	23,875	21,410	14,187
Kandy	33,063	24,444	22,450	16,203
Matale	30,013	19,678	18,606	14,119
Nuwara-Eliya	31,029	25,621	21,431	11,914
Southern	32,514	24,059	23,253	16,837
Galle	31,376	24,907	21,886	17,517
Matara	30,980	22,914	23,048	16,229
Hambantota	36,879	24,076	26,406	16,784
Northern	23,712	-	16,710	-
Jaffna	18,917	-	14,815	-
Vavuniya	39,640	-	29,370	-
Eastern	23,922	20,811	18,030	14,828
Batticaloa	22,844	21,032	16,129	15,593
Ampara	24,721	20,676	19,082	14,556

Trincomalee	24,291	-	19,154	-
North-Western	35,586	22,565	20,961	14,824
Kurunegala	36,922	22,870	20,778	14,500
Puttlam	32,918	21,939	21,593	15,612
North-Central	35,577	24,759	24,993	16,064
Anuradhapura	37,586	21,995	25,682	16,133
Polonnaruwa	31,526	30,530	22,634	15,913
Uva	28,717	21,371	19,761	14,152
Badulla	32,313	22,035	20,982	14,804
Moneragala	22,161	20,118	17,226	12,320
Sabaragamuwa	36,173	20,712	21,676	13,943
Ratnapura	41,312	22,741	22,154	14,356
Kegalle	29,342	18,062	21,122	13,114

Based on surveys and interviews, the project was scored 3.375 with regard to its economic, socio-cultural, and environmental impacts. The project significantly reduced traffic congestion, attracted traffic, prevented traffic accidents, resulted in economic benefits with better road conditions, promoted industrial development in the project site, and expanded the local economy. According to the Board of Investment, which is in charge of promoting private sector investments, road projects require large-scale investment and influence other investment projects in tourism and port development, which are essential to the development of Sri Lanka. The BOI requested more investment.

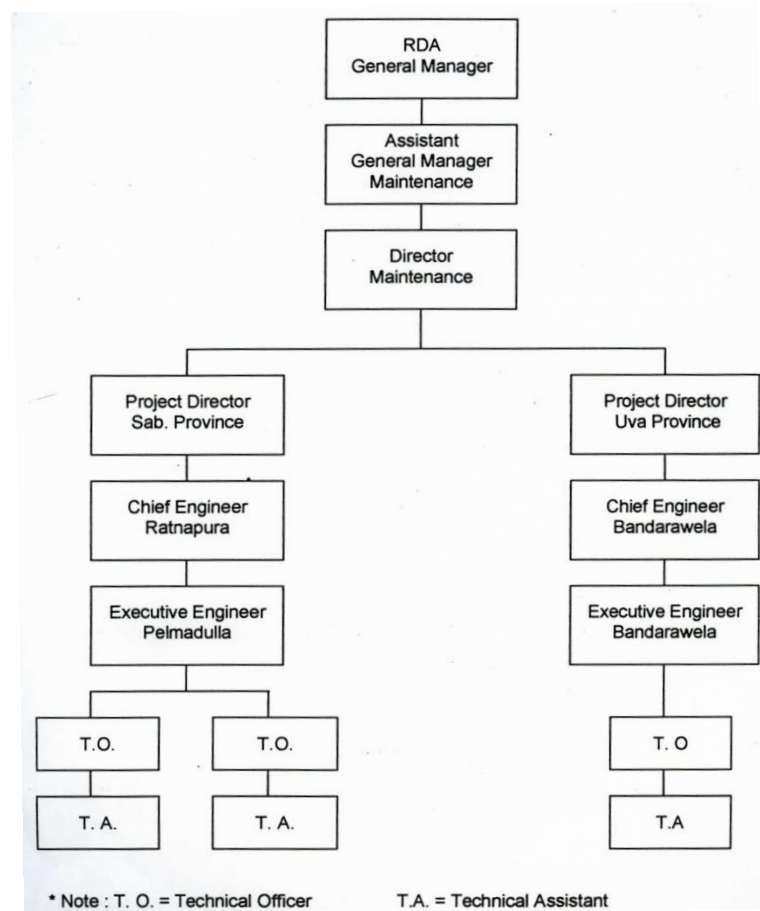
6. Sustainability

Considering operation and maintenance status, related systems, and financial conditions, the project is assessed to have positive sustainability (3 points). The Road Development Authority is in charge of maintaining and managing the project road and has run a well-organized system with dedicated personnel and organization. In particular, the quality of construction was found to be excellent, given that there were no specific maintenance issues during public use as well as during the one-year warranty period.

According to surveys and interviews of road maintenance organizations, road conditions, and sustainability of road maintenance budget, the project was scored 3.33. As for sustainability

of current road conditions, respondents expressed high satisfaction with current conditions and expected the current condition to be sustained for about ten more years.

Figure 2. Organization Chart of Maintenance Division



Source: RDA, Maintenance Program 2011.

IV. LESSONS LEARNED AND RECOMMENDATIONS

1. Lessons Learned

Although the project was completed successfully, there were a few problems regarding delay and scope adjustment. Therefore, hands-on management is required to guarantee success of future EDCF loan projects. Supervision over construction should be particularly strengthened

by monitoring processes after loan disbursement, and swift actions should be taken when faced with unanticipated conditions such as increased construction costs. One solution to be considered is strengthened management and supervision of projects utilizing the expertise of Korean consultants.

One cause for regional income disparity in Sri Lanka is lack of connectivity between cities (consumers) and major rural areas (producers) resulting from poor transport infrastructure. Roads are core infrastructure and indispensable to the country's transport system, especially for development of key industries of tourism, agriculture, and service. Therefore, more support is needed for road projects. In particular, given requests by Sri Lanka including the Road Development Authority, External Resources Department, and Board of Investment to increase investments in road infrastructure, EDCF should render greater assistance as requested.

2. Recommendations

Despite the fact that the project road was designed to accommodate 400 to 500 vehicles per hour, which was more than adequate to prevent congestion, it is now experiencing congestion caused by illegal parking, reckless driving (lane violation), and lack of separation between vehicle lanes and sidewalks. To guarantee road effectiveness, a more effective traffic management system should be adopted in the overall management/operation of the project road in addition to the engineering/maintenance aspect of road management. Installing traffic signals at intersections, putting up bus stops, adopting the concept of 2+1 roads, and implementing roundabout intersections are traffic management techniques that should be considered for implementation. Sharing of advanced transport management systems from Korea should be considered.

It turns out that the project road is being used by different transportation modes travelling at different speeds such as bicycles, three-wheeled vehicles, passenger cars, and trucks, and this is slowing down the average driving speed. Passenger cars traveling at higher speeds end up crossing the center divider to pass slow-moving vehicles like bicycles and three-wheeled vehicles. This poses a significant threat to road safety. More concerted efforts should be made

to establish and implement policies for road safety, such as conducting road safety diagnostics and improving upon accident-prone areas (black spots).

Located 400m above sea level meant the project site required barriers against landslides. However, the project implementing agency decided to partially limit barriers, citing insufficient funds. As there is a lack of proper preventive measures, more attention should be paid to maintain and manage the road in order to minimize road loss and economic damage from landslides. Particular attention is required on the Balangoda-Bandarawela section, which is located on a mountainous area 1,500m above sea level.

While the project implementing agency, the Road Development Authority of Sri Lanka, expressed great overall satisfaction with the project, the recipient, the External Resources Department, requested that EDCF ease “tied-loan conditions” and that Korean companies revamp limited competition bidding for procurement as this would expand un-tied loans in a gradual manner.

To this end, EDCF would have to expand the involvement of Korean consultants, consider the technical involvement of Korean companies in project bidding, and reinforce greater project management and supervision.

-
- 1) Central Bank of Sri Lanka, 2011
 - 2) RDA, Road Network in Sri Lanka, 2011
 - 3) As for qualitative items under the efficiency category, we designed questions to be open-ended and graded them according to the responses.
 - 4) A holiday to celebrate arrival of Buddhism to Sri Lanka.
 - 5) The project road is located in Sabaragamuwa and Uva Provinces, connecting Ratnapura, Badulla, and Moneragala Districts.