



Validation Report

Reference Number: PCV:BHU 2007-29
Project Number: 32288
Loan Number: 1763(SF)
December 2007

Bhutan: Road Improvement Project

Operations Evaluation Department

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
DOR	–	Department of Roads
EA	–	executing agency
EIRR	–	economic internal rate of return
OCR	–	ordinary capital resources
OED	–	Operations Evaluation Department
PCR	–	project completion report
PMO	–	project management office
RRP	–	report and recommendation of the President
TA	–	technical assistance
VOC	–	vehicle operating cost

Key Words

adb, asian development bank, bhutan, roads, lessons, operations evaluation department, performance evaluation

Officer-in-Charge Director

R. K. Leonard, Operations Evaluation Department
R. B. Adhikari, Operations Evaluation Division 2, Operations Evaluation
Department

Quality Control Reviewers

N. Singru, Evaluation Specialist, Operations Evaluation Department
R. Lumain, Senior Evaluation Officer, Operations Evaluation Department
C. Roldan, Senior Operations Evaluation Assistant, Operations Evaluation
Department

OED PCR VALIDATION REPORT

1. Basic Project Data		PCR Review Date Posted:		
Project Number:	32288	Appraisal	Actual	
Project Name:	Loan 1763-BHU(SF): Road Improvement Project	Total Project Costs (\$M):	12.80 14.25	
Country:	Bhutan	Loan/Credit (\$M):	9.60 10.42	
Sector(s):	Transport	Cofinancing (\$M):		
Financing (\$M):	ADF: 9.6 SDR: 7.3	Borrower Contribution (\$M):	3.20 3.83	
	OCR:	Board Approval Date:	3 Oct 2000	
Cofinanciers:		Closing Date:	30 Jun 2005 8 Aug 2006	
Project Officers:	Name:	Designation:	From (month/yr)	To (month/yr)
	Paul Vallely	Transport Specialist, IWTC	2000	2000
	Hasan Masood	Project Specialist (Transport), SATC	2001	2004
	T. Nakazaki	Transport Specialist, SATC	2004	2006
	Sri Widowati	Sr. Proj. Specialist, SATC	2006	2006
Meriaty Subroto	Transport Specialist (Reg. Cooperation), SATC	2007	2007	
Evaluator:	Thomas F. Jones	Director:	Ramesh B. Adhikari, OED2	
Quality Control Reviewer:	Narendra Singru, OED2			

2. Project Description (as stated in the RRP)

a. Rationale and expected impacts

The social and economic well-being of Bhutan is related to an effective and sustainable road transport network as no other mode of transport is available for the movement of people and goods. The extreme geographic conditions and mountainous terrain pose challenges to the provision of transport links and to their necessary maintenance. The existing national road network is in need of improvement and protection as the deteriorated road surface makes journeys very long and extremely difficult. Frequent landslides also block the roads—sometimes for more than a week at a time—causing major delays in movement by vehicle or on foot. Heavy snow cover in winter also hinders movement. The East-West Highway, the project road, was constructed to a single-lane standard by the Indian Border Roads Organization (IBRO) during 1965–1985. It connects Thimphu in the west and Trashigang in the east. The road is of strategic importance to Bhutan since it is the only means of transport between those two important towns. The highway also links a number of other urban centers along the route including Wangdue-Phodrang, Trongsa, Jakar, and Mongar, and acts as the only collector of traffic from the urban centers north and south of the route.

b. Objectives or expected outcomes

The Project was to address the following aspects of the Asian Development Bank's (ADB) sector strategy and policy dialogue: (i) integrate the domestic market; (ii) enhance access to local, regional, and international markets; (iii) increase employment opportunities and incomes, especially in rural areas, to reduce poverty; (iv) stimulate private sector activity, especially in rural areas; (v) develop public-private partnerships for planning, managing, and implementing construction and maintenance of the national road network; (vi) improve road safety; and (vii) develop the domestic consulting profession. The technical assistance (TA), which was implemented concurrently with the Project, was to improve governance by strengthening the Department of Roads (DOR).

c. Components

At appraisal, the Project consisted of road resurfacing, improving slope stability, setting up a pilot equipment-leasing scheme, and consulting services.

d. Outputs

More specifically, at appraisal, the Project expected the following outputs: (i) resurfacing of about 380 kilometers (km) on the East-West Highway, using mechanical techniques in an environmentally sound manner and incorporating all related drainage works; (ii) improving slope stability to preserve the existing national highway network; (iii) implementing a pilot contractor and equipment-leasing scheme for domestic

contractors to participate in the Project; and (iv) providing consulting services for design and supervision of civil works and for institutional support.

3. Evaluation of Design and Implementation (evaluator assessment of actual versus envisioned)

a. Relevance of design and formulation

The Project was relevant at appraisal and after completion. It was consistent with the overall emphasis and objectives of the 8th Five-Year Plan of the Government of Bhutan as well as ADB's strategic objectives, which were to (i) integrate the domestic market; (ii) improve access to local, regional, and international markets; (iii) increase employment opportunities and incomes, especially in rural areas, and reduce poverty; (iv) stimulate private sector activity; and (v) develop public-private partnerships in planning, managing, and implementing the construction and maintenance of the national road network. The Project was designed to maximize the sustainability of the road sector in Bhutan by (i) building the capacity and clearly defining the responsibility of DOR, (ii) introducing simple planning procedures for maintenance and improvement works, (iii) devising adequate cost recovery mechanisms, and (iv) contracting out maintenance works to the private sector. The preceding is largely the view of the Project Completion Review Mission. This evaluator agrees with the relevancy conclusion with the added comment that most lessons learned as expressed in the project completion report (PCR) for the Project and from a previous ADB-funded road project were also incorporated in the design.¹

b. Outputs and costs as envisioned during appraisal compared with actual costs and achievement of outputs; reasons for any deviation

Description	Project Outputs: Estimated and Actual					
	Appraisal	Quantity Completed	Ratio ^a	Appraisal ^b	Cost Completed (\$ million)	Ratio ^a
1. Civil Works						
1A. Periodic Maintenance	371.2 km	328.3 km ^c	0.88	10.10	11.29	1.12
1B. Slope Protection				0.80	0.45	0.56
2. Equipment				0.50	0.98	1.97
3. Consulting Services	384.0 person-months	557.5 person-months	1.45	1.20	1.36	1.13
Total				12.60	14.08	1.12

km = kilometer.

^a Completed/actual.

^b Includes physical and price contingencies.

^c Includes resurfacing of 20 km of road near the original project area with the amount saved from the periodic maintenance (PM) contract packages PM2, PM3B, and PM4.

The report and recommendation of the President (RRP) identified the project components and made preliminary estimates of the quantities/amounts for each component, leaving the actual amounts/quantities to be determined during project implementation. While there are variations from the RRP values, these appear minor in scope and have been adequately justified in the PCR. In most cases, the adjustments were prepared by DOR and the implementation consultants with ADB oversight.

c. Project cost, disbursements, borrower contribution, and conformance to schedule (as relevant to project performance)

The final cost of the Project was \$14.25 million, compared with \$12.80 million estimated during appraisal. The total cost comprised \$9.97 million in foreign currency including interest cost compared with \$8.70 million estimated at appraisal and \$4.28 million equivalent in local currency versus \$4.10 million at appraisal. The increase was largely due to delays between the preparation of tender documents and the start of construction, leading to further road deterioration. A slightly higher cost of consulting services was

¹ ADB. 2000. *Project Completion Report on the Road Development Project in Bhutan*. Manila; and ADB. 2000. *Project Performance Audit Report on the East-West Highway Maintenance Project*. Manila.

also a contributory factor. The Government financed \$3.83 million (27%) of the project cost compared with \$3.20 million estimated at appraisal (25%). Regarding disbursements, the loan utilization rate was 99.3% with only \$0.07 million (SDR0.05 million equivalent) cancelled (but not shown in the basic data).²

The loan was approved in October 2000 and was signed and became effective in November 2000. Physical implementation was scheduled to start in June 2001 and be completed by December 2004. The actual physical implementation started only in December 2002 and was completed in June 2005. The delay was caused mainly by three factors: (i) a 4-month delay in recruiting consultants was due to slow internal processing by the executing agency (EA) and delays in approval by ADB and in scheduling contract negotiations; (ii) a 9-month delay in procurement was associated with the need to hold prequalification of contractors twice due to a low passing rate during the first prequalification; and (iii) construction proceeded slowly due to initial difficulties in site management by relatively inexperienced contractors, bureaucratic delays in approval of suitable quarry sites, and limited availability of construction materials and equipment, even though some equipment was procured under the Project. To accommodate the delays, the Borrower—the Government of Bhutan—requested two extensions of the loan closing date, totaling 13 months.

d. Implementation arrangements, conditions and covenants, and related technical assistance

The implementation arrangements appear to have been appropriate and took into account lessons learned from previous ADB-funded road projects such as having the implementation consultants funded under the loan and their recruitment undertaken by the EA. The latter helped ensure a sense of ownership by the EA. Although DOR-seconded staff became more confident and effective during implementation, an anomaly was reported. Since the resident engineers were consultants and the site inspectors were seconded from DOR; in some areas, implementation of project activities was not coordinated. The specific areas and the effect of lack of coordination are not identified in the PCR.

All covenants were fully met at the time of the PCR mission.

A TA grant of \$954,000 for planning roads and strengthening management was attached to the loan and was completed in June 2002. The TA project was rated as successful by the TA completion report. The objectives of the TA were to (i) prepare the road sector master plan; (ii) improve the capacity of the Policy and Planning Division and DOR to plan and secure sustainable financing for the national road network and road maintenance programs, including a comprehensive database of the road asset inventory; (iii) train the staff of the Policy and Planning Division and DOR to use appropriate planning tools; and (iv) draft the proposed Road Act. The TA proved useful to DOR. It was used in preparing the 9th Five-Year Plan. The Road Act was adopted by the National Assembly in 2004. This legislation clearly defined (i) responsibilities and rights of road users and affected communities; (ii) construction, rehabilitation, maintenance, and use of roads, and safeguards against adverse environmental impacts on users and the community at large; (iii) compensation to be paid in acquiring land for road construction, including that for right-of-way; (iv) user levies to recover the cost of maintaining the national road network; (v) agency responsibilities for monitoring and enforcing the provisions of the legislation; and (vi) penalties for violating the road statutes. The Road Act was a significant step in improving the legal framework for the road sector.

e. Performance of the Borrower and Executing Agency

According to the PCR, the performance of the Borrower and the EA was satisfactory from the start. The project management office (PMO), established before appraisal, was fully staffed and functioning at the time of the ADB Inception Mission. The PMO was proactive and implementation issues were speedily resolved. There is no evidence to suggest otherwise.

² The original loan amount was 7.31 million special drawing rights (SDR) equivalent. At completion, the net loan amount was SDR7.26 million or \$10.42 million.

f. Performance of the Asian Development Bank

ADB was effective in preparing the Project, including consultations with the government, civil society, and stakeholders. Most of the lessons learned from previous ADB-funded road projects were taken into account. Participation during implementation was proactive and effective. The TA was well thought out and effective in instituting fundamental changes in the road sector.

4. Evaluation of Performance (evaluator assessment)

a. Relevance

The Project was relevant (see 3.a).

b. Effectiveness in achieving outcome

The Project was effective. A total of 328 km of roads was resealed. Road roughness was reduced by 19–44%; vehicle operating costs, by 19–38%; and travel time, by 25%. Traffic on the various road sections increased for all categories of vehicles. Maintenance costs were reduced.

c. Efficiency in achieving outcome and outputs

The Project was efficient. The calculated economic internal rate of return (EIRR) for the civil works component at appraisal was 32%, while the PCR EIRR was 19%. The main cause of the lower PCR value was a less-than-expected reduction in road surface roughness and a higher cost per kilometer. The still relatively rough surface could be a cause for concern as it could represent poor subsurface conditions, which could affect future maintenance requirements. The PCR does not mention reshaping, reconstructing, or strengthening project road sections. Surface treatments do not add strength, but sealing protects the road from the intrusion of water into the base course and earthworks. There are some questions regarding the calculation of the EIRR (section 9).

d. Preliminary assessment of sustainability

Sustainability is likely, e.g., at appraisal. The EA has been given the tools to plan road maintenance. Implementation and, therefore, sustainability of the outputs are a matter of future concern and depend largely on budget revenues and allocations, and how much and how often maintenance is required (see 4.c). Sustainability of the training and equipment components very much depends on DOR's commitment to sustaining them.

e. Impact (both intended and unintended)

No serious unintended impacts were identified. Nevertheless, the PCR noted that the growing number of people visiting the eastern part of the country is generating increased waste in the area. Local authorities must address the proper disposal of this waste to protect the environment.

5. Overall Assessment, Lessons, and Recommendations (evaluator assessment)

a. Overall assessment

Overall, the Project was successful. Delays were minor, and changes in scope were fully justified. Both the EA and ADB acted in a timely manner and showed the flexibility needed to complete a project with reasonable efficiency.

b. Lessons

Aside from the lessons given in the PCR, other lessons could be the following. First, the design of the Project was based on the project approach, but during implementation many aspects of the sector approach were used. One consequence of this is the expensive redesign costs, as conditions between the design and the start of civil works can change. During construction, designs have to be changed. Using a sector

approach³ during project preparation could provide the EA with a broader picture of the entire network and provide flexibility in certain agreed-upon parameters, thus reducing the need for ADB approval for every minor or significant change. Second, realistic implementation schedules should be prepared during appraisal. Although completion of physical works under the Project was delayed by just 16 months, there is scope for minimizing delays and arriving at more realistic schedules at appraisal.

c. Recommendations

- (i) Flexibility in the design and implementation of projects is essential when dealing with fluid situations such as rapidly changing conditions and rapid deterioration of physical attributes of a project, particularly road components. This suggests that a different approach to project design would be in order, e.g., a sector approach, which would allow flexibility in determining improvement level or a series of road improvement projects to properly design and do all improvement works in a consistent and sustainable manner across the network.
- (ii) To the extent possible, quarry and other material sites should be identified during detailed design and early steps taken to acquire the necessary approvals so as to avoid implementation delays.
- (iii) Road safety is an issue in every country. Bhutan is no exception. The detailed design should incorporate appropriate road safety components, and liaison between concerned agencies should be encouraged.
- (iv) Implementation of the various components of the Road Act should be followed up to ensure that appropriate rules and regulations are promulgated.
- (v) The capacity of DOR and contractors in project management and construction techniques should be further improved.

6. Monitoring and Evaluation Design, Implementation, and Utilization (evaluator assessment)

The design of the Project involved mainly civil works and the purchase of some equipment and training. Results are easily confirmed as such projects involve fixed assets and their performance can be easily confirmed by site visits. DOR is still a young agency and needs further development to become more effective.

7. Others (safeguards, including governance and anticorruption; fiduciary aspects)

Safeguards were built into the Project and its design. Implementation followed those safeguards. Environmental concerns were handled well, and no resettlement was required as the civil works were carried out within the existing right-of-way. The fiduciary aspects appear to have been well handled.

8. Ratings	PCR	OED Review	Reason for Disagreement/Comments
Relevance:	Relevant	Relevant	
Effectiveness in Achieving Outcome:	Effective	Effective	
Efficiency in Achieving Outcome and Outputs:	Efficient	Efficient	
Preliminary Assessment of Sustainability:	Likely	Likely	This depends on funding availability, good routine maintenance, traffic growth, and strength of the foundation.
Borrower and EA:	Satisfactory	Satisfactory	
Performance of ADB:	Satisfactory	Satisfactory	
Impact:	Positive	Positive	
Overall Assessment:	Successful	Successful	
Quality of PCR:		Satisfactory	

³ Using a sector approach does not necessitate using sector loans. The idea of using the sector approach at the preparation stage is to step out of the narrow confines of the project and look at the broader picture of network management. This approach could enable better sustainability of the project roads funded under ADB loans.

9. Comments on PCR Quality

Bases used:

- Quality and completeness of evidence and analysis to substantiate claimed ratings
- Consistency with PCR Guidelines (PAI 6.07)
- PCR candor and internal consistency; consistency of narrative/ratings with monitoring indicators, other data
- Candid, accurate consideration of exogenous factors (positive and negative), and attribution of results
- Extent to which lessons and recommendations are based on evidence and analysis

A few observations regarding the PCR are given below.

- The PCR does not evaluate the performance of the contractors. It only states that their performance improved.
- The PCR is silent on the performance of the equipment suppliers and the effectiveness of the pilot equipment-leasing program.
- The PCR is silent on whether the project road sections were reshaped, strengthened, or reconstructed to ensure a good foundation for the surface treatment.
- The effect of “lack of coordination” should have been spelled out (para. 14).
- The cancelled loan amount is not reflected in the Basic Data.
- The PCR could have been better edited.
- The PCR economic evaluation raises some questions. The first is how generated traffic was estimated. The second involves the use of only maintenance cost savings, which are shown to be stable during construction (instead of increasing as civil works progress) and then not quantified afterward; nor is there a column for maintenance costs. Finally, Table A9.4 states that the EIRR calculations are based on constant 2006 prices, yet Table A9.2 uses the same vehicle operating costs as used in the RRP which are end-1999 prices. These matters and their effect on the EIRR need to be clarified.
- The PCR could have been more comprehensive if some comparison with civil works costs in nearby countries had been made. Such comparison can ensure more realistic cost estimation for future projects.
- The design and monitoring framework has room for improvement: (i) the impact statement would be better if it showed outcomes such as an increased contribution of road improvement to the country’s economy; (ii) the international roughness indicator improvement is shown as an indicator of outcome but is actually an indicator of output; and (iii) the indicators of outcome should be reduction in travel times, increase in traffic, decrease in vehicle operating costs and so on.
- The design and monitoring framework is an evolving document. Since outputs and outcomes can change during implementation and variations approved, the document could be progressively revised to reflect that matter.

REGIONAL DEPARTMENT'S RESPONSE TO THE PROJECT COMPLETION REPORT VALIDATION REPORT

On 19 October 2007, Director, OED2, Operations Evaluation Department (OED), received the following comments from the Transport and Communications Division of South Asia Department.

On the "Efficiency in Achieving Outcome and Output" in relation with the maintenance costs, the actual annual budget for road maintenance is currently Nu60,000 per km per year. Road maintenance during the implementation period and 2 years after the completion of the project (2005) was not done for the section of the roads under this project. The maintenance cost savings during this period were considered as benefits attained because of the project. Starting from the third year after project completion, it was assumed that the maintenance cost per km of road per year in the "with project" and "without project" scenarios will be the same. Incremental maintenance cost ("with project" less "without project" scenario), therefore, during this period will be equal to zero. Thus, there was no column for maintenance cost in the EIRR computation.