



Performance Evaluation Report

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Project Numbers: 28355-01; 29151; 30311
Loan Numbers: 1444-KGZ (SF), 1630-KGZ (SF), 1853-KGZ (SF)
August 2010

Kyrgyz Republic: Road Rehabilitation Project, Second Road Rehabilitation Project, and Third Road Rehabilitation Project

Independent Evaluation Department

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 20 July 2010)

		At Appraisal	At Project Completion	At Independent Evaluation
Loan 1444-KGZ(SF): Road Rehabilitation Project				
		Mar 1996	Mar 2002	July 2010
Som1.00	=	\$0.0866	\$0.0209	\$0.0217
\$1.00	=	Som11.55	Som47.87	Som46.00
SDR1.00	=	\$0.68	\$0.80	\$0.68
Loan 1630-KGZ(SF): Second Road Rehabilitation Project				
		Aug 1998	May 2005	July 2010
Som1.00	=	\$0.0517	\$0.0243	\$0.0217
\$1.00	=	Som19.34	Som41.09	Som46.00
SDR1.00	=	\$0.75	\$0.65	\$0.68
Loan 1853-KGZ(SF): Third Road Rehabilitation Project				
		Aug 2001	July 2007	July 2010
Som1.00	=	\$0.0208	\$0.0264	\$0.0217
\$1.00	=	Som48.00	Som37.82	Som46.00
SDR1.00	=	\$0.77925	\$0.653261	\$0.68

ABBREVIATIONS

ADB	–	Asian Development Bank
ADTA	–	advisory technical assistance
CAREC	–	Central Asia Regional Economic Cooperation
DOR	–	Department of Roads
DMF	–	design and monitoring framework
EIRR	–	economic internal rate of return
GDP	–	gross domestic product
HDM	–	highway development management
IEM	–	independent evaluation mission
IMF	–	International Monetary Fund
IRI	–	international roughness index
JBIC	–	Japan Bank for International Cooperation
km	–	kilometer
m/km	–	meters per kilometer
MOF	–	Ministry of Finance
MOT	–	Ministry of Transport
MOTC	–	Ministry of Transportation and Communications
PCR	–	project completion report
PPER	–	project performance evaluation report
PIP	–	public investment program
PIU	–	project implementation unit
PPTA	–	project preparatory technical assistance
PSC	–	project steering committee
RSPS	–	Road Sector Policy Statement

RRP	– Report and Recommendation of the President
SDR	– special drawing rights
TA	– technical assistance
TSPS	– Transport Sector Policy Statement
VOC	– vehicle operating cost

NOTES

- (i) The fiscal year (FY) of the Government and its agencies ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

KEYWORDS

adb, asian development bank, bishkek, evaluation, infrastructure, osh, rehabilitation, roads, road fund, road maintenance, transport

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A. Results of the Socioeconomic Survey

In accordance with guidelines formally adopted by the Independent Evaluation Department (IED) of the Asian Development Bank to avoid conflict of interest in its independent evaluations, the IED director general did not review the report and delegated approval of this evaluation to the director of the Independent Evaluation Division 1. Peter Darjes and RAM Engineering Associates LLC. were the consultants. To the knowledge of the management of IED, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

BASIC DATA
Road Rehabilitation Project (Loan 1444-KGZ [SF])

Project Preparatory/Institution Building

TA No.	Technical Assistance Name	Type	Person-Months	Amount \$	Approval Date
1962	Road Rehabilitation	PPTA	20	600,000	21 Dec 1994
2587	Institutional Strengthening of the Road Sector	ADTA	43	800,000	13 Jun 1996

Key Project Data (\$ million)	Per ADB Loan Documents	Actual
Total project cost	86.0	76.0
Foreign exchange cost	48.4	47.1
ADB loan amount/utilization ^a	50.0	46.1
ADB loan amount/cancellation		0.6
Amount of cofinancing		
JBIC	21.0	20.8
Government of the Kyrgyz Republic	15.0	9.0

^a Actual loan amount and cancellation will not add up due to fluctuations in \$ and special drawing rights exchange.

Key Dates	Expected	Actual
Fact-Finding	22 Nov—4 Dec 1995	21 Nov—3 Dec 1995
Appraisal	13—23 Feb 1996	14—23 Feb 1996
Loan negotiations	IV Apr 1996	8—10 Apr 1996
Board approval	I Jun 1996	13 Jun 1996
Loan agreement		18 Jul 1996
Loan effectivity	16 Oct 1996	27 Sep 1996
First disbursement		19 Nov 1996
Project completion	31 Oct 1999	10 Jul 2001
Loan closing	30 Apr 2000	18 Dec 2001
Months (effectivity to completion)	36	63

	Appraisal	PCR	PPER
Economic Internal Rates of Return (%)	13.1	9.7	12.4

Borrower Kyrgyz Republic
Executing Agency Ministry of Transport and Communications

Mission Data

Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	39
Appraisal	1	40
Inception	1	3
Review	6	70
Loan Administration	2	9
Loan Disbursement	1	5
Project Completion Review Mission	1	39
Independent Evaluation Mission	1	23

ADTA = advisory technical assistance, JBIC = Japan Bank for International Cooperation, PCR = project completion report, PPER = project performance evaluation report, PPTA = project preparatory technical assistance, TA = technical assistance.

Second Road Rehabilitation Project (Loan 1630-KGZ [SF])

Project Preparatory/Institution Building

TA No.	Technical Assistance Name	Type	Person-Months	Amount \$	Approval Date
2760	Second Road Rehabilitation	PPTA	46	600,000	11 Feb 1997
3065	Policy Support in the Transport Sector	ADTA	28	600,000	10 Sep 1998

Key Project Data (\$ million)

	Per ADB Loan Documents	Actual
Total project cost	109.80	110.89
Foreign exchange cost	71.90	70.50
ADB loan amount/utilization ^a	50.00	49.36
ADB loan amount/cancellation		0.41
Amount of cofinancing		
JBIC	40.80	40.50
Government of the Kyrgyz Republic	19.00	21.03

^a Actual loan amount and cancellation will not add up due to fluctuations in \$ and special drawing rights exchange.

Key Dates

	Expected	Actual
Fact-Finding		23 Sep—7 Oct 1997
Appraisal	IV Jan—II Feb 1998	2—11 Dec 1997
Loan negotiations	IV Apr 1998	3—5 Aug 1998
Board approval	II June 1998	10 Sep 1998
Loan agreement	Dec 1998	23 Dec 1998
Loan effectivity	23 Mar 1999	10 Mar 1999
First disbursement		28 Apr 1999
Project completion	31 Dec 2001	Nov 2005 ^a
Loan closing	30 Apr 2002	18 Feb 2005
Months (effectivity to completion)	37	68

^a Although most construction was completed before the loan closing, the construction of the retaining wall, snow-retaining barriers, and parapets was only completed by August 2005.

	Appraisal	PCR	PPER
Economic Internal Rates of Return (%)	16.0	17.4	14.8

Borrower	Kyrgyz Republic
Executing Agency	Ministry of Transport and Communications

Mission Data

Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	38
Appraisal	1	40
Consultation	1	16
Inception	1	5
Review	7	46
Loan Administration	1	12
Project Completion Review	1	30
Independent Evaluation	1	23

ADTA = advisory technical assistance, JBIC = Japan Bank for International Cooperation, PCR = project completion report, PPER = project performance evaluation report, PPTA = project preparatory technical assistance, TA = technical assistance.

Third Road Rehabilitation Project (Loan 1853-KGZ [SF])

Project Preparatory/Institution Building

TA No.	Technical Assistance Name	Type	Person-Months	Amount \$	Approval Date
3335	Preparing the Third Road Rehabilitation	PPTA	46	600,000	10 Dec 1999
3757	Institutional Support to the Transport Sector	ADTA	57	440,000	31 Oct 2000

Key Project Data (\$ million)	Per ADB Loan Documents	Actual
Total project cost	50.00	57.10
Foreign exchange cost	30.60	33.60
ADB loan amount/utilization ^a	40.00	45.88
ADB loan amount/cancellation		1.34
Amount of cofinancing		
Government of the Kyrgyz Republic	10.00	11.20

^a Actual loan amount and cancellation will not add up due to fluctuations in \$ and special drawing rights exchange.

Key Dates	Expected	Actual
Fact-Finding		27 Feb—16 Mar 2001
Appraisal		24 May—6 Jun 2001
Loan negotiations	13—15 Aug 2001	13—14 Aug 2001
Board approval	21 Sep 2001	31 Oct 2001
Loan agreement		29 Apr 2002
Loan effectivity	29 Jul 2002	12 Sep 2002
First disbursement		16 Jul 2003
Project completion	Oct 2004	30 Jul 2007
Loan closing	30 Apr 2005	10 Dec 2007
Months (effectivity to completion)	33	58

	Appraisal	PCR	PPER
Economic Internal Rates of Return (%)	19.3	22.4	31.5

Borrower Kyrgyz Republic
Executing Agency Ministry of Transport and Communications

Mission Data		
Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	48
Appraisal	1	34
Inception	1	8
Review	7	73
Project Completion Review	1	5
Independent Evaluation	1	23

ADTA = advisory technical assistance, PCR = project completion report, PPER = project performance evaluation report, PPTA = project preparatory technical assistance, TA = technical assistance.

EXECUTIVE SUMMARY

After the break-up of the former Soviet Union, the Kyrgyz Republic struggled with a depletion of financial resources, the disintegration of institutions, the weakening of economic activity and trade relationships, and the deterioration of infrastructure. Modernization of the transport system was critical to the restructuring that lay ahead. Road infrastructure had suffered years of neglect and mounting maintenance backlogs and was in particular need of rehabilitation. In the road sector, as elsewhere, the institutional legacy meant that market-oriented policies had to be determined, new responsibilities defined, and the roles of the private and the public sectors clarified.

The Asian Development Bank (ADB) approved three road projects between 1996 and 2001. The selected road sections are part of the Bishkek–Osh Road, the country's premier transport artery. The road is the only surface link between the country's two largest cities, Bishkek, the capital in the north, and Osh, the economic center of the South. It is a lifeline of the national economy, serving areas that account for half of gross domestic product (GDP). It helps strengthen social and cultural bonds between the country's diverse ethnic groups. The Road Rehabilitation Project, (first project), the Second Road Rehabilitation Project (second project), and the Third Road Rehabilitation Project (third project), together rehabilitated 483 kilometers (km) or over 72% of the 670 km Bishkek–Osh Road over a period of about 10 years. Three technical assistance projects supported reforms in institutional and regulatory framework. This report presents the findings of the performance evaluation of the three projects and technical assistance.

The three projects were designed to support economic growth and the development of a market-oriented economy by reducing transport costs, improving access to markets in the Bishkek–Osh corridor, and making road transportation safer and more efficient. An explicit additional goal of the Third Project was to reduce poverty and generate sustainable economic growth. In addition to the civil works, the first and third projects provided equipment for road maintenance, with equipment under the initial project procured through cofinancing from the Japan Bank for International Cooperation (JBIC). Through three advisory technical assistance (ADTA) grants, the three projects also focused on improving institutions and the regulatory framework in the road sector, as well as increasing competition in the markets for transport services.

The implementation arrangements were as envisaged at appraisal and have worked well. The borrower for all three projects was the Government of the Kyrgyz Republic, represented by the Ministry of Finance (MOF). The Ministry of Transportation and Communications (MOTC) was the executing agency and implemented all three projects. This included procurement and implementation of the contracts following ADB and JBIC procedures. Completion in all three projects was substantially delayed due to capacity shortcomings within the MOTC and its unfamiliarity with procurement rules, which slowed the implementation of reforms. Poor performance by the contractors set implementation back further.

The first and second projects were delivered at below appraisal cost estimates, enabling savings from the loans. The third project cost 14% more than projected due to significant price increases for major civil works inputs and increased consultant services to cover civil works delays. The quality of the completed road sections is very good and those rehabilitated first have been well maintained. The three projects underwent no major change in design or scope but an envisaged equipment pool was not created. The equipment intended for the proposed pool, from which road maintenance machinery was to be leased out to private contractors, was

assigned instead to the MOTC's maintenance units without prior arrangements for the required lease payments. The output was thus delivered but not the expected outcome, namely operation of an equipment pool under commercial conditions, which could have promoted a market mechanism in the country's road maintenance regime. Compliance with loan covenants was generally lax. Covenants related to reform issues were generally not complied with.

The performance of the three projects overall is rated *successful*, as is each project individually. All the project road sections have been rehabilitated and maintained in good condition. The projects have reduced travel time significantly and improved the movement of resources along a strategic corridor.

The projects are rated *relevant*. They fit the country's strategic priorities well and its needs during transition in particular. They conform with ADB's country and sector strategies and were in line with its operational strategy for the country's road subsector. This strategy focused on restoring essential transport infrastructure and making institutional and policy reforms to speed transition from a command to a market-based economy. The three projects' capacity-building efforts were rated *relevant* and addressed identified reform needs. TA performance in achieving development results, however, was *less than satisfactory*. The only notable achievement was the government's acceptance of a broad reform agenda prepared under the first TA and the reorganization and more focused mandate of the MOTC. The expected overall outcome of creating a commercially-oriented road sector based on a sustainable maintenance regime was not achieved. The Road Fund Act was legislated to meet a loan covenant but the fund does not have the planned autonomous financing scheme based on road-user charge principles. Its major funding source, the company road tax, was cancelled in January 2009.

The three projects are rated *effective* overall in achieving their objectives. The rehabilitated Bishkek–Osh Road provides an all-weather connection between cities that comprise one third of the country's population. Traffic growth has exceeded appraisal forecasts. Vehicle operating costs have fallen. The average travel time from Bishkek to Osh was reduced from 17 hours to 10 hours. Freight and passenger fares and charges have fallen. The projects have helped strengthen attention to road safety.

The complex and far-reaching reforms the projects envisaged needed more time than was allowed to come to fruition. The succession of largely identical road projects provided an opportunity to extend the time horizon for these reforms. This opportunity was missed. Although sustainable road maintenance was a common goal of the three projects, they failed to focus sharply on the best way to achieve it, which is road asset management. The overall reform agenda became diverse and somewhat disjointed as each project introduced new reform objectives. Each left its agenda unfinished, which suggests that the TA was spread too thinly, and thus less than effectively, over too many reform issues. The lessons learned presented in the report and recommendation of the President (RRP) for projects two and three provided little indication that some reforms were incomplete, possibly at risk, and in need of ADB's continued attention and additional support. The inadequate assessment of the critical performance issues of precursor projects weakened the quality-at-entry design of subsequent projects and, in turn, reduced their effectiveness.

The combined projects are rated *efficient*. The third project is rated *highly efficient*. The project's overall expected economic outcome was achieved. Improved road conditions have led to a significant reduction in vehicle operating costs and travel time. Together these represent their main benefits. The projects also supported a more efficient maintenance regime, which generated substantial savings in maintenance costs. They shortened closure periods by building

a responsive maintenance system along the entire project road. The projects experienced delays but with small cost overruns (first two had cost underruns and the third one had 14% overrun).

Sustainability is rated *likely*. The sustainability criterion assesses the probability that financial resources will be sufficient to maintain the achieved outcome over the economic lifetime of the project. The Bishkek–Osh Road’s current state of repair is evidence of good maintenance and the MOTC’s budget allocations for its care so far reflect recognition of its importance to the national network. However, large capital investments are planned for important new regional highway projects in the country. This raises concerns that funding necessary to maintain the project road and the national network in general may be crowded out. To reduce the threat to sustainability, a balanced allocation of government resources between new road construction or rehabilitation and the maintenance of existing roads is essential. The proposed road fund was designed to secure resources for future maintenance but it is not functioning. No alternative plan exists to replace the source of maintenance funding lost when the company road tax was cancelled in January 2009. The introduction of a well structured and more structured, rational, needs-based asset management system is expected to contribute to mitigating the risk of underfunding for maintenance.

The three projects had several positive socioeconomic impacts. They created employment in construction and by generating heavier traffic gave rise to new or expanded small-scale businesses along parts of the Bishkek–Osh Road, including more guesthouses and gas stations. A survey by the Independent Evaluation Department shows that residents recognize the project improvements as badly needed and have benefited through reduced travel costs. It also shows that trips from smaller communities to big urban centers have increased, although the extent to which the projects contributed to this rise has not been determined.

The impact on institutions is rated *moderate*. The three projects supported institution building and development of the policy-making and regulatory oversight capacities of the MOTC. The successful impact is evidenced by the MOTC’s evolution from various sector agencies into a single ministry with a clear mandate for transport planning and policy formulation. On the other hand, the MOTC remains involved in areas that were supposed to be transferred to the private sector. Of special concern is the fact that its own workforce still carries out road maintenance operations that were to be opened to commercial competition. A project goal of community participation in maintenance of project secondary road needs a way to induce local residents to take the responsibility on a voluntary basis.

ADB’s performance is rated *less than satisfactory*. The Independent Evaluation Mission found that ADB performed satisfactorily in attaining the physical outputs and met the projects’ minimum objective. With regard to achieving improvements in the maintenance regime, a central outcome pursued through all three projects, ADB performed less satisfactorily. The formulation of the capacity-building components misjudged the time and resources needed for these reforms. The reform agenda suggested by TA has been unfocussed and has not been achieved. The delays in project completion could have been shortened with more realistic planning, continuous supervision, and timely guidance during project implementation.

The overall performance of the borrower is rated *less than satisfactory*. During the second project, the borrower delayed payment of counterpart funds to the contractors. The borrower also failed to comply with loan covenants on funding road maintenance expenditures during 2002–2005 and on implementing the reforms agreed upon with ADB. The performance of the MOTC as the executing agency is rated *satisfactory*. The project objectives were achieved

even though all the civil work contracts were completed well behind schedule. An important cause of these delays was limits placed by the International Monetary Fund (IMF) on annual spending under the Public Investment Program (PIP). Concerned about fiscal sustainability, the IMF set progressive reduction targets in the PIP, from 6.8 percent of GDP in 2000 to 3.0 percent of GDP by 2005. This led to cuts in annual disbursements to development projects, including ADB's, from both the government and development partners, putting them behind schedule.

Issues

The question of whether the MOTC can financially sustain the maintenance of the Bishkek–Osh project road, in addition to maintaining and rehabilitating the rest of the national road network is a main issue. It is linked to the uncertain future of the road fund, which has never functioned in the way the projects envisaged. ADB should revisit whether it is realistic or beneficial to pursue the road fund goal any further. Among the essential preconditions for a successful road fund identified by a World Bank report on international road fund practices is government-wide commitment.¹ The Government of the Kyrgyz Republic does not appear to have this commitment. The MOF continues to resist the road fund concept of setting dedicated revenue sources aside for the road sector. The IMF, which provides the government with a macroeconomic stabilization program, endorses this position. Another consideration is the World Bank report's recommendation that a road fund should not be implemented in a country with low transparency. An international transparency index places the Kyrgyz Republic in its least transparent group of countries.

Although a properly functioning road fund is unlikely in the near future, the establishment of a sound road asset management system can provide a sustainable maintenance regime in the medium term. Without a well-structured system to manage road assets, road maintenance tends to be output- and schedule-driven, resulting in discretionary, inequitable, and inefficient allocation of resources. An asset management system would make road maintenance more sustainable through a disciplined systematic assessment of the road sector's objective needs, leading in turn to a correct balance between the resources allocated for new construction or rehabilitation and those required to maintain existing roads. It would also enable the MOTC to generate reliable estimates of the sector's funding requirements and to justify the resulting budget requests to the rest of the national government. Substantial assistance will be required to design and implement a road asset management system.

Another serious issue is a safety regulation banning large buses from operation on the Bishkek–Osh Road. It limits the efficiency of the country's transport system and reduces the projects' economic viability. The scale economies inherent in bus transport make unit costs per passenger-kilometer the lowest of all modes of motorized road transport. That the ban has not prompted a sharper reaction from passengers and the bus industry is due to the operation on the road of dilapidated and obsolete minibuses that offer very low fares at the expense of safety, the environment, and travel comfort. The regulations appear to discriminate against large buses in favor of heavy trucks, which are not covered by the ban. When the IEM inspected the tunnel, the passage of one way traffic from both directions was allowed in turn. This study could not find an acceptable rationale for the bus ban. The ban's justification needs to be revisited from both the economic and engineering viewpoints.

¹ World Bank. 2007. *Evaluation of Bank Support for Road Funds: Background Paper for Evaluation of World Bank Assistance to the Transport Sector, 1995-2005*. Washington, D.C.

Lessons

The envisaged institutional and policy reforms were complex and far-reaching and would have required a longer time to come to fruition. The projects did not focus sharply on more realistic policy instruments—a system for road asset management, for example, which was a theme common to all three. Each project left an unfinished agenda, which suggests that the TA was spread over too many reform issues. The implementation time for institutional reforms typically exceeds the implementation period of an average civil work project. The reforms should therefore be pursued on a selective basis and over a longer period.

Long-term planning and proper sequencing are needed in the reform process to reform the road sector successfully. Sufficient resources must be allocated for capacity building in institutions and the monitoring of reform implementation. Given the common resource constraints, this would mean being more selective in determining priority areas for policy and institutional reforms.

Coordination with development partners is a procedural necessity to avoid delays that can arise from conflicting policy advice. Although the creation of a separate road fund to ensure sustained maintenance resources was a key project component, ADB had to waive the relevant loan covenant due to the IMF's firm position that the government has only one consolidated central budget account. If the project team had consulted fully with the IMF at the project design stage, ADB and the government could have explored other ways to guarantee funding for road maintenance. It should be remembered that ADB's Operation Manual requires that no policy advice should be given that conflicts with that of other development partners.

ADB's guidelines for the economic analysis of projects mandate that a national affordability assessment be undertaken for large projects. A project can be considered large when it may have a substantial impact on a country's foreign exchange revenues, expenditure, or budget resources. An assessment of the national affordability of the road rehabilitation projects could have helped set a realistic implementation timeline based on the national economy's resource mobilization capacity. In 2001, while the second project was being implemented, the IMF introduced its rigid quarterly ceiling on the PIP, complicating the government's cash management and resulting in project delays. It would be prudent for ADB to finance large infrastructure projects in smaller countries based on a national affordability assessment with a medium-term fiscal perspective, as mandated in its own guidelines for the economic analysis of projects.

Substantial delays of the kind experienced by all three projects should be avoided in the future. In contemporary infrastructure management, a time overrun, like a cost overrun, is a key indicator of performance. On-time completion is particularly important for a road rehabilitation project. The service level of a road under the rehabilitation is downgraded because the road's capacity is constrained during civil works. The impact tends to be greater than a new construction project. Due to unrealized benefits during the delay period, time overruns undermine the project's efficiency and economic internal rate of return.

Follow-Up Actions

The need for a well-structured, rationalized system to secure financial resources for road maintenance will take on renewed urgency as new capital investment projects suggested by the Road Sector Development Strategy are developed. ADB must examine the sustainability of the

projects. A road asset management could mitigate the risk of under-funding for maintenance, and ADB may consider providing assistance to establish such a system.

ADB should revisit the continued justification and feasibility of the unfinished elements of the institutional reform agenda. These include the restructuring of a road fund, the creation of an equipment pool and privatization of maintenance service, and community participation in maintenance of the secondary roads. A future reform agenda should be pursued on a selective basis and follow feasibility analysis that considers institutional capacity, the political economy, and medium- and long term macroeconomic fundamentals.

ADB should follow up on the ban of bus services on the project road. Remedial action should focus on improving the safety devices in the tunnel and reviving the dormant bus industry.

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I. INTRODUCTION

A. Evaluation Purpose

1. Built before World War II and improved in the 1950s and 1960s, the Bishkek–Osh Road originally 620 kilometers (km) in total length, is the Kyrgyz Republic's premier transport artery. After independence the Bishkek–Osh Road was extended by 50 km for a total length of 670 km. It provides the only domestic surface link between the Bishkek, the capital in the north, and Osh, the economic center of country's southern region. It runs through an area that produces half of the nation's gross domestic product and most of its manufacturing. The road is also part of an international network that runs north from the landlocked nation to Kazakhstan and the Russian Federation, south into Uzbekistan and Tajikistan, and east to the People's Republic of China. The Bishkek–Osh Road was in disrepair when the Kyrgyz Republic gained independence from former Soviet Union in 1991. Proper condition surveys did not appear to have been done but observation indicated roughness levels on existing sealed roads of at best 5 meters per kilometer (m/km) on the international roughness index (IRI).¹ On some of the worst sections, the IRI level was 10 m/km.² Unpaved portions typically ranged from 10 m/km to 15 m/km, with seasonal variation reflecting snow cover and snow clearing operations at higher altitudes.

2. The Asian Development Bank (ADB) approved three projects to improve the Bishkek–Osh Road between 1996 and 2001. The Road Rehabilitation Project of 1994 (first project),³ the Second Road Rehabilitation Project in 1996 (second project),⁴ and the Third Road Rehabilitation Project in 1998 (third project),⁵ had rehabilitated 483 km of the road by 2007. This was 20 kilometers more than 463 kilometers originally programmed.

3. In 2009, ADB's Independent Evaluation Department (IED) selected the three as part of the annual sample of completed projects for performance evaluation. Because substantial portions of the projects were completed before 2005, sufficient time had passed for project results to be examined and performance evaluated. The independent evaluation mission (IEM) that prepared this project performance evaluation report (PPER) visited the Kyrgyz Republic in September 2009. By that time, the third project had been in full operation for over 2 years and the first project had been completed for 7.

4. The evaluation draws on a review of documents from the three projects and other relevant studies, as well as the IEM members' discussions with the executing agency, a development partner, and stakeholders. It incorporates the results of the IEM's field inspections of the road, traffic studies, and a socioeconomic survey carried out to measure the projects' overall benefits and/or disbenefits, as perceived by the people affected. The IEM's road survey included a traffic count, visual pavement survey, and axle load weighing of heavy trucks. The IEM also spoke with a random cross-section of road users, shopkeepers, hotel owners, and maintenance company officials during the mission's visit. The three projects have been rated both individually and as a whole.

¹ Road roughness, as measured by the IRI, is a key indicator of the riding quality of a road surface, which factors importantly in vehicle operation costs. It is commonly shown in meters per kilometer or millimeters per meter. The scale of IRI ranges from 1 to 16, and the IRI of an old paved road ranges from 2.5 to 6.0.

² ADB. 1994. *Road Rehabilitation*. Manila (TA 2256-KGZ, approved for \$600,000 on 21 December).

³ ADB. 1996. *Road Rehabilitation*. Manila (Loan 1444-KGZ [SF], approved for \$50 million on 13 June 1996).

⁴ ADB. 1998. *Second Road Rehabilitation*. Manila (Loan 1630-KGZ [SF], approved for \$50 million on 10 September 1998).

⁵ ADB. 2001. *Third Road Rehabilitation*. Manila (Loan 1853-KGZ [SF], approved for \$40 million on 31 October 2001).

5. The project completion reports (PCRs) for the first, second, and third projects were circulated in December 2002, August 2005, and October 2008, respectively. All three projects were rated *successful* (Table 1). The implementation arrangements were rated *generally adequate* and the performance of the borrower *variable*. The executing agency's performance was rated *satisfactory*. All three projects achieved their objectives, although all of the civil works contracts were completed much later than scheduled. The borrower's performance of *partly satisfactory* was due mainly to its late payment of counterpart funds to the contractors. The civil works delays resulted primarily from the inadequate financial and technical capacities of some contractors. The completed civil works were of good quality and consistent with international standards. The project facilities were being adequately maintained.

Table 1: Project Completion Reports Findings and Assessment

Item	Road Rehabilitation Projects		
	First	Second	Third
Overall	Successful	Successful	Successful
Relevance	Highly Relevant	Highly Relevant	Highly Relevant
Effectiveness	NR	Effective	Effective
Efficiency	NR	Efficient	Efficient
Sustainability	Likely	Likely	Likely
Cost underrun (overrun) (%)	11.6	(1.0)	(14.2)
Months Delay (to physical completion)	17	46	33

NR = not rated.

Source: Project completion reports.

6. The PCRs highlighted a number of lessons. They focused on the need to (i) conduct more thorough feasibility studies and design preparation for complex tunnel work, (ii) allow a new executing agency to familiarize itself with ADB guidelines and procedures, (iii) monitor compliance with loan covenants related to the functioning of a proposed equipment pool, and (iv) apply innovative approaches that are guided by the level of acceptance and demands of beneficiaries and stakeholder. The last lesson emerged from a failure to involve local communities in the maintenance of secondary roads.

7. The third project's PCR concluded that dividing the Bishkek–Osh Road rehabilitation into three phases and separate ADB projects was ineffective because it diminished the benefits that might have accrued to the Kyrgyz economy. It argued that a single project would have allowed a longer-term perspective on planning and resource allocation, shortening the implementation period and ensuring better delivery of the desired benefits.

8. This PPER further assesses the projects' achievements, sustainability, and overall performance. It identifies issues and lessons, makes recommendations, and suggests follow-up action. The PPER also provides additional data on the impact of the three projects, based on independent road traffic and socioeconomic surveys.

B. Expected Results and Program Objectives

9. The project frameworks prepared for the second and third projects were reviewed by their PCRs.⁶ The proposed indicators and targets were suitable for evaluating the impact,

⁶ The logical framework, known then as the project or technical assistance framework, has been used by ADB since the early 1990s. It has evolved and been renamed the design and monitoring framework (DMF). Since 1996, the report and recommendation of the President (RRP) and technical assistance (TA) papers have been required to include a design and monitoring framework as Appendix 1. The Road Rehabilitation Project, processed in 1995 but approved in 1996, did not have a DMF.

outcome, and output statements. They are reflected in the summary design and monitoring framework in Appendix 1.

10. The projects aimed to promote economic growth and the development of a market-oriented economy by reducing transport costs, improving access to markets in the Bishkek–Osh corridor, and making road transportation safer and more efficient. An explicit additional goal of the third project was to reduce poverty and generate sustainable economic growth. Overall, the projects intended to rehabilitate 463 km—over 68%—of the Bishkek–Osh Road and to improve about 125 km of secondary roads in Jalal-Abad Oblast⁷ that feed into the Bishkek–Osh Road. Table 2 breaks each down by road segments. Through three advisory technical assistance (ADTA) grants, the projects also sought to strengthen institutions and the regulatory framework in the road sector and increase competition in the transport services market.

Table 2: Road Segments Covered by Three Road Rehabilitation Projects

Road Segments	Kilometers
(First) Road Rehabilitation	
Kilometer 161 to Kilometer 248	87
Kilometer 327 to Kilometer 361	34
Kilometer 412 to Kilometer 426	14
Total Rehabilitation	135
Second Road Rehabilitation	
Kilometer 81 to Kilometer 161	80
Kilometer 248 to Kilometer 325	77
Kilometer 361 to Kilometer 412	51
Total Rehabilitation	208
Third Road Rehabilitation	
Kilometer 427 to Kilometer 498	72
Uzgen to Osh	48
Total Rehabilitation	120
Improvement of about 125 kilometers of secondary roads feeding into the Bishkek–Osh Road	

Sources: Report and Recommendation of the President for the Road Rehabilitation Project, the Second Road Rehabilitation Project, and the Third Road Rehabilitation Project.

11. In addition to the road civil works, the first and third projects were to provide equipment for road clearing and routine maintenance. Equipment under the initial project was procured under cofinancing with the Japan Bank for International Cooperation (JBIC).

II. DESIGN AND IMPLEMENTATION

A. Formulation

12. At a donors' meeting in Paris in June 1994, the Government of the Kyrgyz Republic requested ADB to provide technical assistance (TA) to prepare a project to rehabilitate the country's road network. In December 1994, ADB approved its first assistance to the country's transport sector through a project preparatory technical assistance (PPTA) grant to finance the preparation of a road rehabilitation project for the Bishkek–Osh Road.⁸ The project was to be

⁷ An oblast or province is an administrative unit one step below the national level and further divided into districts or rayons.

⁸ Footnote 2.

the first phase of a rehabilitation program for the full length of the road that was projected to cost \$300 million. The first project focused on the road's mountainous section to improve safety and make the movement of freight and passengers more efficient. The remaining sections were to be rehabilitated through subsequent loans.

13. Based on the report produced by the PPTA, an appraisal mission fielded in February 1996 defined a project costing \$88 million. On 13 June 1996, ADB's Board of Directors approved a loan for \$50 million (footnote 3) to rehabilitate 135 km of the road. The project became effective on 27 September 1996. The JBIC loan to finance procurement of maintenance equipment became effective on 27 June 1997.

14. The PPTA for the feasibility study of the second phase was approved on 11 February 1997.⁹ A tripartite meeting in September 1997 to discuss the PPTA findings was followed by a fact-finding mission in September and October 1997. The appraisal mission was fielded in December 1997. On 10 September 1998 ADB's Board of Directors approved the second loan (footnote 4) to rehabilitate another 208 km of the road.

15. During a country programming mission in March 1999, the government asked that ADB provide a TA to prepare the third road project. The PPTA was approved on 10 December 1999¹⁰ and a loan appraisal mission was fielded in May and June 2001. The loan for the third phase of the Bishkek–Osh Road rehabilitation was approved by ADB's Board of Directors on 31 October 2001 and became effective on 12 September 2002.

16. The overall project formulation for the three projects benefited from domestic and international expertise and coordination and consultation with counterpart institutions, people to be affected, and development partners. The studies produced by the PPTAs provided convincing justifications for the projects. Environmental and social impact assessments were also prepared.

17. The feasibility study and designs for the third project would have improved had PPTA consultants exercised greater scrutiny and foreseen the project's adverse impact on 100 households along the rehabilitated sections (para. 92). A proper review of detailed designs and feasibility study reports could have prevented or mitigated the damage to the residents affected in the affected project area.

18. The first and second projects focused on the mountainous road between Kilometer 81 and Kilometer 426. This decision emerged from government suggestions during project formulation that this section, because it was the most vulnerable to landslides, avalanches and other weather-related accidents, take precedence over the lowland stretches. The consultants agreed that restoring reliable service in the mountain region was fundamental to keeping traffic moving along the entire length of the road. They also considered the lowland northern and southern sections to be in better condition.

19. The third project covered three distinctly important portions of the road south of Karakul. Kilometer 426 to Kilometer 498 pass through steep slopes along the Naryn River and needed improvements to cross-drainage structures. The section from Kilometer 451 to Kilometer 498 through undulating terrain in the north and relatively flat lands in the south runs along the eastern rim of the Fergana Valley, one of the most productive agricultural areas in Central Asia.

⁹ ADB. 1997. *Second Road Rehabilitation Project*. Manila (TA 2760-KGZ, approved for \$600,000 on 11 February).

¹⁰ ADB. 1999. *Third Road Rehabilitation*. Manila (TA 3335-KGZ, approved for \$600,000 on 10 December).

The third project section provides a key link between the South's two biggest cities, Uzgen and Osh.

B. Rationale

20. The three projects shared a common overall rationale: they were aimed at facilitating the country's transformation from a command to a market-based economy. Like other newly independent past members of the former Soviet Union, the Kyrgyz Republic had to contend after its breakup with a depletion of financial resources and the disintegration of institutions, economic activities, and trade relationships. Among the strategic considerations in the urgent task of arresting rapid economic decline and rising poverty was the need to restore an efficient transport system. The Kyrgyz Republic had been trying since 1992 to diversify its international trade. Trade had previously depended on its partners within the former Soviet Union and transport logistics had been designed to support this pattern. A modernized transport system was crucial to restructuring trade.

21. To meet the emerging demands of a market economy, the road sector had to overcome institutional and physical legacies through major policy and structural reforms. Neglected transport infrastructure—the major roads, in particular—had to be returned to serviceable condition. Although the transport infrastructure would need no immediate expansion to meet a moderate revival in demand, the more densely trafficked national roads were suffering severe deterioration due to a large and growing backlog of capital-intensive periodic maintenance and rehabilitation needs. Road blockages and closures were frequent, particularly in winter. The institutional legacy in the road sector meant that market-oriented policies had to be determined, new responsibilities defined, and the roles of the private and the public sectors clarified. This backdrop helped form the rationale for the three projects.

22. The Bishkek–Osh Road projects were a natural way to address the sector's most urgent infrastructure needs. The road plays an essential role in integrating the country's economy and strengthening the social and cultural bonds between its diverse ethnical groups.¹¹ It is the only internal surface link between the country's two most populous cities and it passes through four of the country's six oblasts account for over half of gross domestic product and 80% of the manufacturing industry.

23. The road is also part of an important international transport corridor that links the landlocked country to Uzbekistan, Tajikistan, Kazakhstan, the People's Republic of China, and Siberia in the Russian Federation. Its rehabilitation was expected to enhance international economic cooperation and regional integration. The first project's inception coincided with the launch of ADB's Central Asia Regional Economic Cooperation (CAREC) program in early 1997. Among other objectives, the program was to reduce the economic isolation of the Central Asian countries by securing access to new markets and to cut transaction costs by improving transit and transport across the region.

24. The third road project sought specifically to benefit the poor by improving their access to markets for agricultural produce and to health facilities and better employment opportunities. In addition to work on the main Bishkek–Osh route, it included the rehabilitation of two secondary roads in areas where the incidence of poverty was high—the Tash Kumyr–Karajgach road and

¹¹ The southern region of the Kyrgyz Republic has a long history of ethnic conflict. Hundreds were killed in the 1990s in clashes between Kyrgyz and Uzbek inhabitants over land distribution. Similar deadly rioting broke out in Jalal-Abad in May 2010.

the Bazar Korgom–Arslanbob road, along with its branch linking Kyzl and Ungkur. Poverty was particularly heavy near Karajgach, in an area where agriculture and livestock activity dominated. Population was dense along the second of the rehabilitation roads and poverty grew more evident as the road moved away from the main route. The area near Arslanbob had a rich agricultural base that included cotton, tobacco, rice, and walnuts. The Kyzl–Ungkur road feeds into three villages with above-average poverty levels and many extremely poor residents.

C. Cost, Financing, and Executing Arrangements

25. The first and second projects were delivered at below the cost estimated at appraisal, enabling savings from the loans. The third project cost 14% more than projected. (Appendix 2).

26. The first project was implemented as originally designed at 11.6% below cost estimates although the base cost exceeded the appraisal estimate by 2.6% (Table 3). Total ADB disbursement was \$46.1 million and cancellation was \$0.6 million, the difference being accounted for by the depreciation of the dollar against special drawing rights (SDR). Total disbursement from JBIC was 99.5% of appraisal estimates while the government disbursed only 60% of the programmed \$15 million. At project completion, government financing covered 11.8% of total project cost.

27. The base cost overrun of \$1.9 million was due to the higher cost of equipment and the extension of the services of the international consultants for construction supervision to complete civil works that had been delayed.

28. The original scope of the second project was completed at a cost 5.7% below the original estimate. The cost savings allowed for the extension of the project to include additional road safety works and to procure winter maintenance equipment (para. 45). The project, including the additional works, was completed with a \$1.1 million overrun, or 1% higher than the appraisal estimate. Of the \$110.9 million expended for the project, 44.5% or \$49.4 million was financed by ADB, 36.5% or \$40.5 million was financed by JBIC, and the rest was financed by the government, which financed the cost overrun. The detailed costs for each component, including the breakdown of foreign and local cost components, are in Appendix 2.

Table 3: Estimated and Actual Costs

	Appraisal (\$ million)	Actual (\$ million)	Actual/ Appraisal (%)
Road Rehabilitation Project			
Asian Development Bank	50.0	46.1	92.2
Japan Bank for International Cooperation	21.0	20.9	99.5
Government	15.0	9.0	60.0
Total Project Cost	86.0	76.0	88.4
Base Costs	72.1	74.0	102.6
of which: Civil Works	62.5	62.2	99.5
Equipment	6.5	7.4	113.8
Consultancy Services	3.1	4.3	138.7
Second Road Rehabilitation Project			
Asian Development Bank	50.0	49.4	98.8
Japan Bank for International Cooperation	40.8	40.5	99.3
Government	19.0	21.0	110.5
Total Project Cost	109.8	110.9	101.0

	Appraisal (\$ million)	Actual (\$ million)	Actual/ Appraisal (%)
Base Costs	91.6	109.2	119.2
of which: Civil Works	86.8	101.6	117.0
Equipment		1.4	
Consultancy Services	4.8	6.3	131.2
Third Road Rehabilitation Project			
Asian Development Bank	40.0	45.9	114.8
Government	10.0	11.2	112.0
Total Project Cost	50.0	57.1	114.2
Base Costs	42.9	56.5	131.7
of which: Civil Works	39.2	50.6	129.1
Equipment	1.3	2.3	176.9
Consultancy Services	2.4	3.6	150.0

Sources: Asian Development Bank database, project completion reports, project files, and report and recommendation of the President.

29. The third road project was completed at a cost 14.2% higher than appraisal estimates. ADB financed 80.4% of the total. Due to the appreciation of the US dollar against SDR, ADB was able to cover part of the cost overrun within its original commitment. At appraisal, ADB's funding was equivalent to SDR31.778 million. Actual disbursements totaled SDR30.935 million. Counterpart funding was 12% higher than originally estimated.

30. Apart from an increase in consultant services to cover delays in construction works, a variation order to increase consultant services by an additional \$443,853 was approved to do the detailed design of the Osh–Sarytash–Irkeshtham road. As was the case in equipment procurement, the cost overrun in civil works arose from price increases in major inputs, such as diesel, steel, and bitumen.

31. The implementation arrangements were as envisaged at appraisal and appeared to have worked well. The government was the borrower for all three projects, represented by its Ministry of Finance (MOF). The Ministry of Transportation and Communication (MOTC) was the executing agency.¹² A project steering committee (PSC), comprising representatives of the MOF, the MOTC, the Ministry of Economy, Goskominvest (government investment committee), and the project manager, was established to oversee and coordinate all project activities, including all sector reforms agreed during policy dialogue with ADB. The PSC's work was constrained by frequent turnover of its members and political instability in 2005–2006. Following a change of government in March 2005, the new government established a committee for managing investment projects for major road works. The committee was chaired by the minister of MOTC and filled the role of PSC for all donor-funded projects.

32. A project implementation unit (PIU) responsible for implementing the projects was established under the Bishkek–Osh Road Division.¹³ The PIU was headed by a project manager and assisted by international and national consultants. It carried out (i) the day-to-day supervision of project implementation; (ii) the procurement of civil works, goods, and services;

¹² Prior to the reorganization, the executing agency was the Ministry of Transport. The Ministry of Transportation and Communications (MOTC) replaced the Ministry of Transport after the reorganization.

¹³ Prior to the reorganization of the MOTC and during the early part of implementation of the first project, this division was called Directorate General for Rehabilitation and Maintenance of the Bishkek–Osh Road.

(iii) consultant recruitment; (iv) disbursements; (v) reporting; and (vi) liaison among MOTC, contractors, suppliers, government agencies, and ADB. On average, the PIU had nine staff over the period of the projects, including the PIU head and deputy head, two financial specialists, three engineers, and two support staff. PIU operating expenses were originally financed through the supervising engineer's contract. From September 2006, the PIU staff was employed under direct contracts with the MOTC and financed through the imprest account. Another PIU was established for the JBIC-funded components of the projects.

D. Procurement, Construction, and Scheduling

33. **Procurement.** The projects' civil works were implemented through eight contracts, two contracts each under the first and second projects (one each financed by ADB and JBIC), and four contracts under the third project. Procurement financed by ADB was undertaken in accordance with ADB's *Guidelines for Procurement*. The procurement financed by JBIC followed JBIC's guidelines. To facilitate timely project implementation, particularly in light of severe winter conditions that limited construction to about 8 months a year, ADB approved advance procurement under all three projects. All eight contracts for civil works were awarded on the basis of international competitive bidding. All equipment contracts were awarded based on a single-stage, two-envelope system under the international competitive bidding procedures. No problems were encountered in the packaging of contracts, preparation of tender documents, and evaluation of bids.

34. **Construction and Scheduling.** The consultant for the first project began work on 5 June 1996, a week prior to loan approval but after the advance recruitment action was approved on 7 February 1996. The civil works contractor was selected on 13 September 1996 and the civil works commenced on 1 January 1997. The original loan closing date of 30 April 2000 was extended once to 1 October 2001. The civil works were completed by July 2001, about 17 months behind the date anticipated at appraisal (Table 4). The delay was due to (i) recurrent slope stability problems, which caused 4 months of delay and several minor design changes; (ii) problems in obtaining diesel fuel and good-quality bitumen for asphalt works; and (iii) a lack of one contractor's capacity in managing and resolving implementation issues and internal problems in the joint venture between the Turkish and Kyrgyz companies.

Table 4: Time Overrun

	Road Rehabilitation Projects		
	First	Second	Third
Expected project completion	31 Oct 1999	31 Dec 2001	Oct 2004
Actual project completion	10 July 2001	Nov 2005	30 July 2007
Time overrun (months)	17	46	33
Months of effectivity to completion expected	36	37	33
Months of effectivity to completion actual	63	68	58

Source: Project completion reports.

35. The second project was expected to be implemented within 4 years, beginning with procurement activities in early 1998 and ending with the completion of construction in October 2001. The loan was extended three times from the original closing date of 30 April 2002 to 31 October 2004. The delays were caused by (i) the relocation of electric cables within the Tyu Ashu tunnel; (ii) disputes between the MOTC, the supervising consultant, and the contractor over the detailed design, which had not been available at the time of tendering; and (iii) minor design changes at a late stage. While the rehabilitation of the road sections was complete by November 2001 (1 month later than envisaged at appraisal), the tunnel works were not completed until September 2002, an 11-month delay over the appraisal estimate.

36. A major accident occurred in the Tyu Ashu tunnel on 3 August 2001, killing five people by asphyxiation and injuring many more.¹⁴ Nine ventilation fans had been purchased and delivered to the project site but they had not been installed at the time of the accident. Safety issues in the tunnel had been brought to the attention of the MOTC, the contractor, and the supervising consultant several times. A government commission was established in August 2001 to investigate the accident. ADB fielded a special loan review mission from 23 to 28 August 2001 to review safety conditions in the tunnel and help formulate an action plan to prevent further accidents.¹⁵



37. The third project was greatly slowed by pre-loan effectiveness delays, pre-construction delays, and the poor performance of two contractors. Implementation took 6 years, double the original estimate. The appraisal schedule was overly optimistic, allowing only 3 months from loan approval to effectiveness. The pre-construction period was lengthened by difficulties in evaluating complex civil works contract packages and the need to verify the credentials of the lowest bidders, whose tenders were 30% below the engineer's estimate. Slower than projected execution led to an 18-month overrun in the implementation of civil works. One contractor was terminated for continuing poor performance.

38. Limits placed by the International Monetary Fund (IMF) on the country's public investment program (PIP) were an important contributor to the late completion of the second and third projects. Concerned about fiscal sustainability, the IMF's Poverty Reduction and Growth Facility for 2001 programmed progressive reductions in the PIP from 6.8% of gross domestic product (GDP) in 2000 to 5.5% of GDP in 2002, and to 3% of GDP by 2005. This compressed annual disbursements to donor-funded projects by both donor and government sources¹⁶ and held back implementation. The rigid quarterly ceiling on PIP further complicated the government's cash management.

E. Design Changes

39. All project designs determined at appraisal were followed. The preliminary civil works designs envisaged at appraisal were largely reflected in the detailed designs of the completed projects. One minor change was observed from the TA-supported design of the capacity-building components. A study had invalidated the need for the TA component for enhancing competition among transport operators and it was canceled.¹⁷ No major change in design and scope of the projects was made after the loan approvals.

40. In response to a serious accident in the Tyu Ashu tunnel, which was rehabilitated as part of the second project, a road safety secretariat was established within the MOTC.¹⁸ This was an

¹⁴ There had been a previous accident on 14 June 2001 with no fatalities.

¹⁵ A review mission on 16 October 2001 by the Kyrgyz Republic Resident Mission checked on the implementation of the safety action plan at the tunnel and found that all 33 measures of the action plan were complied with.

¹⁶ ADB. 2001. *Kyrgyz Republic: Principles and Practice of Public Investment Program (PIP)*. Consultant's Report. Manila. (Report of TA 3382-KGZ).

¹⁷ A similar TA funded by the European Union had confirmed that transport services were already highly competitive, freight services were deregulated, and passenger services were only lightly regulated.

¹⁸ The required office equipment was purchased under ADB. 2000. *Technical Assistance to the Kyrgyz Republic for Improvement of Road Sector Efficiency*. Manila (TA 3531-KGZ, approved on 31 October 2000 for \$440,000). The operating cost of the secretariat was financed under ADB. 2001. *Technical Assistance to the Kyrgyz Republic for Institutional Support in the Transport Sector*. Manila (TA 3757-KGZ, approved 31 October 2001 for \$650,000).

addition to the original design of the second project. The secretariat of four staff members operates out of a very small office with only one computer. It has a liaison and coordination function and serves as an interface between the MOTC and the traffic police. It also analyzes accidents on behalf of the Safety Commission, which is headed by the deputy prime minister. The secretariat has been involved in a continuing ban on the passage of buses through the Tyu Ashu tunnel, which was put into effect after the 2001 accident. This means that large buses cannot travel the full length of the Bishkek–Osh Road. Secretariat staff suggested that inadequate geometric design standards of the tunnel led to the bus ban. When the IEM inspected the tunnel, the passage of one way traffic was allowed in turn and was not well lit. The safety secretariat also indicated that the bus ban was issued over concern that obsolete buses may be involved in accidents on the mountainous sections of the road. Heavy articulated trucks are apparently not affected by the ban. The tunnel accommodates them using one-way traffic controls. The bus ban undermines the efficiency of the project and its rationale needs to be revisited.

F. Outputs

41. The outputs of the three projects comprised (i) civil works for road rehabilitation, (ii) procurement of road maintenance equipment, (iii) ancillary physical outputs, and (iv) institutional outputs to be achieved with support from related ADTAs. The institutional outputs are assessed in paras. 97–102 Section IV. B. The project design of the physical project components was realized in compliance with the technical specifications. In contrast, the expected outcomes of the ADTAs were only partly achieved.



1. Bishkek–Osh Road Rehabilitation

42. The projects rehabilitated 483 km of the Bishkek–Osh—about 72% of the total length and 20 km more than expected.¹⁹

- Under the first project, three road sections totaling 135 km were rehabilitated. Two sections of 100 km in total length were financed by ADB. The third section of 35 km was financed by JBIC. The civil works for the three sections were completed between 1999 and 2001.
- Under the second project, 228 km were rehabilitated, comprising (i) a 100-km section and including a 2.5-km tunnel financed by ADB, and (ii) two sections totaling 128 km financed by JBIC. The sections were completed between September 2002 and November 2005. The 100-km section financed by ADB covered 80 km from Kilometer 81 to Kilometer 161, as included in the original design, and 20 km from Kilometer 61 to Kilometer 81, as a change in scope approved on 11 April 2002.
- The third project rehabilitated 120 km. The civil works were completed in 2007.

¹⁹ Under the second project, loan funds from the unallocated category were used to improve an additional 20 km of the road. This was considered a minor change in scope and a variation order for the existing civil works contract and the consultant supervision was made.

2. Secondary Roads

43. The third project was to rehabilitate 125 km of secondary roads: 53 km from Tash Kumyr to Karajgach, 52 km from Bazar Korgom to Arslambob, and 20 km of a branch of this second road to Kyzl Ungkur. The IEM was able to confirm the rehabilitation of 105 km, consisting of 53 km from Tash Kumyr to Karajgach, 47 km from Bazar Korgom to Arslambob, and 5 km of the branch to Kyzl Ungkur (Appendix 4). These road sections were completed at a cost of \$14.0 million or 119% more than the cost estimate. The rehabilitation of the remaining 20 km has not been substantiated. Civil works on the secondary roads were completed in 2007.

3. Maintenance Equipment

44. Equipment for road maintenance, rehabilitation, and emergency works was procured under all three projects at a cost of \$11.1 million or 4.5% of the projects' total cost. The use of the equipment was not limited to locations along the Bishkek–Osh Road. Most of it was deployed elsewhere in the country. A list of the equipment procured is in Appendix 4.

- The \$7.4 million of equipment procurement under the first project included pavers, rollers, graders, loader, bulldozers, excavators, dump trucks, and snow-removal equipment.
- Under the second project, road maintenance equipment was added to the project scope after loan approval and unallocated loan funds were used to procure winter maintenance equipment, including multipurpose maintenance equipment, a snowplow, and a front loader. Total cost was \$1.4 million.
- In the course of implementing the third project, the scope for equipment procurement was changed to allow the purchase of heavier equipment, including front loaders, crushers, and chip sealers. At project appraisal only light and hand-operated equipment had been envisaged. A total of \$2.3 million was spent for procurement of maintenance equipment under the third project.
- The road maintenance equipment procured under the projects has been assigned to the road maintenance units of the MOTC. It was envisaged that under the second project part of the equipment would be transferred to an equipment leasing company, which would be operated by the Bishkek–Osh Road Department. The leasing company has yet to be established.

45. An expected output of the first project was the establishment of an equipment pool for the equipment procured. Although the pool was created, it did not have any permanent staff or any accounts. Under the second project, the MOTC requested a minor change in scope to allow procurement of winter road maintenance equipment. The MOTC was required to provide ADB with information showing that the equipment pool was functioning before the winter equipment was purchased. Audit reports of the equipment pool sent to ADB did not address critical issues raised by ADB. The MOTC explained that the equipment pool was not functioning because the equipment was assigned to the maintenance units without making prior arrangements for the required lease payments. Thus, while the output was delivered, the expected outcome, namely the operation of the equipment pool under commercial conditions, which was also to benefit private contractors, was not achieved.

4. Other Physical Outputs

46. Unallocated loan funds under the second project were used to (i) improve road safety on selected mountainous sections, and (ii) stabilize rock slopes on those sections. The third project included pavement overlays for about 105 km of a secondary road in the Jalal-Abad Oblast that connected to the Bishkek–Osh Road. At the borrower's request, the project scope for secondary roads was increased to include a bridge adjacent to the Tash–Kumyr–Karajigach section that had been damaged by flooding during implementation. The design standards for the secondary road were modest but adequate for the intended improvements.



G. Consultants

1. Consultants for Civil Works Implementation

47. A total of 529 person-months of international and local consultants were used under the three projects. The consultants were engaged for pre-construction activities, construction supervision, and some special activities explained below. International consultants were recruited according to ADB's *Guidelines on the Use of Consultants*. National consultants were recruited under local procedures that were satisfactory to ADB. The MOTC assessed the overall performance of the consultants as satisfactory.

48. Under the first project, two consultant contracts covering 161 person-months totaling \$7.1 million were concluded. Initially, the ADB consultant also supervised the JBIC-financed civil works and equipment components. After 2002, JBIC-financed consultants supervised the JBIC component of both the first and the second projects. The MOTC signed and financed a separate consultant contract to cover the defects emerging during the liability period.

49. Under the second project, two contracts totaling \$6.3 million were concluded. The consultants financed by ADB for the first civil works package were recruited in accordance with ADB's *Guidelines on the Use of Consultants*. The consultant recruitment for the second package, which was financed by JBIC, followed JBIC procedures. Due to five variations to the original contract, the consultant inputs increased by 32 person-months from 202 person-months to 234 person-months.²⁰ Further details are given below:

- (i) The review of detailed design and assistance to prequalification of contractors, tendering, and contract award for the civil works of the third project have expedited implementation of that project.
- (ii) A request was made by the MOF for a reallocation of loan proceeds from the unallocated category to cover the costs of consulting services for the auditing of project accounts. There was no provision to finance the cost of auditing services under the project and the government did not have sufficient funds. The auditors were recruited in accordance with ADB's *Guidelines on Use of Consultants*.

²⁰ The variation orders covered (i) preparation of bidding documents, tendering, and evaluation of bid proposals for the Third Road Rehabilitation Project; (ii) additional consulting services for work on the additional rehabilitation from Kilometer 61 to Kilometer 81; (iii) preparation of bidding documents and evaluation of bids for the supply of winter maintenance equipment; (iv) preconstruction services on preparation of bidding documents, bidding, and evaluation of bids for rock slope stabilization works; and (v) a reduction in the list of design and survey equipment to be procured under the consultants' contract.

- (iii) The PCR for the first project had recommended examining pavement defects on selected road sections, designing remedial measures, and assessing the liabilities of each party. ADB endorsed the recommendation and approved the allocation of \$35,000 from the project to finance this consultant.
- (iv) A domestic consulting firm was recruited to undertake the supervision of the rock slope stabilization. The consultants were recruited under domestic procedures acceptable to ADB.

50. The recruitment of consultants under the third project, which was undertaken in accordance with ADB's *Guidelines on the Use of Consultants*, suffered substantial delays. To expedite project implementation, all pre-construction activities were carried out by the supervising consultant hired under the second project (para. 49). The supervising engineer's contract was awarded through international competitive recruitment 13 months later than envisaged at appraisal. ADB approved five contract variations for a total of about \$0.85 million. Among other things, they covered (i) additional construction supervision inputs resulting from a delay in civil works contracts, (ii) preparation of the detailed design for the proposed Southern Transport Corridor Road Rehabilitation Project, and (iii) procurement services for the same project. In April 2006, ADB imposed worldwide sanctions on the selected consulting firm. As a result, the firm's contract was discontinued. To allow the borrower to complete the project, ADB in 2006 approved (i) additional engineering services for about \$0.5 million, and (ii) a change of the selection method for these services from a quality- and cost-based selection to a single-source selection and direct selection of individual consultants.²¹ Auditing consultants were recruited in accordance with ADB's *Guidelines on Use of Consultants*. The total costs of consulting services, which comprised about 134 person-months, increased by half from \$2.4 million estimated at appraisal to \$3.6 million at project completion.

2. ADTA Consultants

51. About 85 person-months of consultants were provided under the ADB-financed ADTAs. The ADTAs have supported institution-building and development of the policy-making and regulatory oversight capacities of the MOTC. The ADTAs were aimed at restructuring the road sector and building capacity in policy formulation, planning, management and project implementation for highways, and maintenance financing. The TA was funded by the Japan Special Fund.

52. The ADTA for the institutional strengthening of the road sector, which supported the first project, was to help the government improve its policy and regulatory framework for the road transport sector.²² The consultants delivered a design for a transport sector development framework, an action plan for road sector reforms, and a draft transport sector policy statement. As a result of the TA, the MOTC was established, new mandates were transferred to it, road maintenance was reorganized, and the Automobile Roads Act and Road Fund Act were passed. The performance of the consultants ensured that these outcomes were achieved. Throughout the TA period, the consultants adopted an interactive and consultative approach.

²¹ The approved arrangements included hiring (i) the current team leader directly as an individual international consultant for the position of supervising engineer representative and resident engineer; (ii) a local design institute, formerly the consultant's subcontractor, by single-source selection; and (iii) all current PIU staff directly as individual national consultants.

²² ADB. 1996. *Institutional Strengthening of the Road Sector*. Manila. (TA 2587-KGZ, approved for \$800,000 on 13 June 1996).

53. The TA to provide policy support in the transport sector and attached to the second project was to strengthen policy functions, institutional development, and the financial management capacity of the MOTC.²³ The two-part TA also focused on building the capacity of private contractors. The first part aimed to strengthen the MOTC's transport policy formulation and financial management capabilities. The second part's objectives were to define the organizational structure and roles of the Department of Roads (DOR).²⁴ While based on best practices at the time of TA implementation, the solutions recommended by the TA consultants were adapted to the country's needs and conditions. The recommendations contributed to the restructuring of the MOTC, even if not all of them were implemented. The TA recommendations for establishing a road fund were not fully implemented. This was not attributable to the quality of the recommendations. The delay in establishing the Transport Policy Department and the Planning, Design, and Construction Department limited the consultants' effectiveness in strengthening these agencies. The role of private contractors in carrying out maintenance works has so far also been limited, although the consultants made detailed recommendations and carried out training to achieve this objective.

54. The TA attached to the third project provided institutional support for the transport sector and was aimed at developing the government's capacity to maintain secondary roads and at increasing competition among transport operators.²⁵ The consultant designed a concept for road maintenance in which local communities were expected to participate. The concept could not be implemented. The consultants should have identified the constraints to implementing the concept and recommended remedial action.

H. Loan Covenants

55. Two of the first project's loan covenants were not complied with and one was only partly kept. The two unmet covenants related to the road maintenance budget. The first called for the funding of a yearly road maintenance budget for the road fund and the second was related to the improvement of road sector revenues from road users. The covenant to promote the principles of a market-oriented economy was partly complied with. While the necessary statements, reports and legislation were drafted, no legislation followed to ensure that regulations were in place.

56. The borrower did not comply with two loan covenants under the second project, one related to the road fund, the other calling for the preparation and the adoption of a road safety program. Three covenants were met only in part. One was related to the proposed road fund, the second to the facilitation of private sector participation in road maintenance, and the third to a road maintenance system.

57. At the time of the IEM, two loan covenants under the third project remained outstanding and four had been only partly complied with. The requirement to have the project beneficiaries participate in the maintenance of secondary roads was not complied with in the absence of any incentive or motivation that would entice them to become involved. The lack of appropriate skills was also an impediment. Covenants related to the funds for maintenance and one mandating the participation of local communities in the maintenance of secondary roads were partially met.

²³ ADB. 1998. *Policy Support in the Transport Sector*. Manila. (TA 3065-KGZ, approved for \$600,000 on 10 September 1998).

²⁴ The Department of Roads was to devolve into the Transport Policy Department and the Planning, Design, and Construction Department.

²⁵ ADB. 2001. *Institutional Support in the Transport Sector*. Manila. (TA 3757-KGZ, approved for \$650,000 on 31 October 2001).

The required monitoring and evaluation of project impact was carried out but not as often as required by the loan covenant. A required mid-term review was not conducted but the issues specified by the covenant for coverage in the review were addressed during regular missions.

I. Policy Framework

58. **Macroeconomic Conditions.** The event that most influenced the overall policy environment during the preparation and start-up period of the first project was the financial crisis in the Russian Federation. The crisis led to a further contraction of the Kyrgyz Republic's economy and to its near-bankruptcy. The IMF was eventually convinced to launch a macroeconomic stabilization program under its Poverty Reduction and Growth Trust arrangements.²⁶ The economic downturn slowed the overall pace of economic reforms and soured the climate for necessary structural reforms. The IMF program stalled the proposed ADB reforms that aimed to ensure sustainable financing for road maintenance by establishing a special account for the road fund. Other than the introduction of a value-added tax, which created initial uncertainty among international contractors over whether they would have to pay it, no changes in the political economy had an impact on the projects' performance.

59. **Policy, Legal, and Regulatory Framework.** The transition to a market economy required major changes in institutions and policies. The core tasks were to (i) establish an appropriate policy, legal, and regulatory framework for the road sector; (ii) provide and maintain public infrastructure for the road and rail networks and civil aviation; and (iii) ensure efficient transport operations. The projects responded to the government's reform agenda in the transport sector and to other emerging needs by (i) supporting the creation of a more liberal business and regulatory environment (ii) opening the transport sector to competition; (iii) facilitating the upgrading of transport infrastructure; (iv) improving the efficiency of the state-owned transport enterprises by commercializing their operations; and (v) developing and introducing safety and environmental standards. The agenda was presented in the Transport Sector Development Framework, a Transport Sector Policy Statement (TSPS), and the Road Sector Policy Statement (RSPS), all prepared under ADB TA.²⁷ The TSPS was to provide the long-term framework for the development of the transport sector. The documents translated the government's commitment to market-based reforms into a set of sector-specific policies, legal documents,²⁸ and guidelines. The TSPS and RSPS were to be formally adopted and issued by the government by the end of 1996.

60. **Roles of the Government and the Private Sector.** To strengthen accountability and promote cost-recovery, the role played by government institutions in the road sector was to be limited to planning and policy formulation, performance monitoring, and regulation, licensing, and safety. Their direct involvement in construction and maintenance operations was to end.²⁹ The former Ministry of Transport (MOT) was reorganized toward this goal. However, the MOTC,

²⁶ The IMF program in the Kyrgyz Republic began in May 1993 with a standby arrangement. The first assistance under the Poverty Reduction and Growth Facility was provided in July 1994. <http://www.imf.org/external/np/fin/tad/extarr2.aspx?memberKey1=565&date1key=2010-03-31>

²⁷ ADB. 1996. *Technical Assistance for Institutional Strengthening of the Road Sector in the Kyrgyz Republic*. Manila (TA 2587-KGZ, approved for \$800,000 on 13 June 1996).

²⁸ Legal documents included amendments to the Automobile Roads Act of May 1994, jurisdiction of sector institutions, and a functional road classification.

²⁹ The Department of Roads (DOR) was expected to be responsible for (i) formulating road sector policies; (ii) programming and budgeting road activities; (iii) mobilizing resources for funding of road activities, including management of a proposed road fund; (iv) managing routine maintenance and periodic maintenance; (v) maintaining a centralized road inventory; (vi) controlling the cost and quality of works; and (vii) road standards and safety.

which evolved from the MOT in the restructuring, is holding on to functions that were to be carried out by the private sector. The MOTC is still involved in maintenance operations, indicating that attempts to outsource maintenance to contractors have been unsuccessful. The MOTC officials say that the contractors have been unable to deliver the work at the required quality standards.

61. **Privatization.** Soon after independence, the government launched a comprehensive privatization program. It was to transform state-owned enterprises into joint stock companies and transfer shares to the employees. Additional measures were later adopted to advance the privatization agenda by liberalizing the use and transfer of shareholders' rights, introducing competitive procedures for all types of privatization, broadening the ownership of company assets, and reducing state control over partially privatized companies. By early 1996, about half the enterprises, once controlled by the state had been privatized. Most transport companies were not financially viable, however, raising concerns about the need for an adequate scale of operation and thus for regulating access to the industry to avoid ruinous competition. And their technical and managerial capabilities were limited because of the short experience of market economy. The provision of equipment reportedly strengthened the capacity of the MOTC to maintain the national road network although it did not, as the projects had envisioned, engage private contractors to do the work for which the equipment had been purchased.

62. **Cost Recovery and Road Fund.** Under the former Soviet Union, road maintenance funds had been allocated to the Kyrgyz Republic by the central government, based on technical standards applied throughout the country. These standards included pavement overlays on major roads every four years regardless of pavement conditions and traffic. The loss of these subsidies and the fall in government revenues after independence cut financial allocations for road maintenance drastically. By 1995, government resources met only 3% of annual routine and periodic maintenance requirements.³⁰ The backlog of deferred maintenance grew steadily and large parts of the road network deteriorated to a point where they required reconstruction and rehabilitation. Against this backdrop, the government adopted a policy of recovering costs from road users and prepared a road sector maintenance plan to determine resource requirements. Sustained funding of maintenance was to be ensured by a road fund through which the proceeds from road user charges would be made available to the former MOT without the constraints of budget procedures and reviews.

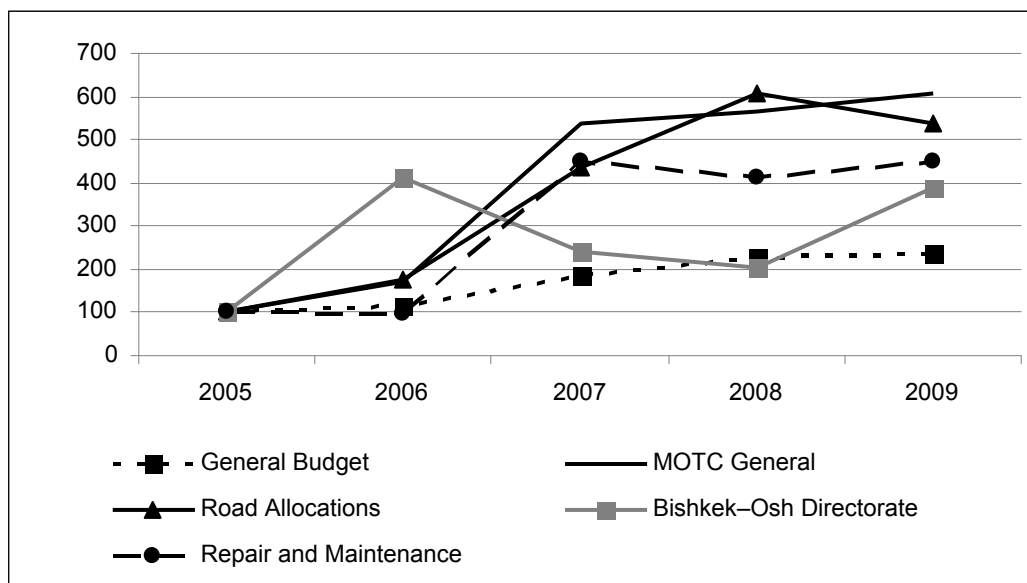
63. These plans failed for a number of reasons. Given the government's narrow fiscal space, the IMF was concerned about the creation of any extra-budgetary funding arrangements. It expected that the proposed earmarking of general taxes for the road sector would adversely impact macroeconomic fiscal control and flexibility. Most taxes on vehicles, fuel, and tires were designed to generate revenue for the general budget and perform a road user pricing function. Because of this, the fund was replenished at the discretion of the Ministry of Finance instead of road user revenues being allocated automatically to the road sector in line with its needs. While the government did enact legislation for a road fund, the fund has never functioned as designed. It remained an account within the general budget. Revenues from road user taxes were not earmarked. The only tax that could have been considered earmarked was the company road tax, which was levied on companies' turnover at the rate of 0.8%. While the revenue it generated was substantial, the tax was neither equitable nor commensurate with the cost incidence of the

³⁰ ADB. 1995. *Technical Assistance for the Road Rehabilitation Project*. Phase 1—Studies. Consultant's report. Manila. (TA 2256-KGZ).

different vehicle classes with regard to road conditions and maintenance.³¹ In January 2009, the company road tax was cancelled.

64. On the other hand, the government has drastically increased resource allocations to roads, both as a percentage of the general budget and in terms of allocations for road maintenance. Figure 1 shows the development of resource allocations between 2005 and 2009.

Figure 1: Development of the General Budget and Transport Sector Allocations
(2005=100)



Source: Ministry of Transport and Communication.

65. Nonetheless, the current regime of road user charges and resource allocations is far from consistent with sound pricing principles. It is also far from being a stable, predictable mechanism for needs-based resource allocations. Clearly identified designated road user charges need to be introduced that are levied separately from general taxation. Two taxes are currently levied on gasoline: the 10% value added tax and the 8% sales tax. Despite the generally low gasoline and diesel prices, the government refrains from raising taxes. Experience shows that cross-border tax differentials lead to smuggling and the government does not want to lose out on trade from bordering countries. When excise taxes on oil products were cut by 40% to 50%, smuggling fell sharply and tax revenue rose.³² Yet the current pricing and tax regime provides little incentive to use fuel-efficient cars. An increase in tax rates might encourage fuel efficiency, reduce vehicle emissions, and produce higher revenues that could be earmarked for road maintenance.

66. Successful application of a user charge principle requires that the proceeds from road user charges be paid directly into a special account dedicated to road rehabilitation and maintenance. The account should be managed and supervised by an independent organization, such as a road board of members representing road users, businesses, and the government. The introduction of a road asset management system aimed at the optimal allocation of resources for the management and enhancement of the road network might alleviate the MOF's

³¹ The tax was charging firms with a high car use to the same degree as firms that did not use or own any cars.

³² ADB. 2004. *Asian Development Outlook 2004*. Manila.

resistance to the creation of a special account and result in an improved road board. Such a system would (i) provide a more objective and verifiable basis for claims on financial resources; (ii) balance the need for new construction with the need for asset preservation; and (iii) provide a mechanism that holds the road board accountable to stakeholders. The projects' designs focused the government's reform efforts too narrowly on one function of the road fund—that of a depository for government funds. With the planned increase in the country's strategic road network and some of the priority projects soon coming on stream, emphasis should now be placed on the introduction of an asset management system to ensure sustainability of the entire network.

III. PERFORMANCE ASSESSMENT

A. Overall Assessment

67. The overall assessment of the three projects combined is *successful* (Table 5). Each individual project is rated *successful*. To arrive at the overall assessment, the individual project ratings were aggregated using equal weightings for the three. The total rating of an individual project used four weighted criteria: relevance (20%), effectiveness (30%), efficiency (30%), and sustainability (20%). Individual criterion ratings ranged from 0 to 3, in increasing order of project performance.

Table 5: Overall Performance Rating

Criterion	Weight	Road Rehabilitation Projects			Combined
		First	Second	Third	
1. Relevance	0.2	2.0	2.0	2.0	2.0
2. Effectiveness	0.3	2.0	2.0	2.0	2.0
3. Efficiency	0.3	2.0	2.0	3.0	2.3
4. Sustainability	0.2	1.5	1.5	1.5	1.5
Total		1.9	1.9	2.2	2.0
RATING		S	S	S	S

Highly successful (HS) >2.7; 2.7 ≥ successful (S) >1.6; 1.6 ≥ partly successful (PS) >0.8; unsuccessful (US) ≤ 0.8.

Source: Independent evaluation mission.

B. Relevance

68. The combined rating for the three projects *relevant* (Table 5). The rating considers (i) the relevance to the country's priorities, particularly in terms of its requirements as a transition country, and to ADB's country and sector strategies; (ii) the extent to which each project was designed to achieve the intended impact and outcome; and (iii) the ex-ante and current significance of the project to the country's priorities. The three projects were consistent with government priorities at the time of appraisal and the IEM. The project road has always been and remains of strategic importance for national integration. Its rehabilitation was in line with the government's strategy to (i) connect the two most important population centers and areas of economic growth, (ii) foster regional and national integration, and (iii) provide better access to less developed and disadvantaged areas. The projects were in line with ADB's country operational strategy for the Kyrgyz Republic's road subsector, which focused on the restoration of essential transport infrastructure and institutional and policy reforms to accelerate the transition from a command to a market-based economy. In addition, the projects were consistent with ADB's strategy of regional economic integration through facilitating movements of people and goods across borders by reducing transport costs.

69. The government did not comply with the loan covenant on the creation of the road fund. One important reason was the concept's conflict with IMF conditionality. This may indicate that ADB staff did not consult the IMF even though a program under the Poverty Reduction and Growth Facility was in place at the time of loan processing.^{33, 34} ADB's own guidelines require its staff to conduct adequate consultations with development partners and particularly with the IMF on conditionality involving fiscal and monetary policies. In this particular case, the significant impact of the project's road fund on the public finances of the country would make it an important issue for discussion with the IMF. Consultations with the IMF were a procedural requirement³⁵ and establishment of the IMF's firm position would have compelled ADB and the government to explore other options to fund and manage road maintenance. As discussed in para. 113, the conditions in the Kyrgyz Republic did not seem to favor the proposed road fund. Leaving aside consultation with the IMF, the loan covenant regarding the road fund seems to have been decided upon without the necessary background analytical work.

70. Implementation of the third project involved a minor change in scope represented by the inclusion of a bridge in the secondary road rehabilitation. The bridge is located along one of the roads proposed for rehabilitation and may be considered part of that road and relevant to the objectives of the third project. An added consideration is the vulnerability of the project area to recurrent natural disasters.³⁶ The selected project roads and bridges had been affected by continuous heavy rains, which caused severe flooding and landslides. The inclusion of the damaged bridge was expedient and necessary to ensure the effectiveness of the rehabilitated roads.

71. Another minor change in scope involved the acquisition of maintenance equipment. The design of the third project had planned on acquiring light, handheld equipment to be used by local people recruited to help maintain roads in their communities. This concept was abandoned. As a result, heavier maintenance equipment that can be used on both primary and secondary roads was procured instead. Its inclusion was largely relevant to the envisaged goals and purposes of the third project.

72. Consideration of the contribution of capacity-building efforts under the three projects and the related TA to the intended impact and outcome has two dimensions. The first concerns the relevance of each individual TA. The TA projects were found *relevant* in addressing identified reform needs (see paras. 107—110 for a detailed assessment of the TA). A notable exception was a relatively small component of the ADTA attached to the third project. This component was to foster community participation in the maintenance of secondary roads. While improving the maintenance regime was a broad common theme of the projects' TA, having local people

³³ The completion report of the TA for institutional support in the transport sector said the consultants "well coordinated with concerned agency such as International Monetary Fund (IMF) regarding the road funding issues." But the report does not state whether the IMF agreed with the creation of a special account or opposed it despite the fact that an earlier TA performance audit report found that "the IMF has been against such earmarking of revenue. (ADB. 2002. *Technical Assistance Performance Audit Report for Institutional Strengthening and Policy Support to the Road Sector in Kazakhstan, Kyrgyz Republic, and Mongolia*. Manila.)

³⁴ The IMF program in the Kyrgyz Republic began in May 1993 with a standby arrangement. The first assistance under the Poverty Reduction and Growth Facility was provided in July 1994. <http://www.imf.org/external/np/fin/tad/extarr2.aspx?memberKey1=565&date1key=2010-03-31>

³⁵ ADB. Operations Manual Section 31—(Issued on 8 September 1986). Paragraph 7 in Section 34 on Coordination with Aid Agencies states that macroeconomic issues such as balance of payments, overall monetary and fiscal policies of a DMC are dealt with by the IMF. Paragraph 9 states that no policy advice that conflicts with that of other donors should be given.

³⁶ The Kyrgyz Republic is prone to natural disasters, which can take the form of earthquakes, landslides, and floods. Over the past 15 years, an average of about 170 disasters has occurred per year. Annual disaster damage is in the range of \$30 million–\$35 million.

participate in maintenance works may not have been an urgent item on the reform agenda. The component was therefore rated *partly relevant*.

73. The second dimension concerns the performance of ADB TA in achieving impact and outcome. The record in this regard was mixed. Notable achievements included the government's acceptance of a broad reform agenda prepared under the first TA, the reorganization of the MOTC and the focusing of its mandate, and the introduction of pertinent road legislation. However, the expected overall outcome of creating a commercially-oriented road sector based on a sustainable maintenance regime was not achieved.

C. Effectiveness

74. Each of the individual projects and the combined three projects were rated *effective*. The IEM has assessed effectiveness in the light of the outcome of the three projects, as defined in the reformulated design and monitoring framework shown in Appendix 1.

75. The expected outcome of the all three projects was a more efficient and safe road transport corridor, market-oriented sector policies, private sector participation in road maintenance, improved traffic safety, better access to markets, and strengthened road sector institutions. The outcome was to be reflected in reduced transportation costs, increased traffic in the road corridor, reduced vehicle travel time, reduced freight and passenger charges, reduced traffic accidents, and more rational road sector policies and institutions. The combined three projects have to some extent achieved the expected outcomes, although the reform agenda envisaged under the three projects was not completed as expected. The rehabilitated Bishkek–Osh Road provides an all-weather connection between two country's two largest cities. Traffic growth has exceeded the appraisal forecasts and vehicle operating costs have fallen. The average travel time from Bishkek to Osh was reduced from 17 hours to 10 hours, freight and passenger fares and charges were reduced by 10%–15% between 1999 and 2004. Even though the absolute number of traffic accidents has increased by about 70% from 513 in 1998 to 862 in 2004, the traffic volume has also increased substantially and only 18% of the accidents are to be attributable to improved pavement by the projects. In addition, the increase in generated traffic was a direct result of reduced vehicle operating costs, which on average dropped by 15% as result of the projects. The project contributed to poverty reduction aimed by the third project through promotion of economic activities by reduced transportation costs.

76. The projects failed to achieve one of the key components in the project design—the establishment of the envisaged road maintenance regime. The user charge principle and the proposed road fund were to secure a sustainable source of financing for road maintenance. The creation and privatization of the equipment pool was proposed to enhance the efficiency of road maintenance. The participation of local communities was also designed to improve the maintenance regime of secondary roads under the third project. At the time of the IEM, none of the planned road maintenance programs had been implemented. The road fund legislation was adopted but the fund was not based on the user charge principle or on the earmarking of revenue. Although the equipment pool was created, maintenance work was being done by government units that were not operating on a commercial basis. There was no local community participation either. The feasibility study for the reform agenda should have considered institutional capacity, the political economy, long- and medium-term macroeconomic implications, and coordination with other donor programs.

77. The PCR on the third project argued that greater benefits could have been realized if the three projects had been implemented as one. The IEM does not support this argument.

Programming constraints may have precluded formulation of one large project. The incremental approach adopted was likely better suited to the conditions at the time the first project was conceived. It allowed ADB and the government the space and flexibility needed to adapt to a situation that was new to both partners. A smaller project was conducive to learning and familiarization.

78. Evaluating the three successive projects as one allowed an assessment of their joint contribution to the entire reform process and the effectiveness overall of capacity-building and reform efforts. The following observations are pertinent in this regard:

- The envisaged reforms were complex and far-reaching and needed more time to come to fruition. This was particularly true of the reforms proposed for more rational financing arrangements for road maintenance. It would have been better to pursue the reforms under a series of projects as in the three projects, rather than under the relatively short time span of an individual project. The succession of largely identical road projects provided an opportunity for extending the time horizon for the reforms.
- Although sustainable road maintenance was a common goal in all three projects, they failed to focus sharply on the best way to achieve it—road asset management, including the organizational and financial prerequisites. Instead, each project introduced a new reform objective, which made the reform agenda as a whole too diverse and somewhat disjointed. This agenda ultimately comprised private sector and local community involvement in maintenance, competition in the transport industry, commercialization of an equipment pool, road safety concerns, road user charges, the organizational issue of a road fund, and road legislation. While all of these efforts were more or less important, each project left its agenda unfinished. This suggests that overall the TA was spread too thinly over too many issues and was less effective than it might have been if it had concentrated on fewer areas of reform.
- A related concern is the limited extent to which lessons from earlier projects were applied to the design of those that followed. The sections on lessons learned in the report and recommendation of the President (RRP) of the second and third projects provide no indication that some reforms were incomplete, possibly at risk, and in need of ADB's continued attention and additional support. The RRP of the second project referred to "some delays" in the establishment of the road fund but did not examine the underlying reasons. The discussion of lessons learned appeared stereotypical and lacked analytical depth.³⁷ The inadequate assessment of critical performance issues of precursor projects weakened the quality-at-entry design of each subsequent project and, in turn, reduced its effectiveness.

D. Efficiency

79. The combined three projects is rated *efficient*. The third project is rated *highly efficient*. The expected economic outcome of the projects was achieved. Improved conditions on the Bishkek–Osh Road have led to a significant reduction in vehicle operating costs and travel times. Together, these represent their main benefits. The projects also supported a more efficient maintenance regime, which generated substantial savings in maintenance costs. They not only improved the road's riding surface, thus reducing operating costs, they also shortened

³⁷ The lack of specificity is exemplified by a footnote in the RRP of the Second Road Rehabilitation Project. "Valuable experience gained from the [first] project as well as from a number of similar interventions in Mongolia and Kazakhstan, which are undergoing a similar rapid transition to a market economy." ADB. 1997. *Second Road Rehabilitation Project*. Manila.

closure periods by building a responsive maintenance system for the entire road that now clears falling rock and snow more rapidly. This may not eliminate road closures, given the country's severe winters, but extended closures have become less frequent.

80. The viability of the projects combined rests on three main factors: the improved road conditions generating substantial savings in vehicle operating costs; time savings; and savings in road maintenance, since further deterioration of the roads under the without-project scenario would have required mounting maintenance expenditures to keep them open to traffic. Without the project, routine annual maintenance expenditures would also have been higher; while gradual pavement deterioration is also assumed under the with-project scenario, it occurs at a lower rate than in the without-project case and gives rise to savings in vehicle operating costs.

81. Updated information on the physical conditions of the project road sections, current and anticipated traffic, and vehicle operating costs were used to recalculate an economic internal rate of return (EIRR) as the principal indicator for efficiency. The recalculated EIRR for the combined three projects is 15.4%. This result is substantially below the appraisal EIRR (27.0%), but above the result of the PCR of the third project, which had estimated the EIRR for the entire project at 12.2%. The differences are attributable in part to better than expected development of traffic but also to different assumptions on which the evaluations were based. Most notably, the PCR for the third project included the cost for secondary road rehabilitation in the cost for the Bishkek–Osh Road sections, attributed all equipment cost to that project, and made unverifiable assumptions regarding the maintenance regimes under the with- and without-project scenarios. Another explanation lies in the consistency of model assumptions. While the PPER has assumed substantial periodic maintenance interventions as a reflection of an improved maintenance regime, the PCR has not made such an assumption but has forecast steadily increasing vehicle operating cost savings nonetheless.

Table 6: Economic Internal Rates of Return (%)

Projects	Appraisal	PCR	PPER
Road Rehabilitation	13.1	9.7	12.9
Second Road Rehabilitation	16.0	17.4	15.0
Third Road Rehabilitation	19.3	22.4	31.5
All Projects	27.0	12.2	15.4

PCR = project completion report, PPER = project performance evaluation report.

Sources: Independent Evaluation Mission estimates, project completion reports, and report and recommendation of the President.

82. Overall, the economic viability of the combined three projects is robust and can tolerate adverse developments of the main benefit and cost parameters. This was tested in the sensitivity analysis accompanying the EIRR recalculation. The assumptions and methodology used for the revised traffic forecast and the recalculation of the EIRR are in Appendix 5.

83. The IEM evaluated the relative efficiency of the three projects. The determining factors include differences in the unit cost of construction, the share of costly tunnel construction, and different traffic volumes, all contributing to the variance in the EIRRs of the individual projects.

Table 7: Relative Efficiency of the Road Rehabilitation Projects

Item	ROAD REHABILITATION PROJECTS			Total Three Projects
	First	Second	Third	
Length of road (km)	135.0	228.0	120.0	483.0
Cost of civil works (\$ million/km)	0.39	0.44	0.28	0.39
Cost of supervision (\$ million/km)	0.03	0.03	0.03	0.03
Annual Average Daily Traffic (2009; vehicles/day)	2,315	2,632	7,817	
EIRR (%)	12.9	15.0	31.5	15.4

EIRR = economic internal rate of return, km = kilometer.

Sources: Asian Development Bank database, Independent Evaluation Mission, project completion reports.

84. The implementation of the three projects, involving the preparation of designs and other preconstruction activities, appears to have been *less than efficient*. This is reflected by the fact that all three projects experienced delays. The optimistic assumptions of the appraisal missions concerning the implementation periods are among the factors that contributed to the EIRRs projected in the appraisal being higher than those of the PPER.

85. Since the completion of the first project, traffic on the Bishkek–Osh Road has increased on average by between 4% and 6% per annum, depending on the road section. One restraint is the fact that large buses are not allowed to operate along the entire length of the Bishkek–Osh corridor due to safety considerations, although heavy trucks are permitted. This ban reduces the efficiency of the road and tempers its benefits on passenger movement. Uninterrupted travel by public transport between Bishkek and Osh with one city as origin and the other as final destination is only possible on a minibus from May to October or by taxis throughout the year. Authorities claim that the passenger taxi fare of \$20 one way is acceptable.

86. One strategic issue not addressed in the feasibility studies or the PCRs is whether the country could afford such a large series of projects. ADB's guidelines for the economic analysis of a project require that a national affordability analysis be undertaken when project costs will have a considerable impact on a national economy.³⁸ The investment in the three Bishkek–Osh Road projects was \$244 million to rehabilitate 483 km. The estimated cost of rehabilitating the entire 670-km road was \$300 million at 1994 prices—equivalent to 21.7% of annual average GDP for 1993–1996.³⁹ Such massive investments would have major macroeconomic impact even if implemented over a 10-year period. Financial prudence mandates that they be based on a careful assessment of this impact, using a medium-term fiscal framework to avoid having other essential investments crowded out and to ensure that adequate funding will be available for maintenance. Yet no assessment was done at loan approval stages of the projects' macroeconomic impact and the long-term sustainability of road sector investments, based on a fiscal framework in the Kyrgyz Republic. This is not only a significant weakness in ADB's large-scale funding to smaller countries but also a breach of ADB guidelines for the economic analysis of projects. The substantial time overrun can be attributed to the IMF cap on annual government expenditure under the PIP, which was imposed in response to the country's known fiscal challenges.

³⁸ ADB. 1997. *Guidelines for the Economic Analysis of Projects*. Manila. (Chapter VIII).

³⁹ The original length of the Bishkek–Osh Road was 620 km. After independence it was extended by an additional 50 km.

E. Sustainability

87. **Maintenance Expenditure on the Bishkek–Osh Road.** The IEM is by and large satisfied with the current state of repair of the project road. It reflects proper maintenance. The amounts allocated by the MOTC to maintain the corridor support its national importance. The maintenance budget for the Bishkek–Osh Directorate has increased by about Som20 million per year since 1991. The budget was reported to have reached Som217 million in 2009, out of a total MOTC budget of Som1.06 billion. The MOTC allocates a significantly higher amount of resources to the corridor than to the rest of the network (\$2,016.5 per km for the State Directorate of the Bishkek–Osh Road, compared with \$1,290 per km for the average network). Given the increasing traffic demand on the Bishkek–Osh Road, it is unlikely to lose its position as the premier highway in the Kyrgyz Republic.

88. **Investment Needs for the Road Sector.** Project sustainability may be threatened by a development plan for other undertakings in the road sector. A road sector development strategy was formulated in 2007.⁴⁰ The new plan developed a transport corridor rehabilitation program for five major national corridors with a total length of 1,484 km, including 1,200 km of non-rehabilitated roads.⁴¹ The investment required is estimated at \$490 million. The implementation of another program of annual rough surface treatment (RTS-1000) needs another \$175.5 million. No clear financing plan has emerged so far. Even if the international financial institutions, including ADB, provide assistance of \$90.8 million as planned, it is difficult to see how the MOTC can meet these investment needs. Given a lack of financial resources overall and the absence of an effective road maintenance financing scheme in particular, a joint country portfolio review has expressed concern about the sustainability of the Bishkek–Osh projects' impacts.⁴² The review said about 45% of the country's 5,400-km core network, including regional corridors, met minimum operational standards in 2000 but this figure had dropped to 32.8% in 2006.

89. **Maintenance Regime.** Given the expected rise in road sector spending, ADB included the establishment of a road fund in the loan covenants to ensure that resources would be available to maintain the improved Bishkek–Osh Road. While this road fund technically exists under government legislation, it is not functioning properly. Revenues from road user charges are not earmarked for the fund. The tax regime itself is not aligned with actual use of the roads and the wear-and-tear users inflict on the pavement. In addition, a company road tax that has been the road fund's major revenue source was cancelled in January 2009. An interministerial committee was organized to develop recommendations to replace revenue lost through this cancellation and to replenish the fund. The government is currently drafting a toll road act and considering a new tax regime that may consist of a car owner tax and a petrol tax, in addition to fees and charges for registration, transit by foreign cars, and tunnel use. It is not yet clear whether these charges will be earmarked and allocated to the road fund. The MOF and other ministries of the committee are not supportive of earmarking resources to the road sector. The road fund's current income is a small fraction of total maintenance needs and must be supplemented from the general budget.

⁴⁰ Government of the Kyrgyz Republic, Ministry of Transport and Communications. 2007. *Road Sector Development Strategy for 2007–2010*. Bishkek.

⁴¹ The rehabilitation corridors developed by the strategy are Osh–Sarytash–Irkeshtam (258 km), Suusamy–Talas–Tarz (199 km), Bishkek–Naryn–Torugart (539 km), Osh–Batken–Isfana (385 km), and Sarytash–Karamyk (142 km).

⁴² ADB, Islamic Development Bank, KfW, and World Bank. 2007. *The Kyrgyz Republic: 2007 Joint Country Portfolio Review*. Bishkek.

90. Although resource constraints and the lack of an effective maintenance regime may jeopardize the projects' sustainability in future, the road is well-kept and in good physical condition as of now. Officials from the MOTC and the MOF interviewed by the IEM stated that the Bishkek–Osh Road is considered a strategic national corridor and will be accorded the highest priority in funding. This high level of government priority seems supported by the fact that the sections of road that have not been rehabilitated in the last 20 years have been properly maintained and provide acceptable riding quality. A rapid axle load survey carried out by the IEM also contributes to a positive rating of sustainability. It confirmed that vehicle overloading on the road is rare, mainly because the fleet of trucks using the road are principally multi-axle and articulated vehicles whose load is distributed evenly over several axles. Overall, the sustainability of the project is rated *likely*.

IV. OTHER ASSESSMENTS

A. Impacts

91. **Road Safety.** Accident data provided to the IEM suggest that accidents on the Bishkek–Osh Road have increased since the road improvements. In 1998, they totaled 513 and caused 97 deaths. In 2004, the number increased by about 70%, to 862 incidents and 203 fatalities. Attributing this increase to the improved conditions on the project road would be problematic, however. During the same time period, vehicle ownership in the Kyrgyz Republic also rose sharply and international experience indicates that growth in vehicle ownership is typically accompanied by a rise in accidents. Moreover, the primary causes of the accidents do not seem closely linked to the changed conditions of the road. A traffic accident survey showed that only 18% of accidents were caused by excessive speed, something the improved pavement could have enabled. But 49% of the accidents resulted from improper or impaired driving and 14% from pedestrian behavior, including ignoring traffic regulations. The increase was therefore due mainly to factors other than the improved road condition.

92. The three projects rehabilitated road sections on an existing alignment and the purchase of right-of-way for road widening was not envisaged. A social impact assessment projected no resettlement and no effects on vulnerable groups. Nonetheless, the civil works adversely affected a small number of residents. In 2005, the MOTC received complaints from about 100 households along the Uzgen–Osh section, alleging damage to houses from the vibrations of heavy equipment operations. The MOTC established a multi-agency commission to review the complaints. The government in February 2006 endorsed a substantial portion of the complaints and recommended compensation. The compensation was paid during in 2006–2007 and the beneficiaries confirmed their satisfaction with the amounts they received.

93. At the time of the PCR, the compensation to three affected households living close to a rehabilitated road section in Tegene Village on the Tash–Kumyr–Karajigach feeder road still had to be paid. The IEM confirms that payment to these households was completed in 2009.

94. **Socioeconomic Impact.** The rehabilitation of the road has given rise to new small-scale businesses and expanded and/or improved existing businesses in some road segments. The greater road traffic has increased the number of guesthouses and gas stations along the route, especially in the Kara Suu rayon (footnote 7), where 20 new gas stations have been added to the 8 that existed before the third project was completed. Real estate prices have reportedly risen, although it is difficult to attribute this development to the projects alone. Table 8 compares population growth along the Bishkek–Osh Road with the national figures. In the 1990s, the population grew a great deal faster along the road than nationally and, while the gap has

narrowed considerably since 2000, this trend continues. In 1999 and 2000, the first project generated about 6,060 person-months of local employment in civil works and about 300 person-months of domestic consulting services. The second project generated more than 15,000 person-months of local employment in the civil works and 214 person-months of domestic consulting services. There is no account of employment generation for the third project but a similar trend is certain.

Table 8: Population Growth Along Bishkek–Osh Corridor and Nationally

	1990	1995	2000	2005	2009	'90-'00	'00-'09	'05-'09
	(number of people in thousands)					(growth rates in %)		
The Corridor	1,118	1,204	1,321	1,392	1,458	1.7	1.1	1.2
Kyrgyz Republic	4,358	4,525	4,867	5,093	5,276	1.1	0.9	0.9

Note: Bishkek–Osh Corridor comprises the following rayons along the road: Sokuluk, Moskva, Jayil, Toktogul, Nookan, Bazar-Korgon, Suzak, Uzgen, and Kara-Suu.

Source: The Statistics Committee of Kyrgyz Republic, Unpublished Source.



95. The IEM conducted a survey to assess the socioeconomic impacts of the projects and how beneficiaries perceived them. Three hundred and fifty residents from six villages were interviewed and six focus group discussions conducted. In addition, the deputy heads of the rayon administration, vice mayors and opinion leaders of communities have been interviewed. More than 95% of the residents agreed that the project was “extremely needed,” and that it benefited residents by reducing travel time and vehicle operating costs. The number of their trips to big cities such as Bishkek, Osh, and Jalal-Abad had increased from 2002 (see Supplementary Appendix 1 for details of the socioeconomic survey).

96. **Environment.** Because the projects rehabilitated existing roads, no environmental impact was expected. Mitigation measures for restoration of borrow pits, extraction of water for construction, and control of hazardous and toxic materials were implemented appropriately by the MOTC and monitored by the Ministry of Environment, which performed regular site inspections.

B. Institutional Development

97. **Institutional Capacity.** The impact on institutions is rated *moderate*. Through their attached TA, the three projects supported institution-building and development of the policy-making and regulatory oversight capacities of the MOTC. The impact of these efforts is evidenced by the MOTC’s evolution from various sector agencies into one ministry that has a clear mandate for transport planning and policy formulation.

98. Nonetheless, the MOTC is still involved in operational areas that were supposed to be transferred to the private sector. Of particular concern is the fact that the MOTC’s own regional road maintenance agencies still carries out most maintenance operations and that the role of private contractors in these tasks is only limited so far. While the government has made efforts to privatize road maintenance operations, an absence of an assured work program has been a disincentive for private contractors to invest in their businesses. The impact of measures to transfer know-how to MOTC staff was likewise limited. Due to a high turnover in civil service personnel, the skills were not passed on to ministry personnel. The road fund and cost recovery were major initiatives of the Action Plan for Road Sector Reform but they were not executed as envisaged.

99. Under the second project, the MOTC was to assume new responsibilities that were expected to be transferred from the Ministry of Architecture and Construction and the Ministry of Internal Affairs. The responsibilities included the development of road design and construction standards, technical road surveys and inspection, traffic management, and road safety. However, not all of these responsibilities were transferred as envisaged. Road design and construction standards became the responsibility of a newly created technical committee.⁴³ The transfer of functions relating to technical road surveys and inspection, traffic management, and road safety was achieved, albeit with considerable delays.

100. The earmarking of financial sources for road maintenance and road development was an expected outcome of the second project. Although the road fund was created in 1999, it never received the revenue raised through road user charges that was supposed to be earmarked to sustain it. ADB subsequently waived the related loan covenant in response to IMF concerns about extra-budget government accounts.⁴⁴ The issues of sustainable maintenance finance and activation of the road fund were followed up under the third project. While ADB's recommendation to activate the road fund was not implemented, the government has over time increased the budget allocations for road maintenance (Figure 1).

101. The ADTA attached to the third project also provided institutional support to develop the government's capacity to maintain secondary roads and to increase competition among transport operators. The consultant designed a concept for road maintenance in which local communities were expected to participate. The concept could not be implemented. While such participation was required under the loan, MOTC found it difficult to recruit volunteers who were able ensure quality of work that met MOTC standards. In addition, the proposed concept did not provide adequate incentives to the local people.

102. **Governance.** The project implementation arrangements helped improve the governance of road construction and introduced transparent contract management practices. The use of international competitive bidding for all civil works and most equipment contracts exposed staff of the MOTC and local consultants to best practices, advanced technologies, and competitive rates.

C. Asian Development Bank Performance

103. ADB's performance is rated *less than satisfactory*. The IEM found that ADB performed satisfactorily in delivering the physical outputs of the projects, meeting a minimum objective. In pursuit of a central outcome of the three projects—improving the maintenance regime—ADB performed less satisfactorily. The formulation of the capacity-building components misjudged the time and resources required for the reforms. The series of projects provided an opportunity to learn and pass on lessons for succeeding phases but the relevant sections in the RRP show that this opportunity was not fully utilized. The preparation of each new project seemed to be driven by a desire to start something new rather than to acknowledge the shortcomings in the previous project and focus on mitigating action.

104. ADB's supervisory performance was mixed. On the positive side was the pragmatic handling of required changes in scope, notably extra work for slope stabilization, responses to

⁴³ This was the Technical Committee for Roads and Structures, which was established by a joint decree of the MOTC and the State Agency for Architecture and Construction Control in June 1999.

⁴⁴ Loan Agreement for the Second Road Rehabilitation Project, Schedule 6.

procurement issues,⁴⁵ the number of review missions,⁴⁶ as well as the specific proficiency of the staff in the resident mission, to which the authority to administer project implementation was eventually delegated. The resident mission was instrumental in resolving problems and in expediting implementation. It helped that one mission staff member had previously worked in the MOTC and in the road sector. The MOTC staff also indicated satisfaction with ADB's performance. The role performed by ADB review missions in providing advice on technical, procurement, and administrative matters was also recognized by the MOTC. The downside of ADB's supervisory performance included its response to a substantial delay in implementing the second project due to disputes between the MOTC, the supervising consultant, and contractor. ADB could have helped settle this problem earlier and should have paid more attention to a time overrun of 46 months, even though the PIU was responsible for day-to-day supervision and liaison among stakeholders. The delays in scheduling might have been aggravated by discontinuity in ADB supervision. Five ADB project officers were assigned over the course of the second project, which resulted in some confusion in the MOTC and lapses in project supervision during the changeovers.

D. Borrower Performance

105. The overall performance of the borrower is rated *less than satisfactory*. During the second project, the borrower delayed the payment of counterpart funds to the contractors. The borrower also failed to comply with loan covenants related to funding road maintenance expenditure during 2002–2005 and to implementing the reforms agreed upon with ADB. The ceiling on government expenditure imposed by the IMF under its 2001 PIP had an impact on disbursements for the second and third projects (para. 37). The borrower should have anticipated the impact of the PIP on the availability of funds and resources necessary to implement the project according to the schedule.

106. The performance by the MOTC as executing agency is rated *satisfactory*. The project objectives were achieved, although not without delays in implementing all of the civil works contracts. The performance of the PIU responsible for implementing the third project was rated *satisfactory*. By that time, the experience gained by the PIU staff under the previous projects showed results. This applies in particular to the work of the financial staff, who were able to schedule more timely disbursements and to more effectively control price escalations under the civil works contracts.

E. Technical Assistance

107. ADB provided ADTA in preparation of the first project and in conjunction with the three loan projects. All four TA projects have supported institution-building and development of the policy-making and regulatory oversight capacities of the MOTC. ADB was the first donor to assist the transport sector of the Kyrgyz Republic, shortly after the country's independence. This first TA⁴⁷ provided the direction and laid the foundation for future work of ADB and other donors.

⁴⁵ Under the third project, ADB helped the MOTC resolve the issue of the poorly performing contractor and to complete the project. The solution involved the direct awarding of the contract for the remaining works to a contractor performing well under the same project. ADB was also effective in resolving the unexpected problem of replacing the supervising consultant under the third project.

⁴⁶ During the three projects, ADB fielded about 30 project administration missions, including an inception mission and a mid-term review mission. For the third project, the mid-term review was waived, as all issues had been resolved during regular review missions.

⁴⁷ ADB. 1995. *Technical Assistance for the Road Rehabilitation Project. Phase 1 – Studies. Final Report*. Manila (TA 2256-KGZ).

A pervasive element in all TA was capacity building in policy formulation and in highway planning, management, and project implementation. The overall goal was to accelerate economic recovery by addressing the urgent needs of the road sector. The TA was aimed at strengthening road sector institutions, improving the regulatory framework, and increasing the competitiveness of the markets for transport services.

108. The ADTA for Institutional Strengthening of the Road Sector⁴⁸ was attached to the first project. It was to help the government improve its policy and regulatory framework for the road transport sector, strengthen the road sector institutions, develop a road maintenance plan, and improve road funding. Implementation of the TA began in January 1997 and was completed in August 1997. Among the outputs were a transport sector development framework, an action plan for road sector reforms, and a draft transport sector policy statement. The government's interim road sector policy statement was reviewed. The TA also helped the Government draft the new Automobile Road Act and Road Fund Act. The TA also included training of financial managers to develop proper costing procedures and control. The TA consultants also proposed measures for restructuring the MOT and road maintenance activities. As a result of the TA, the MOTC was established, road maintenance was reorganized, and an Automobile Roads Act and Road Fund Act were passed.

109. The ADTA to provide policy support in the transport sector, which was attached to the second project, was to strengthen policy functions, institutional development, and the financial management capacity of the MOTC.⁴⁹ The ADTA also focused on capacity building of private contractors. It was divided into two parts. The objectives of the first part were to strengthen the MOTC's transport policy formulation and its financial management capabilities. The second part was to define the organizational structure and roles of the DOR (footnote 24). The ADTA, which was completed in August 2000, was rated partly successful. While it contributed to improving the organization and financial management of the MOTC, the ADTA's recommendations for the road fund were not implemented. The delay in establishing the Transport Policy Department and the Planning, Design, and Construction Department limited the effectiveness of the consultants in strengthening these agencies.

110. The ADTA attached to the third project also provided institutional support for the transport sector. Specifically, it aimed at developing the government's capacity to maintain secondary roads and at increasing competition among transport operators.⁵⁰ The consultant's concept of involving local communities in road maintenance could not be implemented (para. 101). The ADTA component related to enhancing competition among transport operators was canceled. A similar TA funded by the European Union had confirmed that transport services were already highly competitive, freight services were deregulated, and passenger services were lightly regulated.

⁴⁸ ADB. 1996. *Institutional Strengthening of the Road Sector*. Manila (TA 2587-KGZ, approved for \$800,000 on 13 June 1996).

⁴⁹ ADB. 1998. *Policy Support in the Transport Sector*. Manila (TA 3065-KGZ, approved for \$600,000 on 10 September 1998).

⁵⁰ ADB. 2001. *Institutional Support in the Transport Sector*. Manila (TA 3757-KGZ, approved for \$650,000 on 31 October 2001).

V. ISSUES, LESSONS, AND FOLLOW-UP ACTIONS

A. Issues

111. **Sustainability and the Road Fund.** The question of whether the MOTC can sustain the maintenance of the Bishkek–Osh project road, in addition to maintaining and rehabilitating the rest of the national road network (para. 89), is a central issue. It is linked to the uncertain future and viability of the road fund. The need for a well-structured and more objective maintenance system takes on renewed urgency because costly new regional highway projects are planned. It is difficult to say whether the road fund, which technically exists but is not functioning according to the envisaged user pay principle, may one day fulfil this need. Many of ADB's developing member countries (DMCs) have been encouraged by international financial institutions to earmark road user charges or some portion of general government revenues to fund road maintenance. ADB has favored the setting up of road funds for countries underfunding road maintenance.⁵¹ In the Kyrgyz Republic, however, where the government has not instituted the road fund as originally conceived despite a long policy dialogue with ADB, it an open question whether it remains practical and beneficial to keep pursuing it.

112. A World Bank report reviewed international practices of the road fund concept and identified preconditions for its successful implementation.⁵² The review concludes that government commitment is essential for establishing an efficient fund. So are adequate resources and a secure channel for the revenues the fund will need. These preconditions do not exist at the moment in the Kyrgyz Republic. The government besides MOTC does not appear committed to the creation of a special fund for the road sector. The road fund is not functioning even though the Road Fund Act was passed to comply with a loan covenant. In interministerial committee meetings to develop recommendations to make up for lost revenue from the cancelled company road tax, other ministries, including the MOF, have not supported the earmarking of revenue for the road sector. The MOF's objection to such a special fund is supported by the IMF, which is providing the government with a macroeconomic stabilization program. The IMF's position is that the budget must encompass all expenditures and that transactions involving separate special or dedicated funds are not very transparent. For its part, the World Bank report also identifies conditions under which a road fund should not be established. They include a high level of corruption and little likelihood of independent audits. Transparent procurement should be in place, the World Bank report said, and the finance ministry should be relatively strong. Although the country's MOF seems reasonably strong, the Kyrgyz Republic is ranked at 162 out of 180 countries on transparency index of Transparency International.⁵³ Conditions in the country, it would seem, are not likely to favor a properly functioning road fund in the near future.

113. **Asset Management System.** A sound road asset management system is necessary for sustainable road maintenance. The current resource allocation to the project roads is greater than the average allocation for the rest of the network. This mirrors the Bishkek–Osh Road's strategic importance in achieving national integration. This significance is also highlighted by the ethnic disturbances in the southern part of the country in May 2010. However, it also demonstrates a discretionary allocation regime that may not be based entirely on needs. In the absence of an asset management system, road maintenance practices tend to be output- and

⁵¹ ADB. 2003. *Road Funds and Road Maintenance: An Asian Perspective*. Manila.

⁵² World Bank. 2007. *Evaluation of Bank Support for Road Funds: Background Paper for Evaluation of World Bank Assistance to the Transport Sector, 1995-2005*. Washington, D.C.

⁵³ Transparency International. 2009. *Corruption Perception Index*. Quoted by Wikipedia (http://en.wikipedia.org/wiki/Corruption_Perceptions_Index). New Zealand is ranked first and Somalia last at 180.

schedule-driven. While this pattern currently benefits the project roads, perhaps at the expense of other important highways, future major road projects may reverse that situation. The introduction of a road asset management system could help ensure that the entire network becomes sustainable. The MOTC has no systematic road maintenance management system but is considering introducing highway development management (HDM) software. Without such a system, claims on the road maintenance budget will not be well founded and the opposition of the MOF to an extra-budget account will continue. The salient features of such a system are (i) a high level of service commitments by the fund board to its stakeholders; (ii) an asset database, which is a road inventory system; (iii) earmarking of taxes that perform a road user pricing function; and (iv) suitable computer software that assists in project evaluation and network planning. Substantial assistance will be needed to design and implement an asset management system.

114. An asset management system would enable the government to formulate and manage a more sustainable road development strategy. The system would enforce a balanced resource allocation between new construction and rehabilitation on one side and maintenance on the other. This would make all road projects more sustainable, partly by moderating the tendency of government officials to favor new construction and major rehabilitation for their political impact, thereby neglecting the less glamorous business of essential maintenance. In addition, the financing costs of projects assisted by development finance institutions are lower than market price and the development partners and donors themselves also lean toward new construction and rehabilitation. The lower lending price of new projects, in fact, can lead a borrowing country to develop roads that are beyond its ability to sustain.

115. **Bus Ban.** The ban on large buses on the project roads is a serious issue for transport efficiency and the economic viability of the projects. The regulations appear to discriminate against large buses in favor of heavy trucks, which are not covered by the ban. The ban has not elicited a sharper reaction from passengers and the bus industry because the dilapidated and obsolete minibuses that can still travel the Bishkek–Osh Road charge very low fares at the expense of safety, the environment, and travel comfort. Less restrictive regulations or practices that ensure road safety may be put in place to replace the bus ban, which may be overly severe. The justification of the ban from economic and engineering viewpoints needs to be revisited.

116. The proliferation of old minibuses and passenger cars from Europe results from a tax regime that allows these vehicles imports and of a gasoline pricing policy that does not encourage fuel efficiency (para. 65). The trade-off is between low acquisition and operating costs of second-hand cars on the one hand and environmentally friendly yet more costly fuel-efficient cars on the other. Because the current tax regime does not penalize the use of fuel-inefficient cars, there is an urgent need to charge road users for all costs, including the costs inflicted on the environment and those of properly maintaining the roads.

B. Lessons

117. **Selective Reform Agenda.** The institutional and policy reforms envisaged in the projects were complex and far-reaching and needed a longer time to come to fruition. There was no sharp focus on road asset management, which was a theme common to the three projects. Each of the projects left an unfinished agenda, which suggests that TA was spread too thinly over too many reform issues. The designs of succeeding projects did not indicate or act on the fact that some reform measures in the precursor projects were pending, at risk, and in need of ADB's continued attention. The conclusions that must be drawn from this assessment are twofold:

- The implementation time for institutional reforms typically exceeds the implementation period of an average civil works project. The reforms should therefore be pursued over a longer period.
- Long-term planning and proper sequencing of the reform process are needed to successfully reform the road sector. Sufficient resources need to be allocated for capacity building of institutions and monitoring of the implementation of reforms. Given the common resource constraints, this would mean being more selective in determining priority areas for policy and institutional reforms.

118. **Donor Coordination.** The creation of a road fund has been a key component of all three projects. It was to ensure the availability of adequate financing for operation and maintenance of project roads. To date, however, the road fund has not operated as envisaged. Because of the IMF restriction that the government should have only one consolidated central budget account, the government requested, and in 2001 was granted, an ADB waiver on the loan covenant that a special account for a road fund be created. If the project team of the first project understood IMF's firm position at the stage of project design, ADB and the government could have explored a more realistic alternative to fund road maintenance. It should be remembered that ADB's Operation Manual requires that no policy advice should be given that conflicts with that of other development partners.⁵⁴

119. **National Affordability Assessment.** ADB's guidelines for economic analysis of projects require that a national affordability assessment be carried out for large projects. A project is considered large if it may have a substantial impact on the country's foreign exchange revenues, expenditure, or budget resources. During the implementation of the second project, the IMF introduced a PIP ceiling in 2001 because it was concerned about the government's fiscal sustainability. It set a rigid ceiling and thereby contributed to a significant delay in project implementation. As assessment of the projects' national affordability could have helped set a realistic timeline based on the national economy's resource mobilization capacity. It would be prudent for ADB to finance large infrastructure projects in smaller countries based on the national affordability analysis in a medium-term fiscal perspective, as mandated in its own guidelines for the economic analysis of projects.

120. **Time Overrun.** Project management must pay more attention to the scheduling of project implementation. Substantial delays experienced by all three projects should have been avoided or shortened. In contemporary infrastructure management, time overrun, like cost overrun, is a key performance indicator and affects the project's efficiency. On-time completion is particularly important for a road rehabilitation project. The service level of a road under the rehabilitation is downgraded because the capacity of the road should be constrained during civil works. The impact tends to be greater than that of a new construction project. In addition, the delay in project completion results in a decrease in EIRR of a project due to unrealized benefits during the delay period. If the second project was completed as expected in the RRP, the EIRR of these projects could have been increased to 15.3%–15.7% from 15.0%, depending on the assumptions.

⁵⁴ ADB. 2008. Classification and Graduation of Developing Member Countries. *Operations Manual*. OM A1/BP. Manila.

C. Follow-Up Actions

121. The need to introduce a well-structured maintenance system will take on renewed urgency as new capital investment projects suggested by the Road Sector Development Strategy are developed that could crowd out financial resources for maintaining the Bishkek–Osh Road. ADB needs to examine sustainability of the road projects. A road asset management approach could mitigate this risk of maintenance underfunding. ADB may consider providing assistance to establish such a system.

122. ADB should revisit the continued justification and practical feasibility of the unfinished elements of the institutional reform agenda. These include the restructuring of the road fund, the creation of an equipment pool and privatization of maintenance service, and community participation in maintenance of the secondary roads. A future reform agenda should be pursued on a selective basis and follow feasibility analysis that considers the political economy, institutional capacity, and medium- and long-term macroeconomic perspectives.

123. ADB should follow up on the ban of bus services on the project road. Remedial action should focus on improving the safety devices in the tunnel and reviving the dormant bus industry.

PROJECT DESIGN AND MONITORING FRAMEWORK

Design Summary	Achievement	Assessment
Impact		
Facilitate development of the market-oriented economy in the Kyrgyz Republic, promote economic activity and contribute to poverty reduction.		Partly achieved
Outcome		
More efficient movement of freight and passenger traffic. Reduced transport costs.	Since the completion of the first project, traffic on the Bishkek–Osh corridor has increased on average by between 4% and 6% per year. Traffic growth has exceeded appraisal estimates. The average travel time from Bishkek to Osh was reduced from 17 hours to 10 hours. Freight and passenger charges were reduced by 10% to 15% between 1999 and 2004. The increase in generated traffic was a direct result of reduced vehicle operating cost, which on average dropped by 15% as a result of the projects.	Achieved
Improved traffic safety.	Accident data provided suggest that accidents have increased since the road improvements. In 1998, accidents on the Bishkek–Osh Road totaled 513, 97 fatalities. In 2004, the number of accidents reached 862, with 203 fatalities. The increase in accidents may have been due to several factors, including the rise in vehicle ownership and driver and pedestrian behavior.	Partly achieved
Enhanced financing of road maintenance.	The Bishkek–Osh Road is regarded as an important link between two major cities and this is reflected in the maintenance budget that it receives from the Ministry of Transportation and Communications. The establishment of a road fund was a loan covenant, starting from the first project. While the fund exists, it is not functioning as envisaged. Revenues from the road user charges are not earmarked for the fund and the tax regime is not aligned with the usage of roads and the wear-and-tear road users inflict in the pavement.	Not achieved
Improved access to markets employment opportunities and social services. (Secondary Roads)	Since the projects rehabilitated roads, the impact was facilitating access to markets in terms of reduced travel time and lower costs. Employment opportunities were created during the implementation of the three projects.	Achieved
Strengthened institutional capacity for road sector management.	The technical assistance grants attached to the three projects supported institution building and development of the policy-making and regulatory oversight capacities of the MOTC.	Achieved
Output		
Rehabilitation of 463 kilometers of different portions of the Bishkek–Osh Road under the three projects combined.	A total of 483 kilometers were rehabilitated. An additional 20 kilometers were added to the second project.	Achieved
Rehabilitation of 125 kilometers of secondary roads under the third project.	A total of 105 kilometers of secondary roads were rehabilitated, including a bridge damaged by floods and not part of the original design. It is not certain whether the intention was to rehabilitate 125 kilometers or 105 kilometers. The report and recommendation of the President indicated 125 kilometers.	Partly achieved
Various maintenance equipment.	Various road maintenance equipment was provided under the three projects, including winter maintenance equipment under the second project.	Achieved

Design Summary	Achievement	Assessment
Development and implementation of a system for secondary road maintenance based on collaboration between communities and local maintenance units.	A system was developed but not implemented.	Partly achieved
Enactment of the Road Fund Act.	The Road Fund Act was enacted but the road fund is not functioning as envisaged. It remained an account within the framework of the general budget and revenues from road user taxes were not earmarked.	Not achieved

Note: The design and monitoring framework is adjusted from logical framework, known as project or technical assistance framework, of the Second and third projects. The framework became a mandatory attachment to all project documents in 1996 probably RRP of the first project has been documented.

APPRAISAL AND ACTUAL PROJECT COSTS

Table A2.1: Appraisal and Actual Costs for the Road Rehabilitation Project

Project Component	Appraisal			Actual			Actual/ Appraisal (%)
	Foreign	Local	Total	Foreign	Local	Total	
A. Base Cost							
1. Civil Works	31.5	31.0	62.5	33.4	28.8	62.2	99.5
2. Equipment	6.2	0.2	6.5	7.4	0.0	7.4	114.6
3. Consulting Services	2.5	0.6	3.1	4.3	0.0	4.3	139.7
Subtotal (A)	40.2	31.8	72.1	45.1	28.8	74.0	102.6
B. Contingencies							
1. Physical Contingencies	4.1	3.2	7.3	0.0	0.0	0.0	0.0
2. Price Escalation	2.5	2.6	5.1	0.0	0.0	0.0	0.0
Subtotal (B)	6.7	5.8	12.4	0.0	0.0	0.0	0.0
C. Interest During Construction	1.5	0.0	1.5	2.0	0.0	2.0	138.8
Total	48.4	37.6	86.0	47.1	28.8	76.0	88.4

Table A2.2: Appraisal and Actual Costs for the Second Road Rehabilitation Project

Project Component	Appraisal			Actual			Actual/ Appraisal (%)
	Foreign	Local	Total	Foreign	Local	Total	
ORIGINAL SCOPE							
A. Base Cost							
1. Civil Works	55.5	31.3	86.8	59.6	35.6	95.2	109.7
2. Consulting Services	3.9	0.9	4.8	5.0	1.2	6.2	130.2
Subtotal (A)	59.4	32.2	91.6	64.6	36.8	101.4	110.8
B. Contingencies							
1. Physical Contingencies	6.5	3.1	9.6				
2. Price Escalation	4.0	2.6	6.6				
Subtotal (B)	10.5	5.7	16.2				
C. Interest During Construction	2.0	0.0	2.0	1.6	0.0	1.6	80.0
Subtotal Original Scope	71.9	37.9	109.8	66.2	36.8	103.0	94.3
D. Extended Scope							
1. Road Rehabilitation (km 61—81)				2.8	1.7	4.5	
2. Road Safety Works (km 83—143)				0.1	0.0	0.1	
3. Rock Slope Stabilization Works				0.0	1.8	1.8	
4. Construction Supervision (Slope Stabilization)				0.0	0.1	0.1	
5. Winter Maintenance Equipment				1.4	0.0	1.4	
Subtotal Extended Scope				4.2	3.6	7.8	
Total				70.5	40.4	110.9	

Table A2.3: Appraisal and Actual Costs for the Third Road Rehabilitation Project

Project Component	Appraisal			Actual			Actual/ Appraisal (%)
	Foreign	Local	Total	Foreign	Local	Total	
A. Base Cost							
1. Civil Works							
1a. Bishkek–Osh Road	22.1	10.7	32.8	24.5	12.1	36.6	111.6
1b. Secondary Roads	1.3	5.1	6.4	3.0	11.1	14.0	218.8
2. Maintenance Equipment	1.3	0.0	1.3	2.3	0.0	2.3	176.9
3. Consulting Services	1.3	1.1	2.4	3.3	0.3	3.6	150.0
Subtotal (A)	26.0	16.9	42.9	33.1	23.5	56.5	131.7
B. Contingencies							
1. Physical Contingencies	2.6	1.7	4.3	0.0	0.0	0.0	0.0
2. Price Escalation	1.2	0.8	2.0	0.0	0.0	0.0	0.0
Subtotal (B)	3.8	2.5	6.3	0.0	0.0	0.0	0.0
C. Interest During Construction	0.8	0.0	0.8	0.6	0.0	0.6	75.0
Total	30.6	19.4	50.0	33.7	26.5	57.1	114.2

STATUS OF COMPLIANCE WITH LOAN COVENANTS

COVENANTS		PCR	IEM
Loan 1444-KGZ[SF]: Road Rehabilitation Project			
1.	The Project Implementation Unit established within DGRMBOR Directorate General for Rehabilitation and Maintenance of the Bishkek–Osh Road (DGRMBOR) shall be responsible for the day-to-day implementation of the Project and provide the necessary contact between DGRMBOR, the contractors, the suppliers, other relevant parties and the Asian Development Bank (ADB). A Project Manager appointed by DGRMBOR shall serve as the head of the unit and shall at all times be supported by a minimum of three civil engineers with appropriate expertise in materials and soil engineering, bridges and tunnels.	Complied	Complied with
2.	The Project Steering Committee established by the Borrower shall be maintained for the duration of the Project implementation period and shall (i) oversee and coordinate all Project activities, including contact among agencies involved in Project implementation, and sector reforms agreed during policy dialogue with ADB; (ii) review the status of the implementation of Project components; (iii) monitor the progress achieved and resolved difficulties encountered; and (iv) serve as a forum for discussions on, and review of, the Project's impact on regional development.	Complied	Complied with
3.	The Borrower shall cause the Ministry of Finance, Ministry of Transport (MOT, though name was later changed to Ministry of Transport and Communications), and DGRMBOR to establish by 31 December 1996 a yearly road maintenance budget commencing from 1 January 1997 to be implemented by MOT and DGRMBOR and funded by collections under the Road Fund Act.	Complied with delay	Not complied with
4.	The Borrower shall, by 30 June 1997, taking into account the recommendations of the Technical Assistance, adopt measures to improve road sector revenues from road users, including the transnational traffic on the Bishkek–Osh Road.	Complied with delay	Not complied with
5.	The Borrower shall, in consultation with ADB, implement by 30 June 1997, the road maintenance system to be prepared under the Technical Assistance, and give priority to operation and maintenance activities to improve maintenance and safety of the Bishkek–Osh Road.	Complied	Complied with
6.	The Borrower shall, (a) by 30 June 1997, (i) with the assistance of the consultants financed under the Technical Assistance, established a system for collecting and recording traffic data for selected road sections; and (ii) cause MOT and DGRMBOR to undertake, with the assistance of consultants for detailed design and construction supervision engaged under the Project, benefit monitoring and evaluation of the Project in accordance with the terms of reference and schedule to be agreed upon between the Borrower and ADB; and (b) submit annually a benefit monitoring and evaluation report to ADB, commencing from 31 December 1997.	Not complied	Partly complied with
7.	The Borrower shall (i) ensure that appropriate environmental protection and safety devices are included in the design of the Project facilities; and (ii) implement the Project, and operate and maintain the Project facilities, in accordance with the Initial Environment Examination that has been accomplished under ADB-financed technical assistance (TA No. 2256-KGZ: Road Rehabilitation Project), and ADB's "Environmental Guidelines for Selected Infrastructure Projects".	Complied	Complied with
8.	The Borrower shall, by 31 December 1996, in consultation with ADB and with the assistance of the consultants financed under the Technical Assistance, promote the principles of a market oriented economy in the transport sector by (i) issuing a Transport Sector Policy Statement (TSPS), a revised Road Sector Policy Statement (RSPS) and regulations consistent with TSPS and RSPS; (ii) preparing and presenting for the consideration of the Parliament a Road Fund Act to finance road maintenance; and (iii) undertaking a comprehensive review of the existing legislation in the transport and road sector, and making any amendments required to ensure consistency with the TSPS, RSPS and the Road Fund Act.	Complied	Partly complied with

	COVENANTS	PCR	IEM
9.	The Borrower shall, by 30 June 1997, taking into account the recommendations for the Technical Assistance and in consultation with ADB, restructure MOT and DGRMBOR, institutionally strengthen the Department of Roads, and implement the human resource development plan to be prepared under the Technical Assistance.	Complied with delay	Complied with
10.	The Borrower shall (i) maintain, or cause to be maintained, separate accounts for the Project; (ii) have such accounts and related financial 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; (iii) furnish to ADB, as soon as available but in any event not later than nine (9) months after the end of each related fiscal year, 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 Loan proceeds and compliance with the covenants of this LA), all in the English language; and (iv) furnish to ADB such other information concerning such accounts and financial statements and the audit thereof as ADB shall from time to time reasonably request.	Complied with delay	Complied with
11.	The Borrower shall furnish, or cause to be furnished, to ADB all such reports and information as ADB shall reasonably request concerning (i) the Loan, and the expenditure of the proceeds and maintenance of the service thereof; (ii) the goods and services and other items of expenditures financed out of the proceeds of the loan; (iii) the Project; (iv) the administration, operations and financial condition of the agencies of the Borrower responsible for carrying out of the Project, or any part thereof; (v) Borrower and the international balance-of-payments position of the Borrower; and (vi) any other matters relating to the purposes of the Loan.	Complied	Complied with
12.	Without limiting the generality of the foregoing, the Borrower shall furnish, or cause to be furnished, to ADB Quarterly reports on the carrying out of the Project and on the operation and management of the Project facilities. Such reports shall be submitted in such form and in such detail and shall and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the quarter under review, steps taken or proposed to be taken to remedy these problems, and the proposed program of activities and expected progress during the following quarter.	Complied	Complied with
13.	Promptly after physical completion of the Project, but in any event not later than (3) months thereafter or such later date as may be agreed for this purpose between the Borrower and ADB, the Borrower shall prepare and furnish to ADB a report, in such form and in such detail as ADB shall reasonably request, on the execution and initial operation of the Project, including its cost, the performance by the Borrower of its obligations under the Loan Agreement and the accomplishment of the purposes of the Project.	Complied Received Jan 2002	Complied with

Loan 1630-KGZ[SF]: Second Road Rehabilitation Project

1.	Through the Automobile Roads Act and appropriate Government decrees, transfer to MOTC (i) by 1 January 1999 the responsibilities for developing road design and construction standards – from the Ministry of Architecture and Construction; and (ii) by 1 July 1999 the functions relating to technical management facilities, and road safety from the Vehicle Inspection Department in the Ministry of Internal Affairs.	Complied with delay	Complied with
2.	By 1 July 2000, with assistance from the Project implementation consultants, prepare and commence implementing the road maintenance system for the Bishkek- Osh road, including (i) preparing repair and maintenance standards, (ii) preparing specifications for data collection and analysis for use in prioritizing maintenance activities, and (iii) strengthening Local Maintenance Units and training maintenance crews.	Complied with delay	Partly complied with

	COVENANTS	PCR	IEM
3.	By 1 July 2000, with the assistance from the Project implementation consultants, invite bids from local contractors to undertake road maintenance on selected road sections to facilitate private sector participation in road maintenance.	Complied with delay	Partly complied with
4.	By 1 January 2000, MOTC, with the assistance of the Project consultants, shall have established the Equipment Pool that will maintain road maintenance equipment which may be leased by local private contractors undertaking the road maintenance.	Complied with delay	Complied with
5.	MOTC shall prepare, and by 1 January 2000 finalize, in consultation with ADB and with the assistance of the Project implementation consultants, a time-bound road safety program aimed at reducing the high road accident rate. In formulating the program, MOTC shall take into consideration the recommendations made under the Bank financed Regional Technical Assistance RETA No. 5620 for Regional Initiatives in Road Safety.	Complied with delay	Not complied with
6.	Based on the recommendations made under ADB-funded TA No. 2587-KGZ, a system identifying and recording key indicators, including traffic data and collecting statistics for monitoring Project benefits and impact shall be established with the assistance of the Project consultants. Physical, economic, and social benefits shall be monitored and evaluated on an annual basis during the course of Project implementation, commencing in January 1999. These activities shall be reviewed by ADB through the quarterly progress reports and review missions that will monitor the progress of the Project, its impact, and sector reforms.	Complied with delay. Inception, midterm, & final reports were prepared in September 2001, June 2002 & November 2002, respectively.	Complied with
7.	Availability of funds, facilities, services, land and other resources which are required, in addition to the proceeds of the Loan, for carrying out of the Project and for operation and maintenance of the Project facilities.	Complied with delay	Complied with
8.	The Borrower shall ensure that the Project facilities are operated, maintained and repaired in accordance with sound administrative, financial, engineering, environmental, and highway maintenance and operation practices.	Partly complied	Complied with
9.	The Borrower shall ensure that appropriate environmental protection and safety measures are included in the design of the Project facilities, that the Project facilities are constructed, operated and maintained in accordance with the initial environmental examination conducted for the Project, the Bank's <i>Environmental Assessment Requirements and Environmental Review Procedures and Environmental Guidelines for Selected Infrastructure Projects</i> , and that any adverse environmental impact caused by the Project is adequately addressed and prevented or mitigated.	Complied	Complied with
10.	Ensure that ADB's <i>Policy on Gender and Development</i> is complied with in the implementation of the Project.	Complied	Complied with
11.	The Borrower shall (i) maintain a separate Road Fund in a separate and special account and shall use it only for the purposes stated in, and in accordance with the provisions of the Road Fund Act; (ii) have the Road Fund Account audited annually in accordance with appropriate auditing standards consistently applied, by independent auditors whose qualifications, experience and terms of reference are acceptable to the Bank; and (iii) furnish to the Bank as soon as possible, but in any event not later than nine (9) months after the end of each fiscal year, certified copies of the audited accounts of the Road Fund Account.	(i) Waived by ADB in 2001, (ii) Complied with, and (iii) Being complied with.	Partly complied with
12.	The Borrower, in consultation with ADB identify the level of road user charges and excise tax on fuel in line with the provisions of the Road Fund Act, and shall commence collecting such revenues by 1 January 1999. In the event the Road Fund is insufficient for the budgeted costs and expenses of road maintenance and development, the Borrower shall make available on a timely basis the resources required to cover such costs and expenses.	Complied	Not complied with

COVENANTS	PCR	IEM
13. The Borrower shall (i) maintain, or cause to be maintained, separate accounts for Part A of the Project; (ii) have such accounts and related financial statements audited annually, in accordance with appropriate auditing standards consistently applied, by independent auditors whose qualifications, experience and terms of reference are acceptable to the Bank; (iii) furnish to the Bank, as soon as available but in any event not later than nine (9) months after the end of each related fiscal year, 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 Loan proceeds and compliance with the covenants of this Loan Agreement), all in the English language; and (iv) furnish to the Bank such other information concerning such accounts and financial statements and the audit thereof as the Bank shall from time to time reasonably request	Complied with. The audited Project Accounts for FY2003 were received on 23 Sep 2004.	Complied with
14. Continued functioning of the Project Steering Committee (PSC), which was established under Loan 1444-KGZ(SF), chaired by the Minister, MOTC, and its members are the Project Manager and representatives from the Office of the Prime Minister, Ministry of Finance, Goskominvest, and MOTC. Project Implementation Unit (PIU), established under Loan 1444-KGZ(SF), will continue functioning for the Project, consisting of Project Manager, three civil engineers, a materials and soil engineer, road engineer, bridge engineer, and tunnel engineer and sufficient number of supporting staff.	Complied	Complied with
15. Competent and qualified consultants and contractors to be employed on terms and conditions satisfactory to the Borrower and the ADB.	Complied	Complied with
16. Due diligence and efficiency and in conformity with sound administrative, financial engineering, environmental, road practices in carrying out the Project and operation of Project facilities.	Complied	Complied with
17. Ensure that the activities of the departments and agencies with respect to carrying out of the Project and operation of the Project facilities are conducted and coordinated in accordance with the sound administrative policies and procedures.	Complied	Complied with
18. Submission of quarterly progress reports on the carrying out of the Project and on the operation and management of the Project facilities.	Complied	Complied with.
19. Preparation and submission to ADB, within three months of loan closing, the Borrower's Report on the execution and initial operations of the Project, including its cost, the performance by the Borrower of its obligations under the Loan Agreement and the accomplishment of the purposes of the Project.	Complied Received Mar 2005.	Complied with
20. In 2000, carry out a mid-term review of the Project to examine the progress made in sector reforms, review Project implementation, and examine compliance with loan covenants.	Complied MTR in Dec 2000	Complied with

Loan 1853-KGZ[SF]: Third Road Rehabilitation Project

1. The Borrower shall ensure that the Project Implementation Unit (PIU) shall be responsible for the day-to-day Project supervision and implementation of the Project and provide the necessary liaison among MOTC, contractors, suppliers, and the Bank. The PIU shall be headed by a Project Manager appointed by MOTC and acceptable to the ADB.	Complied	Complied with
2. The Borrower shall ensure that the PIU remains adequately staffed at all times throughout the Project implementation period by civil engineers with expertise in materials and soil engineering, roads and bridges, as well as by financial and clerical staff made available from MOTC.	Complied	Complied with
3. The Project Steering Committee (PSC) shall oversee the implementation of the Project. In particular, the PSC shall: (i) oversee and coordinate all Project activities, including liaison among the agencies involved in Project ADB; (ii) review the status of Project implementation; (iii) monitor the progress achieved and resolve difficulties encountered; and (iv) serve as a forum for discussions on, and review of, the Project's impact on poverty reduction and economic development.	Complied	Complied with

	COVENANTS	PCR	IEM
4.	The PSC shall continue to be chaired by the Minister of MOTC, and its members shall be the Project Manager and representatives from the Office of the Prime Minister, Ministry of Finance and MOTC. The PSC shall meet at least four times per year, and more often is required.	Complied	Complied with
5.	Without limiting the generality of Section 4.02 of the LA, the Borrower shall undertake to provide all funds and resources necessary for rehabilitation, operation and maintenance, and management of the Project roads. The Borrower, prior to 31 December of each year of the Project implementation period, shall submit to ADB the Public Investment Program (PIP) for the succeeding year demonstrating availability of necessary funds and resources for rehabilitation, operation and maintenance, and management of the Project roads. The Borrower shall cause MOTC to take all necessary measures to ensure successful rehabilitation of the Project roads, and operation and maintenance thereof after the Project completion.	Complied	Complied with
6.	The Borrower shall establish, not later than the Effective Date, a special account within the Treasury for revenues specified in the Road Fund Act.	Complied	Complied with
7.	The Borrower shall establish a separate budget item for maintenance of the Bishkek–Osh road and shall allocate funds as follows: Som35 million in the year 2001, Som40 million in the year 2002, Som60 million in the year 2003, Som80 million in the year 2004, and Som100 million in the year 2005 to 2008	Complied	Complied with
8.	The Borrower shall allocate funds for maintenance of other MOTC-administered roads as follows: Som162 million in the year 2001; the allocation shall increase by 10% per year, reaching Som237 million in 2005 and 2006; Som360.9 million in 2007 and Som 287 million in 2008.	Complied	Complied with
9.	The Borrower shall adjust the amounts of budgetary allocations indicated in paragraphs (7) and (8) above for the effect of annual inflation and depreciation of the Som against dollars.	Partly complied	Partly complied with
10.	The Borrower shall (i) include the details of actual road maintenance expenditures in every quarterly progress report to be furnished ADB; (ii) have the road maintenance expenditures and the Road Fund special account 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 such audited expenditures and account ADB within nine months from the end of the fiscal year.	Partly complied	Complied with
11.	The Borrower shall ensure that MOTC: (a) by the time of Project completion, shall invite bids from contractors, regardless of ownership, to undertake routine maintenance of all sections of the Bishkek–Osh road, including sections rehabilitated under other projects, for which the warranty periods have expired; (b) within three months of submission of the final report of the Advisory TA, shall prepare and furnish ADB a detailed action plan for implementing the secondary roads maintenance system (SRMS), to be based on collaboration between the local maintenance units (LMUs) and local communities, developed under the Advisory TA; and (c) by the time of completion of civil works for the secondary roads, shall make SRMS fully prepared for operation, upon the expiration of the warranty periods, in the LMUs assigned to the secondary roads rehabilitated under the Project.	Partly complied	Partly complied with
12.	The Borrower shall ensure active participation of the Project beneficiaries in the maintenance of secondary roads after the expiration of the warranty periods by enacting and/or modifying necessary regulations, providing resources and procuring equipment for maintenance of the Project roads in accordance with the list of equipment to be prepared by the Project supervision consultant and furnished for approval to the Bank by June 2003.	Not complied	Not complied with
13.	MOTC shall ensure that (i) the roads are rehabilitated in accordance with the technical specifications of the design; and (ii) construction supervision, quality control and contract management are performed in accordance with internationally acceptable standards.	Complied	Complied with

	COVENANTS	PCR	IEM
14.	To ensure a safe road network in the Project area during Project implementation and after Project completion, MOTC shall install appropriate road safety facilities, such as pavement marking, warning signs and signals, communication facilities, hazard barriers, and traffic management and monitoring facilities. The Borrower shall cause MOTC and the State Automobile, Inspection (GosAvtoInspectsia) of the Ministry of Internal Affairs to take all necessary measures, including implementation of proper traffic management procedures, during the Project implementation to ensure safety of Project workers and road users. The Borrower shall ensure that recommendations for maintaining road safety made by contractors, the Project supervision consultant or the ADB, agreed upon by the Borrower and ADB, shall be implemented in accordance with the agreed timeframe.	Complied	Complied with
15.	The Borrower undertakes to implement the regulatory changes recommended under the Advisory TA and agreed upon with the ADB so that the benefits of the Project are passed on to the poor. The Borrower, within three months from the submission of the final Advisory TA report, shall prepare and submit to ADB a detailed action plan for implementing the Advisory TA recommendations to ensure that a substantial part of the recommendations is implemented by June 2004, and the implementation of the recommendations is entirely completed by the end of 2004.	Not complied (irrelevant)	Not complied with
16.	According to the recommendations specified in the final report for TA 3065-KGZ: Policy Support in the Transport Sector, MOTC shall (i) by 1 January 2002, integrate the financial planning and management functions of MOTC and its regional road maintenance agencies (RRMAs) and appoint a Chief Financial Officer to head these functions; and (ii) by 1 January 2004, commence implementation of international accounting standards (of the International Accounting Standards ADB Bank) in MOTC, its branches and entities involved in the Project implementation.	Complied	Complied with
17.	The Borrower shall ensure that (a) road rehabilitation and maintenance works under the Project are carried out in accordance with the environmental laws and regulations of the Borrower and ADB's environmental procedures and guidelines, in particular, ADB's <i>Environmental Guidelines for Selected Infrastructure Project</i> ; (b) all contracts related to rehabilitation of the Project roads require that the contractors (i) take appropriate erosion control measures; (ii) minimize and adverse impact due to altered embankments, borrow pits, and other activities as set out in the SIEE; (iii) take appropriate safety measures to minimize risks of landslides, soil subsidence, and related occurrences; and (iv) keep construction materials and facilities, such as asphalt and hot-mix plants, at least 500 meters away from schools, hospitals, and other sensitive facilities; (c) MOTC and MEES regularly undertake joint inspections of the environmental aspects of the Project, including erosion control, and include the results of such inspections in the Project quarterly reports submitted to ADB; and (d) the contractor under the Project implements environmental mitigation measures recommended under the SIEE.	Complied	Complied with
18.	The Borrower shall take necessary actions to ensure that local labor is engaged in Project works and procurement of local materials, and wages paid to local labor employed under the Project are above the poverty line.	Complied	Complied with
19.	To ensure that the Project facilities are managed effectively, and Project benefits are maximized, MOTC, with the assistance of the Project implementation consultants, shall undertake monitoring and evaluation of Project impact. Project impact shall be monitored and evaluated based on the data, agreed upon with ADB, collected at the commencement of the Project, at Project completion, one year from Project completion, and three years from Project completion. These activities shall be reviewed by ADB through the quarterly progress reports and review missions that will monitor the progress of the Project, its impact, and sector reforms.	Partly complied	Partly complied with

	COVENANTS	PCR	IEM
20.	In the year 2003, the Borrower and ADB shall carry out a midterm review of the Project. The objectives of the review will be to: (i) evaluate the Borrower's progress in implementing policy reforms; (ii) examine the Project implementation and determine whether any adjustments to the scope and implementation and determine whether any adjustments to the Project scope and implementation arrangements are warranted; (iii) determine the compliance with relevant standards; (iv) address any potential procurement, financing, and scheduling issues; and (v) examine compliance with the provisions of this Loan Agreement.	Partly complied MTR was waived. All issues addressed during regular review missions Complied	Partly complied with
21.	The Borrower shall ensure compliance with ADB's <i>Policy on Gender and Development</i> during the Project implementation and shall take necessary measures to encourage women to participate in Project implementation activities. MOTC shall monitor effects on women during Project implementation through the monitoring and evaluation system, in consultation with local governments and local women's associations.	Complied	Complied with
22.	The Borrower shall ensure that information in the Russian language on the risk of socially transmitted diseases is disseminated to those employed during Project implementation and to transport operators when using the Project facilities.	Complied	Complied with
23.	For the purpose of complying with the requirements of this Loan Agreement regarding annual submittal of audited financial statements, proceeds of the Loan may be used to finance expenditure for private sector auditors and translation of auditors' reports into English, provided that (i) such auditors have qualification, expertise and terms of reference acceptable to the Bank; and (ii) the recruitment process is acceptable to ADB.	Complied	Complied with
24.	The Borrower shall maintain or cause to be maintained, records and accounts adequate to identify the goods and services and other items of expenditure financed out of the proceeds of the Loan, to disclose the use thereof in the Project, to record the progress of the Project and to reflect, in accordance with consistently maintained sound accounting principle MOTC and other agencies of the Borrower responsible for the carrying out of the Project and operation of the Project facilities, or any part thereof.	Complied	Complied with
25.	The Borrower shall (i) maintain, or cause to be maintained, separate accounts for the Project; (ii) have such accounts and related financial 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; (iii) furnish ADB, as soon as available but in any event not later than nine (9) months after the end of each related fiscal year, 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 Loan proceeds and compliance with the covenants of this Loan Agreement), all in the English language; and (iv) furnish ADB such other information concerning such accounts and financial statements and the audit thereof as ADB shall from time to time reasonably request.	Complied	Complied with
26.	The Borrower shall furnish, or cause to be furnished, to ADB quarterly reports on the carrying out of the Project and on the operation and management of Project facilities. Such reports shall be submitted in such form and in such detail and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the quarter under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following quarter.	Complied	Complied with
27.	Promptly after physical completion of the Project, but in any event not later than three (3) months thereafter, or such later date as may be agreed for this purpose between the Borrower and ADB. The Borrower shall prepare and furnish to ADB a report, in such form and in such detail as ADB shall reasonably request, on the execution and initial operation of the Project, including its cost, the performance by the Borrower of its obligations under this Loan Agreement and the accomplishment of the purposes of the Loan.	Complied with delays	Complied with

SUMMARY OF PHYSICAL ACCOMPLISHMENTS

Item	Unit	Appraisal	Actual
A. Road Rehabilitation			
First Road Rehabilitation Project	km	135	135
Second Road Rehabilitation Project	km	208	228
Third Road Rehabilitation Project	km		
Bishkek–Osh Road		120	120
Secondary Roads			
Tash Kumyr to Karajgach	km	53	53
Bazar Korgom to Arsabob	km	52	47
Branch to Kyzl Ungkur	km	20	5
B. Road Maintenance Equipment			
B.1 Road Rehabilitation Project			
Patch hole repairing machine	unit		8
Truck Ural	unit		1
Bulldozer	unit		14
Paver	unit		4
Grader	unit		4
Loader	unit		7
Snow removing machine	unit		2
Dump truck	unit		18
Excavator	unit		1
Water tanker and sand distributor	unit		12
Roller	unit		6
Pick-up	unit		6
Niva "Taiga"	unit		3
Trailer	unit		4
Dump truck	unit		14
Motor grader	unit		15
Road line marker	unit		2
Asphalt vibratory roller	unit		8
Combined road machine	unit		10
Wheel type tractor	unit		13
Wheel dozer excavator	unit		13
Combined road machine	unit		7
Front wheel loader	unit		12
Spare parts			
B.2 Second Road Rehabilitation Project (Winter Equipment)			
Multifunctional truck	unit		3
Snow clearing machine	unit		3
Snow plough	unit		3
Sweeper	unit		3
Front loader	unit		3
Sandspreader	unit		3
Water sprinkler	unit		3
Snow blower	unit		1
Wheel loader	unit		1
B.3 Third Road Rehabilitation Project			
Chip sealer	unit		2
Motor grader	unit		2
Wheel loader	unit		2
30 T/hr crusher	unit		2
Bulldozer blade for grader	unit		2

REEVALUATION OF THE ECONOMIC INTERNAL RATES OF RETURNS

A. General

1. The overall economic viability of the projects was reevaluated with updated information on road conditions, traffic, and vehicle operating cost (VOC). The methodology adopted is likely to differ from the approach adopted at appraisal and by the project completion reports (PCRs). The evaluation in the report and recommendation of the President (RRP) and the PCRs, notably the PCR for the third project, did not adequately describe the assumptions with regard to the without-project scenario. It was particularly unclear what maintenance regimes were assumed and what pavement deterioration was forecast under the without-project scenario. The reevaluation conducted for this project performance evaluation report (PPER) assumed a with-project case defined by improved road conditions and a more efficient maintenance regime, under which periodic and routine maintenance is carried out regularly. The without-project case is characterized by a higher pavement roughness and rising maintenance expenditures necessary to prevent complete failure of the road pavement. On the other hand, the maintenance assumed for the without-project case is still adequate to prevent high roughness figures. The assumption is based on the conditions of the short, still unrehabilitated sections of the Bishkek–Osh Road, which have been properly maintained over the years and show no signs of failure. The riding quality of those sections is acceptable. While the pavement has not been designed to carry the current traffic load, the sections are a suitable example for the without-project scenario and demonstrate the importance that the government attaches to maintaining the entire road.

2. The development of pavement conditions over time reflecting different maintenance regimes and traffic loads is expressed in terms of the international roughness index (IRI).¹ Before the project, the IRI on the project roads measured about 9,000 to 11,000 millimeters (mm) depending on the individual section. The rehabilitation under the three projects reduced the IRI to below 3,000 mm on all project roads. Roughness is currently at an average level of about 3,500 mm. This was borne out by the rapid condition survey carried out in connection with the independent evaluation mission (IEM). Under the without-project case, the pavement would have further deteriorated, the pace of deterioration being slowed by increasing routine maintenance expenditures. In contrast, the with-project case allows for a better balance of routine and periodic maintenance interventions, whereby the periodic interventions would reduce the pavement roughness to about the original levels. Unlike the previous evaluations of the project sections, the re-evaluation has assumed substantial periodic interventions under both scenarios.

B. Costs

3. The actual investment cost was converted to economic cost reflecting consumption of economic resources. To this end, taxes and duties were deducted from the cost, and wages were adjusted to reflect the opportunity cost of labor indicating the actual scarcity of labor in the Kyrgyz Republic. Based on these considerations, a conversion factor of 0.85 was used to

¹ The international roughness index (IRI) is used to define the longitudinal profile of a track created by traveling wheel. The IRI constitutes a standardized roughness measurement. The measurement units are meters per kilometer (m/km) or millimeters per meter (mm/m). The IRI is based on the ratio of a standard vehicle's accumulated suspension motion caused by roughness (in mm, cm, or inches) divided by the distance traveled by the vehicle during the measurement (miles, kilometers). The IRI scale is open-ended. Good road surfaces are typically below an IRI of 4.

convert financial to economic costs. Historical maintenance cost data was obtained from MOTC, whereas future data was calibrated based on anticipated traffic loads, and relationships provided by the pavement deterioration model used in the evaluation. Periodic maintenance is assumed to be carried out at 7-year intervals, based on the existing and forecast traffic loads.

4. Maintenance equipment was procured under the three projects. The equipment is part of the equipment pool of the Ministry of Transportation and Communication (MOTC). The equipment is therefore not employed only in the Bishkek–Osh Directorate. For the economic analysis, the cost of equipment was therefore pro-rated consistent with the share of the directorate in the total cost of the MOTC.

5. The PCR for the third project has included the construction cost for the secondary roads in the reevaluation of the Bishkek–Osh Road sections. This may have been a defensible approach if the method of assigning traffic, economic benefits, and maintenance costs had been explained. The IEM has reevaluated the third project net of the costs and benefits of the secondary roads.

C. Traffic

6. The actual traffic data and traffic forecasts were reviewed and updated based on traffic counts carried out by the MOTC in December 2008 and in connection with the IEM in October 2009. The MOTC is conducting regular traffic counts at different times during the year. These data was used for the 2002–2008 period.

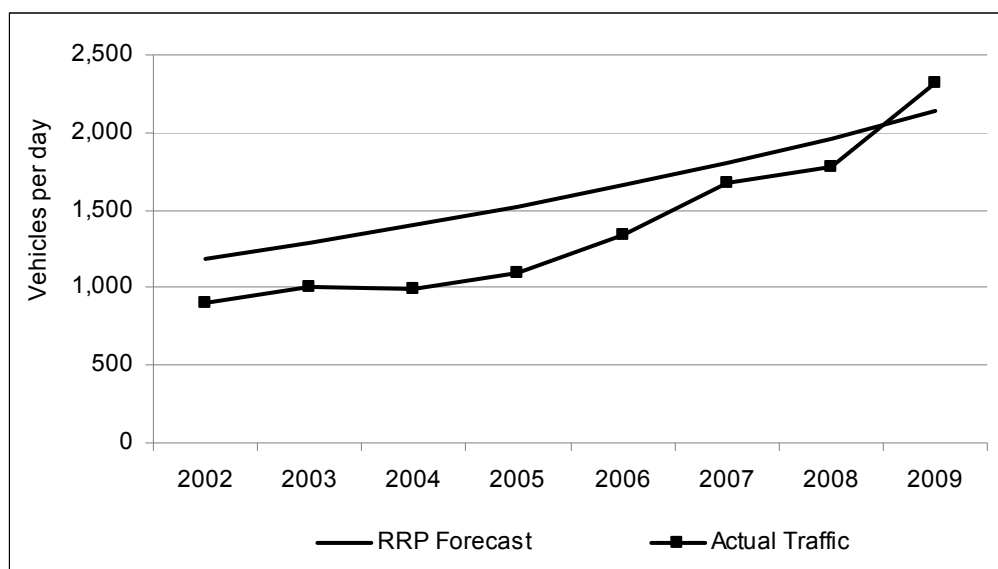
7. In connection with the IEM, traffic counts were conducted on five locations along the entire project road. The locations were selected based on the specific traffic pattern, with a view to capturing traffic on long road stretches and at major traffic deviation points. This meant that the counts on some of the stations were relevant to more than one road section of the project roads. Traffic counts classified by vehicle category were conducted on each of the count stations during the 12 peak traffic hours from 8 a.m. to 8 p.m. for 4 days. Additional counts were made during night hours (8 p.m. to 8 a.m.). Traffic counts were separated for each direction to identify directional distribution. The main purpose of carrying out the traffic counts was to confirm the most recent data of the MOTC. This was achieved but the scope of the survey was limited to traffic counting, rather than establishing origin–destination patterns of traffic. This would have meant interviewing drivers and passengers, which could not be done within the scope of this short survey.

8. It was noted that the traffic assumptions of the PCRs were below the most recent traffic counts carried out by the MOTC in 2008 and also below those carried out in connection with the IEM. The reasons for this are unclear as the PCR did not provide specific explanations for the assumed data.

9. Traffic is forecast to grow at the conservative rate of 4% over the rest of the 20-year investment period.² This growth rate was adopted consistent with forecast economic growth in the Kyrgyz Republic. The development of traffic anticipated at appraisal and the actual development is shown in the graphs below.

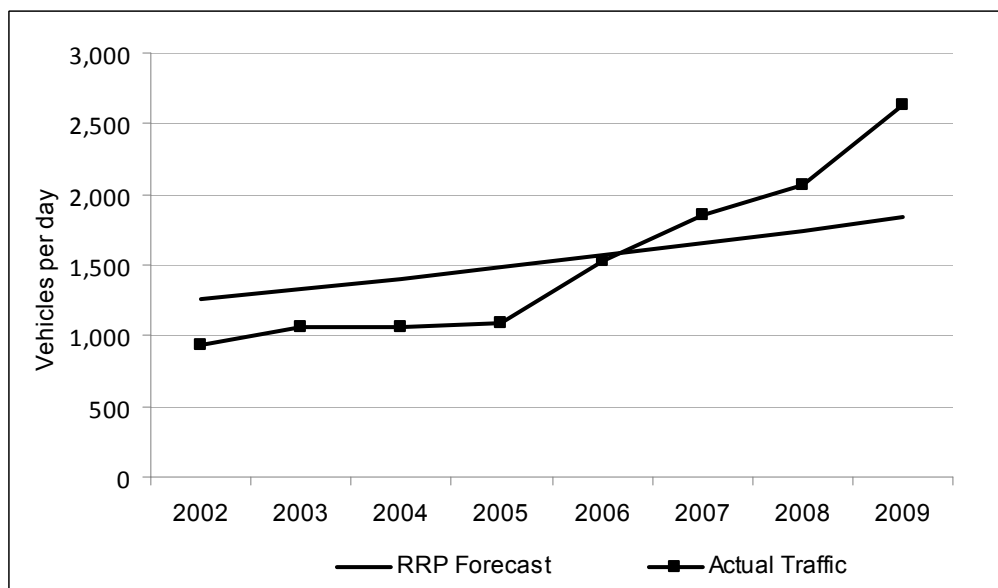
² The growth rate is based on the population growth rate of 1.3% per year and the assumed low economic growth of 3% per year.

Figure A5.1: Development of Traffic on the First Project Road
(Average Number of Vehicles per Day)



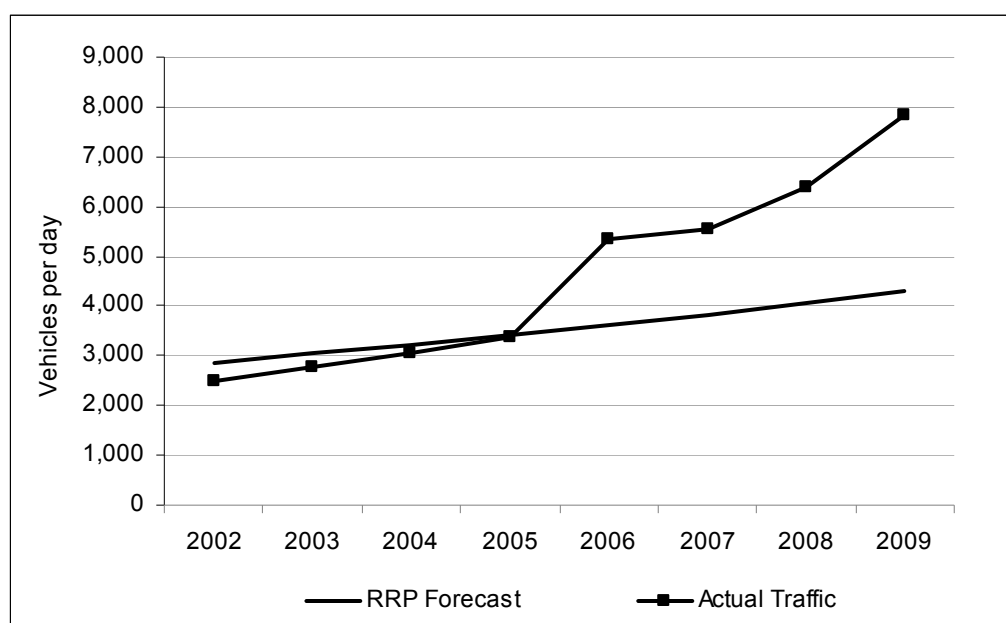
RRP = report and recommendation of the President.
Sources: RRP and Independent Evaluation Mission.

Figure A5.2: Development of Traffic on the Second Project Road
(Average Number of Vehicles per Day)



RRP = report and recommendation of the President.
Sources: RRP and Independent Evaluation Mission.

Figure A5.3: Development of Traffic on the Third Project Road
(Average Number of Vehicles per Day)



RRP = report and recommendation of the President.
Sources: RRP and Independent Evaluation Mission.

10. It appears that the initial traffic growth has largely been in line with the projections of the appraisal mission. While the actual traffic volume has been lower for the first years, the composition of traffic, notably the share of heavy vehicles, has been underestimated and that of large buses overestimated. The net effect on the project's viability would thus largely be neutral. While lower than expected traffic growth would tend to have a decreasing effect on the economic internal rate of return (EIRR), the higher share of heavier vehicles would generate relatively more cost savings and would tend to improve the EIRR.

D. Benefits

11. Traffic data collected through traffic counts were translated into traffic output figures in terms of vehicle kilometers. Recalculated benefits include (i) VOC savings due to better road conditions, and more efficient operating speed; (ii) travel time savings for passengers; (iii) freight time savings. A common assumption is that the roads will be properly maintained. Cost savings due to occasional road closures under the without-project case were not included.

1. VOC Savings

12. The reevaluation is based on VOC relationships generated by Highway Development Management (HDM) System-4 calibrated for road and traffic conditions on the project road sections. The VOC are assumed to increase as a result of pavement roughness. In this regard, the IEM used the VOC module of HDM-4. The costs are constant at 2005 prices. Table A5.1 below shows the increases in VOC as a function of increases in roughness.

Table A5.1: Vehicle Operating Cost as a Function of Roughness

	Vehicle Operating Costs (\$/km)						
	International Roughness Index Scale						
	2	3	4	5	6	7	8
Car & Jeep	0.2106	0.2111	0.2127	0.2154	0.2192	0.2238	0.2293
Heavy Bus	0.3643	0.3726	0.3825	0.3938	0.4065	0.4205	0.4356
Small & Medium Truck	0.2842	0.2902	0.2973	0.3055	0.3147	0.3247	0.3356
Heavy Truck	0.6130	0.6247	0.6391	0.6558	0.6747	0.6957	0.7186

Km = kilometer.

Source: Independent Evaluation Mission.

13. The determinants of VOC based on the vehicle fleet in the Kyrgyz Republic are in Table A5.2.

Table A5.2: Vehicle Fleet Characteristics

Cost and Operation Parameters	Car and Jeep	SM Truck	Bus	Heavy Truck
New Vehicle Cost (\$/Vehicle)	15,000.0	30,000.0	50,000.0	60,000.0
Fuel Cost (\$/liter)	0.7	0.6	0.6	0.6
Lubricant Cost (\$/liter)	2.4	2.4	2.4	2.4
New Tire Cost (\$/tire)	45.0	110.0	220.0	255.0
Maintenance Labor (\$/hour)	0.6	0.6	0.7	0.7
Crew Cost (\$/hour)	0.3	1.4	1.4	1.4
Interest Rate (%)	6.0	6.0	6.0	6.0
Utilization and Loading				
Kilometers Driven per Year (km)	18,000.0	50,000.0	50,000.0	50,000.0
Hours Driven per Year (hours)	500.0	1,800.0	2,000.0	2,000.0
Service Life (years)	8.0	7.0	8.0	8.0
Percent of Time for Private Use (%)	80.0	6.0	11.0	20.0
Gross Vehicle Weight (tons)	1.4	6.0	11.0	20.0
Number of Passengers	4.0		40.0	
Trips per Year	54	149	149	149
VOC at IRI = 2000 (\$/km)	0.211	0.364	0.284	0.613

IRI = international roughness index, km = kilometer, SM = small and medium, VOC = vehicle operating cost.

Sources: Highway Development Management Vehicle Operating Cost Model, Independent Evaluation Mission.

2. Time Savings

14. Time savings are related to passengers and freight. For the reevaluation, all passengers were assumed to accrue a monetary benefit from the saving in travel time. Based on travel on the project roads (excluding the secondary roads), the reduction in travel time due to pavement improvements was estimated at 1.5 hours per trip. Considering that the time saving for the journey over the entire length of the Bishkek–Osh Road is about seven hours, the assumed saving per trip is conservative. As to freight, the savings occur in the form of interest savings due to a shorter time that capital is tied up in the freight during transit. The freight on the road is dominated by agricultural produce valued on average at \$400 per ton carried.³ The interest rate

³ This is based on the typical produce in the project region, including potatoes valued at about \$450 per ton, cotton at about \$1,300 per ton, onions of \$300 per ton, and rice at \$900 per ton.

applied was 6%, which is the average cost of capital over the past 5 years. The recalculated EIRRs are shown below.

Table A5.3: Economic Internal Rate of Return for the First Project
(\$ million, constant 2005 prices)

	Costs				Benefits				
	Capital	Maintenance		Total	Normal	Generated	Time	Total	Net
		With	Without	Cost	Traffic	Traffic	Savings		
1996	4.5			4.5					-4.5
1997	17.4			17.4					-17.4
1998	20.9			20.9					-20.9
1999	28.0			28.0					-28.0
2000	11.6	0	0.15	-0.15	11.5	4.8	0.5	0.64	5.96
2001		0.1	0.15	-0.01	0.0	5.1	0.5	0.66	6.27
2002		0.1	0.15	-0.01	0.0	5.4	0.6	0.69	6.62
2003		0.1	0.16	-0.01	0.0	6.3	0.6	0.80	7.73
2004		0.1	0.16	-0.01	0.0	6.2	0.6	0.76	7.59
2005		0.1	0.16	-0.02	0.0	6.9	0.7	0.85	8.43
2006		0.1	0.17	-0.02	0.0	8.7	0.9	1.02	10.60
2007		10.7	0.17	10.55	10.6	11.0	1.1	1.25	13.35
2008		0.1	0.17	-0.03	0.0	11.5	1.2	1.36	14.02
2009		0.1	12.06	-11.92	-11.9	17.4	1.8	1.59	20.73
2010		0.1	0.15	0.00	0.0	17.0	1.7	1.61	20.33
2011		0.1	0.15	-0.01	0.0	18.0	1.8	1.67	21.51
2012		0.1	0.15	-0.01	0.0	19.1	2.0	1.74	22.77
2013		0.1	0.16	-0.01	0.0	20.2	2.1	1.81	24.11
2014		0.1	0.16	-0.01	0.0	21.4	2.2	1.88	25.47
2015		0.2	0.16	-0.01	0.0	21.8	2.2	3.18	27.17
2016		10.7	0.17	10.55	10.6	23.0	2.4	3.30	28.66
2017		0.1	0.17	-0.03	0.0	24.3	2.5	3.43	30.26
2018		0.1	12.06	-11.92	-11.9	25.7	2.6	3.57	31.96
2019		0.1	0.15	0.00	0.0	27.2	2.8	3.72	33.67
2020		0.1	0.15	0.00	0.0	21.8	2.2	1.44	25.43

EIRR = 12.9%

Source: Independent Evaluation Mission.

Table A5.4: Economic Internal Rate of Return for the Second Project
(\$ million, constant 2005 prices)

	Costs					Benefits				
	Capital	Maintenance			Total	Normal Traffic	Generated Traffic	Time Savings	Total Benefits	Net
		With	Without	Incremental						
1999	25.1				25.1					-25.1
2000	31.4				31.4					-31.4
2001	38.4				38.4					-38.4
2002	21.7				21.7					-21.7
2003	5.4	0	0.23	-0.23	5.2	9.4	1.0	0.61	10.93	5.7
2004		0.2	0.24	-0.02	0.0	9.5	1.0	0.60	11.05	11.1
2005		0.2	0.24	-0.02	0.0	10.0	1.0	0.67	11.69	11.7
2006		0.2	0.25	-0.02	0.0	14.0	1.4	0.90	16.35	16.4
2007		0.2	0.25	-0.03	0.0	17.4	1.8	1.07	20.21	20.2
2008		0.2	0.26	-0.03	0.0	19.5	2.0	1.14	22.67	22.7
2009		0.2	0.26	-0.03	0.0	29.3	3.0	1.13	33.41	33.4
2010		16.7	0.27	16.45	16.5	31.2	3.2	1.73	36.13	19.7
2011		0.2	0.27	-0.05	-0.1	26.7	2.7	1.10	30.49	30.5
2012		0.2	18.8	-18.59	-18.6	28.0	2.9	1.15	32.06	50.6
2013		0.2	0.23	-0.01	0.0	29.7	3.0	1.19	33.91	33.9
2014		0.2	0.24	-0.01	0.0	31.4	3.2	1.24	35.89	35.9
2015		0.2	0.24	-0.01	0.0	33.3	3.4	1.29	38.02	38.0
2016		0.2	0.25	-0.02	0.0	35.3	3.6	1.34	40.30	40.3
2017		0.2	0.25	-0.02	0.0	37.4	3.8	1.39	42.61	42.6
2018		0.2	0.26	-0.02	0.0	35.1	3.6	2.41	41.15	41.2
2019		16.7	0.26	16.46	16.5	37.2	3.8	2.50	43.46	27.0
2020		0.2	0.27	-0.04	0.0	39.3	4.0	2.60	45.92	46.0
2021		0.2	18.8	-18.58	-18.6	41.6	4.3	2.71	48.55	67.1
2022		0.2	0.23	0.00	0.0	69.6	7.9	2.82	80.32	80.3
2023		0.2	0.24	-0.01	0.0	72.1	9.1	0.47	81.67	81.7

EIRR = 15.0%

Source: Independent Evaluation Mission.

Table A5.5: Economic Internal Rate of Return for the Third Project
(\$ million, constant 2005 prices)

	Costs					Benefits				
	Capital	Maintenance			Total	Normal Traffic	Generated Traffic	Time Savings	Total	Net
		With	Without	Incremental						
2003	3.4				3.40					-3.4
2004	3.2				3.20					-3.2
2005	7.5				7.47					-7.5
2006	16.2				16.15					-16.2
2007	7.5	0	0.13	-0.13	7.39	6.9	0.7	2.07	9.63	2.2
2008		0.1	0.13	-0.01	-0.01	7.7	0.8	2.20	10.68	10.7
2009		0.1	0.14	-0.01	-0.01	9.6	1.0	2.81	13.41	13.4
2010		0.1	0.14	-0.01	-0.01	10.2	1.0	4.82	16.08	16.1
2011		0.1	0.14	-0.01	-0.01	10.8	1.1	5.01	16.95	17.0
2012		0.1	0.15	-0.01	-0.01	11.5	1.2	5.21	17.87	17.9
2013		0.1	0.15	-0.02	-0.02	12.2	1.2	5.42	18.86	18.9
2014		9.6	0.15	9.45	9.45	13.0	1.3	5.64	19.92	10.5
2015		0.1	0.15	-0.03	-0.03	12.1	1.2	5.86	19.22	19.2
2016		0.1	10.8	-10.67	-10.67	12.7	1.3	6.10	20.15	30.8
2017		0.1	0.13	0.00	0.00	13.5	1.4	6.34	21.21	21.2
2018		0.1	0.13	0.00	0.00	14.3	1.5	6.59	22.35	22.4
2019		0.1	0.14	-0.01	-0.01	15.1	1.6	6.86	23.55	23.6
2020		0.1	0.14	-0.01	-0.01	16.1	1.6	7.13	24.84	24.8
2021		0.1	0.14	-0.01	-0.01	17.0	1.7	7.42	26.15	26.2
2022		0.1	0.15	-0.01	-0.01	15.9	1.6	7.71	25.25	25.3
2023		9.6	0.15	9.45	9.45	15.9	1.6	8.32	25.88	16.4
2024		0.1	0.15	-0.02	-0.02	16.8	1.7	8.65	27.22	27.2
2025		0.1	10.8	-10.67	-10.67	17.8	1.8	8.99	28.65	39.3
2026		0.1	0.13	0.00	0.00	18.8	1.9	9.4	30.10	30.1
2027		0.1	0.13	0.00	0.00	20.0	2.0	9.5	31.48	31.5
EIRR = 31.5%										

Source: Independent Evaluation Mission.

Table A5.6: Economic Internal Rate of Return for Combined Projects

(\$ million, constant 2005 prices)

Normal traffic+generated traffic ==> VOC

	Costs					Benefits				
	Capital	With	Maintenance Without	Incremental	Total	Normal Traffic	Generated Traffic	Time Savings	Total	Net
1996	4.5				4.5					-4.5
1997	17.4				17.4					-17.4
1998	20.9				20.9					-20.9
1999	53.1				53.1					-53.1
2000	43.0	0	0.15	-0.15	42.9	4.8	0.5	0.6	6.0	-36.9
2001	38.4	0.14	0.15	-0.01	38.4	5.1	0.5	0.7	6.3	-32.1
2002	21.7	0.14	0.15	-0.01	21.7	5.4	0.6	0.7	6.6	-15.1
2003	8.8	0.14	0.39	-0.25	8.6	15.6	1.6	1.4	18.7	10.1
2004	3.2	0.37	0.40	-0.03	3.2	15.7	1.6	1.4	18.6	15.5
2005	7.5	0.37	0.41	-0.04	7.4	16.9	1.7	1.5	20.1	12.7
2006	16.2	0.37	0.41	-0.04	16.1	22.7	2.3	1.9	27.0	10.8
2007	7.5	10.95	0.56	10.39	17.9	35.2	3.6	4.4	43.2	25.3
2008		0.50	0.57	-0.07	-0.1	38.7	4.0	4.7	47.4	47.4
2009		0.50	12.46	-11.96	-12.0	56.3	5.8	5.5	67.6	79.5
2010		16.99	0.56	16.44	16.4	58.4	6.0	8.2	72.5	56.1
2011		0.50	0.57	-0.07	-0.1	55.5	5.7	7.8	68.9	69.0
2012		0.50	19.11	-18.61	-18.6	58.6	6.0	8.1	72.7	91.3
2013		0.51	0.54	-0.03	0.0	62.1	6.4	8.4	76.9	76.9
2014		9.98	0.55	9.43	9.4	65.8	6.7	8.8	81.3	71.9
2015		0.51	0.56	-0.05	-0.1	67.2	6.9	10.3	84.4	84.5
2016		11.08	11.21	-0.13	-0.1	71.1	7.3	10.7	89.1	89.2
2017		0.51	0.56	-0.05	0.0	75.2	7.7	11.2	94.1	94.1
2018		0.51	12.45	-11.94	-11.9	75.2	7.7	12.6	95.5	107.4
2019		17.00	0.55	16.45	16.4	79.5	8.1	13.1	100.7	84.2
2020		0.51	0.56	-0.05	-0.1	77.1	7.9	11.2	96.2	96.2
2021		0.36	18.95	-18.59	-18.6	58.6	6.0	10.1	74.7	93.3
2022		0.37	0.38	-0.01	0.0	85.5	9.5	10.5	105.6	105.6
2023		9.83	0.39	9.45	9.4	88.0	10.7	8.8	107.5	98.1
2024		0.13	0.15	-0.02	-0.02	16.8	1.7	8.6	27.2	27.2
2025		0.13	10.80	-10.67	-10.67	17.8	1.8	9.0	28.6	39.3
2026		0.13	0.13	0.00	0.00	18.8	1.9	9.4	30.1	30.1
2027		0.13	0.13	0.00	0.00	20.0	2.0	9.5	31.5	31.5

EIRR = 15.4%

Source: Independent Evaluation Mission.

15. The sensitivity of the EIRR for the projects overall to changes in key determinants was tested. The result is shown in Table A5.7. Overall, the economic viability of the projects is robust in that the increase in maintenance costs or reduction in net benefit by 10% keep them economically viable with EIRR above 12%.

Table A5.7: Sensitivity Calculations

	Independent Variable (%)	EIRR (%)	Sensitivity Indicator
Base Case		15.4	
Reduction in net benefits	-10.0	13.8	-1.03
Increase in maintenance costs	10.0	14.5	-0.04
Combination of both variables		13.2	

EIRR = economic internal rate of return.

Note: The sensitivity indicator is defined as the percentage change of the EIRR resulting from the percentage change in the independent variable. A sensitivity indicator of above 1 or below -1 would signal a strong impact of the chosen independent variable on the EIRR.

Source: Independent Evaluation Mission.