



Completion Report

Project Number: 32058-03
Loan Number: 1928
October 2009

Pakistan: Punjab Road Development Sector Project

CURRENCY EQUIVALENTS

(as of 31 December 2008)

Currency Unit – Pakistan rupee/s (PRe/PRs)

		At Appraisal (30 September 2002)		At Project Completion (31 December 2008)
PRe1.00	=	¥2.08	or	\$0.0169
\$1.00	=	PRe59.00		¥122.65
¥1.00	=	PRe0.48		\$0.0081
				¥1.141 or \$0.0126
				PRe79.15 ¥90.33
				PRe0.88 \$0.1463

ABBREVIATIONS

ADB	–	Asian Development Bank
BER	–	bid evaluation report
CIWEC	–	M/s China International Water & Electric Co.
CWD	–	Communication and Works Department
EIRR	–	economic internal rate of return
FIDIC	–	Federation Internationale des Ingenieurs-Conseil
ICB	–	international competitive bidding
IDC	–	institutional development consultant
IRI	–	international roughness index
LIBOR	–	London interbank offered rate
NCB	–	national competitive bidding
PEC	–	project engineering cell
PPBME	–	project performance, benefit monitoring, and evaluation
PIU	–	project implementation unit
PMC	–	project management consultant
PMU	–	project management unit
PPER	–	project performance evaluation report
PPTA	–	project preparatory technical assistance
RAR	–	rural access road
RRP	–	Report and Recommendation of the President
TTC	–	travel time cost
VOC	–	vehicle operating costs

NOTES

- (i) The fiscal year (FY) of the Government of Pakistan and the provincial government ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2008 ends on 30 June 2008.
- (ii) In this report, "\$" refers to US dollars.

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BASIC DATA

A. Loan Identification

1.	Country	Pakistan
2.	Loan Number	1928
3.	Project Title	Punjab Road Development Sector Project
4.	Borrower	Islamic Republic of Pakistan
5.	Executing Agency	Communication and Works Department, Punjab
6.	Amount of Loan	¥18,396,800,000 (equivalent to \$150 million)
7.	Project Completion Report Number	PCR: PAK 1117

B. Loan Data

1.	Appraisal	
	– Date Started	3 April 2002
	– Date Completed	9 April 2002
2.	Loan Negotiations	
	– Date Started	29 September 2002
	– Date Completed	1 October 2002
3.	Date of Board Approval	31 October 2002
4.	Date of Loan Agreement	26 March 2003
5.	Date of Loan Effectiveness	
	– In Loan Agreement	26 June 2003
	– Actual	26 June 2003
	– Number of Extensions	–
6.	Closing Date	
	– In Loan Agreement	31 December 2008
	– Actual	31 December 2008
	– Number of Extensions	–
7.	Terms of Loan	
	– Interest Rate	London Interbank Offered Rate
	– Maturity (number of years)	15
	– Grace Period (number of years)	3
8.	Terms of Relending (if any)	
	– Interest Rate	London Interbank Offered Rate
	– Maturity (number of years)	15
	– Grace Period (number of years)	3
	– Second-Step Borrower	Not Applicable

9. Disbursements

a. Dates

Initial Disbursement	Final Disbursement	Time Interval
19 December 2005	5 August 2009	43 months, 18 days

Effective Date	Original Closing Date	Time Interval
26 June 2003	31 December 2008	66 months, 5 days

b. Amount (¥ '000)

Category or Subloan	Original Allocation	Net Amount Available	Amount Disbursed	Undisbursed Balance
Civil Works				
-Provincial Highways	5,837,900	5,837,900	5,163,294	674,606
-Rural Access Roads	9,163,100	9,163,100	2,784,393	6,378,707
Equipment				
-Institutional Development	44,200	44,200	–	44,200
-Provincial Highways	154,500	154,500	–	154,500
Incremental Administration	171,700	171,700	5,282	166,418
Consulting Services				
-Institutional Development	111,600	111,600	–	111,600
-Project Management & Coordination	137,400	137,400	–	137,400
-Construction Supervision of Provincial Highways	317,600	317,600	9,9421	218,179
-Design & Construction Supervision of Rural Access Roads	583,800	583,800	59,896	523,904
Front-End Fee	184,000	184,000	183,968	32
Interest and Commitment Charge	466,000	466,000	466,000	–
Unallocated	1,225,000	1,225,000	–	1,225,000
Imprest Account	–	–	227	-227
Total	18,396,800	18,396,800	8,762,481	9,634,319

10. Local Costs (Financed)

- Amount (\$) million	54.7
- Percent of Local Costs	47.0
- Percent of Total Cost	24.6

C. Project Data

1. Project Cost (\$ million)

Cost	Appraisal Estimate	Actual
Foreign Exchange Cost	105.6	64.9
Local Currency Cost	116.5	54.7
Total	222.1	119.6

2. Financing Plan (\$ million)

Cost	Appraisal Estimate	Actual
Implementation Costs		
Borrower Financed	72.1	36.8
ADB Financed	146.2	78.7
Other External Financing	–	–
Total	218.3	115.5
Interest During Construction Costs		
Borrower Financed	–	–
ADB Financed	3.8	4.1
Other External Financing	–	–
Total	222.1	119.6

ADB = Asian Development Bank

3. Cost Breakdown by Project Component (\$ million)

Component	Appraisal Estimate	Actual
A. Base Cost		
1. Institutional Development Component		
a. Consulting Services	1.3	–
b. Equipment	0.9	–
2. Road Improvement		
a. Land Acquisition and Resettlement	2.8	0.7
b. Provincial Highways Improvement	68.0	69.7
c. Rural Access Roads Improvement	113.2	41.2
3. Axle Load Control	2.8	0.0
4. Road Safety-Pilot Accident Reporting Center	0.2	0.0
5. Consulting Services		
a. Project Management Consultant	1.6	0.1
b. Construction Supervision-Provincial Highways	3.5	1.3
c. Detailed Design and Construction Supervision-Rural Access Roads	6.8	0.8
6. Incremental Costs	1.4	0.1
Subtotal (A)	202.5	113.9
B. Contingencies		
1. Physical	7.7	–
2. Price	6.6	–
Subtotal (B)	14.3	–
C. Front-End Fee	1.5	1.6
D. Interest During Construction	3.8	4.1
Total	222.1	119.6

4. Project Schedule

Item	Appraisal Estimate	Actual
Consulting Services		
Consultant Selection	Jan to Mar 03	Mar 03 to May 08
Consultant Services		
Institutional Development Consultants	Aug 03 to Jun 06	Not fielded
Project Management Consultant		
Subproject preparation	Apr 03 to Mar 04	Apr 03 to Mar 07
Project Management	May 03 to May 08	May 08 to Dec 08
Provincial Roads Consultant	Apr 03 to Dec 07	Jul 05 to Dec 08
Rural Access Road Consultant		
Detailed Design	Jul 03 to Sep 04	Sep 05 to Jun 07
Construction Supervision	Apr 03 to Jun 08	Sep 07 to Dec 08
Provincial Roads		
Contract Procurement	Jan 03 to Jun 03	Jul 05 to Oct 06
Contract Works	Jul 03 to Dec 06	Nov 06 to Dec 08
Rural Access Roads – Core Roads (Phase I)		
Contract Procurement	Jan 03 to Jun 03	Sep 05 to May 08
Contract Works	Jul 03 to Dec 06	Dec 07 to Dec 08

5. Project Performance Report Ratings

Implementation Period	Ratings	
	Development Objectives	Implementation Progress
30 Oct 2002 to 30 Nov 2006	S	S
30 Dec 2006 to 29 Jan 2007	S	PS
30 Jan 2007 to 31 Dec 2008	S	S

S = Satisfactory, PS = partly satisfactory

D. Data on Asian Development Bank Missions

Name of Mission	Date	No. of Persons	No. of Person-Days	Specialization of Members ^a
Inception	8 Aug 2003	2	17	a, b
Review 1	30 Aug 2004	1	9	a
Review 2	5 May 2005	2	10	a, b
Review 3	10 Nov 2005	2	10	a, b
Review 4	22 Mar 2006	1	3	a
Review 5	13 Jun 2006	1	5	a
Mid-term review	12 Dec 2006	5	37	a, b, c, d, e
Review 6	12 Sep 2007	1	2	a
Review 7	14 Nov 2007	1	6	f, g
Review 8	24 Jan 2008	1	6	f
Review 9	5 Mar 2008	1	1	b
Review 10	21 Jul 2008	4	20	a, b, f, g
Review 11	26 Jan 2009	2	6	a, f
Pre-Project Completion Review	10 Jun 2009	2	8	b, f,
Project Completion Review	13 Jul 2009	2	16	b, f

^a a = Senior Project Management Specialist, b = Project Analyst, c = Senior Safeguard Policy Specialist; d = Resettlement Specialist; e = Transport Economist/Staff Consultants; f = Project Officer (Transport), g = Social Safeguard Compliance Officer.

I. PROJECT DESCRIPTION

1. The Government of Pakistan borrowed \$150 million equivalent from the Asian Development Bank (ADB) to implement the Punjab Road Development Sector Project. The loan was classified as “poverty intervention” and the theme was “economic growth.” The initial environmental examination classified the Project as Category B, mainly focusing on the rehabilitation of roads and highways.

A. The Objectives of the Project

2. The objectives included (i) improving the rural access road (RAR) network, increasing access to markets and social services for rural populations, and reducing rural poverty; (ii) improving important provincial highways to facilitate trade and provide better income and employment opportunities; (iii) supporting organizational reforms and institutional strengthening of the Punjab Communication and Works Department (CWD), including devolution and expansion of e-governance; (iv) preserving road infrastructure and improving assets management by increasing the planning and budgeting capacity at the CWD; (v) improving the process of road maintenance, creating a provincial road maintenance funding mechanism; and (vi) increasing private sector participation in road infrastructure development and maintenance.

B. Project Components and Scope

3. The Project had three main components: (i) developing institutional capacity and reforms at the CWD and the districts, (ii) rehabilitating provincial highways in the primary road network, and (iii) rehabilitating RARs in the secondary road network.

a. Institutional Development Component. This component targeted (i) developing the existing road asset management system at the CWD and expanding it to district administrations, (ii) providing essential information technology, and (iii) introducing the rehabilitate-operate-transfer concession and maintenance contracts.

b. Provincial Highway Component. This component targeted (i) rehabilitating 303 kilometers (km) of provincial highways, (ii) installing weigh bridges on the rehabilitated provincial highways, (iii) improving road safety and axle-load control by improving highway design and operations and undertaking road-safety-design audits, (iv) installing a pilot accident reporting center, and (v) providing consulting services for supervising construction.

c. RAR Component. This component included (i) rehabilitating 1,100 km of RARs, (ii) improving road safety by improving road design and undertaking road safety design audits, and (iii) providing consulting services for supervising construction.

C. Implementation Arrangements

4. The Project was implemented through a project engineering cell (PEC) within the Punjab CWD, headed by a project director and supervised by the chief engineer of projects. A steering group chaired by the secretary of CWD was in charge of implementing the project's policy framework and action plan for improving the road network in Punjab.

D. Project Cost and Financing Plan

5. At appraisal, the total estimated project cost was \$222.1 million equivalent. The foreign exchange cost was \$105.6 million and the local currency cost was \$116.5 million. ADB offered \$150 million (67.5% of total project cost) while the Government of Punjab contributed \$72.1 million (32.5% of total project cost).

E. Loan Amount, Terms, and Utilization Period

6. ADB lent ¥18.4 billion (\$150 million equivalent) from ADB's ordinary capital resources through a LIBOR-based lending facility with a 15-year term and a 3-year grace period. The interest rate was determined through ADB's LIBOR-based lending facility. A commitment charge of 0.75% per annum, a front-end fee of 1%, and other conditions set forth in the loan and project agreements applied. The loan became effective on 26 June 2003 and closed on 31 December 2008.

F. Loan Fund Utilization

7. At project completion, loan funds accounted for 37.3% of the total project cost, verses 67.5% estimated at appraisal. The sizable difference was due mainly to variations in the foreign currency exchange rate, but was also partly due to the scope of the Project being reduced during implementation. At appraisal, the value of the ADB loan was \$150 million, and became \$183.9 million on 9 July 2009. At appraisal, ADB financing covered the entire foreign exchange cost of \$105.6 million, plus 38% of the local currency cost of \$44.4 million. At loan closing, ADB contributed \$65 million (54% of project cost) in foreign currency and \$18 million (15% of project cost) in local currency.

G. Results of the Rehabilitation Program

8. Table 1 compares the projected outputs of the Project with actual results:

Table 1: Scope at Appraisal Versus Actual Results

Package	Road Section	Appraisal		Loan Closing	
		Length (km)	Cost (million \$)	Length (km)	Cost (million \$)
P-1	Pindi Bhattian–Chiniot–Kamalpur	71.3	17.3	59.5	7.6
P-2	Jhang–Shorkot	36.5	13.8	35.3	5.7
	Shorkot–Kabirwala	7.0	–	–	–
	Kabirwala–Mahni–Sial	13.8	–	–	–
P-3	Chiniot–Sargodha–Khushab	82.4	19.7	94.0	28.2
P-4	Jhang–Toba Tek Singh–Chichawatni	91.0	20.0	89.7	28.1
R-1	Shorkot City–Shorkot Cantt	18.0	2.0	17.4	1.7
R-2	Mian Channu–Talamba–Abdul Hakeem	10.5	1.1	24.9	–
R-3	Bahawalnagar–Bhukan Pattan	15.3	1.7	16.9	2.6
R-4	Phalia–Kuthala Sheikhan	20.6	2.2	16.2	2.5
R-5	Sheikhupura–Hafizabad	16.8	1.8	13.1	1.9
R-6	Rasool Barrage–Mandi–Malikwal–Bhera	13.2	1.4	74.6	7.4
R-7	Phalia–Bherowal–Warryam–Sial Morr–Ahmed Nagar	–	–	101.1	12.5
R-8	Girotd–Adhikot–Kaloort Kot	–	–	71.9	10.0
	Total	396.4	81.0	614.6	108.2

Source: RRP, and data provided by the project engineering cell.

II. EVALUATION OF DESIGN AND IMPLEMENTATION

A. Relevance of Design and Formulation

9. The project design and outputs were consistent with the Government of Pakistan's transport sector policy framework and its strategic objectives. They were also consistent with ADB's country partnership strategy and transport sector operational policy. The selected roads and highways were important provincial and rural access links that ensured (i) greater mobility, (ii) reduced transportation cost, (iii) travel time savings, (iv) improved road safety, (v) greater access to amenities, (vi) availability of reliable road infrastructure, (vii) enhanced connectivity of rural populations with major economic centers and social services, (viii) extended growth opportunities, (ix) better employment and income opportunities for the poor population, and (x) ultimately reduced poverty through accelerated economic growth.

10. **Project Rationale and Design.** The Project was designed taking into account (i) sector performance; (ii) major sectoral issues such as low road density, poor accessibility, and low serviceability; (iii) challenges such as high transportation demand, high vehicle operating costs, and financial constraints; (iv) available opportunities; and (v) prioritized sector interventions. The financial assistance was closely aligned with Pakistan's transport sector development policy, the Government of Punjab's five-year road sector development program,¹ and with ADB's country partnership strategy and country strategy program update of 2002.² The financial assistance was aimed at (i) providing an efficient and cost-effective road transportation system, (ii) improving road infrastructure and providing the poor population with better access to roads, (iii) accelerating economic growth through sustainable road sector development, and (iv) reducing poverty. The Project also aimed to mitigate constraints resulting from (i) insufficient financial resources, (ii) rapidly growing road transportation demands, (iii) exponential traffic growth, (iv) inadequate road maintenance and road asset preservation, (v) a poor road management system, (vi) rapidly deteriorating roads, (vii) an outdated policy framework, and (viii) limited institutional capacity.

B. Project Outputs

11. The road rehabilitation and institutional development components targeted (i) rehabilitating about 303 km of provincial highways and 1,100 km of RARs, (ii) implementing roads subsector policy framework and agreed-upon action plan, and (iii) reinforcing the CWD's core road management functions through restructuring, preparing the CWD to gain the status of an authority or corporation, expanding the road asset management system, improving road maintenance strategy, establishing a road maintenance fund, introducing measures for improved axle-load control and road safety, expanding private sector participation, and building capacity for environment, social assessment, and resettlement planning.

12. **Project Benefits.** The achieved quantifiable benefits include vehicle operating cost savings and passenger time savings. The interventions contributed to poverty reduction through (i) ensuring participation of the poor in economic activities, (ii) improving the poor's access to social services, and (iii) creating additional income and employment opportunities by stimulating economic growth.

¹ Government of Punjab. 2001. *Five-year Road Sector Development Program*. Lahore.

² ADB. 2002. *Pakistan: Country Strategy and Program 2002-2004*. Manila.

13. **Project Results.** A comparison of the Project's planned versus actual outputs shows that: (i) out of 303 km provincial highways and 1,100 km of RARs planned, 140 km of provincial highways and 310 km of RARs were completed, and (ii) limited progress was made in achieving targets set forth under the institutional reform and capacity building.

14. **Important Developments.** After substantial start-up delays, limited progress was achieved during the 3.5-year project period. The key factors that affected progress included (i) late establishment and mobilization of the PEC; (ii) delayed procurement of civil works and consultancy contracts; (iii) the PEC, consultants', and contractor's insufficient staffing; and (iv) the Government of Punjab's lack of interest and commitment in implementing the project. Procurement of RAR contracts did not take place until November 2007. By the loan closing the Executing Agency was able to accomplish only 30.5% of the RAR component. A portion of provincial highway contract for Jhang–Shorkot, Shorkot–Kabirwala, Kabirwala–Mahni–Sial was deleted because of complex land acquisition issues. The performance of international contractors and consultants was poor. The PEC confronted challenges of insufficient staffing, frequent staff changes, and short staff-turnover period. Significant project implementation efforts did not begin in earnest until January 2008. However, the Executing Agency focused on road construction and achieved only 42% overall progress until loan closing.

15. The CWD's key departmental decision to mainly focus on the road rehabilitation works diverted the Executing Agency's attention away from the institutional development component; as a result, very limited progress was achieved in this component. Some of the constraints contributing to limited progress under the institutional development component included (i) consultants' limited capacity, (ii) the CWD's poor planning, (iii) the Government of Punjab's lack of interest, and (iv) the CWD's lack of skills to develop a meaningful policy and reform program.

16. Under the institutional development component the Executing Agency achieved only few milestones including (i) establishing two weigh stations on major provincial highways, (ii) using safety design procedures in detailed engineering design, (iii) increasing road safety awareness among the general public living in the vicinity of construction sites, (iv) gradually increasing budgetary allocations for road maintenance, and (v) providing in-house environment and resettlement training to the project staff. The CWD has conceived a broad institutional and policy reform program to address the capacity and institutional reform weaknesses.

17. Even with the reduced scope, the Project remained relevant and consistent with the sector's strategic objectives. The Government of Punjab continues to consider road development among its top priorities. The Government of Pakistan's VISION 2030³ sees road infrastructure improvement as a key strategy for accelerating trade and economic growth. ADB's Country Partnership Strategy (2009-2013)⁴ continues to emphasize the importance of road infrastructure and the need to improve the pace of road development.

C. Project Cost

18. The total estimated project cost at appraisal was \$222.1 million, with ADB financing 67.5% of project costs and the Government of Punjab contributing 32.5%. The Project comprised \$105.6 million (47.5% of the total project cost) in foreign exchange and \$116.5 million (52.5% of the total project cost) in local currency.

³ Islamic Republic of Pakistan, Planning Commission. 2006. *Strategic Directions to Achieve VISION 2030*. Islamabad.

⁴ ADB. 2009. *Pakistan: Country Partnership Strategy 2009-2013*. Manila.

19. The estimated cost of civil works at appraisal was \$184.0 million. The actual cost was \$111.6 million. The increase in road rehabilitation unit costs was mainly due to the introduction of design improvements, higher-than-expected bid values, higher inflation than expected, and additional price escalation paid due to delayed implementation. The increased pavement thickness for provincial highways realized to prevent premature pavement failure due to increased traffic volume, heavy vehicular loading, marginal reliability of design, and construction quality variations also contributed to the increase in the unit cost of construction.

20. The total estimated consulting cost at appraisal was \$13.2 million. The incurred consulting cost was \$2.2 million. The savings in consulting costs were mainly attributable to the failure of consultants to provide sufficient staff, the failure of the Executing Agency to mobilize an institutional development consultant (IDC), and the late appointment of the project management consultant (PMC). The consulting staff change rates did not escalate due to the deletion of the escalation clause from the contract. The estimated road safety and axle load control costs at appraisal were \$3.0 million; however, no expenditures were incurred. Appendix 1 provides the project cost breakdown for estimated and actual expenditures.

D. Disbursements

21. Detailed estimates for loan disbursements were not prepared at appraisal. However, the implementation schedule provided a timeline for projected expenditures from June 2003 through December 2008. A comparison of projected disbursements with actual disbursements is presented in Appendix 2. The evident disbursement delays can be mainly attributed to (i) delayed procurement; (ii) late deployment of the PEC, the contractors, and the consultants; (iii) unanticipated delays in construction activities; (iv) extra time consumed by the processing of withdrawal applications; and (v) other unaccounted-for delays.

22. The imprest account facility improved the disbursement rate. Increasing the imprest account ceiling greatly helped to (i) reduce the processing time of payments, (ii) ensure timely release of payments, and (iii) ensure quicker implementation of small works. Disbursement progress improved sharply during the final year of the Project. The imprest account also contributed to the timely disbursement of incremental and other petty expenses. Appendix 3 presents a comparison between projected contract awards and disbursement and actual contract awards and disbursement.

E. Project Schedule

23. The project implementation period, including preconstruction, was 6 years. The schedule for awarding provincial and core RAR contracts was through June 2003. The non-core RAR subprojects were packaged into three different batches. The scheduled completion of major activities was targeted for June 2008. A comparison of the appraised and actual implementation schedule is in Appendix 4.

24. At loan closing, the physically accomplished progress of the provincial highway subcomponent was 47%, while the progress of the RAR subcomponent was 90%. The major factors contributing to delayed implementation included (i) the Government of Punjab's lack of interest in implementing the Project; (ii) inadequate planning and implementation arrangements; (iii) poor preparation and late initiation of most of the Project's critical activities; (iv) late mobilization of consultants, resulting in delayed completion of the consultants' dependent activities; (v) delayed procurement of civil works contracts, mainly because of poor preparation, excessive revisions of bidding documents, and long review processes; (vi) lack of interest of

pre-qualified contractors in the bidding process; (vii) late mobilization, poor performance, and delayed implementation of civil works contracts, leading to delays and construction cost overruns; (viii) longer processing procedures, and slow decision making at critical stages; (ix) inadequate staffing and inefficient performance of the consultants; and (x) impractical unit rates for road construction caused by large implementation delays.

25. Because of the above constraints, the project schedule proved optimistic. The completion periods for major milestones in the project plan were inadequate. The basic assumption of procurement periods was impractical. The CWD's decision to cancel engagement of the IDC and its late appointment of the PMC added to the delays. The real capacities and capabilities of the PEC, the contractors, and the consultants were limited. Lack of commitment, readiness, and capacities remained predominant issues and contributed to further implementation delays.

F. Implementation Arrangements

26. The project implementation team consists of (i) a high-level project steering committee, (ii) the chief engineer of projects, (iii) the project director, (iv) the PEC staff, and (v) extensive consulting support. The role of each is described below:

a. The Executing Agency, the CWD, the chief engineer of projects, and the project director had overall responsibility for implementing the Project. The CWD's secretary guided implementation of the institutional development component, conforming to the action plan and the project's policy framework.

b. The PEC was responsible for project management, contract administration, and consultant supervision. Major tasks included (i) overall project planning and supervision of implementation; (ii) timely recruitment of consultants; (iii) supervision of contracts, contract management, and loan administration; (iv) supervision of the monitoring, evaluation, and reporting process; (v) support for the reform and capacity building subcomponents; (vi) ensuring compliance with ADB's policies, procedures, and guidelines; and (vii) ensuring compliance with the loan covenants.

c. The PMC was responsible for assisting the PEC in project management, supervision of short-term consultants, administering the IDC contract, and project preparatory work. The PMC was also responsible for preparing project documentation and implementation manuals. Construction supervision consultants were responsible for supervising the civil works contracts, implementing planned activities in a timely manner, ensuring quality, confirming specifications, and administering contracts in accordance with Federation Internationale des Ingenieurs-Conseil (FIDIC) conditions. The IDC was responsible for helping the PEC and the CWD in planning, programming, and capacity-gap assessment, developing and imparting capacity building programs, ensuring effective management of project components and resettlement plans, and ensuring timely preparation of subprojects.

27. Generally, the Project implementation arrangements envisaged at appraisal were adequately designed for the entire project scope but did not fully materialized during actual implementation. The selected subprojects complied with the well-defined subproject selection criteria and also with the overall objectives of the Project. The following shortcomings were observed during project implementation: (i) insufficient attention given to details, inadequate planning, and lack of coordination; (ii) limited guidance from top management and fewer

meetings of the project steering committee during the 6 years; (iii) staffing problems at the PEC, including discontinuity, inconsistency, and lack of proficiency; (v) low dedication and commitment of the project team; (vi) failure to employ the IDC and belated employment of the PMC; (vii) failure of consultants to provide adequate staff to supervise the Project and as a result, the quality and performance of the consultants' work was poor; (viii) high turnover of managerial and technical staff of the consultants; and (ix) the PEC and the consultants' inefficiency in resolving technical, land acquisition, and resettlement issues. Based on the above, the overall project implementation arrangements are rated as partly successful. Appendix 5 provides the chronology of important events related to project implementation.

G. Conditions and Covenants

28. The Government of Punjab and the Executing Agency partly complied with the standard loan covenants of (i) hiring the consultants and the contractors, (ii) availability of land, (iii) timely provision of counterpart funds, (iv) submission of audit reports, and (v) submission of the government's project completion report. The covenants related to the PEC and consultant staffing and reporting were partly complied. All other covenants (environmental, social, financial, economic) were partly satisfactory. Appendix 6 provides details on compliance with the covenants.

H. Related Technical Assistance

29. No technical assistance was associated with the loan.

I. Consultant Recruitment and Procurement

1. Consultant Recruitment

30. The international and national consultant selection was in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time) using quality-and cost-based selection procedures. It complied with the provisions of the Loan Agreement and the conditions stated in the report and recommendation of the President (RRP).⁵ The CWD included relevant sections of ADB's *Anticorruption Policy* (1998, as amended to date) in all invitations, bidding documents and contracts. The CWD only employed the staff positions considered essential. Table 2 provides details regarding the consultant procurement process for each consultancy contract.

Table 2: Consultant Procurement Process

Consultancy Service	Expression of Interest Received	Prequalified	Submission of Proposal	Responsive Proposals
IDC	Not implemented			
PMC	14 firms/JVs	6 firms	3 firms	3 firms
Construction Super-PH	5 firms/JVs	4 firms/JVs	3 firms	3 firms
Design &	10 firms/JVs	5 firms (section 1)	4 firms (section 1)	4 firms (section 1)

⁵ ADB. 2000. *Report and Recommendation of the President to the Board of Directors on Proposed Loan to the Islamic Republic of Pakistan for the Punjab Road Development Sector Project*. Manila.

Construction Super RAR		7 firms (section 2)	6 firms (section 2)	6 firms (section 2)
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JVs = Joint Ventures, IDC = Institutional development consultants, PH = provincial highways, PMC = project management consultant, RAR = rural access roads.

Source: project engineering cell.

31. At appraisal, the overall estimated consulting inputs were 176 person-months for international consultants and 7,100 person-months for domestic consultants. A comparison of consultancy resources used against the planned inputs is presented in Table 3 below:

Table 3: Comparison of Consultant Input Planned vs. Actual

Consultancy Component	Employed Firm	Planned Consulting Inputs		Employed Consulting Inputs	
		Foreign	Local	Foreign	Local
IDC	Not engaged				
PMC	Lee International	6.0	84.5	–	35.8
Design and Construction Supervision of PH	Snowy Mountain Engineering Corporation International Pty Ltd.	70.0	2,570.0	40.5	1,513.2
Design and Construction Supervision of RAR	Indus Associated Consultants (Pvt) Ltd.	–	1,705.0	–	1,163.0
Design and Construction Supervision of RAR	Associate Consulting Engineers-ACE (Pvt.) Ltd.	–	1,431.0	–	522.0
Total		76.0	5,790.5	40.5	3,234.0

IDC = institutional development consultants, PMC = project management consultant, PH = provincial highways, RAR = rural access roads.

Source: project engineering cell.

2. Procurement

32. As planned at appraisal, goods, services, and civil works contracts were procured in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). Four provincial highways civil work contracts were awarded following international competitive bidding (ICB) procedures among pre-qualified bidders. Initially, the RAR contracts were awarded using national competitive bidding (NCB) among prequalified bidders, but later, because of poor participation among prequalified bidders, post-qualification procedures were used. The goods contracts were procured through shopping procedures. The CWD included relevant sections of ADB's *Anticorruption Policy* (1998, as amended to date) in all invitations, bidding documents and contracts. Expression of interest for prequalification of ICB and NCB contracts were invited on 10 February 2003 and 10 May 2005. The prequalification process completed on 24 August 2004 and 28 November 2005 respectively. The response to the prequalification request was poor and ADB approved 8 firms for ICB packages and 33 firms for NCB packages. A comparison of appraised costs with actual costs is presented in Table 4.

Table 4: Comparison of Contract Packages – Appraised vs. Actual

Package No.	Contracts	Appraisal Estimate	Bid Received	Actual Contract Value	% Difference
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<u>ICB Civil Works</u>					
P-1	Pindi Bhattian–Chiniot–Kamalpur	17.3	22.7	22.6	+30.6
P-2	Jhang–Shorkot– Kabirwala– Mahni–Sial	13.8	33.3	30.2	+118.8
P-3	Chiniot–Sargodha–Khushab	19.7	39.9	39.9	+102.5
P-4	Jhang–T.T. Singh–Chichawatni	20.0	37.4	37.4	+87
<u>NCB Civil Works</u>					
R-1	Shorkot City–Shorkot Cantt	2.0	3.8	3.7	+85
R-2	Mian Channu–Talamba–Abdul Hakeem	2.8	5.1	5.1	+82.1
R-3	Bahawalnagar–Bhukkan Pattan	2.2	4.4	4.1	+86.4
R-4	Phalia–Kuthiala–Sheikhan	1.8	3.0	2.9	+86.4
R-5	Sheikhupura–Hafizabad	1.4	3.5	3.5	+150
R-6	Rasool Barrage–Mandi–Malikwal– Bhera	0.0	13.9	13.7	
R-7	Phalia–Bherowal–Warryam–Sial Morr Ahmed Nagar	–	16.8	16.5	–
R-8	Girof-Adhikot–Kaloor Kot	–	12.8	12.4	–
	Goods	–	–	–	–

ICB = international competitive bidding, NCB = national competitive bidding
Source: RRP, and project engineering cell.

J. Performance of Consultants, Contractors and Suppliers

1. The Consultants

33. The consultants' overall performance is assessed as partly successful. Consultancy inputs produced few benefits compared with targets at appraisal. The Executing Agency noted the following deficiencies in consultant performance: (i) inconsistency, discontinuity, and high staff turnover; (ii) inadequate quality and qualification of replacements; (iii) insufficiency of staff support at subproject level; (iv) consultants' indolent management and poor performance; (v) low standard of consulting services; (vi) delays in decision making and approval processes, with minimal feedback to the client; and (vii) poor quality and inadequate content and context of progress monitoring reports.

34. The CWD noted some serious engineering design issues during project execution. The construction supervision at subproject sites were substandard. In some cases, insufficient staff was employed for supervision of geographically widespread civil works contracts, resulting in weak administration and poor quality of works. The local consultants performed better than the international consultants. Generally, the international consultants failed to provide staff in a timely, consistent manner. Staff turnover was high and the staff that was provided demonstrated a lack of effort. While the local consultants performed better, however, their work was also imperfect. Meanwhile, the PMC's lead international consultant did not join the team because of security concerns. The Government of Punjab rated the performance of the PMC as poor and substandard. The consultants faced difficulties in retaining experienced and qualified staff because the contract conditions did not allow for wage increases to account for inflation.

2. The Contractors

35. The Government of Punjab found it difficult to attract international and national contractors at prequalification. At prequalification stage, four international and 58 national civil

works contractors showed interest and three international and 38 national civil works contractors were prequalified. Participation of prequalified contractors in the bidding process was poor. During three out of four ICB bidding processes, only a single bid was received. All bids except one came in higher than the projected amount. Domestic contractors initially showed some interest in bidding, but later, because attractive opportunities cropped up elsewhere, their interest ebbed. The Executing Agency adopted post-qualification procedures for awarding the balance of contracts.

36. **Overall Performance of Contractors.** The overall performance of the civil works contractors remained partly successful. Generally, the contractors had limited skills for (i) proper planning and executing the works; (ii) managing the working capital; (iii) retaining efficient human resources; (iv) managing consistent supply of construction materials; (iv) maintaining efficiency of equipment and machinery; and (v) dealing with the security issues (in some of project areas). Most of the contractors relied heavily on future loan extensions, which history has shown to add inordinate construction delays to transport (including road) loans. After realizing that a loan extension would not be forthcoming, contractors extended significant efforts to make up for lost time, and the rate of progress improved sharply. Table 5 presents the analysis.

Table 5: Contract Time Extensions and Additional Costs

Package No.	Package Name	Contractor	Completion of Scope as % Increased	
			Additional Time	Additional Cost
A. Provincial Highways				
P-1	Pindi Bhattian-Chiniot-Kamalpur	Alkhan Construction Co.	4 months	PRs 41.2 million
P-2	Jhang-Shorkot, Shorkot-Kabirwala and Kabirwala-Mahni Sial	China Intl. Water & Elec. Corp.	12 months	PRs 15.4 million
P-3	Chiniot-Sargodha-Khushab	China Intl. Water & Elec. Corp.	9 months	PRs 348.5 million
P-4	Jhang-Tota Tek Singh-Chichawatni	China Intl. Water & Elec. Corp.	9 months	PRs 317.6 million
B. Rural Access				
R-1	Shorkot City-Shorkot Cantt	Tarmac Pak & Co.	Terminated	PRs 23.7 million
R-2	Mian Channu-Talamba-Abdul Hakeem	Two packages (2 contractors)	6.5 months	PRs 20.1 million
R-3	Bahawalnagar-Bhukkan Pattan	Sarwar & Co.	6.5 months	PRs 20.1 million
R-4	Phalia-Kuthiala-Sheikhan	Buildeco Pakistan (Pvt) Ltd.	5.5 months	PRs 35.8 million
R-5	Sheikhupura-Hafizabad	M. F. Karim Construction Co.	8.5 months	PRs 21.1 million
R-6	Rasool Barrage-Mandi-Malikwal-Bhera	Five packages (5 contractors)	6.8 months	PRs 97.3 million
R-7	Phalia-Bherowal-Warryam-Sial Morr	Seven packages (7 contractors)	4.8 months	PRs 154.2 million
R-8	Girotd-Adhikot-Kaloor Kot	Six packages (6 contractors)	11.3 months	PRs 106.8 million

Source: project engineering cell.

37. **ICB Contractors.** All four ICB contractors failed to complete their contracts within the original contract period. The Executing Agency allowed some variations and extensions for individual contracts. The overall performance of the ICB contractor on P-1 remained unsatisfactory; this was mainly due to a lack of interest, poor planning skills, inadequate human resources, insufficient working capital, and some contractual issues. The overall performance of the P-2, P-3, and P-4 contracts was also unsatisfactory. Progress remained behind schedule during the entire period of implementation. Difficulties such as financing shortfalls, materials shortfalls, and lack of interest were observed. Prolonged land acquisition issues held up the award of the P-2 contract for a considerable period; this contract was ultimately awarded on the

government assurance that any incomplete work after the loan closing will be completed through 100% government's financing.

38. The consultants allowed scarification of long stretches of existing highways and ICB contractors were unable to meet the construction schedule, which resulted in prolonged construction activities over a substantial road length. Traffic and the population living in the vicinity of these provincial highways remained affected until December 2008, when the asphalt layers were applied. The measures for road signage, traffic, and environmental management were insufficient initially, but later improved. Project site management remained partly satisfactory.

39. **Domestic Contractors.** The implementation period for the domestic civil works contracts was limited. The overall performance of the domestic contractors, with few exceptions, was satisfactory. The contractors responded to their work programs with high commitment, even taking into account constraints such as the financing shortfall, high inflation, and shortages of materials and labor. Contractors worked extended hours, employed added personnel, and deployed additional resources to achieve the difficult targets. However, they lacked proper project planning, resources allocation, financial management, and project administration skills. Road-signage, traffic, and environmental management measures were insufficient initially, but later improved. Project site management was partly satisfactory. The traffic and the population in the vicinity were relatively less affected compared with those affected on the ICB contracts. Project site management was partly successful.

40. **Suppliers.** The Executing Agency only procured the office supplies and accessories through qualified local suppliers. The performance of suppliers was satisfactory. Procured items were supplied on time and conformed to the approved specifications. Nonetheless, the performance of the contractors' suppliers was partly satisfactory. Problems encountered included (i) delayed payment by contractors, (ii) materials shortages, (iii) high inflation and excessive increases in unit prices, (iv) significant increase in the price of diesel and labor, and (v) immediate demands and short supply period for delivery.

K. Performance of Borrower and Executing Agency

41. The borrower (the Government of Pakistan) vested implementation responsibilities with the Government of Punjab. The Government of Punjab and the Punjab CWD had considerable experience in constructing, rehabilitating, and maintaining provincial and district roads, bridges, and other road facilities. Being the primary communication department of the Punjab, the CWD had sufficient planning, management, and contract management expertise. It had sufficient experience working with national and international contractors and consultants as well. The CWD's past track record shows their deep interest and vigor in project implementation.

42. The overall performance of the Government of Punjab and the CWD is assessed as partly successful. Important factors impeding the performance included (i) limited supervision and commitment of the Government of Punjab and the CWD; (ii) influenced and unpopular decision making at the CWD; (iii) limited guidance, reviews, and inputs provided by the steering committee; (iv) late initiation of serious implementation efforts by the PEC's; (v) delayed activities, failure to make up for lost progress, failure to achieve project targets; (vi) inadequate and limited knowledge of ADB's processes, procedures, and guidelines; (vii) inadequate consistency, continuity, and weak composition of the CWD and the consultants' teams; (viii) slow resolution of issues and late decision making by the steering committee and the PEC ; (ix)

considerable processing delays at the Government of Punjab and the PEC levels, which improved later; and (x) prolonged land acquisition issues at the PEC through March 2008.

L. Performance of the Asian Development Bank

43. ADB's overall performance was partly successful. ADB sent eleven review missions and two project completion missions, offered advice, shared critical analysis, made recommendations for improvement, assisted and advised on planning, procurement, construction management, compliance with loan covenants, contract administration, compliance with social safeguards, environmental mitigation measures, resettlement policies, and resolution of technical issues. The Executing Agency observed some delays in the processing of procurement and payments. The Executing Agency has assessed ADB's performance as partly successful. For implementation facilitation, ADB allowed procurement through post-qualification procedures, raised the imprest account ceiling, and approved a minor change in scope. These measures helped the Executing Agency comply with an expanded scope, accelerate activities, and ultimately improve results.

III. EVALUATION OF PERFORMANCE

A. Relevance

44. The ADB's intervention was extremely relevant and was in line with the Government of Pakistan's strategy for developing the provincial highways and rural road system. The objectives were consistent with national road transportation needs and development priorities. The transport sector is recognized as the backbone for economic development, especially in remote and rural areas of Pakistan. It contributes about 6% of total gross domestic product. In recent years the demand for transportation through roads has been growing at about 7-8% per annum. A large portion of this increase in demand has taken place within Punjab Province.

B. Effectiveness in Achieving Outcome

45. The Project is rated as less effective. The expected outcomes have partly been achieved. The investment component will accrue direct and indirect benefits, but the expected benefits will be quantitatively lesser than envisioned because of the reduced scope. The initiative of institutional development support, capacity building, and institutional reforms subcomponents achieved minimal results and were less effective. The consulting firms were unable to provide adequate planning, programming, and support for the reform agenda, and were ineffective in implementing the investment component. The consulting services were inefficient and inferior. The effectiveness of interventions under the Project remained limited.

46. The main weaknesses of the Project arose from the Government of Punjab's insufficient ownership of and lack of commitment to the Project. The current policy and reform initiatives required stronger commitment, dedication, encouragement, and incentives for institutional and behavioral changes. The project design assumed continuity in developed synergy, strong implementation focus, a sense of ownership of key ideas, knowledge, and professionalism in transforming the CWD into a modern road agency. Very little of the above materialized.

C. Efficiency in Achievement of Outputs and Outcome

47. The Project is assessed as less efficient than envisaged at the appraisal. The key objectives of the Project were partly achieved. The overall achievement through the investment component was 42%. The actual costs of project components were much higher than appraisal estimates. Therefore, the Project failed to achieve many projected results. Minimal progress was made in achieving the objectives of the institutional development component; even the progress achieved during previous road sector projects was lost. The effectiveness, efficiency, and performance of the consultants were marginal. The project monitoring and reporting was unsuccessful. Coordination between the various layers of the project team was insufficient.

48. The subproject selection criteria ensured selection of road links that were likely to reduce rural poverty. The institutional development component targeted improved governance and business processes at the CWD and the district government. The results of the Project confirmed the following characteristics: (i) it conformed to the provincial road master plan; (ii) it linked rural populations with key economic centers; (iii) it had no adverse effects on the environment; (iv) it contributed to the Government of Punjab's efforts to reduce poverty; (v) it had minimal impacts on affected person's land and livelihood; (vi) its economic viability, measured in terms of economic internal rate of return (EIRR), ranged from 16% to 40%, compared with 11% to 24% at appraisal; and (vii) it confirmed the Government of Punjab's commitment for providing sufficient funds for maintenance, rehabilitation, and operations.

49. The EIRR values during the reevaluation of completed subprojects suggested an improving trend compared with the appraisal analysis. This was because the completed project scope included important road links offering higher benefits and return on investment. The paved roads had higher traffic growth rates than the surface-treated roads. High inflation drove up the prices of vehicles and pushed up the operating cost inputs. An economic reevaluation detailing the methodology and results of the economic analysis is in Appendix 7. The implemented project scope is assessed as efficient.

50. The improved transportation facilities directly benefit 30 million inhabitants living within the development corridor and vicinity. In the bigger picture, the facilities will benefit road users of the entire Punjab Province as well as other provinces by improving connectivity and access to project-affected areas.

D. Preliminary Assessment of Sustainability

51. The sustainability of the Project is preliminarily assessed as less likely. The demanding nature of continuing interventions and prevailing poor socioeconomic situation in Punjab Province lessens the likelihood that sufficient financial resources will be allocated to ensure sustainability. The significance of the institutional development component, which the Project sought to promote, has although been recognized as important drive by the Government of Punjab, however, reclaiming the targeted development will require considerable time, consistency, continuity, and strong commitment.

52. The physical infrastructure component is likely to be more sustainable than the institutional development component. However, because only one-third of the physical infrastructure component was completed, there will likely be a road rehabilitation backlog requiring large capital investment and additional time. Policy reforms and governance initiatives are less likely in the current climate of political and financial instability.

53. The Government of Punjab has developed a clear understanding of how to effectively maintain and manage its road assets, and has committed to provide sufficient funds to ensure the sustainability of road investments in the province. The allocation of road maintenance funds has increased in recent years and is likely to increase further in the coming years. Overall, future road investments are expected to contribute to rural development and ultimately reducing poverty.

E. Environmental, Sociocultural, and Other Impacts

54. The main objectives were to improve road conditions through rehabilitation and improvement of the existing road infrastructure. No greenfield construction or major realignment of roads was involved. The impacts of land acquisition for the right-of-way, resettlement, and changes in land use patterns were minimal, as envisaged at appraisal.

55. The initial environment impact assessment study at appraisal, covering all environmental parameters, rated no significant impacts. However, some low-intensity effects on soil erosion during road construction, and some temporary low-level silting of waterways at bridge sites were visible. Some trees were cleared to enable road widening, but this had a negligible impact on the environment. Poor dust control and traffic management had some localized negative impacts on the population, crops, and vegetation. Environmental mitigation measures were included in the bidding and contract documents and addressed the minor issues during project execution.

56. At appraisal, Shorkot City to Shorkot Cantt road was included as a candidate road. It passes through a protected forest and involved an environmental study of wildlife sanctuary and its biodiversity to be carried out by the Executing Agency. The subproject was not implemented under the Project. No other subproject required such mitigating measures.

57. The improved road structure, better riding surface, wider carriageways, stable and high embankment, improved drainage through bridges, culverts, and drains, all improved the local environment. Less traction power is required to traverse the superior and smoother road surfaces, which means less fuel consumption and reduced air and noise pollution. The interventions reduced noise levels, dust, uncontrolled water and surface flow, and embankment erosion.

58. The road safety, signage, and geometric improvements reduced the risks of road accidents, ultimately reducing social costs and economic losses. Improved road maintenance and management will ensure greater mobility, convenience, safety, and efficiency through roads. Improved travel conditions and serviceability⁶ will lead to direct and indirect social benefits in both the short term and the long term.

59. All roads and highways improved through the Project were existing roads with established right-of-way and traffic streams. Improvement of such facilities has little to no socioeconomic or sociocultural impacts. Improving the roads did ensure better access for the poor to markets, economic centers, and social services and amenities. The new trading pattern in the region will follow the old culturally accepted pattern. Enhanced trade and cultural activities will result in deeper interaction between various cultures, and lead to increased harmony among societies. The established traffic pattern will continue to flow through the same corridors, only with more traffic flow as vehicles divert from other routes would chose to use the improved

⁶ Serviceability is a measure of riding quality of road surface.

roads. The overall environmental, socioeconomic, or sociocultural situation will undergo a very minimal change. Therefore, the Project is assessed as having insignificant environmental, socioeconomic, or sociocultural impacts.

IV. OVERALL ASSESSMENT AND RECOMENDATIONS

A. Overall Assessment

60. The overall assessment of Project is partly successful. The objectives were relevant and aligned with national economic growth needs, the Government of Pakistan's infrastructure development strategy, and ADB's country partnership strategy. ADB made a sincere effort to embark on road rehabilitation and institutional development; based on the urgency of the challenges, the Project's initial assumptions of strong government commitment, consistency, and continuity of policies seemed realistic. However, only selected scope of the Project was implemented. Frequent scope changes and inflated costs resulted in (i) long implementation delays, (ii) higher subproject completion cost, and (iii) slow progression of construction works. A large portion of the RAR component and most of the activities envisioned in the institutional development component were incomplete.

61. Given the late start of project implementation, there was inadequate time remaining to achieve some of the project's objectives. The Project also relied too much on consulting services, while the capacity of the Government of Punjab was lower than expected. The project staff, contractors, and consultants performed below expectations. A lack of government commitment for project implementation, poor performance, and poorly performing consultants undermined the objectives of institutional development component and slowed the pace of progress on road rehabilitation.

62. The performance, technical ability, and operational support of the consultants was partly successful. The effectiveness, coordination, and synchronization of project team layers was poor. A lack of consultants' guidance, insufficient supervision, and poor communication were key problems at the Project. Multilayered complicated processes, cumbersome and long procedures, and in-place complex practices at the Government of Punjab level caused long implementation delays. The performance monitoring team did not track project activities diligently or accurately; had ADB intervened earlier, this could have been rectified.

63. The Project design was successful. Its objectives, benchmarks, performance indicators, and targeted outputs were realistic. The project implementation details laid out in the loan documents provided the required guidelines, compliances, and processes. ADB provided timely approvals of prequalifications, procurement documents, short-listings, requests for proposals, bid evaluations, concurrences to award, and contract signings. Most of the implementation delays were due to procedural and decision making holdups, inconsistency of project staff, and lack of interest and commitment of the Government of Punjab.

64. The CWD through the PMC and the construction supervision consultants were required to carry out the project performance, benefits monitoring, and evaluation (PPBME) by compiling and analyzing appropriate traffic, socioeconomic, and other data for the project roads. The relevant consultants were not fielded and the PPBME was not prepared. The monitoring and evaluation framework supported the implementation activities and the Project progress was assessed through monitoring and evaluation reports. The reporting was regular but its quality was partly successful.

B. Lessons Learned

65. **Avoid Overly Optimistic Objectives in Project Design.** Putting overly optimistic objectives in the limited implementation period should have been avoided. A gradual, step-by-step approach, consistent with the government processing requirements for achieving the policy and reform goals should have been adopted.
66. **Base Capacity Evaluation on a Realistic Analysis.** The choice of Executing Agency, its capacity, capability, and experience of working with ADB should have been carefully and realistically done. The Executing Agency's team should consist of dedicated professionals with demonstrated track records.
67. **Adopt Separate Implementation Arrangements for Each Component.** Consideration should have been given to selecting different executing agencies or implementing agencies to implement the road rehabilitation and institutional development components.
68. **Include Additional Assurances for Sustainable Government Support.** Measures ensuring government commitment to implementing the institutional development initiative should have been taken, and a periodic review of the institutional development component should have been undertaken that is tightly tied to the release of funds.
69. **Avoid Heavy Reliance on Consulting Services.** Project design should not depend heavily on consultant support. The criteria for selecting consultants should be more carefully thought out. Previous performance should be a major evaluation and selection criteria. Penalties for poor performance and failure to fully comply with the project design should have been introduced. A stricter approach should be adopted for replacing the specialists.
70. **More Focus on ADB's Advisory Role.** ADB should have monitored the Project's performance more closely and should have worked with the government on resolving issues concerning slippage, inordinate delays, unmet conditions, and poor performance in a more-timely fashion. In the case of unrecoverable delays, early closure, reduction of scope, and loan suspension should be considered.
71. **Greater Concentration on Local Contracting Resources.** The Project had difficulty attracting international contractors; those who were contracted performed poorly. Smaller civil work packages, suitable for local competitive bidding, would probably yield better results. Greater care should be taken in prequalification to ensure the participation of capable and resourceful contractors. Incentives for early completion and penalties for delays should be built into contracts. The post-qualification procedures should be adopted for procuring civil works contracts.
72. **More Attention to Readiness Filters and Advance Actions.** ADB and the Government should have allowed advance actions such as land acquisition, detailed engineering design, procurement of civil works and consultancy contracts, and full establishment of the project management unit and project implementation units. Compliance with readiness for implementation should be ensured during pre-loan activities.
73. **Adopt Realistic Work Scheduling, Procurement, and Monitoring Targets.** The monitoring and reporting framework should further be reinforced through specialist and dedicated resources ensuring regular monitoring of land acquisition, resettlement, and environmental impacts. Implementation schedules should be based on realistic procurement

timelines allowing floats for unforeseen revisions and/or resubmissions. ADB should have ensured that the PPBME was prepared and then monitored the achievements against the benchmarks in a timely manner.

74. **Enhancing the Imprest Account Role in Implementation.** The enhanced imprest account ceiling can play a more important role in implementation. Loan conditions should allow more flexibility for utilizing the instruments for improving the cash flow.

C. Recommendations

1. Project Related

75. **Future Monitoring.** Monitoring of the following should continue: (i) the performance of the improved highways and roads, (ii) Government's fund allocation for ensuring sustainability of investments, (iii) the Government of Punjab's institutional reform and capacity building efforts. ADB should field special periodic follow-up missions and use future fact-finding missions to monitor further developments.

76. **Covenants.** Covenants related to reform, restructuring, and transformation of the CWD should call for a more gradual, step-by-step process that allows adequate time for government processing. Covenants related to independent monitoring of compliance with environmental and social safeguards should be strengthened. Covenants related to strategic maintenance planning, asset management, and public-private partnerships should be introduced. ADB should consider allowing specialized consultancy inputs relating to project planning, involuntary resettlement, environmental mitigation, and project management over the project period. Covenants ensuring project team continuity, consistency, and government support and commitment should be strengthened. Monitoring and reporting framework should be revisited.

77. **Future Actions or Follow-up.** Further follow-up actions are required to ensure that (i) completed works are performing to a high standard, (ii) management of the CWD has improved, (iii) institutional reform and capacity building measures have been implemented. ADB should field periodic follow-up review missions and develop closer interaction with the Government of Punjab. ADB should continue to follow up on the PPBME compliance for completed subprojects.

78. **Additional Assistance.** The Government of Punjab is now planning to launch a road sector development program for the poor and undeveloped southern portion of Punjab Province. Financing support in the form of a PPTA is required to enable preparatory works to begin. Later on, a multitranche financing facility may be considered. The Government of Punjab also requires assistance to formulate a comprehensive road sector development master plan and to prioritize immediate, short-, medium-, and long-term investment programs.

79. **Timing of Project Performance Evaluation Report.** Some work is still to be done. The Government of Punjab needs further time to achieve progress on the institutional development initiatives. Furthermore, the traffic regime and socioeconomic developments may require 2 to 3 years for maturity. A suitable time for undertaking a project performance evaluation report would be 2012.

2. General

80. The Government of Punjab should adopt comprehensive measures to ensure (i) adequate road maintenance; (ii) adoption of key policy and institutional reforms; (iii)

reorganization of institutional setup and sufficient levels of staffing; (iv) sustainable funding sources; (v) adoption of best practices and revenue earning sources; and (vi) public–private partnerships, proper corridor management, and concessions for off-budget financing of road rehabilitation, maintenance, and reconstruction.

81. Closer scrutiny should be given to an executing agency's capacity to implement ADB-assisted projects. The organizational structure of the executing agency should be carefully analyzed. An executing agency should hire the services of dedicated cross-sectoral experts. ADB should make serious efforts to ensure the proper composition and consistency of the project team during the entire implementation period. The involvement of consultants should be limited to their area of expertise.

82. ADB should field more frequent review missions and encourage more interaction among members of the implementation team. ADB should ensure that the Government's efforts extend adequate capacity building efforts and also help for timely resolving the implementation issues.

83. ADB should ensure that appropriate government's assurances and participation are available for the successfully implementing the organizational change process. Sufficient recognition of likely barriers to success posed by the bureaucracy, inadequacy of institutional capacity, insufficient staff resources, and lack of commitment should also be considered while formulating project design.

84. The project design should not rely on superior professional consultants inputs only. Assessment of consultant's capacity, efficiency, effectiveness, and expected quality of the outputs should be properly evaluated.

85. Measures preventing unanticipated policy deviation and lack of interest and commitment of the Government should also be considered in project design.

FINANCING PLAN
(\$ million)

Component	Appraisal			Actual		
	FX	Local	Total	FX	Local	Total
A Base Cost						
1 Institutional Development Component						
a Consulting Services	0.4	0.9	1.3	–	–	–
b Equipment	0.9	–	0.9	–	–	–
2 Road Improvement						
a Land Acquisition and Resettlement	–	2.8	2.8	–	0.7	0.7
b Provincial Highways Improvement	40.8	27.2	68.0	41.8	27.9	69.7
c Rural Access Roads Improvement	45.3	67.9	113.2	16.5	24.7	41.2
3 Axle Load Control	1.1	1.7	2.8	–	–	–
4 Road Safety—Pilot Accident Reporting Center	0.1	0.1	0.2	–	–	–
5 Consulting Services						
a Project Management Consultants Construction Supervision—	1.2	0.4	1.6	–	0.1	0.1
b Provincial Highways	1.6	1.9	3.5	0.9	0.4	1.3
c Detailed Design and Construction Supervision—Rural Access Roads	0.8	6.0	6.8	–	0.8	0.8
6 Incremental Costs	–	1.4	1.4	–	0.1	0.1
Subtotal (A)	92.2	110.3	202.5	59.2	54.7	113.9
B Contingences						
1 Physical	4.4	3.3	7.7	–	–	–
2 Price	3.7	2.9	6.6	–	–	–
Subtotal (B)	8.1	6.2	14.3	–	–	–
C Front End Fee	1.5	–	1.5	1.6	–	1.6
	–	–	–	–	–	–
D Interest During Construction	3.8	–	3.8	4.1	–	4.1
Total	105.6	116.5	222.1	64.9	54.7	119.6

FX = foreign exchange

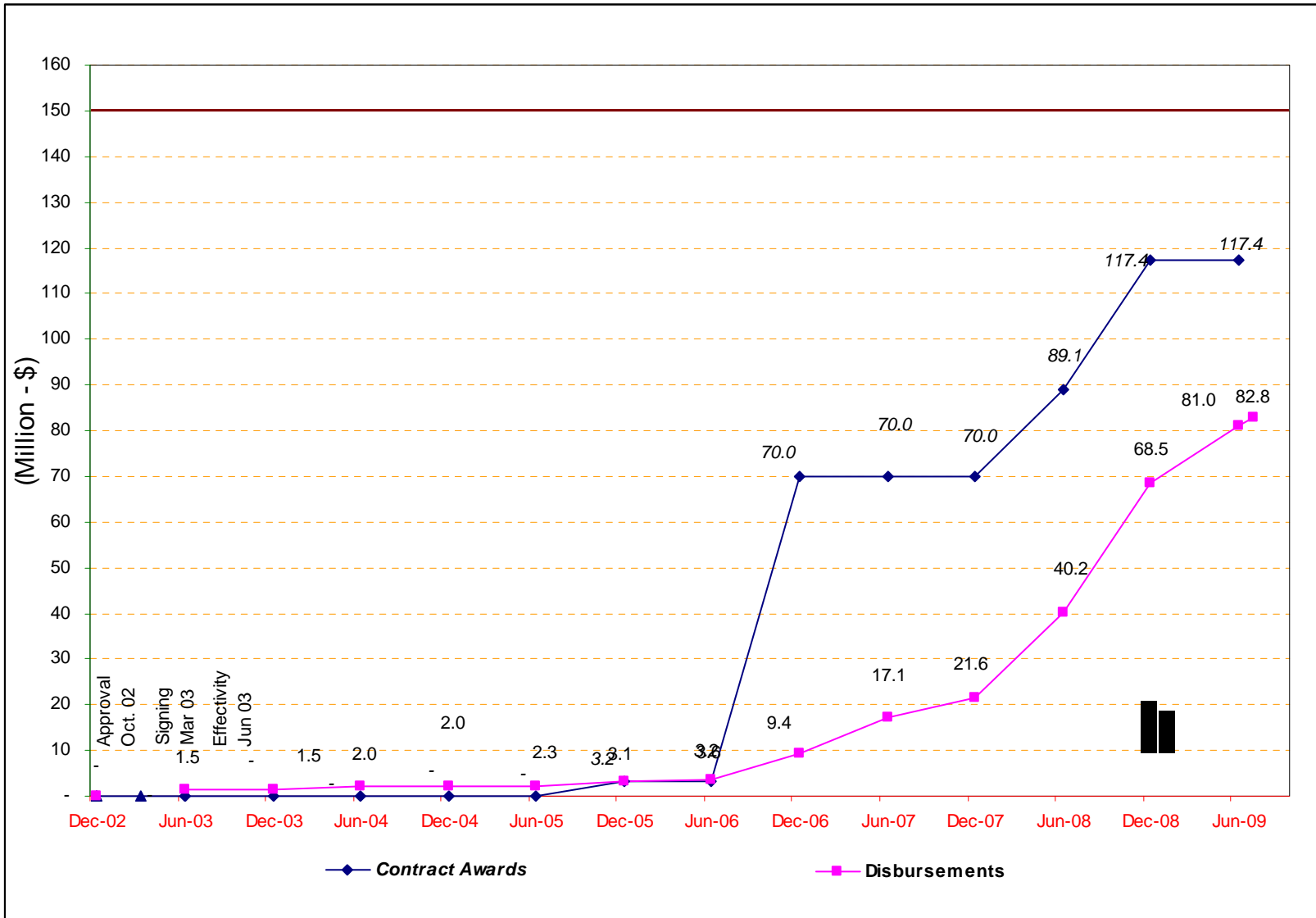
Source: ADB's loan financial information system, and executing agency's project engineering cell.

PROJECTED AND ACTUAL CONTRACT AWARDS AND DISBURSEMENT
(\$ million)

Year	Quarter	Contract Award		Disbursement	
		Projected	Actual	Projected	Actual
2003	I	0.000	0.000	0.000	0.000
	II	0.000	0.000	0.000	1.537
	III	0.000	0.000	0.000	0.026
	IV	0.000	0.000	0.000	0.071
	Subtotal	0.000	0.000	0.000	1.634
2004	I	0.000	0.000	0.000	0.086
	II	0.000	0.000	0.000	0.093
	III	16.000	0.000	0.000	0.000
	IV	12.000	0.000	3.000	0.236
	Subtotal	28.000	0.000	3.000	0.415
2005	I	3.850	0.000	0.420	0.000
	II	0.000	0.000	0.440	0.282
	III	53.180	1.875	5.760	0.000
	IV	1.890	1.332	4.120	0.762
	Subtotal	58.920	3.207	10.740	1.044
2006	I	0.000	0.000	0.400	0.000
	II	10.000	0.000	1.500	0.538
	III	10.000	0.000	4.000	0.000
	IV	7.000	66.677	4.400	5.790
	Subtotal	27.000	66.677	10.300	6.328
2007	I	0.000	0.000	0.070	1.557
	II	31.260	0.000	0.250	6.094
	III	5.900	0.000	5.680	2.139
	IV	0.000	0.000	8.000	2.349
	Subtotal	37.160	0.000	14.000	12.139
2008	I	25.250	15.335	14.260	11.819
	II	0.000	3.793	11.580	6.791
	III	0.000	22.826	9.560	13.847
	IV	0.000	5.344	8.300	14.487
	Subtotal	25.250	47.298	43.700	46.944
2009	I	0.000	0.000	6.000	7.850
	II	0.000	0.000	0.000	5.771
	III	0.000	0.000	0.000	0.718
	Subtotal	0.000	0.000	6.000	14.339
	Total	176.330	117.182	87.740	82.843

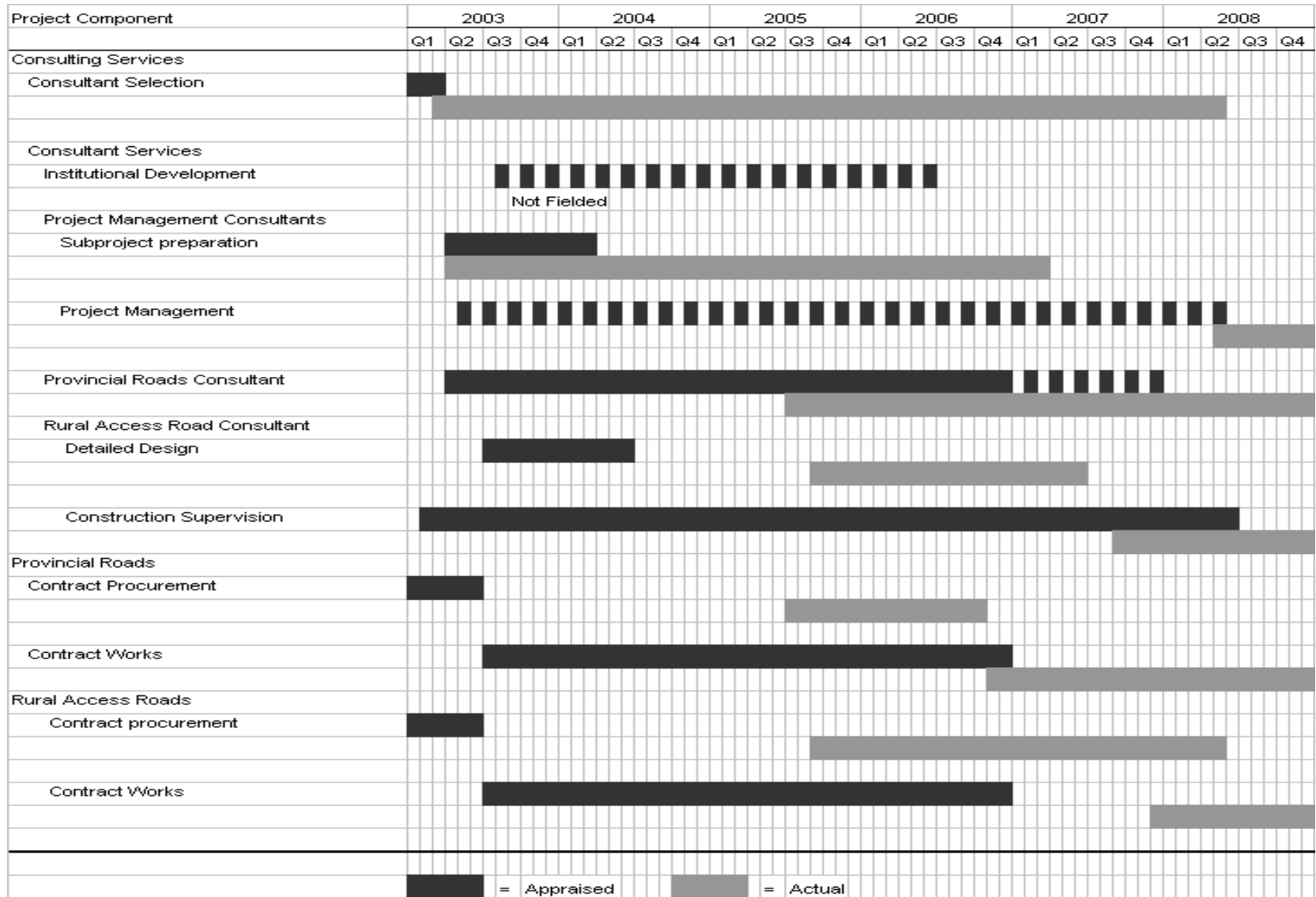
Source: ADB's loan financial information system.

CONTRACT AWARDS AND DISBURSEMENT PERFORMANCE



Source: ADB's loan financial information system.

IMPLEMENTATION SCHEDULE



Source: report and recommendations of the president and executing agency's project engineering cell.

CHRONOLOGY OF EVENTS

2001

3 Jul Project approved

2002

31 Oct Feasibility study completed
 3 to 9 Apr Appraisal completed
 20 to 31 May Fact-finding completed
 20 Jun Management review meeting
 31 Jul Staff review committee
 29 Sep to 1 Oct Loan negotiations completed
 1 Oct Board circulation
 31 Oct Board approval

2003

10 Feb Issued expression of interest for prequalification of contractors for provincial highway roads
 3 Mar Loan agreement signed
 26 Jun Loan declared effective
 26 Oct to 1 Nov Inception Mission

2004

22 to 26 Nov First loan review mission
 24 Aug Approved eight firms (5 Pakistani, 1 Malaysian, and 2 Chinese) as prequalified for provincial highways' four packages (P-1, P-2, P-3 and P-4).

2005

5 to 9 May Second loan review mission
 10 May Issued expression of interest for prequalification of contractors for rural access roads
 12 Jul Consultancy contract signed with M/s SMEC International Pty Limited
 27 Sep Consultancy contract signed with M/s Associated Consulting Engineers-ACE (Pvt.) Limited
 27 Sep Consultancy contract signed with M/s Indus Associated Consultants (Pvt) Limited
 10-14 Nov Third loan review mission
 3 Nov Approved bidding document for the provincial highways
 28 Nov 33 firms approved as prequalified

2006

19 Jan Approved reduction in bidding period for provincial highways from 90 days to 45 days
 25 Jan On the request of M/s China International Water & Electric Corporation a maximum bidding period of 90 days was approved for all bidders
 6 Feb Approved extension in bid submission date from 25 Feb 2006 to 18 Mar 2006
 22 to 24 Mar Fourth loan review mission
 13 Apr Commented on draft bidding documents for rural access roads
 1 Jun Approved bidding document for the rural access roads

13 to 17 Jun	Fifth loan review mission
22 Jun	Received bid evaluation report (BER) for P-1 (Pindi Bhattian–Chiniot–Kamalpur)
23 Jun	Received BER for P-3 (Chiniot–Sargodha–Khushab)
26 Jun	Conditionally approved feasibility study of rural access road (Girof–Adhikot–Kaloor Kot Road: 184 km)
28 Jun	Received Addendum No. 1 to BER for P-3 (Chiniot–Sargodha–Khushab)
29 Jun	Received BER for P-4 (Jhang–Toba Tek Singh–Chichawatni)
30 Jun	Conveyed discrepancies noted in the BERs for P-1 and P-3
30 Jun	Sent BERs together with Pakistan Resident Mission comments for P-1 and P-3 to Central Operations Services 1 and Office of General Counsel for comments
10 Jul	Received Addendum No. 1 to BER for P-1
12 Jul	Conveyed comments on BER for P-4 (Jhang–Toba Tek Singh–Chichawatni)
12 Jul	Sent BER for P-4 together with PRM comments to Central Operations Services 1 and Office of General Counsel for comments
19 Jul	Received Addendum No. 1 to BER for P-4
1 Aug	Approved award of contract for P-1 to M/s Alkhan Construction (Pvt) Limited
2 Aug	Approved award of contract for P-3 to M/s China International Water & Electric Co. (CIWEC)
3 Aug	Approved award of contract for P-4 to M/s CIWEC
4 Aug	Conveyed approval of P-3 and P-4 to the Executing Agency
7 Aug	Received BER for P-1 (Jhang–Shorkot–Kabirwala–Manisial)
8 Aug	Conveyed comments on the BER for P-1
17 Aug	Approved award of contract for P-1 to M/s CIWEC
9 Sep	Executing Agency issued letter of acceptance for P-1, P-3 and P-4
30 Oct	Approved award of contract for P-2 to M/s CIWEC
14 Nov	Conveyed approval of P-2 to the Executing Agency
17 Nov	Executing Agency issued letter of acceptance for P-2
12 to 18 Dec	Midterm review mission
2007	
23 Jan	Approved national competitive bidding threshold from US\$3.0 million to US\$5.0 million
1 to 6 Feb	Second phase midterm review mission
9 May	Attended a special meeting chaired by the chairman of the Planning and Development Board to review issues hampering overall progress of the Project
7 Jul	Attended the steering committee meeting to review and resolve issues hampering the progress of the Project
18 Jul	Advised for rebidding of rural access road 1 (R1) (Shorkot City to Shorkot Cantt) rural access road because of evidence of collusion
18 Jul	Advised Executing Agency to send completed BERs R2(i) and R3 because of deficient documents and costs that were substantially higher than the engineer's estimates
6 Sep	Approved minor change in implementation arrangements allowing the Executing Agency to use post-qualification procedures for all remaining national competitive bidding rural access road contracts
12 to 13 Sep	Sixth loan review mission

25 Sep	Granted no objection to negotiate the bid prices for R1, R2(i), R4, R5, R7(iv), R7(v), R8(i), R8(ii), R8(iv), R8(v), and R8(vi)
28 Sep	Approved BERs for R7(vi) and R7(vii)
2 Oct	Executing Agency issued letters of acceptance to R7(vi) and R7(vii) successful bidders
18 Oct	Advised Executing Agency to cancel the bid for R6(ii) and R6(iv) initiate rebidding following post-qualification procedures
24 Oct	Approved BERs for R1, R2(i), R3, R4, R7(iv), R7(v), R8(i), R8(ii), R8(iii), R8(iv), R8(v), and R8(vi)
13 Nov	Approved letters of acceptance for the 12 packages approved on 24 Oct
14 Nov to 14 Dec	Seventh loan review mission
2008	
24 to 29 Jan	Eighth loan review mission
18 Feb	On Executing Agency's request, the imprest advance ceiling was enhanced to US\$5,506,065
5 Mar	Ninth loan review mission
11 Mar	Approved minor change in the scope for P-2 (Jhang-Shorkot-Kabirwala-Mahni Sial): Deletion of 18.7 km Jhang Bypass
13 Mar	Conveyed no objection to the Executing Agency on deletion of 18.7 km Jhang Bypass for P-2
14 Mar	Approved Executing Agency's technical evaluation of contractors for R2(i), R5, R6(i) to R6(v), and R7(i) to R7(iii)
29 Apr	Approved contract awards for R5, R6(ii), R6(iii), R6(iv), R6(v), R7(i), R7(ii), and R7(iii). Financial bids for R6(i) and R2(ii) were disapproved.
6 to 8 May	Executing Agency issued letters of acceptance for the packages approved on 29 Apr 2008
12 May	Project management consultancy contract signed with M/s LEA International
19 Jun	Approved memo for reduction in scope for P-2 (Jhang-Shorkot-Kabirwala-Mahni Sial): Deletion of 18.7 km Jhang Bypass
23 Jun	Conveyed no objection to the Executing Agency on deletion of 18.7 km Jhang Bypass for P-2
27 Jun	Approved Executing Agency's technical evaluation of contractors for R6(i) and R2(ii)
11 Jul	Approved contract awards for R2(ii) and R6(i)
17 Jul	Executing Agency issued letters of acceptance for R2(ii) and R6(i)
21 Jul to 11 Aug	Tenth loan review mission
6 Sep	Received Borrower's request for loan extension up to 30 September 2009
29 Dec	Executing Agency requested extension in loan account closing by 31 March 2009
31 Dec	Loan closed as scheduled
2009	
15 Jan	Executing Agency requested loan account closing extension up to 31 May 2009
26 to 28 Jan	Eleventh loan review mission
1 Apr	Received Borrower's project completion report
14 May	Advised the Executing Agency to refund US\$896.11 from imprest account
19 May	Executing Agency advised the National Bank of Pakistan to refund US\$896.11 to ADB's account

27 Jun	Executing Agency requested replenishment of US\$1,472.67, which amounted to the shortfall in the account resulting from wrong application of dollar rate against cheque No. 180652
1 Jul	Advised Executing Agency to provide verification of the State Bank of Pakistan on the exchange rate on the date of transaction
19 Jul	Executing Agency provided verification of the exchange rate from State Bank of Pakistan and submitted revised withdrawal application
10 to 14 Jun	Pre-project completion review mission
13 to 20 Jul	Project completion review mission
5 Aug	Loan account closed

LOAN COVENANTS COMPLIANCE STATUS

Covenant	Reference in Agreement	Status of Compliance
<p>Sector The Borrower shall cause the Provincial Government to continue restructuring of the CWD and reform of the road sector in accordance with the Policy Framework and Action Plan. Specifically the Provincial Government and the CWD shall meet the milestones contained in the Policy Framework and Action Plan including (a) strengthening of functions in the organizational structure in CWD, (b) preparing for conversion of CWD to a highway authority or corporation (c) further development of the road asset management system, (c) strengthening of road maintenance, (d) establishing a road maintenance fund or similar mechanism, (e) measures to improve axle load control, (f) improvement of road safety and enforcement of traffic and safety regulations, (g) further private sector involvement, (h) further involvement of road user associations n the pilot accident reporting center and the provincial road safety committee, resettlement grievance and advisory committee and non-profit company of road maintenance funds and (i) capacity building in environment and social assessment and resettlement planning.</p>	LA, Schedule 6, para 1	Partly complied.
<p>Within six (6) months of the Effective Date, the Borrower shall cause the Provincial Government to prepare a strategy for the road sector to strengthen the application and enforcement of principles of transparency, fairness and propriety with stricter sanctions for violations of these principles, including in procurement procedures, in consultation with civil society and ADB. The Borrower shall cause the Provincial Government to implement such strategy during the remaining Project implementation period.</p>	LA, Schedule 6, para 9	Partly complied.
<p>The Borrower shall cause the Provincial Government to keep ADB informed of all transport sector and road subsector studies undertaken in Punjab, and shall provide ADB with copies of all documents relevant to such studies, including consultant's reports, and shall ensure that ADB has the opportunity to comment on the recommendations contained therein. The CWD and ADB shall from time to time exchange views on the progress of the Provincial Government in carrying out the policies and actions recommended by transport and road sector studies. The Provincial Government shall maintain a policy dialogue with ADB on problems and constraints affecting the growth and development of the road section, and in particular in respect of road maintenance with investment and road user charges.</p>	LA, Schedule 6, para 13	Partly complied.
Environmental		

Covenant	Reference in Agreement	Status of Compliance
PPG will ensure that Road construction and maintenance will be carried out as required under the Government's environmental laws and regulations and ADB's environmental guidelines including (a) appropriate selection of quarry and borrow sites and their subsequent rehabilitation after use, (b) proper disposal of spoils and construction materials, (c) use of sound environmental design and construction techniques that ensure slope stability and drainage, and (d) minimization of construction impacts such as dust, diversion of stream flow and increased turbulence, and equipment noise.	LA Schedule 6, para 5(b)	Partly complied.
When project roads pass through or near protected or sensitive areas (e.g. nature reserves, parks, conservation areas, biodiversity reserves, or cultural and historical sites), a rapid assessment will be carried out prior to commencement of any construction works. PPG will ensure cooperation with the responsible authority in preparing and implementing protective measures.	LA, Schedule 6, para 5(c)	Not applicable.
Environmental Considerations: Each subproject shall have been screened for its environmental impacts in compliance with the requirements of the Provincial Government and ADB's requirements, i.e. the "Environmental Assessment Requirements of the Asian Development Bank" (March 1998), and will not cause any major adverse impact on the environment. No subproject shall be category A project under the ADB's environmental guidelines, and the ADB shall have received and reviewed the IEE, if any, prepared for the Subproject.	LA, Schedule 6, para 2(b)	Complied with.
The Borrower shall cause CWD to ensure that all environmental mitigation measures identified in the initial environmental examination are incorporated into the Project design and implemented during Project construction, O&M, in accordance with the ADB's environmental guidelines and the Environmental Management Monitoring Plan agreed with ADB.	LA, Schedule 6, para 5(a)	Complied with.
When Project roads pass through or near protected or sensitive areas (e.g., nature reserves, parks, conservation areas, biodiversity reserves, and cultural and historical sites), the Borrower shall ensure that a rapid assessment is carried out prior to commencement of any construction works. The Borrower shall cause the Provincial Government to ensure cooperation with the authority responsible for the area in preparation and implementation of protective measures which may include any combination of area demarcation, fencing, checkpoints, speed bumps, wildlife passage zone, patrols or other degradation due to road improvement and increased access.	LA, Schedule 6, para 5(c)	Not applicable.
Social		

Covenant	Reference in Agreement	Status of Compliance
Punjab CWD will ensure that land acquisition and resettlement activities are implemented in accordance with all applicable laws and regulations, and ADB's Policy on Involuntary Resettlement, as agreed in the resettlement plans.	LA, Schedule 6, para 4	Complied with.
PPG will ensure that the civil works contracts include an information and education campaign on sexually transmitted diseases and HIV/AIDS for construction workers as part of the health and safety program at campsites during the construction period.	LA, Schedule 6, para 7	Partly complied.
PPG will ensure that the civil works contractors comply with all applicable labor laws, and do not employ child labor in construction activities.	LA, Schedule 6, para 8	Complied with.
Poverty Targeting; The Subproject shall have been accorded priority based on the district development ranking used by the Provincial Government for determining allocation of its development expenditures. {LA, Schedule 6, para 2(c)}	LA, Schedule 6, para 2(c)	Complied with.
The Subproject shall not involve any involuntary resettlement or land acquisition, and the impact on any affected persons (APs) or their livelihoods of any resettlement or land acquisition shall be minimal. In the event the Subproject involves land acquisition or involuntary resettlement, a resettlement plan acceptable to ADB shall have been prepared in accordance with the RRP.	LA, Schedule 6, para 2(c)	Complied with.
The Borrower shall cause CWD to ensure that all land and right-of way required for the Project will be made available in a timely manner and that the provisions of the RPF and the resettlement plan agreed with ADB, including compensation and entitlements for APs, will be implemented in accordance with all applicable laws and regulations of the Borrower, and ADB's "Policy on Involuntary Resettlement", including but not limited to compensation for land and other assets at replacement cost, compensation for non-land assets and other rehabilitation assistance to the non-titled, and compensation n to be paid to an account for payment to APs before land possession and the award of civil works contracts. In the event of a difference between the requirements under the applicable laws and regulations of the Borrower and ADB's "Policy on Involuntary Resettlement", the requirements under ADB's "Policy on Involuntary Resettlement" shall apply.	LA, Schedule 6, para 4(a)	Complied with.
The Borrower shall cause CWD to ensure that (i) adequate staff and resources are committed to supervision and internal monitoring of the implementation of the resettlement plan and that quarterly reports on resettlement progress are forwarded to ADB; (ii) an independent domestic monitoring agency will be contracted, in accordance with procedures	LA, Schedule 6, para 4(c)	Partly complied.

Covenant	Reference in Agreement	Status of Compliance
acceptable to ADB, to carry out systematic monitoring twice each year during resettlement plan implement, conduct evaluations after completion, and forward reports to ADB; and (iii) an annual audit of resettlement disbursements and expenditures is conducted by the implementing agencies audit bureau, with a summary report forwarded to ADB.		
The Borrower shall cause CWD to ensure that all APs are provided adequate information and regularly consulted in advance of signing household compensation agreements and other decisions that affect their livelihoods and living conditions as a result of the Project. CWD shall maintain records of consultation and grievances, which will be made available to ADB on request.	LA, Schedule 6, para 4(d)	Complied with.
The Borrower shall cause CWD to update the resettlement plan as necessary to reflect any significant material changes, other than the agreed resettlement policy, principles and entitlement, in the Project scope or other causes, and such changes shall be reported to ADB as part of Project reporting.	LA, Schedule 6, para 4(e)	Complied with.
The Borrower shall cause CWD to ensure that APs have full opportunity to participate in resettlement planning and implementation, particularly income restoration measures, as set out in the resettlement plan.	LA, Schedule 6, para 4(f)	Complied with.
The Borrower shall cause CWD to ensure that civil works contractors comply with all applicable labor laws and regulations and do not employ child labor in the construction activities. The Borrower shall cause CWD to set employment targets for women for road construction activities. The Borrower shall ensure CWD provides equal opportunity for women, as well as require contractors not to differentiate wages between men and women for work of equal value.	LA, Schedule 6, para 8	Complied with.
Financial The Borrower shall cause CWD to ensure the timely provision of counterpart funds for land acquisition and resettlement activities specified in the resettlement plan, and shall meet any unforeseen obligations in excess of the resettlement plan's budget estimate in order to satisfy resettlement objectives. CWD shall ensure that counterpart funds for compensation and entitlements under the resettlement plan are fully provided directly to APs through an account for payment to AP, prior to loss of land, livelihood, income or other assets, and prior to land possession. In addition, CWD shall ensure that no emergency provisions are applied to land possession for the Project that would result in possession in advance of payment.	LA, Schedule 6, para 4(b)	Complied with.
Punjab shall make available, as needed, the funds facilities, services, equipment, land and other resources	PA, Section 2.02	Complied with.

Covenant	Reference in Agreement	Status of Compliance
which are required in addition to the proceeds for the loans, for carrying out the Project.		
Punjab shall cause CWD to (i) maintain separate accounts for the Project and for its overall operations; (ii) have such accounts and related financial statements (balance sheet, statement of income and expenses, and related statements) audited annually, in accordance with appropriate auditing standards consistently applied, by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB; and (iii) furnish to ADB, promptly after their preparation but in any event later than six months after the close of the fiscal year to which they relate, certified copies of such audited accounts and financial statements and the report of the auditors relating thereto (including the auditors' opinion on the use of the proceeds of the loans and compliance with the covenants of the loan agreement as well as on the use of procedures for imprest account/statement of expenditures), all in the English language. Punjab shall cause CWD to furnish to ADB such further information concerning such accounts and financial statements and the audit thereof as ADB shall from time to time reasonably request.	PA, Section 2.09(a)	Complied with.
Punjab shall enable ADB, upon ADB's request, to Punjab's financial statement and its financial affairs from time to time with Punjab's auditors, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB, provided that any such discussion shall be conducted only in the presence of an authorized officer of Punjab unless Punjab shall otherwise agree.	PA, Section 2.09(b)	Complied with.
Except as ADB may otherwise agree, Punjab shall apply the proceeds of the loan to the financing of expenditures on the Project in accordance with the provisions of the Loan Agreement and this Project Agreement, and shall ensure that all goods and services financed out of such proceeds are used exclusively in the carrying out of the Project.	PA, Section 2.13	Complied with.
<p>Economic</p> <p>The Subproject shall have an economic internal rate of return of at least 12%.</p>	LA, Schedule 6, para 2(e)	Complied with.
<p>Others</p> <p>Established, Staffed, and Operating PMU/PIU: CWD shall be the Executing Agency of the Project. The Chief Engineer Projects (CEP) placed under the Secretary of CWD shall assume overall responsibility for project implementation. The Secretary of CWD shall chair a steering group, comprising senior staff of the Provincial Government and the CWD, which will guide the implementation of the CWD restructuring program and</p>	LA, Schedule 6, para 1	Partly complied.

Covenant	Reference in Agreement	Status of Compliance
the Policy Framework and Action Plan. CWD shall ensure that the project engineering cell (PEC), which has already been established under CEP, shall be responsible for Project management and headed by a Project Director (PD). The PD shall be supported by other staff including two deputy PDs who will be in charge of day-to-day administration of the provincial highways and rural access roads.		
Fielding of Consultants: The consultant shall be selected and engaged in accordance with procedures acceptable and subject to approval of ADB. Advance procurement action has been approved by ADB.	LA, Schedule 5, para 7	Complied with.
Punjab, through CWD shall employ competent and qualified consultants, acceptable to ADB to an extent and upon terms and conditions satisfactory to ADB.	PA, Section 2.03(a)	Complied with.
Punjab through CWD shall furnish to ADB all such reports and information as ADB shall reasonably request concerning (i) the loan and the expenditure of the proceeds thereof; (ii) the goods and services and other items of expenditure financed out of such proceeds; (iii) the project; (iv) the administration, operations and financial condition of the Punjab; and (v) any other matters relating to the purposes of the loan.	PA, Section 2.08(a)	Complied with.
Without limiting the generality of the foregoing, Punjab through CWD shall furnish to ADB brief and full quarterly reports on the execution of the project and on the operation and management of the project facilities.	PA, Section 2.08(b)	Complied with.
Each Sub project shall have a minimum length of 5 kilometers (km), and a maximum estimated cost of \$2.5 million equivalent.	PA, Schedule 6, para 2(a)	Complied with.
The Subproject shall be included in the provincial road master plan of the Provincial Government.	LA, Schedule 6, para 2(f)	Complied with.
The relevant districts of the Provincial Government shall have confirmed in manner acceptable to ADB, its commitment to the Subprojects, including but not limited to the provision of budgetary allocation for the rehabilitation and operation and maintenance of the subprojects of roads.	LA, Schedule 6, para 2(g)	Complied with.
The Borrower shall cause CWD to continuously monitor and evaluate Project benefits by compiling and analyzing socioeconomic data and traffic on the Project financed provincial highways and rural access roads. The form and content of reporting shall be agreed between CWD and ADB during Project implementation, and shall be in accordance with ADB's Project Performance Systems Guidelines for Bank Staff dated September 1999, as amended from time to time.	LA, Schedule 6, para 3	Partly complied.
The Borrower shall cause CWD to be responsible for the operation and maintenance of the Project roads through proper technical supervision and adequate allocation of	LA, Schedule 6, para 6	Not yet due.

Covenant	Reference in Agreement	Status of Compliance
funds, CWD shall also ensure that maintenance needs will be met through resources generated for the road maintenance financing mechanism to be developed and set in place during the Project implementation period. The Borrower shall cause the Provincial Government to ensure that the improved roads are maintained to design standards and in accordance with sound maintenance practices. The Provincial Government shall further ensure that new roads maintenance procedures and annual maintenance plans are prepared for the improved roads with support of the consultants, on the basis of the modern and agreed-upon maintenance standards, traffic volumes, and assessment of needs and in accordance with the action plan agreed with ADB.		
The Borrower shall cause CWD to strengthen the capacity and increase the number of core staff in RSESAC with five experienced experts by June 2003 to deal with such issues, including road safety resettlement planning and management, poverty reduction monitoring, labor practices, gender analysis, and environment.	LA, Schedule 6, para 10	Partly complied.
The Borrower shall cause CWD to carry out a safety audit for the provincial highways and core rural roads during the Project implementation and develop recommendations to be used for other roads in Punjab by December 2005.	LA, Schedule 6, para 11	Not complied.
The Borrower shall cause the Provincial Government to carry out Project performance monitoring and evaluation by compiling and analyzing appropriate traffic and socioeconomic data and other data for Project roads. Prior to commencing of civil works, the CWD and ADB shall agree upon the data to be collected and the methodology for their analysis based upon the baseline survey that was carried out in 2002.	LA, Schedule 6, para 14	Partly complied.
Punjab through CWD shall furnish to ADB brief monthly and full quarterly reports on the execution of the Project and on the operation and management of the Project facilities. Such reports shall be submitted in such form and in such details and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the period under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following period.	PA, Section 2.08(b)	Complied with.

ADB = Asian Development Bank, APs = affected persons, CWD = Communication and Works Department, and PD = project director

Source: project engineering cell

ECONOMIC REEVALUATION

1. The economic reevaluation of the completed scope of the Project has been established by calculating its profitability in terms of accrued benefits to the economy over economic costs by discounted cash flow technique. The estimated costs in the "without project" scenario were compared with costs accrued in the "with project" scenario to arrive at an estimation of benefits to road users. The assumptions were:

a. In the "without project" scenario, it is assumed that existing roads are maintained at present levels without major capital investments. Routine, low-cost maintenance is carried out throughout i.e. 7 years to prevent pavement from excessive deterioration or destruction. The assumptions for road roughness progression¹ were as noted below:

i. **Provincial Highways.** It is assumed that the international roughness index (IRI)² is allowed to deteriorate to a value of 10 meters (m) per kilometer (km). At this level some low-cost maintenance is carried out to reduce the IRI to 6 m per km.

ii. **Rural Access Roads (RARs).** It is assumed that IRI is allowed to deteriorate to a value of 10 m per km. At that level some periodic maintenance is carried out to reduce the IRI to 8 m per km.

iii. **Maintenance Strategy.** It is assumed the same strategy will remain enforced for the next 25 years without major investments or any improvement beyond the above standards.

b. In the "with project" scenario, it is assumed that investments are made in the form of rehabilitation activities for improving the serviceability³ to a higher performance level. The pavement is then allowed to deteriorate over time until another intervention is made for restoring the serviceability to an acceptable limit. The investments for such strategy include regular routine maintenance, periodic overlays, and rehabilitation activities. The periodic overlay or resealing of pavement surface shall be done at every 6 years. The assumptions for road roughness progression⁴ were as noted below:

i. **Provincial Highways.** It is assumed that the IRI is allowed to deteriorate to 10 m per km. Regular routine maintenance is carried out for the entire period of analysis. At the level periodic overly or rehabilitation is carried out to bring the IRI down to 6 m per km or less.

ii. **Rural Access Roads.** It is assumed that the IRI is allowed to deteriorate to 10 m per km, with regular routine maintenance. At that level some resealing, rehabilitation, and periodic maintenance activities are carried out to bring the IRI down 6 m per km.

¹ Road roughness progression refers to increase in the unevenness of road surface with aging and utilization.

² International roughness index (IRI) is a measuring unit of road surface unevenness in meter per kilometer.

³ Serviceability is a measure of riding quality of road surface.

⁴ Road roughness progression refers to increase in the unevenness of road surface with aging and utilization.

iii. **Maintenance Strategy.** It is assumed the same strategy will remain enforced for the next 25 years without major investments or any improvement beyond the above standards.

2. **Scope.** The 278.5 km length of provincial highways and 336 km of RARs were reevaluated. It is assumed that in the "with project" scenario, a smoother and more efficient traveling facility is available after completion of road to an acceptable standard. The road is then properly maintained.

3. **Methodology.** The economic reevaluation of the Project has been established by showing its profitability in terms of excess benefits to the economy over economic costs through discounted cash flow technique. The projected stream of economic benefits, over the economic life of the Project, has been compared with the estimated stream of economic costs by bringing the two streams to a uniform basis through process of discounting. The economic indicators such as net present value, benefit cost ratio, and economic internal rate of return (EIRR) have been computed. The economic viability is evaluated through the value of EIRR against the threshold figure of 12%.

4. **Project's Benefits.** Tangible benefits accruing from the Project included vehicle operating cost (VOC) and travel time cost (TTC) savings. However, most benefits accrued from VOC savings. Sensitivity analysis has been done by increasing the cost of the Project by 15%, decreasing the benefits by 15%, and combining the effects of both.

5. **Existing and Projected Traffic Streams.** The Executing Agency through supervision consultant and the planning department carried out the traffic assessment for the year 2009. The data and the traffic growth rates were analyzed and reevaluated for validity. Fitness of data for estimating the future traffic regime over the investigation period was ensured. Probable traffic levels were estimated by considering the future trends of road sector development, corridor development, transport demand, economic growth, and other economic parameters. Table 1 provides the existing traffic used for reevaluation.

Table 1: 2009 Traffic Streams on Subprojects

Package	Road Section	Motor Cycle	Car	Wagon	Buses	Truck 2-Axles	Truck 3-Axles	Truck >3-Axles	Total Traffic
Provincial Highways									
P-1	Pindi Bhattian – Chinot – Kamalpur	587	687	384	423	971	203	122	3,377
P-2	Jhang – Shorkot -Kabirwala- Mahni Sial	365	726	414	270	839	293	219	3,126
P-3	Chiniot-Sargodha-Khushab Road	636	1,291	994	481	1,206	298	17	4,922
P-4	Jhang-Toba Tek Sing-Chichawatni Road	2,101	872	509	162	242	78	10	3,974
Rural Access Road									
R-1	Shorkot City – Shorkot Cantt	684	634	53	66	236	13	37	1,723
R-2	Man Channu–Talamba–Abdul Hakeem	419	1,151	494	166	195	4	5	2,434
R-3	Bahawalnagar – Bhukan Pattan	172	910	62	268	341	160	25	1,938
R-4	Phalia – Kuthala Shekhan	711	1,022	70	52	324	43	5	2,227
R-5	Sheikhupura – Hafizabad	973	987	87	124	218	8	1	2,398
R-6	Rasool Barrage–Mandi–Malkwal–Bhera	704	809	544	468	99	81	75	2,780
R-7	Phalia – Bherowal–Sial Mo- Ahmed Nagar	1,684	809	644	468	99	315	135	4,154
R-8	Girof – Adhkot – Kaloof Kot	306	784	336	290	430	186	153	2,485

Source: Data provided by the project engineering cell.

6. **Comparison of Traffic Growth.** The traffic growth factors used at appraisal ranged from 2.5% to 4.6%. At appraisal, same traffic growth rates were applied to provincial highways and RARs. Considering the type, characteristics, and geographical location of roads suitable traffic growth rates for provincial highways and RARs have been applied. It is assumed that the traffic growth rate would be applicable 5 year period. Different estimated traffic growth rate for every 5-year period have been used for projecting the traffic stream under each category. Different traffic growth factors of provincial highways and RARs have been assumed by considering the location, socioeconomic factors, and their role in the road network. This allowed a realistic assessment of future traffic streams. Table 2 provides the traffic growth factors adopted for estimating future traffic. Conservative traffic growth rates have been selected for reevaluation.

Table 2: Traffic Growth Factors Adopted

a. Provincial Highways

Period	M/Cycle	Cars	Wagons	Buses	2-Axles	3-Axles	Multi-Axles
Growth Rate up to 2013	4.00	4.00	3.50	3.00	3.50	3.50	3.55
Growth Rate after 2018	3.50	3.50	3.25	3.00	3.25	3.25	3.30
Growth Rate after 2023	3.25	3.00	3.00	2.50	3.00	3.10	3.00
Growth Rate after 2028	3.00	2.70	2.75	2.25	2.75	3.00	2.75
Growth Rate after 2029+	2.80	2.50	2.50	2.10	2.50	2.80	2.50

b. Rural Access Roads

Period	M/Cycle	Cars	Wagons	Buses	2-Axles	3-Axles	Multi-Axles
Growth Rate up to 2013	3.00	3.00	3.50	3.00	3.00	3.00	3.50
Growth Rate after 2018	3.15	3.10	3.00	2.75	2.75	2.75	3.30
Growth Rate after 2023	3.00	3.20	2.70	2.60	2.50	2.50	3.00
Growth Rate after 2028	2.75	3.00	2.50	2.45	2.00	2.00	2.75
Growth Rate after 2029+	2.50	3.00	2.20	2.30	2.00	2.00	2.50

Source: Data provided by the project engineering cell.

7. **Improvement of Road Condition.** Road roughness fairly represents the road condition when expressed in term of single criteria. Roughness was considered as the single road characteristic representing the overall road condition since all other road distresses have direct impacts to road roughness. The strategies used for controlling the road conditions were:

a. For improving the provincial highways a periodic overlay⁵ is provided after every 6th year. The existing road conditions at the completion of improvement will achieve the desired serviceability standard in terms of road roughness.

b. For RARs it is assumed that a thin overlay will be provided every 7th year and will improve the serviceability level to the desired roughness standard.

8. **Average Operating Speeds.** Average operating speeds for "with project" and "without project," scenarios, for various vehicles categories, have been used to work out VOC and TTC savings. The assumed operating conditions for each traffic category is presented in Table 3:

⁵ Periodic overlay: pavement's top surface replaced with better material for improving serviceability and pavement strength.

Table 3: Vehicle Operating Speeds (km/hr)

Description	Motor Cycle	Car	Wagon	Bus	Truck 2-Axle	Truck 3-Axle	Multi-axle Trailers
Provincial Highways							
Without Project	35	50	45	40	35	35	35
With Project	50	70	65	60	55	50	50
Rural Access Roads							
Without Project	30	50	45	40	40	35	35
With Project	40	70	60	50	50	50	50

Source: Data provided by the project engineering cell.

9. Economic prices have been used for calculating VOC and TTC are detailed below.

a. **VOC.** Fuel consumption, engine oil consumption, tire wear, maintenance cost, depreciation, interest, vehicle ages, and other indicators are used to calculate VOC per km at various speeds in the with project and without project scenarios. It is difficult to measure these indicators precisely, so the results of this analysis are rough estimates. The reevaluation uses the VOC values calculated through HDM-4.⁶ Table 4 outlines VOC values at various IRI levels.

Table 4: Vehicle Operating Cost for Various Roughness Levels

IRI (m/km)	Car	Wagon	Bus	2 Axle	3 Axle	Multi Axle
1500	6.123	13.319	15.213	16.010	17.590	25.269
2000	6.299	13.750	15.805	16.589	18.143	26.061
2500	6.398	14.000	16.143	16.887	18.428	26.480
3000	6.497	14.249	16.481	17.184	18.714	26.899
3500	6.722	14.832	17.272	17.810	19.313	27.815
4000	6.982	15.515	18.213	18.478	19.945	28.825
4500	7.132	15.917	18.773	18.837	20.280	29.377
5000	7.282	16.318	19.334	19.196	20.615	29.929
5500	7.631	17.262	20.660	19.970	21.320	31.114
6000	8.038	18.367	22.203	20.801	22.060	32.370
6500	8.266	18.989	23.084	21.245	22.445	33.027
7000	8.494	19.611	23.964	21.688	22.831	33.685
7500	8.964	20.894	25.933	22.628	23.629	35.054
8000	9.444	22.210	28.094	23.615	24.453	36.471

Source: Results of HDM-4 analysis, the National Highway Authority's maintenance study 2009.

b. **TTC.** Parameters considered for calculating the passenger's travel time cost for each vehicles categories were:

- i. Average annual income per passenger
- ii. Annual working hours
- iii. Number of occupants per vehicle

⁶ HDM-4: Computer software *Highway Design and Management Version 4*.

10. Based on the above parameters, economic value of time expressed as travel time per hour have been worked out for occupants of motorcycles, cars, wagons, buses, two-axle trucks, three-axle trucks, and multi axle-trucks.

11. The value of passenger travel time in several studies has been estimated at 25% to 33% of the person's wage rate due to lack of information on the split of work and non-work travel among passengers and the proportion of non-wage earners among passengers. For calculating the travel time value of occupants, a 33% of total value of working time (in PRe per hr) is used, which is very conservative approach.

12. Based on the assumptions and calculations detailed the per-kilometer value of travel time for passengers of various vehicles against different operating speeds have been estimated and are given in Table 5 below.

Table 5: Travel Time Cost of Various Passengers Using Transport Mode

Vehicle Category	PRe/hrs
Motor cycle	6.94
Cars	13.89
Wagons	11.11
Buses	12.50
2-Axle Trucks	11.81
3-Axle Trucks	11.81
Multi-Axle Trucks	12.50

Source: Results of analysis.

13. **Quantification of Project Benefits.** The overall tangible benefits of the Project comprised VOC savings and TTC savings. The methodology adopted for calculating these benefits is described below.

a. **Vehicle Operating Cost Savings.** A reliable estimate of VOC per km, in both the "without project" and "with project" scenarios, is important for estimating the road user benefits. Based on the VOC values for corresponding road roughness index (discussed above) and economic prices, VOC per km in the without project scenario have been worked out using the HDM-4 model. To arrive at total annual VOC both under without project and with project scenarios, VOC per km have been multiplied by annual average daily traffic and distance traveled in a year. Annual VOC corresponding to the road improvement have been worked out for both without and with project scenarios. Table 5 summarized the roughness improvement:

Table 6: Measured IRI Values at Subprojects

Sr. No.	Route	Before Project	After Project
Provincial Highways			
1	Pindi Bhattian-Chiniot-Kamalpur	9.6	4.2
2	Jhang-Shorkot-Kabirwala-Mahni Sial	9.2	4.1
3	Chiniot-Sargodha-Khushab	8.9	4.0
4	Jhang-Toba Tek Singh-Chichawatni	9.7	4.2
Rural Access Roads			
1	Shorkot City to Shorkot Cantt	9.1	6.2
2	Mian Channu-Talamba	12.5	7.1
3	Bahawalnagar-Bhukan	8.9	6.3
4	Phallia-Kuthiala Sheikhan	8.5	5.6
5	Sheikhupura-Hafizabad	10.4	6.8
6	Rasool Barrage-Mandi-Malikwal-Bhera	8.5	6.4
7	Phallia-Bherowal-Warryam-Sial Morr-Ahmad Nagar	9.0	6.5
8	Girod-Adhikot-Kaloor Kot	8.8	6.4

Source: Data provided by the project engineering cell.

b. **Annual Savings in Value of Travel Time.** Basic parameters required for evaluation of travel time for motorcycles, cars, wagons, buses, two-axle trucks, three-axle trucks, and multi-Axle trucks were determined. The value of travel time, in both without project and with project scenarios, has been calculated by dividing the value of passenger time per hour by the respective speeds. Based on these parameters, annual average value of time in respect of diverted traffic are summarized below:

14. **Project Costs.** Economic analysis is to be undertaken on constant price levels for estimating both benefits and costs attributed. These have been expressed in economic terms as PRe by applying a standard conversion factor of 0.85. Respective project construction period were applied for assessing the project completion. Table 7 presents the subproject costs.

Table 7: The Subproject Cost and Economic Cost

Route	Road	Subproject Cost	Economic Cost
Rural Access Roads			
1 Shorkot City to Shorkot Cantt	R1	255,171,913	216,896,126
2 Mian Channu-Talamba	R2	353,553,017	300,520,064
3 Bahawalnagar-Bhukan	R3	284,689,161	241,985,787
4 Phallia-Kuthiala Sheikhan	R4	216,591,549	184,102,816
5 Sheikhpura-Hafizabad	R5	235,505,747	200,179,885
6 Rasool Barrage-Mandi-Malikwal-Bhera	R6	955,121,889	811,853,606
7 Phallia-Bherowal-Warryam-Sial Morr-Ahmad Nagar	R7	1,198,407,058	1,018,645,999
8 Girot-Adhikot-Kaloor Kot	R8	885,343,528	752,541,999
Subtotal		4,384,383,861	3,726,726,282
Provincial Highways			
1 Pindi Bhattian-Chiniot-Kamalpur	P1	1,431,651,840	1,216,904,064
2 Jhang-Shorkot-Kabirwala-Mahni Sial	P2	1,308,571,282	1,112,285,590
3 Chiniot-Sargodha-Khushab	P3	2,806,093,826	2,385,179,752
4 Jhang-Toba Tek Singh-Chichawatni	P4	2,618,325,215	2,225,576,433
Subtotal		8,164,642,163	6,939,945,839
Total		12,549,026,024	10,666,672,120

Source: Results of analysis.

15. **Cost Components.** The project cost components used in the analysis include capital costs, recurring costs, and overlay costs.

a. **Recurrent Costs.** Operating and maintenance costs work out to be PRe150,000 per km for RARs and PRe 200,000 per km for provincial highways. By applying a standard conversion factor of 0.85, the economic costs are estimated as PRe127,500 for RARs and PRe 170,000 for provincial highways.

b. **Overlay Costs.** Overlay costs estimated as PRe 20 million every 6 years after project implementation for provincial highways, PRe 15 million every 7 years for RARs.

c. **Total Cost.** Project's annual costs stream have been calculated by adding the annual capital, recurrent, and periodic overly costs.

16. **Sensitively Analysis.** In order to examine the impacts of increase in project costs and/or decrease in estimated economic benefits, three alternative sensitivity analyses were carried out. The basis of assumptions were as follows:

- a. A 15% increase in the project costs
- b. A 15% decrease in the project benefits
- c. Combined effects of a 15% increase in the project costs and 15% decrease in the project benefits

17. **Results.** The results of the economic and the sensitivity analysis, shown in Table 8, indicate that except one case, the Project is not sensitive to the assumptions stated at paragraph 16. The calculated EIRR in all cases is well above 12%.

18. **Evaluation.** The average cost of road construction and impact of cost and benefits changes has been summarized below:

a. The average cost of provincial rehabilitation remained PRe 29.31 million per km, whereas the cost of RAR rehabilitation was PRe 13.05 million per km. The VOC and time savings have been considered together; therefore, economic returns are higher than the appraisal estimates.

b. Sensitivity analysis was conducted by (i) increasing the cost by 15%, (ii) decreasing benefits by 15%, and (iii) a combination to two. In all cases, except one, the subprojects remain viable, with an EIRR higher than 12%.

19. While evaluating the improvement under "with project" and "without project" scenarios through comparison of incremental costs over the lifecycle costs of the road, using discounted cash flow techniques, the economic internal rate of return (EIRR) remains the decision criteria. Table 8 below shows the EIRRs for each subproject ranging from 14.5% to 36.7%.

Table 8: Results of Economic Analysis

Description	Length (Km)	Project Cost (PRe)	EIRR			
			Base Case	15% Cost Increase	15% Benefits Decrease	Combined 15% Increase in Cost & 15% Decrease in Benefits
Provincial Highways						
1 Pindi Bhattian-Chiniot-Kamalpur	59.54	1,431,651,840	35.3	32.0	31.5	28.6
2 Jhang-Shorkot-Kabirwala-Mahni Sial	35.32	1,308,571,282	26.6	24.3	24.0	22.0
3 Chiniot-Sargodha-Khushab	93.99	2,806,093,826	36.7	33.3	32.8	29.9
4 Jhang-Toba Tek Singh-Chichawatni	89.69	2,618,325,215	23.7	21.6	21.3	19.4
Rural Access Roads						
1 Shorkot City to Shorkot Cantt	17.42	255,171,913	14.5	12.4	12.2	10.5
2 Mian Channu-Talamba	24.91	353,553,017	25.4	22.9	22.6	20.4
3 Bahawalnagar-Bhukan	16.93	284,689,161	17.8	15.9	15.7	13.9
4 Phallia-Kuthiala Sheikhan	16.19	216,591,549	17.4	15.5	15.2	13.4
5 Sheikhpura-Hafizabad	13.07	235,505,747	18.3	16.5	16.2	14.5
6 Rasool Barrage-Mandi-Malikwal-Bhera	74.56	955,121,889	22.0	19.8	19.5	17.4
7 Phallia-Bherowal-Warryam-Sial Morr-Ahmad Nagar	101.1	1,198,407,058	28.9	26.0	25.6	23.0
8 Girotd-Adhikot-Kaloor Kot	71.85	885,343,528	26.9	24.2	23.8	21.5

Source: Results of the economic and sensitivity analyses conducted during reevaluation.

20. **Conclusion.** The entire scope of the Project was not completed. However, the selected subproject represents important road links, which will positively contribute in the economic growth and benefits to the road users. The EIRR figures suggest that the overall economic benefits against the investment would be higher than the limiting criteria of 12%. The EIRR values also suggest that the present ADB's financing will result in a sustainable economic growth over the useful life of the facilities.