



Completion Report

Project Number: 42399-023
Loan Number: 2755
Loan Number: 3204
Grant Number: 0418
March 2019

Kyrgyz Republic: CAREC Corridor 1 (Bishkek– Torugart Road) Project 3

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Asian Development Bank

CURRENCY EQUIVALENTS

Currency Unit – som (Som)			
	At Appraisal (25 April 2011)	Additional Financing (30 October 2014)	At Project Completion (31 December 2017)
Som1.00 =	\$0.0213	\$0.0177	\$0.0145
\$1.00 =	Som46.916	Som56.508	Som69.140

ABBREVIATIONS

ADB	–	Asian Development Bank
CAREC	–	Central Asia Regional Economic Cooperation
CPS	–	country partnership strategy
EIA	–	environmental impact assessment
EIRR	–	economic internal rate of return
EMP	–	environment management plan
ICB	–	international competitive bidding
ICS	–	individual consultant selection
IPIG	–	Investment Projects Implementation Group
IRI	–	international roughness index
KJSNR	–	Karatal-Japaryk State Nature Reserve
LARP	–	land acquisition and resettlement plan
MOTR	–	Ministry of Transport and Roads
NLA	–	normative legal act
PBM	–	performance-based maintenance
PCR	–	project completion review
PRC	–	People's Republic of China
SDR	–	special drawing right
TOR	–	terms of reference
VOC	–	vehicle operating cost

NOTES

- (i) The fiscal year (FY) of the Government of the Kyrgyz Republic and its agencies ends on 31 December. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2017 ends on 31 December 2017.
- (ii) In this report, "\$" refers to United States dollars.

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BASIC DATA

A. Loan and Grant Identification

1. Country	Kyrgyz Republic
2. Loan and grant number, and financing source	Loan 2755-KGZ (COL), Loan 3204-KGZ (COL), Grant 0418-KGZ (ADF)
3. Project title	CAREC Corridor 1 (Bishkek—Torugart Road) Project 3
4. Borrower	Kyrgyz Republic
5. Executing agency	Ministry of Transport and Roads
6. Amount of loan and grant	L2755: SDR35,041,000 (\$55.0 million equivalent) L3204: SDR7,258,000 (\$10.8 million equivalent) G0418: \$4.3 million
7. Project completion report number	KGZ*****
8. Financing modality	Project loan and grant

ADF = Asian Development Fund, CAREC = Central Asia Regional Economic Cooperation, COL = concessional ordinary capital resources, G = grant, L = loan, SDR = special drawing rights

B. Loan and Grant Data

B.1. Loan 2755

1. Appraisal	
– Date started	25 January 2010
– Date completed	11 February 2011
2. Loan negotiations	
– Date started	2 March 2011
– Date completed	7 June 2011
3. Date of Board approval	19 September 2011
4. Date of loan agreement	
5. Date of loan effectiveness	
– In loan agreement	18 November 2011
– Actual	13 February 2012
– Number of Extensions	Two
6. Project completion date	
– Appraisal	30 September 2015
– Actual	30 June 2017
7. Loan closing date	
– In loan agreement	31 March 2016
– Actual	31 December 2017
– Number of Extensions	One
8. Financial closing date	
– Actual	7 May 2018
9. Terms of loan	
– Interest rate	1% per annum during grace period, 1.5% per annum thereafter
– Maturity (number of years)	32 years
– Grace period (number of years)	8 years

10. Disbursements

a. Dates – Loan 2755

Initial Disbursement 6 June 2012	Final Disbursement 18 December 2017	Time Interval 66 months
Effective Date 13 February 2012	Actual Closing Date 31 December 2017	Time Interval 71 months

b. Amount (\$)

Category	Original Allocation (0)	Actual Allocation (1)	Increased during Implementation (2)	Cancelled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Works (Design - Build)	45,000,000	42,624,378	4,298,696		46,923,074	46,248,582	674,492
Project management	1,500,000	1,346,758		765,970	580,788	580,934	-146
Construction Supervision and Environmental Management	3,600,000	3,293,743		540,384	2,753,359	2,753,358	1
Training, Conference, Workshops for Skills Development	800,000	705,412		149,385	556,027	555,410	617
Interest charge	1,000,000	910,899			910,899	910,899	
Unallocated	3,100,000	2,842,957		2,842,957			
Total	55,000,000	51,724,147	4,298,696	4,298,696	51,724,147	51,049,183	674,964

c. Amount (SDR)

Category	Original Allocation (1)	Increased during Implementation (2)	Cancelled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Works (Design - Build)	28,670,000	3,031,833	0	31,701,833	31,238,134	463,699
Project management	956,000	0	557,763	398,237	398,337	-100
Construction Supervision and Environmental Management	2,293,000	0	393,674	1,899,326	1,899,326	0
Training, Conference, Workshops for Skills Development	510,000	\$0	105,396	404,604	404,180	424
Interest charge	637,000	0	0	637,000	637,000	0
Unallocated	1,975,000	0	1,975,000	0	0	0
Total	35,041,000	3,031,833	3,031,833	35,041,000	34,576,977	464,023

**B.2. Loan 3204 and Grant 0418
(additional financing)**

1.	Appraisal	
	– Date Started	waived
	– Date Completed	
2.	Loan and grant negotiations	
	– Date started	27 October 2014
	– Date completed	28 October 2014
3.	Date of Board approval	2 December 2014
4.	Date of financial agreement	26 December 2014
5.	Date of loan and grant effectiveness	
	– In financial agreement	26 March 2015
	– Actual	24 April 2015
	– Number of extensions	One
6.	Project completion date	
	– Appraisal	30 June 2017
	– Actual	30 June 2017
7.	Loan and grant closing date	
	– In financial agreement	31 December 2017
	– Actual	31 December 2017
	– Number of extensions	None
8.	Financial closing date	
	– Actual	7 May 2018
9.	Terms of loan	
	– Interest rate	1% per annum during grace period, 1.5% per annum thereafter
	– Maturity (number of years)	32 years
	– Grace period (number of years)	8 years

10. Disbursements

a. Dates – Loan 3204

Initial Disbursement 4 September 2015	Final Disbursement 21 September 2017	Time Interval 25 months
Effective Date 24 April 2015	Actual Closing Date 31 December 2017	Time Interval 32 months

b. Amount (\$)

Category	Original Allocation (0)	Actual Allocation (1)	Increased during Implementation (2)	Cancelled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Un-disbursed Balance (6 =4-5)
Works (Design - Build)	7,180,000	6,677,968	2,889,911		9,567,879	8,915,344	652,535
Consulting Services (Construction Supervision)	720,000	672,012		334,312	337,700	331,853	5,847
Interest charge	200,000	189,701			189,701	116,356	73,346
Unallocated	2,700,000	2,555,599		2,555,599			
Total	10,800,000	10,095,280	2,889,911	2,889,911	10,095,281	9,363,553	731,728

c. Amount (SDR)

Category	Original Allocation (1)	Increased during Implementation (2)	Cancelled during Implementation (3)*	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6=4-5)
Works (Design - Build)	4,825,000	2,053,419		6,878,419	6,429,815	448,604
Consulting Services (Construction Supervision)	484,000		239,419	244,581	240,561	4,020
Interest charge	135,000			135,000	84,576	50,424
Unallocated	1,814,000		1,814,000	0	0	0
Total	7,258,000	2,053,419	2,053,419	7,258,000	6,754,952	503,048

d. Dates – Grant 0418

Initial Disbursement 4 September 2015	Final Disbursement 9 November 2016	Time Interval 14 months
Effective Date 24 April 2015	Actual Closing Date 31 December 2017	Time Interval 32 months

e. Amount – Grant 0418 (\$)

Category	Original Allocation (1)	Increased during Implementation (2)	Cancelled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Works	4,300,000	0	0	4,300,000	4,142,307	157,693
Total	4,300,000	0	0	4,300,000	4,142,307	157,693

C. Project Data

1. Project Cost (\$ million)

Cost	Appraisal Estimate	With Additional Financing	Actual
Foreign Exchange Cost	58.00	73.10	64.55
Local Currency Cost	12.00	14.90	17.60
Total	70.00	88.00	82.15

2. Financing Plan (\$ million)

Cost	Appraisal Estimate	With Additional Financing	Actual
Implementation Costs			
Borrower Financed	15.00	17.90	17.60
ADB Financed	55.00	70.10	63.52
Other external financing			
Total implementation cost	70.00	86.80	81.12
Interest during construction costs			
Borrower Financed			
ADB Financed	1.00	1.20	1.03
Other external financing			
Total interest during construction cost	1.00	1.20	1.03

ADB = Asian Development Bank.

3. Cost breakdown by project component (\$ million)

Component	Appraisal Estimate	With Additional Financing	Actual
A. Base Costs			
1. Civil Works	55.00	69.00	76.35
2. Consulting Services for Construction Supervision & Environmental Management	4.00	4.80	3.43
3. Project Management	1.70	1.70	0.65
4. Skills Development	1.00	1.00	0.69
Total Base Costs (A)	61.70	76.50	81.12
B. Contingencies	7.30	10.30	
C. Financial Charges	1.00	1.20	1.03

Total (A+B+C)	70.00	88.00	82.15
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4. Project Schedule

Item	Appraisal Estimate	Actual
Date of contract with consultants:		
Supervision Consulting Services	Q4 2011	17 May 2012
Skills Development ^a	Q4 2015	11 August 2016
Completion of engineering designs	NA (Design-Build Contract)	
Civil works contract		
Date of award	Q4 2011	21 August 2012
Completion of work	Q1 2015	18 October 2016

NA = not applicable, Q = quarter

^a At project appraisal, there was no clear implementation schedule for the skills development component

5. Project performance report ratings

Loan 2755

	Project Rating
From 7 Jun 2011 to 31 December 2011	No performance validation for the period
From 1 January 2012 to 30 June 2012	On Track
From 1 July 2012 to 30 September 2012	Potential Problem
From 1 October 2012 to 31 December 2012	On Track
From 1 January 2013 to 31 December 2013	On Track
From 1 January 2014 to 31 December 2014	On Track
From 1 January 2015 to 31 December 2015	On Track
From 1 January 2016 to 31 December 2016	On Track
From 1 January 2017 to 31 December 2017	On Track

Loan 3204/G0418

	Project Rating
From 1 April 2015 to 30 Jun 2015	On Track
From 1 July 2015 to 30 September 2015	Potential Problem
From 1 July 2015 to 30 September 2015	On Track
From 1 October 2015 to 31 December 2015	On Track
From 1 January 2016 to 31 December 2016	On Track
From 1 January 2017 to 31 December 2017	On Track

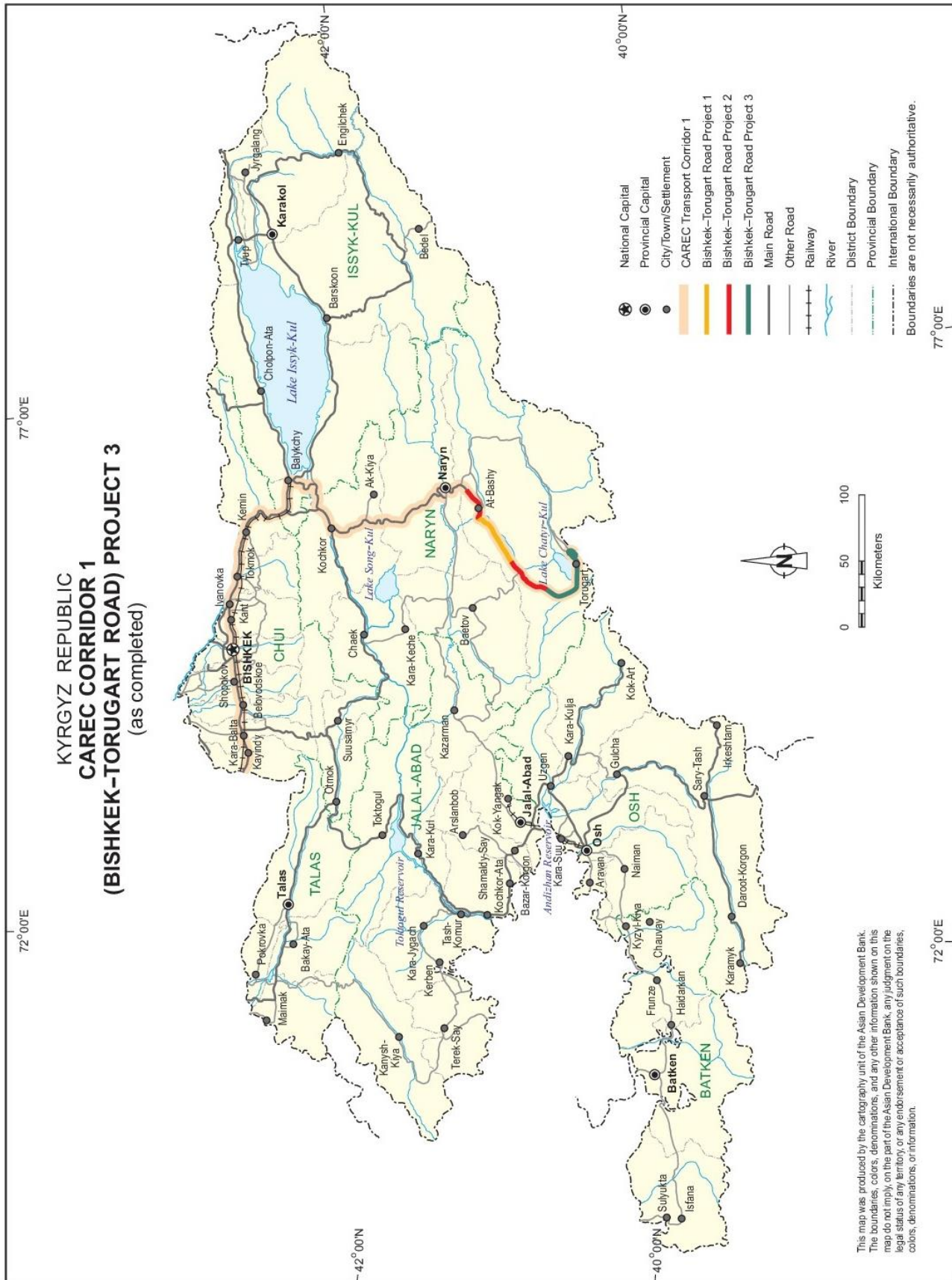
D. Data on Asian Development Bank Missions

Name of Mission^a	Date	No. of Persons	No. of Person-Days	Specialization of Members^b
Reconnaissance	16–30 Apr 2010	2	30	a,f,h,n(2)
Fact-Finding	5–16 Jul 2010	5	60	a,f,h,n(2)
Inception ^a	15–16 Feb 2012	2	2	a,g
Review 1 ^a	26–28 May 2012	2	4	a,b
Review 2 ^a	19–20 Oct 2012	2	2	a,g
Resettlement Review ^a	22–26 Sep 2013	2	8	a,i
Review 3 ^a	11–18 Nov 2013	1	8	a,c,e
Consultation	20–21 Jan 2014	2	4	a

Safeguards Review ^a	26 Feb 2014	6	6	a(2),d,e,g,i,
Review 4 ^a	11–19 Aug 2014	2	16	l,d
Mid-Term Review ^a	13–17 Oct 2014	4	20	a,d,g,k
Review 5 ^a	7 Feb 2015	2	8	a,e
Review 6 ^a	29–30 May 2015	2	4	a,g
Review 7 ^a	3–5 Jun 2015	2	6	a,g
Review 8 ^a	3–5 Aug 2015	1	3	a
Review 9 ^a	5–6 Oct 2015	3	6	a(2),c,e
Review 10 ^a	9 Oct 2015	1	1	a
Review 11 ^a	15–20 Feb 2016	3	15	a,e,g
Review 12 ^a	20–22 Apr 2016	2	6	a,e
Review 13	19–28 Sep 2016	2	18	e,j
Review 14	13–16 Mar 2017	2	8	k,e
Project completion review	27 Jun–7 Jul 2017	4	40	a,b,e,n

^a Missions were combined with other projects (missions No. 13 and 14 include Loan 3204 and Grant 0418).

^b a = transport specialist, b = environment specialist, c = senior environment specialist, d = social development specialist, e = senior project officer; f = project implementation officer; g = project analyst; h = administrative assistant; i = resettlement specialist; j = safeguard specialist; k = lead portfolio management specialist; l = transport economist; m = senior PPP specialist; n = consultant



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I. PROJECT DESCRIPTION

1. At the request of the Government of the Kyrgyz Republic, on 7 June 2011 the Asian Development Bank (ADB) approved a loan of SDR35.041 million (\$55.0 million equivalent) from ADB's Special Fund resources for Project 3 of the Central Asia Regional Economic Cooperation (CAREC) Program Corridor 1 (Bishkek–Torugart Road).¹ The expected project impact was increased regional traffic and trade and improved access to markets and social services for the people living along the corridor. The expected project outcome was to improve the mobility of people and goods with origins and destinations in the road corridor between Naryn and Torugart, which is an important section of the transport corridor connecting the People's Republic of China (PRC) and the Kyrgyz Republic. The project was also expected to improve the government's infrastructure management capability.

2. At appraisal, the project was designed to (i) repair, rehabilitate, or reconstruct 60 kilometers (km) section of the two-lane Bishkek–Torugart road (km 479–km 539); and (ii) improve infrastructure management capability of the Ministry of Transport and Roads (MOTR) through training, education, and mentoring.² Initially, the project cost was estimated at \$70.0 million to be financed by the ADB loan of \$55.0 million and the government's counterpart fund of \$15.0 million. During implementation, the project cost was increased by \$18 million as a result of the revised and improved engineering design and cost overrun, which was financed by additional ADB financing of \$15.1 million and government funding of \$2.9 million; the total project cost consequently rose to \$88.0 million.³ MOTR was the project executing agency; the implementing agency was the investment project implementation group (IPIG) under MOTR. The project was originally scheduled to be implemented over 5 years, with completion in September 2015; the completion date was extended to December 2017 to coincide with the closing date of the additional financing.

II. DESIGN AND IMPLEMENTATION

A. Project Design and Formulation

3. The terrain of the Kyrgyz Republic is dominated by the Tian Shan and Pamir mountain systems, which together occupy about 65% of the country. Trade and travel in this landlocked country are highly dependent on roads. The 539 km Bishkek–Torugart road is endorsed under the CAREC Transport and Trade Facilitation Strategy.⁴ It forms a section of CAREC Transport Corridor 1, and is (i) a part of the old Silk Road that once linked Europe with what is now the PRC, and is the shortest thoroughfare from Kashgar, a vibrant cultural and trade center in the western PRC, to consumer markets in the northern Kyrgyz Republic and beyond; (ii) the only north–south trunk road in the central Kyrgyz Republic, which the city and region of Naryn depend on heavily as their link to the rest of the country; and (iii) the only road providing direct access to the Issyk-Kul Lake region, one of the Central Asia's best-known tourist destinations with huge growth potential. However, poor road quality rendered travel costly, unreliable, and unsafe, hampering social and economic development along the road corridor, particularly for the Naryn region.

¹ ADB. 2011. *Report and Recommendation of the President to the Board of Directors on the Proposed Loan to Kyrgyz Republic: CAREC Corridor 1 (Bishkek–Torugart Road) Project 3*. Manila.

² The Ministry of Transport and Communication was renamed the Ministry of Transport and Roads (MOTR) on 9 August 2016.

³ ADB. 2014. *Report and Recommendation of the President to the Board of Directors on the Proposed Loan and Grant for Additional Financing to Kyrgyz Republic: CAREC Corridor 1 (Bishkek–Torugart Road) Project 3*. Manila.

⁴ ADB. 2008. *CAREC Transport and Trade Facilitation Strategy*. Manila.

4. As a key development partner, ADB financed the improvement of 114 km (km 365–479) of the road corridor in 2008 and 2009,⁵ and helped the government strengthen trade ties with its neighbors through the CAREC program. In 2010 the Government of the PRC financed the improvement of 223 km (most of km 9–272), and in 2012 the Arab Coordination Group financed the improvement of 93 km (km 272–365) of the road corridor. The project was to improve the 60 km At Beit–Torugart section (km 479–539) approaching the Kyrgyz Republic–PRC border, the last unrehabilitated segment of the road corridor. Together with improvement works in other sections, and the full opening of the corridor to traffic by 2017, this enables all-weather, smooth flow of both local traffic (between Bishkek and Torugart), as well as international through-traffic from the PRC to Central Asia and beyond, unleashing one of the key constraints to national and regional trade competitiveness and inclusive growth. Economic benefits include time savings, increased reliability, and reduced transport costs, while better road conditions and protective structures help reduce the risk of accidental toxic spills and material runoff from vehicles, therefore benefiting the ecosystem of the nearby Chatyr-Kul Lake, which is a wetland of international significance protected under the Convention on Wetlands (known as the Ramsar Convention). During preparation and implementation of the original loan and additional financing, consultations were held with the project stakeholders, who were supportive and provided project design recommendations, and demonstrated a high level of ownership during project implementation.

5. The project experienced a cost overrun during implementation resulting from improved engineering design and price escalation. Consequently, the government requested additional financing to achieve the project's intended outputs while improving technical quality. Additional engineering measures were by their nature an integral part of ongoing civil works, and additional financing was deemed the most suitable approach (other options were restructuring, scaling down, or canceling the project). The development objectives of the project remained unchanged with the additional financing, and the project was expected to remain technically, economically, and financially viable despite the cost overrun. The project is in line with ADB's Strategy 2020 and aligns with the National Strategy of Sustainable Development of the Kyrgyz Republic for 2013–2017 (NSSD),⁶ and the country partnership strategy (CPS), 2013–2017, for the Kyrgyz Republic,⁷ which highlights regional cooperation, and includes improved road connectivity as a strategic priority. The additional financing met the eligibility criteria in ADB's additional financing policy.⁸ ADB approved an additional financing on 2 December 2014, including a loan of SDR7.258 million (\$10.8 million equivalent) and a grant of \$4.3 million both from ADB's Special Fund resources.

6. The project was found to be aligned with and highly relevant to the NSSD and ADB's CPS in terms of its design, formulation, implementation, and completion. The project focused on promoting regional cooperation and improving transport links as a critical means to increase trade, bolster economic growth and alleviate poverty. At completion, 60 km of the road along the corridor was improved and an extensive capacity development program was provided to improve the infrastructure management skills of the government and assist long-term road sector development in the country. The outputs and outcome of the project met the government's development objectives and ADB's CPS.

B. Project Outputs

⁵ ADB. Kyrgyz Republic. CAREC Transport Corridor 1 (Bishkek–Torugart Road) Project; ADB. Kyrgyz Republic. CAREC Transport Corridor 1 (Bishkek–Torugart Road) Project 2.

⁶ President of the Kyrgyz Republic, 2013. *National Strategy of Sustainable Development for the Kyrgyz Republic, 2013–2017*. Bishkek

⁷ ADB, 2013. *Country Partnership Strategy, Kyrgyz Republic, 2013–2017*. Manila.

⁸ ADB. 2010. *Additional Financing: Enhancing Development Effectiveness*. Manila

7. The project was designed to have two components (para 2): (i) road improvement, and (ii) capacity development. The project design and monitoring framework (DMF), with project achievements, is in Appendix 1, and confirms that all the targets have been achieved as measured by the original indicators.

8. **Road improvement component.** At appraisal, the project's primary output was 60 km of the Bishkek–Torugart road rehabilitated with special structures to protect the environment, preserve the road structure, and reduce vehicle crashes. At completion, 60.033 km of the road section (km 478.580–538.613) was upgraded. The improvement included subgrade enforcement; surface repaving; construction of bridges, culverts and a drainage system; and installation of road safety facilities (traffic signs and road markings). The road section was designed to meet national Category III road standards with two lanes (carriage width of 7 meters) and a shoulder (2 meters width on each side). The design speed is 90 km per hour. To prevent cracking caused by a freeze–thaw cycle, an improved engineering design was incorporated during implementation with an additional 30 centimeter sub-grade layer and deeper side drainage, with additional costs covered by the additional financing. The protection measures for the Chatyr-Kul Lake wetlands included an integrated system of drainage ditches and spill retention ponds, as well as provision of required environmental monitoring equipment. During construction, the supervision consultant inspected and assessed the works to make sure that the specifications were met. The ADB missions observed that the rehabilitated road was of good quality, with an international roughness index (IRI) below 3 by 2017 (as indicated by the additional financing revised DMF), with appropriate safety and environmental protection facilities provided.

9. **Capacity development component.** At appraisal, \$1 million was set aside for infrastructure management capacity development, which was to focus on developing the technical and commercial skills of government staff. A consulting firm and individual consultants were engaged to implement this component. During implementation, this component was extended to include institutional reforms of MOTR and development of a road sector strategy. At completion, the major activities and outputs included:

- (i) providing training, enhancing MOTR's research capacity, and developing local capacity for road sector technology transfer. A final report on skills development was prepared and submitted to MOTR and ADB, followed by an international road sector conference in May 2017;
- (ii) assisting MOTR with several aspects of institutional reforms, including draft normative legal acts (NLAs); and resolutions on optimization and reform of MOTR, such as introducing toll roads and restructuring road development. Of the 19 legal acts, 17 had been enacted by the government as of 31 December 2017, while 2 were awaiting approval; and
- (iii) carrying out a road sector development strategy study, which led to preparation and approval (in July 2016) of a Road Sector Development Strategy up to 2025 that targets road management system improvements, with the goal of achieving sustainability of the road sector. The strategy outlines road sector development goals and reform policies, as well as road investment and maintenance targets.

10. The training, workshops, institutional reform activities, and strategy study have significantly improved the capacity of MOTR staff in infrastructure management and assisted in planning long-term sector development. In addition, training related to the environment and database management were provided to the Karatal-Japaryk State Nature Reserve (KJSNR), the agency responsible for overseeing the Chatyr-Kul Lake and the surrounding area, as well as to the local road maintenance unit.

C. Project Costs and Financing

11. At appraisal, the project cost was estimated at \$70.0 million equivalent, including the base cost, contingency, and loan financial charges. The project experienced a cost overrun during implementation, mainly as a result of the improved engineering design and increases in the cost of resource inputs.⁹ With the additional financing, the estimated total project cost increased to \$88.0 million; the actual cost at completion was \$82.15 million, or about 6.6% less the estimated cost at additional financing, but 17.4% more than that at original loan appraisal. The cost at completion was below that estimated at additional financing because of savings in (i) the cost of the supervision consultant (\$3.43 million), (ii) project management costs (\$0.65 million), (iii) capacity development costs (\$0.69 million), and (iv) the financial charges (\$1.03 million). In contrast, the civil works cost increased to \$76.35 million, which was about 10.7% higher than estimated at additional financing, and 38.8% higher than estimated at appraisal. A comparison of project costs at appraisal, additional financing, and project completion is in Appendix 2.

12. As envisaged at appraisal, the project was to be financed by the ADB loan of \$55.0 million (78.6% of the total project cost) and government funding of \$15.0 million (21.4%). At additional financing, the financing plan was revised to include \$70.1 million (79.7%) from ADB and \$17.9 million (20.3%) from the government. Upon closing of the loans and grant on 31 December 2017, a total of \$64.55 million was disbursed from ADB, including SDR34,576,977 (or \$51.05 million equivalent) from the original loan (accounting for 98.7% of the total loan amount); SDR6,754,952 (or \$9.36 million equivalent) from the additional loan (93% of the loan amount); and \$4.14 million from the grant (96.3% of the grant amount). The actual project financing was also revised to be 78.6% from ADB and 21.4% from the government. During implementation, the original loan proceeds were reallocated several times, mainly to fully cover the ADB-financed amount of the civil works category from other categories. A detailed comparison of the project financing by financier at appraisal and at completion is in Appendix 3.

D. Disbursements

13. The initial ADB loan was approved on 7 June 2011, signed on 19 September 2011, and became effective on 13 February 2012. The ADB additional loan and grant was approved on 2 December 2014, signed on 26 December 2014, and became effective on 24 April 2015. All disbursements of the loans and grant were carried out in accordance with ADB's *Loan Disbursement Handbook* (2012, as amended from time to time). To facilitate project implementation and funds flow, MOTR created an advance account at a commercial bank acceptable to ADB for the loans and the grant, with an initial advance equivalent to \$50,000. It was managed by IPIG and utilized mostly for IPIG operating expenses, audits, and training. To expedite funds flow and simplify documentation process, MOTR used the statement of expenditures for liquidation and replenishment of eligible expenditures. The direct payment procedure was applied for civil works contracts and consulting services. The arrangement facilitated smoother project implementation, with no irregularities reported in operating the advance account according to audit reports.

14. Disbursements of the proceeds of the loans and grant were made more or less evenly and peaked in 2014 (\$19.06 million) and 2015 (\$18.97 million). The original loan closing date of 31 March 2016 was extended to 31 December 2017 to coincide with the closing date of the additional

⁹ The nonfood price index in the Kyrgyz Republic was 9.05% per year during 2011–2015.

financing.¹⁰ The loans and grant were closed as scheduled and the undisbursed amount was cancelled. The annual and cumulative disbursements of the loans and grant proceeds are in Appendix 4, and the actual disbursements at the project completion against the projected figures at appraisal are in Figure A4.1. For the original loan the actual disbursements were higher than the baseline projections because of the higher-than-projected contract price, cost overruns, and use of project contingencies; for the additional financing the actual disbursements corresponded to the baseline projections.

E. Project Schedule

15. At appraisal, the project was expected to be implemented in 4.75 years (1 January 2011 to 30 September 2015). To facilitate project implementation, ADB approved advance contracting for civil works and consultancy services. The recruitment of the supervision consultant and procurement of the civil works contractor started in the fourth quarter of 2011. The contract for the supervision consultant was awarded on 17 May 2012. For the civil works contract, the bid opening was held on 26 June 2012 and the contract was awarded on 21 August 2012. Due to a counterpart financing constraint, the Notice to Commence to the contractor was delayed, postponing the commencement of civil works to May 2013.¹¹ The ADB project review mission requested that IPIG, the consultant, and the contractor expedite civil works to mitigate the delay. The ADB mission in November 2013 found overall project implementation progress to be satisfactory; contract awards achievement was 88% and disbursements 27% of the total loan amount at the elapsed project period of 51%. In December 2014, ADB approved the additional financing to meet the cost overrun, and the project completion date was extended to 30 June 2017. With the additional financing and extended completion date, civil works progressed satisfactorily, and were completed in September 2015 (ahead of schedule). The road section was turned over to the government in October 2015,¹² followed by a 1-year defect notification period.

16. The implementation of skills development activities was delayed due to difficulties in forming the selection committee. The activities started in August 2016 after the consultant was selected. The infrastructure management skills of MOTR and other government agency staff were improved through training, seminars and mentoring. The consultant submitted a final report on 15 June 2017, with an international conference held on 16 May 2017 to disseminate the experiences and outputs. A working plan for sector reform was prepared by the consultants in February 2016, which was reviewed and approved by the MOTR, and NLAs were developed and sector reform resolutions implemented from July 2016 to July 2017. Upon completion, draft NLAs and reform resolutions were submitted, with most enacted. The preparation of the road sector development strategy began in early 2015, was completed in July 2016, and was approved through a government resolution.

F. Implementation Arrangements

17. MOTR was the executing agency of the project, with MOTR's IPIG as the implementing agency. IPIG was responsible for implementing the project and the day-to-day administration of project activities. IPIG was established in 1996, and has delivered a range of projects, including all ADB financed road projects in the country. IPIG, headed by an experienced director, provided adequate expertise in matters related to project planning and engineering, procurement, contract

¹⁰ ADB approved this extension of loan closing date on 22 January 2016.

¹¹ The project site is at high elevation (over 3,000 meters), with areas of permafrost that required closure of the construction site for winter maintenance. Earth works were implemented during May to October.

¹² TERA International Group, Inc. 2015. *CAREC Transport Corridor (Bishkek–Turugart Road) Project 3 km 479-539 – Taking Over Certificate*. (16 October).

management, safeguards and monitoring, and project supervision, and enabled timely project completion.

18. IPIG adopted an accrual accounting system supported by standardized accounting software, in line with national accounting practices. The project financial accounts were audited annually and audit reports with auditor's opinion (which were unqualified for all annual reports) were submitted to ADB. During implementation, the project provided essential training opportunities to the MOTR and IPIG staff, which improved their project management capacity. The chronology of major events is in Appendix 6. The project implementation schedule is in Appendix 9, and the project implementation institutional framework is in Appendix 10.

G. Consultant Recruitment and Procurement

19. At appraisal, 885 person-months of consulting services were envisaged to be provided to the project, including 435 person-months for construction supervision, 404 person-months for project management, and 46 person-months for capacity development. Draft terms of reference (TOR) for the consulting services were prepared at appraisal. The consultant recruitment was conducted by the MOTR in compliance with ADB's *Guidelines on the Use of Consultants* (2010, as amended from time to time). Under the advanced contracting arrangement, the supervision consultant was recruited by applying the quality- and cost-based selection procedure. The contract was awarded to TERA International Group, Inc. in May 2012. During implementation, the contract with the supervision consultant was revised four times to reflect actual project needs, as follows: in 2013 to replace experts and reflect increased costs resulting from reallocation of person-months; twice in 2015, once for replacement of experts, and once to reflect additional financing and an additional construction season; and in 2016 to ensure completion of all project activities by 31 July 2017. For the capacity development component, 12 individual consultants were recruited using individual consultant section, with a consulting firm selected through the quality- and cost-based selection procedure. MOTR recruited individual consultants using the individual consultant section procedure to assist IPIG with project management throughout the project, except in the fourth quarter of 2013, when recruitment of key IPIG staff was delegated to ADB. MOTR selected a consulting firm in May 2014 (via consultant qualification selection) for annual financial auditing of project accounts.

20. **Consultant for construction supervision.** The overall performance of the supervision consultant, TERA International Group, Inc., was satisfactory. It was planned that the supervision consultant would have a dual focus, on supervision of works and environmental management. The consultant provided efficient supervision and coordination between the contractor and IPIG and ensured the quality of works in accordance with the contract specifications, despite the challenges of working at high altitude. During implementation, the team leader and some team members were replaced because of resignations related to altitude sickness. There were some project implementation delays, but in general the consultant provided its inputs on time. The consultant completed all tasks specified in the TOR, including engineering reviews, construction supervision, environment monitoring, project survey and evaluation, progress report preparation, and provision of training. Upon completion, the consultant provided 327.8 person-months of supervision consulting services, including 84.7 person-months of international and 243.1 person-months of national expert services.

21. **Consultant for capacity development and project management.** A consulting firm was recruited to provide training and capacity improvement activities for the skills development component. The consultant completed all tasks specified in the TOR and its overall performance for the capacity development component was satisfactory. Upon completion, the final report on

the skills development was prepared and submitted to MOTR and ADB. The consultant assisted MOTR to prepare key presentations for an international road sector conference. The individual consultants for the sector reform carried out reviews of the road maintenance system institutional framework and assisted MOTR with institutional reforms, including the drafting of NLAs and reform resolutions, which were submitted to the government for review and endorsement. The consultant for the road sector development strategy study carried out an analysis of road sector development issues and drafted a road sector strategy to 2025 that targets improving the road maintenance system to achieve sustainability of the road sector. The strategy was developed with consideration of the NSSD and offers a comprehensive approach to addressing road sector issues. A list of the capacity development seminars and activities implemented is in Appendix 8.

22. **Civil works contract.** As planned at appraisal, MOTR procured a civil works contract for the road improvement component in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time) using the international competitive bidding (ICB) method. Under the advanced contracting, the procurement for the civil works contract began with an invitation for prequalification in May 2011, four bidders were prequalified, and an invitation for bids was issued in May 2012 using a single-stage one-envelope procedure. The bid opening was held in June 2012, and the contract was awarded in August 2012. Revisions in the engineering design and additional financing resulted in two contract variations being made to the civil works contract.¹³

23. The overall performance of the civil works contractor was satisfactory, despite delays with counterpart financing and challenges of the project site conditions. The contractor had adequate capability and experience, with a long record of working on road construction in the country. During implementation, the contractor mobilized required staff and equipment, established a camp to accommodate contractor and consultant staff, set up laboratories and other engineering facilities, provided a medical facility and safety helmets and vests to its workers, and installed road signage during the work as agreed by the local traffic management authority. The contractor worked closely with IPIG and the supervision consultant in identifying and resolving engineering issues, especially frost heave cracks in the road. The quality of civil works was satisfactory, and the supervision consultant confirmed that all standards and specifications were met. With the additional financing and extended implementation schedule, the progress of the civil works was ahead of schedule, with over 95% of the works completed in September 2015. The completed road was handed over to the MOTR in October 2015, which was followed by the 1-year defect notification period. All works and remedial activities were fully completed before October 2016. The contractor was familiar with the awareness practices needed to combat HIV/AIDS and implemented an appropriate program during construction.

24. Overall, the original contract award projections, taking into account adjustments for the additional financing, were realistic (Appendix 5). The actual contract awards against the projected figures at appraisal are in Figure A5.1. For the original loan the actual contract awards were higher than the baseline projections due to the higher-than-projected contract price, while for the additional financing the actual contract awards corresponded to the baseline projections. The project contract packages with actual costs and financing are summarized in Appendix 11. The executing agency's contract management was satisfactory—contractual issues were addressed constructively and amicably with consultants and contractors, and contract variations were made in accordance with project implementation requirements and in an effective manner.

H. Safeguards

¹³ Variation order No. 1 was made on 15 May 2015, and variation order No. 2 on 11 November 2015.

25. **Environment.** The project was classified as Category A for the environment, because about 35 km of the road passes near the Chatyr-Kul Lake protected area. The environmental impact assessment (EIA) report contained a two-track environmental management plan (EMP) for pollutant source control, and receptor (biodiversity) protection. The control and protection measures included speed limits, signs, special permits for hazardous material movement, hydraulic structures such as retention ponds and diversion channels to prevent runoff pollutants and accidentally spilled toxic substances from entering the wetlands, and equipment and training for emergency response. To enhance environmental protection, an ADB staff consultant updated the EIA report in 2012 based on the baseline monitoring report, and an international environmental consultant was recruited to assist IPIG in environment management.

26. During EMP implementation, the contractor and supervision consultant complied with the environment safeguard requirements and carried out regular monitoring, including checking air quality, water pollution, soil erosion, borrow pits, noise and vibration, fuel and chemical storage, and waste management. Spill control equipment and training were provided to the local Road Management Unit staff. Equipment for environment management and for monitoring the Chatyr-Kul Lake was also delivered to KJSNR. Some of the environmental surveys and field tests were carried out in conjunction with KJSNR staff. The annual environmental monitoring reports were disclosed on the ADB and MOTR websites. A post-construction environmental audit was conducted, and the final environmental report confirmed that the project site cleanup and restoration were satisfactory. The ADB project completion review (PCR) mission also noticed that the borrow pits were recovered properly after completing the civil works. ADB received a complaint dated 21 June 2013 from three residents of Naryn town, whose major concern related to disclosure of the environmental monitoring. After discussion and verification, ADB's Office of Special Project Facilitation found the complaint was not eligible for the problem-solving function of the accountability mechanism, and made recommendations to the complainants to strengthen communications with the project. A complaint closure report was prepared and disclosed on ADB's website.¹⁴ MOTR's environmental team followed the Office of Special Project Facilitation's recommendations and monitored the project closely, including ecological aspects, in line with the EMP. Several meetings and training sessions were successfully conducted with KJSNR staff members, who received adequate capacity building.

27. **Land acquisition and resettlement.** In accordance with ADB's Safeguard Policy Statement (2009), the project was initially classified as category C for resettlement and indigenous peoples. Following finalization of the detailed design, it was confirmed that (i) no indigenous peoples reside in the project area, and (ii) 11 roadside mobile trailer units providing rudimentary accommodation and refreshment facilities at the border-holding area should be relocated by about 100 meters because of road rehabilitation and construction of a roadside truck parking facility. The project was reclassified as resettlement category B and a land acquisition and resettlement plan (LARP) was prepared. Implementation of the LARP was significantly delayed. As requested by the ADB mission in 2013, the LARP was updated by incorporating the most recent compensation packages in accordance with ADB's Safeguard Policy Statement. Based on the LARP, a grievance redress mechanism was established, and a complaints log maintained. During implementation, the project road alignment near the border was shifted slightly to avoid any impact on people and structures. Accordingly, the resettlement category was downgraded to C, and a due diligence report was prepared and disclosed.¹⁵

¹⁴ ADB. 2015. *Progress Report: Closure Report for OSPF Complaint 04/2013 L2755*. Manila.

¹⁵ MOTR. 2015. *Due Diligence Report, Bishkek-Torugart Road Rehabilitation Project - Project 3 (km 479 to 539) - Torugart Customs Post Approach Lanes*. Bishkek.

I. Monitoring and Reporting

28. The project implementation complied with all 16 covenants specified in the loans and grant. IPIG was proactive in carrying out all project implementation tasks, including procurement, financial management, quality control and environmental compliance. The status of compliance with major loan and financing covenants is in Appendix 7. No major issues with respect to compliance with the environmental and social safeguard covenants of the project have been reported or observed, and MOTR implemented the environmental management plan and prepared biannual environmental monitoring reports on time. The government established a well-functioning institutional framework with adequate staff and consultants supports. MOTR, assisted by the consultants, (i) was proactive in carrying out all project implementation tasks, including procurement, financial management, quality control, socioeconomic monitoring; (ii) carried out annual project benefit monitoring and evaluation exercises, including baseline and end-of-project surveys as per the DMF using the criteria in the project performance management system; and (iii) prepared monthly and quarterly reports.

29. The selected financial auditor audited the project accounts on a year-on-year basis for 2012–2017, and made timely submissions of the audit reports and auditor's opinion to ADB. The audit reports were found to be in order, and the unqualified audit opinions were acceptable. During implementation, the government provided the counterpart funding required for the project in full, and ensured project implementation was effective and of good quality. The public fiscal allocation for road improvement and maintenance increased substantially during 2009–2018, and has generally met funding requirements for road maintenance of CAREC corridors, although maintenance of other roads is still underfinanced. Overall, the MOTR's financial management capabilities at fact-finding were assessed as reasonable.

III. EVALUATION OF PERFORMANCE

A. Relevance

30. The project design was *relevant* to the government's objectives and policies at both appraisal and its completion. ADB interventions were guided by and fully consistent with (i) the government's strategy that prioritizes the improvement of national and international transport links as a critical means to increase trade, bolster economic growth and alleviate poverty; (ii) ADB's CPSs and programs that focus on rehabilitating and improving the country's key road network, its maintenance and safety standards; and (iii) the CAREC program to improve regional road corridors to foster international trade and ensure transport linkages with regional and local utility. The CPS for 2013–2017 supported the objectives of the NSSD, which aims to remove key constraints to growth and expand access to economic opportunities. The project completed the rehabilitation of the transport corridor between Bishkek and the PRC border, which is being developed as an economic corridor through support from government programs and external assistance. The capacity development component has also effectively improved the institutional capacity of the government in the areas of road sector development and management. The project's financial modality was appropriate, and the DMF was developed appropriately.

31. The DMF indicators and targets were measurable and applied at various levels. The project relevance was not affected by the additional financing. The relevance of the project design was, however, challenged by weaknesses in the original road design standards applied for the road section. The same standards were used in the previous ADB-financed projects for rehabilitation of the adjacent road sections (footnote 5), which led to cracking of the road surface in 2013, following commencement of the project. As a result, the road design was revised to

improve the ability of the road section to withstand extremely low temperatures and freeze-thaw cycles, and no cracks have been reported to date on the project road section.

B. Effectiveness

32. The project is rated *effective* in achieving its outcome. The intended project outcome of higher mobility of people and goods was attributable to the project intervention, and the project outputs were substantially achieved. Before the project, the road was in poor condition and became a bottleneck for international and domestic traffic. It was almost unpaved, with an IRI of about 12–14, often water logged, and mostly unusable during winter. Upon completion, the entire section of 60 km was rehabilitated with full asphalt surfacing, new and reconstructed bridges, improved drainage system, and adequate road safety facilities. The IRI of the completed project road was 2, better than the IRI of at least 4 anticipated at appraisal. The improvements completely changed the transport condition and facilitated local and international traffic. The project has led to more efficient movement of freight and passenger traffic along the road at a time of increasing demand, in particular because of growing trade with the PRC and tourism development. Average travel time between Naryn and Torugart has been reduced to about 2.5 hours, vs. the DMF indicator of 4 hours. The project has enabled more frequent use of transport services and enhanced access to social services and employment opportunities for the local population.

33. Traffic on the project road is increasing, in line with rapid socioeconomic and trade development. Average daily traffic on the project road increased from 81 vehicles in 2011 to 123 vehicles in 2013 and 130 vehicles in 2016. Most freight vehicles are large or medium-sized trucks for goods transported from Bishkek to the Kyrgyz–PRC border. Passenger vehicles are mainly for local people to commute between villages to the border area, while international travel is also increasing. Along with the rapidly growing economic and social linkages between the Kyrgyz Republic and the PRC, cross-border traffic will likely continue to increase, and at an accelerated pace. The improved road enables vehicles to travel at an average speed of 80–90 km per hour, reducing travel cost and time by more than 50% compared with the situation prior to the project, which has facilitated growth in transport demand and generated more traffic.

34. As anticipated at appraisal, the capacity development component provided training to MOTR staff, including regarding various aspects of environment management, International Federation of Consulting Engineers contracts, road operation and maintenance, road project financing, and the procurement and information system. The component also assisted MOTR to enhance local research capacity for technology transfer in the road sector. Upon completion, a high-level conference—with participation by government officials and other stakeholders, international and local consultants, and contractors—was held to discuss and disseminate project outputs. The project also assisted MOTR with institutional reforms, and key legal acts were enacted by the government as the first phase of road sector reforms. The project helped the government develop a new road sector development strategy that seeks to improve the road management system to achieve road sector sustainability. The draft strategy was approved on 1 July 2016 by government resolution No. 372. This strategy outlines road sector development goals and reform policies, as well as road investment and maintenance targets. The training, reforms, and strategy development have effectively improved the capacity of the government in road sector development and management.

C. Efficiency

35. The project is considered *efficient*. During the original loan appraisal an economic

evaluation of the project was prepared for the entire Bishkek–Torugart road corridor, with an estimated economic internal rate of return (EIRR) of 34%. The evaluation indicated that the EIRR for the project section would be low because of limited traffic. The rationale for the project was that the road corridor should be fully completed to generate the benefits associated with the corridor as a whole. The methodology was changed for the appraisal for the additional financing, and an EIRR of 12.3% was calculated for the project road section. During the PCR mission, an economic reevaluation of the project was carried out using the methodology adopted at the additional financing appraisal, with updated data. The economic costs and benefits were compared for the with- and without-project scenarios. The economic benefits included vehicle operating cost savings and passenger time cost savings. The project EIRR was recalculated as 12.1%, which is slightly lower than that calculated for the additional financing appraisal, but consistent with the ADB-recommended threshold discount rate of 12%. The project road forms the last section of the rehabilitated Bishkek–Torugart road corridor. The project section historically accommodated the least traffic compared to other sections, while cost overruns negatively affected the EIRR. The executing agency's performance was satisfactory in terms of process efficiency (e.g., advance contracting was used for major contract awards, and processing of contract variations and withdrawal applications was timely). There was one loan extension as a result of the additional financing, while cost overruns were mainly attributable to price escalation and unexpected changes in the road design.

36. Completion of the project means that the entire international road corridor has been fully improved. This has positively impacted traffic flows on the adjacent sections, led to a substantial improvement in the performance of the entire corridor, and efficiently facilitated international traffic. Traffic levels remain low as a result of foreign trade and trade facilitation issues. 2016 was the first full year of the Kyrgyz Republic's membership in the Eurasian Economic Union; this initially reduced trade with the PRC,¹⁶ but trade increased in 2017. The completion of transport corridor improvements is expected to promote and boost traffic during 2018–2020. The economic and social linkages between the PRC and Kyrgyz Republic and other EEU members are increasing, and cross-border traffic is expected to increase at an accelerated rate in the near future. Enhancements in trade facilitation play an important role in cross-border transportation, and may lead to a significant increase in traffic volume. Trade among CAREC countries is facilitated with the assistance of development partners. Logistics services along the project road corridor have been developed and there is a high potential for expansion, while the number of international tourists along the road is also expected to increase. The project also has non-quantifiable socioeconomic benefits. The details of the economic reevaluation are in Appendix 12.

D. Sustainability

37. The project's sustainability is rated *likely* in consideration of the following factors.

38. **Road maintenance.** The total state budget for road maintenance in the country has increased steadily, from Som1,685 million in 2012 to Som2,037 million in 2017, an average 6.6% increase per year, which complies with the corresponding project covenant. However, the allocated funds are still insufficient to maintain all the roads to international standards, especially considering the increasing length of roads in the country, although the financing of international

¹⁶ Trade between the PRC and the Kyrgyz Republic (China Statistics Press: *China Statistical Yearbook 2016* and *China Statistical Yearbook 2017*. Beijing) decreased 12%, from \$5.298 billion in 2015 to \$4.640 billion in 2016, which correlates with traffic in 2016 being 15% lower than projected; in 2017 trade increased to \$5.678 billion, suggesting that traffic would have also increased.

road corridors is prioritized and sufficient.¹⁷ Road maintenance and fund utilization efficiency also need to be substantially improved. The government is considering the ways to increase the budget for recurrent maintenance costs and is exploring other funding options, such as introducing user charges and increasing the fuel excise tax. Under the project a new road sector development strategy was adopted that targets improvements to the road maintenance system. The strategy and reforms are presently being implemented to ensure sustainable development of the road sector. The first performance-based maintenance contract has been piloted and satisfactorily implemented under another ADB-funded project.¹⁸ A hybrid rehabilitation and performance-based maintenance contract is planned under another ADB-funded project, and MOTR will replicate this positive experience.¹⁹ To enhance road planning and increase road maintenance fund utilization efficiency, MOTR has established a computer-based Road Asset Management System, which is user-friendly and was developed using a geographic information system platform; it will be further developed under an ongoing ADB project.²⁰ There is broad development partner support for MOTR with regard to road maintenance system reforms and establishing a comprehensive Road Asset Management System.

39. **Traffic safety.** The improved condition of the project road will enable vehicles to travel at much faster speeds. Both residents and authorities pointed out this might cause an increasing number of road accidents even though road safety facilities have been properly installed. Road safety is becoming an acute issue throughout the country; this has been acknowledged by the government, which is developing a road safety strategy with the assistance of development partners. The project road serves as an international transport corridor, with some overloaded trucks, which may seriously damage the road surface and result in road accidents. Although the government installed and operates weighing stations along the corridor, the efficiency and effectiveness of axle weight control needs to be enhanced. To improve road safety in the Kyrgyz Republic, the government plans to install speed and accident control facilities, enforce traffic laws on speeding and overloaded trucks using a modern computerized surveillance system, and conduct national road safety campaigns.

40. **Institutional development and sector reforms.** The capacity and effectiveness of road sector management is not yet adequate compared with international best practices. The government, with the assistance of development partners, has made significant efforts to pursue institutional development and sector reforms. Under the project, various capacity development programs were provided to MOTR and related government agencies. The government is implementing institutional reforms, including road maintenance system reform, updating road engineering design and construction standards, introducing competitive bidding and contract management systems, and applying performance-based maintenance (PBM) contracts.

E. Development Impact

41. The project's development impact is rated *highly satisfactory*, in light of the following

¹⁷ The budget allocation for the Bishkek–Torugart road corridor increased significantly from Som171.0 million (or 9.9% of the total allocation) in 2014 to Som297.2 million (or 16.7% of the total allocation) in 2018. For the project road only, the budget allocation is adequate for the required maintenance.

¹⁸ ADB. 2013. *Report and Recommendation of the President to the Board of Directors on the Proposed Loan and Grant to Kyrgyz Republic: Central Asia Regional Economic Cooperation Corridor 3 (Bishkek–Osh Road) Improvement Project, Phase 4*. Manila.

¹⁹ ADB. 2018. *Report and Recommendation of the President to the Board of Directors on the Proposed Loan and Grant to Kyrgyz Republic: Central Asia Regional Economic Cooperation Corridor 1 and 3 Connector Road Project (Phase 2)*. Manila.

²⁰ ADB. 2016. *Report and Recommendation of the President to the Board of Directors on the Proposed Loan and Grant to Kyrgyz Republic: Central Asia Regional Economic Cooperation Corridor 1 and 3 Connector Road Project*. Manila.

factors.

42. **Socioeconomic impacts.** The project aimed to facilitate regional trade and connectivity, including for businesses and households using imported items. It has generated significant economic benefits and stimulated local socioeconomic development. IPIG, with assistance from the supervision consultant, carried out annual socioeconomic impact surveys. Details are provided in Appendix 13.

43. **Institutional impacts.** The project has had significant institutional impacts. The capacity development component focused on training for MOTR staff and related personnel, assisting with institutional road sector reforms, and developing a long-term road sector development strategy (paras. 9 and 34).

44. **Environmental Impact.** ADB assisted the government in conducting an EIA. The draft EIA report was discussed with stakeholders and disclosed to the public in November 2010. The impacts during construction were mostly temporary and reversible, and hazardous materials spills were avoided. Potential impacts during operations were expected to be greater and pollutants entering the Chatyr-Kul Lake aquatic ecosystem could accumulate because the lake has no outlet. Long-term impacts caused by increased traffic, vehicle emissions, and possible hazardous materials spills posed potential risks to the Chatyr-Kul Lake ecosystem, and the project undertook mitigation measures, including physical facilities to address potential spills. An environmental monitoring program was in place and implemented by the contractor and the supervision consultants. During implementation, the contractor and supervision consultant complied with the environmental safeguard requirements and carried out regular environmental impact surveys and monitoring (described in paras. 25–26).

F. Performance of the Borrower and the Executing Agency

45. The performance of the borrower and MOTR was *satisfactory*. The government established an adequate organizational framework for efficient and timely project management. MOTR, as the executing agency, ensured loan effectiveness requirements were met and project preparation was adequate. It exercised close coordination and regular monitoring of project progress. IPIG was responsible for day-to-day project management and successfully facilitated project implementation. IPIG, with assistance from the consultants, prepared monthly and quarterly progress reports in a timely manner. The project financial accounts and statements were audited by external auditors acceptable to ADB, and timely audit reports were submitted to ADB. Although project implementation experienced initial delays with allocation of counterpart funds, the government fully met the shortfall in financing during project implementation, and all payments were made before the project closing date. MOTR facilitated and supported ADB's review missions during implementation and at completion. The project impact, outcome and outputs were mostly achieved.

G. Performance of the Asian Development Bank

46. Overall, the performance of ADB was *satisfactory*. ADB's support during the project preparation and signing and effectiveness of loans and grants was adequate. Initially, the project was administered and supervised from ADB headquarters with active assistance from the ADB Kyrgyz Resident Mission. In October 2015, the responsibility for overall project administration was delegated to the resident mission, which led to closer coordination with MOTR and strengthened project monitoring and administration. During implementation, ADB conducted 16 project review and administration missions, including the inception mission in 2012 and midterm review mission

in 2014. ADB missions and staff provided required guidance and timely support to the government and MOTR in the project implementation, such as approving advance actions; reviewing procurement, disbursements, safeguards documents, and evaluation reports; and responding to the government's requests. ADB was closely involved in identifying and resolving implementation issues. To facilitate project funding and ensure full achievement of the project objectives and outcomes, ADB approved the additional financing. The government recognized ADB's role in promptly advising on project implementation and technical issues.

H. Overall Assessment

47. Overall, the project is rated *successful*. The project was relevant to the government's development objectives and ADB's country partnership strategies. The project's impact, outcome, and outputs anticipated at appraisal have been mostly achieved. The project has effectively improved the transport condition of the border section of the Bishkek–Torugart road corridor, advanced regional trade and traffic between the Kyrgyz Republic and the PRC, promoted local socioeconomic development, and increased MOTR's institutional capacity. The implementation and operation of the project has brought and continues to bring significant socioeconomic benefits to the residents, especially the poor. The government is working to improve road maintenance practices and increase project sustainability by completing the institutional framework and reforming the road maintenance system.

Overall Ratings	
Criteria	Rating
Relevance	Relevant
Effectiveness	Effective
Efficiency	Efficient
Sustainability	Likely sustainable
Overall Assessment	Successful
Development impact	Highly satisfactory
Borrower and executing agency	Satisfactory
Performance of Asian Development Bank	Satisfactory

Source: Asian Development Bank.

IV. ISSUES, LESSONS AND RECOMMENDATIONS

A. Issues and Lessons

48. **Project engineering design and cost estimation.** At appraisal, the road design was a general one that was used for the entire country without referencing the specific site, climate and material supply conditions. During implementation, the project design was changed significantly to prevent and reduce pavement cracking, which occurred in previous projects due to extremely low winter temperatures. This led to a significant cost overrun. The engineering design of the road at project preparation should be enhanced, based on sufficient technical, geological and climate surveys. For future projects it would be prudent to test the economic feasibility of various design options and adopt options that will minimize total transport costs and consequently provide a better economic rate of return. For the cost estimation, sufficient engineering and price contingencies should be reserved by considering the project engineering features and the country's economic development status.

49. **Supervision consultant.** The continuity of resident engineers in the supervision consultant team was not well managed during the early project implementation stage. Consultants need sufficient incentives to work permanently in remote, high altitude areas with extreme climatic

conditions that lack basic conveniences. To retain qualified experts, consultant recruitment procedures should include an adequate hardship compensation mechanism.

B. Recommendations

50. **Trade facilitation and tourism development.** At the time of the PCR mission, the entire Bishkek–Torugart road had been improved, which has effectively and efficiently facilitated international trade and traffic. The total value of trade between the Kyrgyz Republic and the PRC increased by a factor of about 50 from 2000 to 2015. Along with improvement of transport conditions, traffic on the project road has increased rapidly according to visual observations and traffic surveys. The traffic includes heavy cargo trucks and international tourists traveling on one of the routes of the Silk Road, in addition to PRC and Kyrgyz Republic residents traveling back and forth on scheduled bus services. Traffic development requires both adequate infrastructure and improved trade facilitation. Logistics development along the road corridor still needs enhancement, such as reducing custom clearance processing times, providing more secure sites for road users, and facilitating international tourism by providing proper rest stops.

51. **Economic corridor development.** The objective of the road corridor improvement is to facilitate regional cooperation, promote socioeconomic development, and ultimately turn the transport corridor into an economic corridor. ADB may design and conduct a special study on economic corridor development of the Bishkek–Torugart road corridor (or of an extended corridor to Kashgar in the PRC). A set of government interventions can be proposed to adequately use the road and border infrastructure to facilitate and accelerate economic corridor development, such as investing in related industrial and agriculture projects, establishing local markets and trade centers, promoting logistical and public transport services, implementing poverty alleviation programs, and improving cross-border trade facilitation.

52. While the project was categorized as *no gender elements*, there were notable benefits to women, including employment during construction, demonstrating that opportunities exist to integrate gender in road projects. The road improvement resulted in improved access to social services, markets and goods, and increased income-earning opportunities. Specific benefits to women in terms of improved mobility, income-earning options, and access to services could have been enhanced and reported on had the project included gender targets. It is recommended that future similar projects explore more opportunities to integrate gender actions to address women's issues and ensure that women equally benefit from the project.

53. **Further follow-up actions.** A post-evaluation program might be designed and implemented to assess the overall performance of the entire corridor, including its road condition, road maintenance, traffic development, socioeconomic impacts, and economic corridor development. The data on the road section will be recorded and maintained in the road asset management system that is being introduced. It is recommended that a PBM contract for the maintenance of the road section be applied based on lessons from PBM piloting.

54. **Timing of the project performance evaluation report.** The project performance evaluation report may be prepared in 2019. By then, most sections of the project corridor will have been in operation for more than 2–3 years, allowing road maintenance, traffic flows, safety status, socioeconomic impacts, and corridor performance as a whole to be better assessed.

DESIGN AND MONITORING FRAMEWORK (with additional financing)

Design Summary	Performance Indicators and Targets	Project Achievements
Impact Increased regional trade, particularly between the Kyrgyz Republic and the People's Republic of China	<p>By 2021: Average daily traffic crossing the border at Torugart increased to 310 (2010 baseline: 100) (changed: 400 by 2020 in the original loan DMF)</p> <p>Number of registered businesses in Naryn Province increased to at least 350 (2010 baseline: 250 (unchanged))</p>	<p>Not yet due The average daily traffic on the project road was 130 vehicles in 2016 including cross-border traffic at Torugart comprising 82 truck trailers. A Bishkek–Kashgar bus service runs two times per week in winter and three per week in summer. In addition, dedicated tour buses travel to Tash Rabat, and Silk Road tours travel from Bishkek to Kashgar (Source: MOTR's project reports)</p> <p>Achieved A total of 1,167 businesses were registered and active in the Naryn region in 2016. (Source: National Statistics Committee data)</p>
Outcome Higher mobility for people and goods with origins and destinations in the road corridor between Naryn and Torugart.	<p>By 2017: Average travel time between Naryn and Torugart border crossing reduced to no more than 4 hours (2010 baseline: 6 hours) (unchanged)</p> <p>Number of freight operators offering services in the Naryn–Torugart section increased to at least 5 (2010 baseline: 2) (unchanged)</p>	<p>Achieved Average travel time between Naryn and Torugart (at the border with the PRC) has been reduced to about 2.5 hours. VOC and time cost savings will average about \$12 million per year for 20 years of road operation.</p> <p>Achieved In 2016, more than 5 companies were providing freight transport services in Naryn. (Source: MOTR's project reports)</p>
Outputs Output 1 The last 60-km section of the Bishkek–Torugart road (km 479–km 539), repaired, rehabilitated, or reconstructed to meet national Category III road standards with roadside truck parking facility and special hydraulic features for protecting the environment and preserving the road structure	<p>By 2017: Average international roughness index of the road surface to be reduced to less than 3 (2010 baseline: 12) (changed: less than 4 in the original loan DMF)</p> <p>Road safety audit conducted with at least 90% of recommendations adopted (changed: safety audit score after completion of civil works at least 90% in the original loan)</p>	<p>Achieved Upon completion, the entire 60 km section was rehabilitated. The IRI of the completed project road was improved from 12 to 1.8, the design speed was upgraded to 90 km/hour, road safety facilities were completed as designed, and environmental protection measures were implemented</p> <p>Achieved A road safety audit was conducted by the consultant and at least 90% of road safety recommendations were implemented</p>

<p>Output 2 Improved infrastructure management skills of MOTR and other government agency staff</p>	<p>DMF)</p> <p>Monthly rate of compliance with environmental management plan no less than 90% (unchanged)</p> <p>By 2016: Training and conference participation opportunities offered to at least 25 staff (unchanged)</p> <p>At least 15 staff successfully complete the training courses At least 10 formal presentations are made by staff at national and international meetings (unchanged)</p>	<p>Achieved The contractor and supervision consultants complied with the environment safeguard requirements and carried out regular environmental impacts survey and monitoring. 100% compliance was achieved by the end of the project.</p> <p>Achieved Comprehensive training was provided to the staff of MOTR and related government agencies. More than 800 attendants were enrolled (average of 30 participants per training session).</p> <p>Achieved 613 participants from MOTR and related government agencies completed the training and were awarded with certificates. An international conference was held on 16 May 2017 with more than 10 formal presentations. Those presentations are being regularly updated and used at other meetings.</p> <p>(Source: MOTR's project reports)</p>
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ADB = Asian Development Bank, DMF = design and monitoring framework, IRI = international roughness index, km = kilometer, MOTR = Ministry of Transport and Roads, PRC = the People's Republic of China, VOC = vehicle operating cost

Note: (unchanged) means that indicators are unchanged from the initial loan appraisal; (changed) means the indicator was revised during the additional financing appraisal.

Source: Asian Development Bank.

PROJECT COST AT APPRAISAL AND ACTUAL
(\$ million)

Item	Appraisal Estimate			With Additional Financing			Actual		
	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost
A. Base Costs									
1. Civil works	45.00	10.00	55.00	56.50	12.50	69.00	59.30	17.05	76.35
2. Consulting services for construction supervision	3.60	0.40	4.00	4.30	0.50	4.80	3.09	0.34	3.43
3. Project management	1.50	0.20	1.70	1.50	0.20	1.70	0.58	0.07	0.65
4. Skills development	0.80	0.20	1.00	0.80	0.20	1.00	0.55	0.14	0.69
Subtotal (A)	50.90	10.80	61.70	63.10	13.40	76.50	63.52	17.60	81.12
B. Contingencies	6.10	1.20	7.30	8.80	1.50	10.30			
C. Financial Charges	1.00		1.00	1.20		1.20	1.03		1.03
Total Project Cost (A+B+C)	58.00	12.00	70.00	73.10	14.90	88.00	64.55	17.60	82.15

Source: Asian Development Bank estimates.

PROJECT COST BY FINANCIER

Table A3.1: Project Cost at Appraisal by Financier
(with additional financing)

Item	ADB		Government		Total Cost	
	Amount {A}	% of Cost Category {A/D}	Amount {B}	% of Cost Category {B/D}	Amount {D}	Taxes and Duties {E}
A. Investment Costs						
1. Civil works	56.5	81.88%	12.5	18.12%	69.0	12.5
2. Consultants						
a. Construction supervision	4.3	89.58%	0.5	10.42%	4.8	0.5
b. Project management	1.5	88.24%	0.2	11.76%	1.7	0.2
c. Skills development	0.8	80.00%	0.2	20.00%	1.0	0.2
Subtotal (A)	63.1	82.48%	13.4	17.52%	76.5	13.4
B. Contingencies	5.8	56.31%	4.5	43.69%	10.3	4.5
C. Financial Charges During Implementation	1.2	100.00%			1.2	
Total Project Cost (A+B+C)	70.1		17.9		88.0	17.9
% Total Project Cost		79.66%		20.34%		100%

ADB = Asian Development Bank; Government = The Government of the Kyrgyz Republic.

Note: Numbers may not sum precisely because of rounding.

Sources: ADB loan and grant financial information system; and Investment Projects Implementation Group under the Ministry of Transport and Roads.

Table A3.2: Project Cost at Completion by Financier

Item	ADB		Government		Total Cost	
	Amount {A}	% of Cost Category {A/D}	Amount {B}	% of Cost Category {B/D}	Amount {D}	Taxes and Duties {E}
A. Investment Costs						
1. Civil works	59.30	77.67%	17.05	22.33%	76.35	17.05
2. Consultants						
a. Construction supervision	3.09	90.08%	0.34	9.92%	3.43	0.34
b. Project Management	0.58	89.23%	0.07	10.77%	0.65	0.07
c. Skills development	0.55	79.71%	0.14	20.29%	0.69	0.14
Subtotal (A)	63.52	78.30%	17.60	21.70%	81.12	17.60
B. Contingencies	0	0.00%	0	0.00%	0	0
C. Financial Charges During Implementation	1.03	100.00%	0	0.00%	1.03	0
Total Project Cost (A+B+C)	64.55		17.60		82.15	17.60
% Total Project Cost		78.58%		21.42%		100%

ADB = Asian Development Bank; Government = The Government of the Kyrgyz Republic.

Note: Numbers may not sum precisely because of rounding.

Sources: ADB loan and grant financial information system; and Investment Projects Implementation Group under the Ministry of Transport and Roads.

DISBURSEMENT OF ADB LOAN AND GRANT PROCEEDS

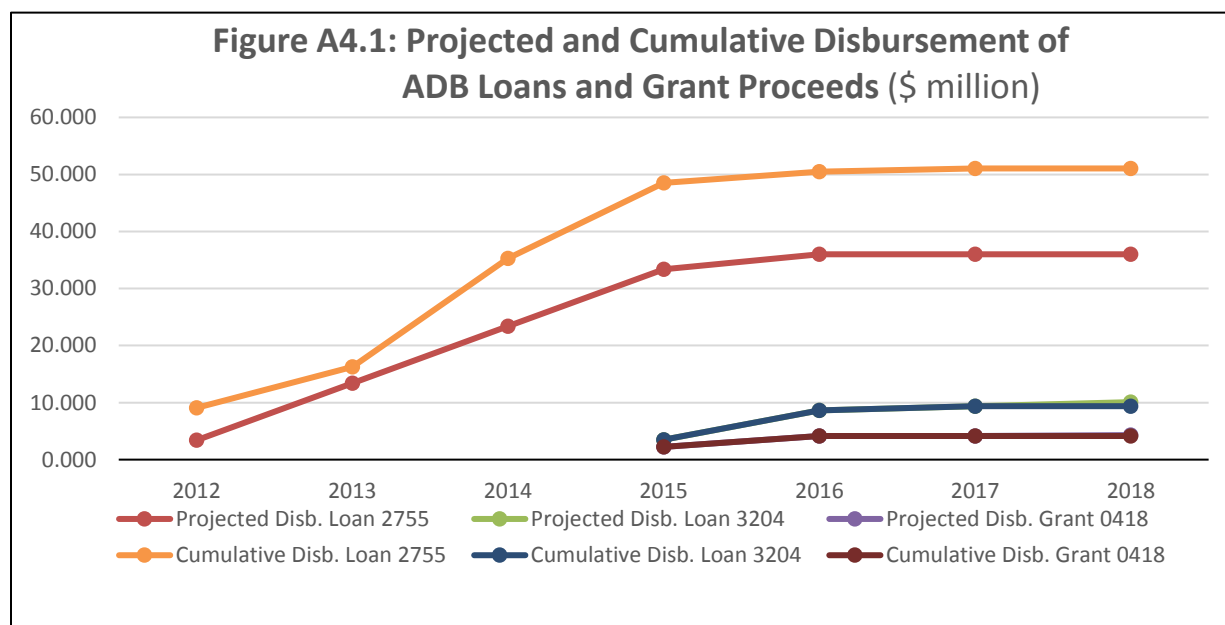
Table A4.1: Annual and Cumulative Disbursement of ADB Loan and Grant Proceeds
(\$ million)

Year	Annual Disbursement					Cumulative Disbursement	
	Amount (\$ million)				% of Total	Amount (\$ million)	% of Total
	L2755	L3204	G0418	Total			
2012	9.03			9.03	14.0%	9.03	14.0%
2013	7.16			7.16	11.1%	16.18	25.1%
2014	19.06			19.06	29.5%	35.25	54.6%
2015	13.25	3.49	2.23	18.97	29.4%	54.22	84.0%
2016	1.94	5.13	1.91	8.98	13.9%	63.20	97.9%
2017	0.61	0.75		1.31	2.1%	64.55	100.0%
Total	51.05	9.36	4.14	64.55	100%		

ADB = Asian Development Bank, G = grant, L = loan

Note: There were three revisions in the contract awards and disbursement projections during project implementation: (i) in April 2014, after the 15–24 February 2014 review mission, because of the delay in approval of the land acquisition and resettlement plan by the government, and further delay in civil works progress; (ii) in November 2014 after the 12–17 October 2014 project midterm review mission, because of additional civil works envisaged as a result of road design improvements, and the need for additional financing; and (iii) in April 2016, after the 15–20 February 2016 review mission, because of price escalations for civil works, which necessitated reallocation of funds to cover civil works costs.

Source: ADB financial system



ADB = Asian Development Bank, Disb. = disbursements

Note: For Loan 3204 and Grant 0418 the projected and cumulative disbursements are approximately equal; as a result, the respective plots almost coincide.

Source: Asian Development Bank.

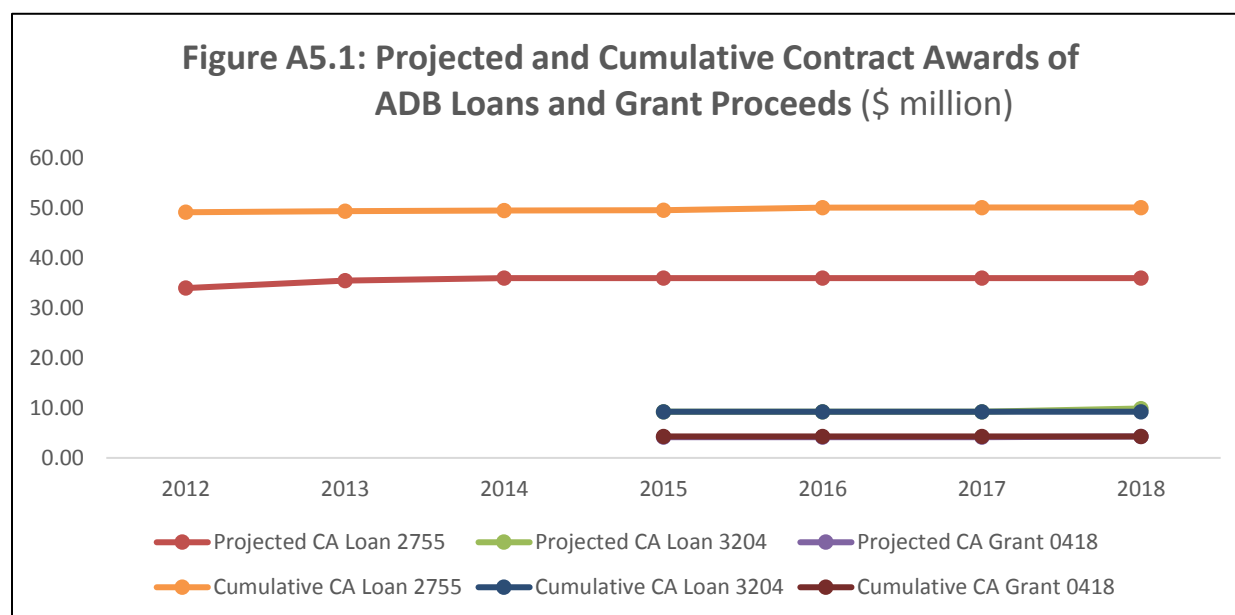
CONTRACT AWARDS OF ADB LOAN AND GRANT PROCEEDS

Table A5.1: Annual and Cumulative Contract Awards of ADB Loan Proceeds
(\$ million)

Year	Annual Contract Awards					Cumulative Contract Awards	
	Amount (\$ million)				% of Total	Amount (\$ million)	% of Total
	L2755	L3204	G0418	Total			
2012	49.187			49.187	77.23%	49.187	77.23%
2013	0.202			0.202	0.32%	49.389	77.55%
2014	0.156			0.156	0.24%	49.545	77.79%
2015	0.067	9.249	4.300	13.616	21.38%	63.161	99.17%
2016	0.526			0.526	0.83%	63.687	100.00%
2017	0.002			0.002	0.00%	63.689	100.00%
Total	50.139	9.249	4.300	63.689	100%		

ADB = Asian Development Bank, G = grant, L = loan.

Source: Asian Development Bank.



ADB = Asian Development Bank, CA = contract award

Note: For Loan 3204 and Grant 0418 the projected and cumulative contract awards are approximately equal; as a result, the respective plots almost coincide.

Source: Asian Development Bank.

CHRONOLOGY OF MAIN EVENTS

Date	Event
2010	
16–30 Apr	Reconnaissance mission fielded
5–16 Jul	Fact-finding mission fielded
2011	
11 Feb	MRM held
18 Feb	MRM minutes and ADB's team for loan negotiations approved
	Advance contracting of civil works, proceeding to loan negotiations, and summary procedure for Board consideration of the financing proposal approved
2 Mar	Loan negotiations held
10 Mar	Reallocation of \$11.6 million from ADF loan savings and cancellation pool in favor of Kyrgyz Republic
1 Apr	Procurement plan updated to add the subheading "Review of Contract Modifications" and text that says "ADB will review contract modification in accordance with the procedure set forth in the loan agreement between Borrower and ADB"
8 Apr	GPN for civil works posted on ADB website
12 May	CSRN for construction supervision package published
16 May	Invitation for Prequalification for civil works posted on executing authority's website
18 May	Invitation for Prequalification for civil works posted on ADB website
7 Jun	Board approval
19 Sep	Loan agreement signed
2012	
3 Feb	Bidding documents for civil works approved by ADB
13 Feb	Loan became effective
15–16 Feb	Inception mission fielded
11 May	Award of construction supervision contract approved by ADB
15 May	Invitation for Bids to civil works prequalified bidders posted
	Bidding documents for civil works issued to prequalified bidders
17 May	Construction supervision consultant contract awarded to TERA International Group, Inc.
26 Jun	Bids for civil works opened
23 Jul	Bid evaluation report submitted
15 Aug	ADB conditionally approved the EIA
21 Aug	Civil works contract awarded to China Road and Bridge Corporation
30 Aug	Reallocation of SDR668,000 from Unallocated category to Works category
5 Oct	ADB retroactively approved contracts and transfer of five national individual consultants from the PIU of CAREC Corridor 1 (Bishkek–Torugart Road) Project (G0123) to CAREC Corridor 1 (Bishkek–Torugart Road) Project 3 (L2755)
9 Oct	Initial disbursement under L2755
17–25 Oct	Review mission fielded
1 Nov	Notice to commence issued to China Road and Bridge Corporation.

	Individual consultant contract for international environment specialist awarded to Jurgen Meyer
2013	
3 May	Notice to start works issued to the contractor
15 May	Commencement of civil works
30 Sep	Contract of international environment specialist Jurgen Meyer terminated
2 Oct	Minor change in selection method to Single Source Selection for the engagement of four individual project implementation unit staff for a short-term assignment of 66 days approved
25 Oct	Minor change to project to delegate to ADB the selection of four project implementation unit staff approved
31 Oct	Individual consultant contract for the replacement of the international environment specialist, awarded to David W.J. Green
7 Nov	ADB completed selection of four project implementation unit staff. Contract period was from 1 January to 31 December 2014
11–18 Nov	Review mission fielded
2014	
20–21 Jan	Consultation mission and presentation on performance-based contracts fielded
24–27 Feb	Review mission fielded
24–28 Feb	Safeguard review mission fielded
26 May	Contract signing with the financial audit firm
11–19 Aug	Review mission fielded
7 Oct	Individual consultant contract for international transport expert awarded to Michael Behr Reallocation of SDR167,165 from Unallocated category to Works category
10 Oct	SRM for additional financing (L3204 and G0418) held
14 Oct	SRM Minutes and ADB's Team for Financing Agreement negotiations approved along with proceeding to financing negotiations, confirmation of (i) project classification as presented in the "Project at a Glance" including safeguards categorization, (ii) project's design and monitoring framework, safeguards, procurement plan, disbursement projections, and due diligence required, (iii) project readiness status, and endorsement for board consideration under summary procedure
13–17 Oct	Midterm review mission fielded
27–28 Oct	Negotiations for additional financing (L3204/G0418) held
2 Dec	ADB approval for additional financing (L3204/G0418)
26 Dec	Financial Agreement for L3204 and G0418 signed
2015	
7–9 Feb	Review mission fielded
2 Mar	Individual consultant contract for international transport expert (Engineering and Institutional Development), awarded to Raimo Sallanmaa
13 Mar	Reallocation of SDR1,139,835 from Unallocated category to Works category
24 Apr	L3204/G0418 became effective
3–5 Jun	Review mission (L3204 and G0418) fielded.
3–5 Aug	Review mission (L2755, L3204 and G0418) fielded
17 Oct	Received Prequalification Evaluation Report
5–6 Oct	Review mission (L2755) fielded
9 Oct	Review mission fielded (L3204 and G0418)
16 Oct	Start of DNP of the road project

2016

4 Jan	Individual consultant contract awarded as follows: national PIU disbursement specialist to Jyldyz Alamanova; national PIU project monitoring specialist to Sanjar Asanaliev; environmental specialist to Asylbek Abdygulov; and road engineer to Aidar Asanov.
15–20 Feb	Review and Handover mission fielded
20–22 Apr	Review mission (L2755, L3204 and G0418) fielded
27 Jun	Individual consultant contracts for three road engineers and three lawyers for the development, implementation, and updating of the regulatory framework
4 Jul	Individual consultant contract for team leader for the development, implementation, and updating of the regulatory framework awarded to Nurlanbek Kalynbaev Individual consultant contract for financier/economist for the development, implementation, and updating of the regulatory framework awarded to Almazbek Diushebaev
11 Aug	Consultant contract for Infrastructure Management Skills component awarded to Renardet S.A. (Switzerland) in association with RAM Engineering Associates LLC (Kyrgyzstan)
19–28 Sep	Review mission (L2755, L3204 and G0418) fielded
16 Oct	End of the DNP and handing over of site to MOTR

2017

13–16 Mar	Review Mission (L2755, L3204 and G0418) fielded
13 May	Individual consultant contract for replacement of the financier/economist for the development, implementation, and updating of the Regulatory Framework awarded to Gulira Borubaeva
16 May	Conference for Infrastructure Management Skill Development held
27 Jun–7 Jul	Project completion mission (L2755, L3204 and G0418) fielded
6 Sep	Final reallocation of loan proceeds (L2755 and L3204)
31 Dec	L2755, L3204 and G0418 closed

ADB = Asian Development Bank, ADF = Asian Development Fund, CSRN = consulting services recruitment notice, DNP = defect notification period, EIA = environmental impact assessment, G = grant, GPN = general procurement notice, L = loan, MOTR = Ministry of Transport and Roads, MRM = management review meeting, PIU = project implementation unit, SDR = special drawing rights, SRM = staff review meeting.

Source: Asian Development Bank.

STATUS OF COMPLIANCE WITH MAJOR LOAN AND GRANT COVENANTS

Particulars	Reference in Loan/Grant Agreements	Status of Compliance
Particular Covenants		
In the carrying out of the Project and operation of the Project facilities, the Borrower shall perform, or cause to be performed, all obligations set forth in Schedule 5 to this Loan Agreement.	L2755 & L3204 and G0418 Article IV Section 4.01	Complied with.
(a) 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 6 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 financial covenants of this Loan Agreement as well as on the use of the procedures for imprest account and statement of expenditures), 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. (b) The Borrower shall enable ADB, upon ADB's request, to discuss the Borrower's financial statements for the Project and its financial affairs related to the Project from time to time with the auditors appointed by the Borrower pursuant to subparagraph (a) hereabove, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB, provided that any such discussion shall be conducted only in the presence of an authorized officer of the Borrower unless the Borrower shall otherwise agree.	L2755 & L3204 and G0418 Article IV Section 4.02	Complied with. All disbursements of the loans and grant were carried out in accordance with ADB's <i>Loan Disbursement Handbook</i> (2012, as amended from time to time). To facilitate project implementation and funds flow, the MOTR created an advance account at a commercial bank acceptable to ADB for the loans and the grant, with an initial advance equivalent to \$50,000. It was managed by IPIG and utilized mostly for IPIG operating expenses, audits, and training. To expedite funds flow and simplify documentation process, MOTR used the SOE procedure for liquidation and replenishment of eligible expenditures. For civil works contract and consulting services, the direct payment procedure was applied. This financial management arrangement facilitated smooth project implementation, and no irregularities were reported in operating the advance account according to audit reports. While APFSs for all fiscal years were concluded acceptable for L2755, L3204 and G0418, the audit for the FY2017 APFS for L3204/G0418 failed to issue separate opinion required on the Advanced Account and SOE, but this does not affect overall compliance.
The Borrower shall enable ADB's representatives to inspect the Project, the Goods and Works, and any relevant records and documents.	L2755 & L3204 and G0418 Article IV Section 4.03	Complied with.
Implementation Arrangement		
The Borrower shall ensure that the Project is implemented in accordance with the detailed arrangements set forth in the PAM. Any subsequent change to the PAM shall become effective only after approval of such change by the Borrower and ADB. In the event of any discrepancy between the PAM and this Loan Agreement, the provisions of this Loan Agreement shall prevail.	L2755 Sch. 5 para. 1	Complied with. Project implementation was arranged in accordance with the PAM. MOTR was the executing agency for the project, and served as the focal point for communication with ADB on important project-related matters, was the signatory of important documents, and ensured compliance with all loan and grant covenants and ADB guidelines and policies. IPIG was responsible for

Particulars	Reference in Loan/Grant Agreements	Status of Compliance
		implementing the project and day-to-day administration of project activities.
Environment		
<p>The Borrower shall ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Borrower relating to environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements set forth in the EIA, the EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.</p>	<p>L2755, Sch. 5 para. 2</p>	<p>Complied with. Project preparation and implementation complied with all applicable laws and regulations relating to the environment, health and safety. The contractor and supervision consultants complied with the environment safeguard requirements and carried out regular environmental impacts survey and monitoring, including checking air quality, water pollution, soil erosion, borrow pits, noise and vibration, fuel and chemical storage, and waste management.</p>
Social Safeguards		
<p>The Borrower shall ensure that the Project does not have any indigenous peoples or involuntary resettlement impacts, all within the meaning of SPS. In the event that the Project does have any such impact, the Borrower shall take all steps required to ensure that the Project complies with the applicable laws and regulations of the Borrower and the principles and requirements set forth in Chapter V, Appendix 2, Appendix 3, and Appendix 4 (as applicable) of the SPS.</p> <p>{Revised edition in L3204 and G0418 Sch. 3 para.2: “(a) The Beneficiary shall ensure that all land and all rights-of-way required for the Project are made available to the Works contractor in accordance with the schedule agreed under the related Works contract and all land acquisition and resettlement activities are implemented in compliance with (i) all applicable laws and regulations of the Beneficiary relating to land acquisition and involuntary resettlement; (ii) the Involuntary Resettlement Safeguards; and (iii) all measures and requirements set forth in the RP, and any corrective or preventative actions set forth in the Safeguards Monitoring Report; (b) Without limiting the application of the Involuntary Resettlement Safeguards or the RP, the Beneficiary shall ensure that no physical or economic displacement takes place in connection with the Project until: (i) compensation and other entitlements have been provided to affected people in accordance with the RP; and (ii) a comprehensive income and livelihood restoration program has been established in accordance with the RP; (c) The Beneficiary shall ensure that the Project does not have any indigenous peoples impact within the meaning of SPS. In the event that the Project does have such impact, the Beneficiary shall take all steps required to ensure that the Project complies with the applicable laws and regulations of the Beneficiary and the principles and requirements set forth in Chapter V, Appendix</p>	<p>L2755, Sch. 5 para. 3 (revised by L3204 and G0418 Sch. 3 para.2)</p>	<p>Complied with. Finalization of detailed design confirmed that no indigenous peoples reside in the project area, and that 11 roadside mobile trailer units providing rudimentary accommodation and refreshment facilities at the border-holding area would have to be relocated about 100 meters away due to road rehabilitation and construction of a roadside truck parking facility. The project was subsequently reclassified as resettlement category B (from C) and a LARP was prepared. Based on the LARP, a Grievance Redress Mechanism was established and a Complaints Log maintained. During implementation, the project road alignment near the border was shifted slightly, and as a result no persons or structures were affected by the project. Accordingly, the resettlement category was downgraded to C and a Due Diligence Report was prepared and disclosed.</p>

Particulars	Reference in Loan/Grant Agreements	Status of Compliance
3 and 4 (as applicable) of the SPS.”}		
<i>Human and Financial Resources to Implement Safeguards Requirements</i>		
The Borrower shall make available necessary budgetary and human resources to fully implement the EMP.	L2755, Sch. 5, para. 4	Complied with. The government made all available necessary budget and human resources for implementation of the EMP for the project.
<i>Execution of Works Contracts</i>		
The Borrower shall ensure that contractors do not commence any Works until the updated EIA, including the EMP, has been revised based on the refined road alignment and environmental baseline survey and cleared by ADB.	L2755, Sch. 5, para. 5	Complied with. To enhance environmental protection, the EIA report was updated by an ADB staff consultant in 2012 based on the baseline monitoring report. No civil works commenced until after the EIA and EMP were updated.
<i>Safeguards – Related Provisions in Bidding Documents and Works Contracts</i>		
The Borrower shall ensure that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractor set forth in the EIA, the EMP, and any corrective or preventative actions set forth in Safeguards Monitoring Reports; (b) make available a budget for all such environmental and social measures; (c) provide the Borrower with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the EIA and the EMP; (d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and (e) fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.	L2755, Sch. 5, para. 6	Complied with. The bidding documents and contract for the civil works contain provisions requesting the contractor to comply with all measures set forth in the EIA and the EMP. During implementation, funding was available for all environmental and social measures. The contractor and supervision consultant complied with the environment safeguard requirements and carried out regular environmental impacts survey and monitoring, including checking air quality, water pollution, soil erosion, borrow pits, noise and vibration, fuel and chemical storage, and waste management.
<i>Safeguards Monitoring and Reporting</i>		
The Borrower shall: (a) submit Safeguards Monitoring Reports to ADB semi-annually during construction and annually during Project operation, and disclose relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the EIA and the EMP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and (c) starting the middle of the first construction season, engage qualified and experienced external experts or qualified NGOs under a selection process and terms of reference acceptable to ADB, to verify information produced through the Project monitoring process, and facilitate the carrying out of	L2755, Sch. 5, para. 7 (revised by L3204 and G0418, Sch.3 para.3)	Complied with. The supervision consultant carried out regular environment monitoring. The semi-annual and annual environmental monitoring reports were submitted to ADB, and disclosed on ADB website. A post-construction environmental audit was conducted, and the final environmental report confirmed that the project site cleanup and restoration were satisfactory. The ADB PCR mission also noted that the borrow pits had been properly covered following completion of civil works. To enhance the environment management, an individual international environment specialist was engaged to assist the IPIG to supervise and monitor EMP implementation.

Particulars	Reference in Loan/Grant Agreements	Status of Compliance
<p>any verification activities by such external experts. {Revised edition in L3204 and G0418 Sch. 3 para.3: The Beneficiary shall do the following: (a) submit Safeguards Monitoring Reports to ADB semiannually during construction and annually during Project operation, and disclose relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the EIA, the EMP or the RP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and (c) continue to engage qualified and experienced external experts or qualified NGOs under a selection process and terms of reference acceptable to ADB, to verify information produced through the Project monitoring process, and facilitate the carrying out of any verification activities by such external experts.”}</p>		
<p>Labor and Health Standards</p> <p>The Borrower shall ensure that specific provisions are included in the bidding documents to ensure that Works contractors: (a) comply with core labor standards, applicable laws and regulations of the Borrower and incorporate workplace occupational safety norms; (b) do not differentiate pay between men and women for work of equal value; (c) do not employ child labor in the construction and maintenance activities; (d) eliminate forced or compulsory labor; (e) eliminate employment discrimination; (f) allow for freedom of association; (g) to the extent possible, maximize employment of local people for project construction purposes provided that the requirements for job and efficiency are adequately met; and (h) disseminate information on the risks of sexually transmitted diseases, including HIV/AIDS, to the employees of the contractors engaged under the Project and to members of the local communities surrounding the Project.</p>	<p>L2755, Sch. 5, para. 8</p>	<p>Complied with. The contract for the civil works includes provisions on the use of laborers and transmitted diseases as required in the loan covenant. The contractor was familiar with the awareness practices needed to combat HIV/AIDS and implemented an appropriate program during construction. During implementation, the contractor provided medical facilities and safety helmets and vests to its workers. A large number of local laborers were employed during the project implementation. In 2015, of the 270 laborers working on the project, 105 were local, including women. The supervision consultants engaged over 240 person-months of national consultant services.</p>
<p>Illegal Trafficking</p> <p>The Borrower shall undertake adequate measures to detect and prevent trafficking of humans, wildlife, endangered species, and illegal substances on the Bishkek-Torugart Road.</p>	<p>L2755, Sch. 5, para. 9</p>	<p>Complied with. There have been no reports of human trafficking or the use of child labor during project implementation.</p>
<p>Counterpart Support</p> <p>Without limiting the generality of Section 6.06 of the Loan Regulations, the Borrower shall ensure that all funds and resources required for implementation of the Project are allocated and provided on a timely basis in accordance with the financing plan agreed for the Project.</p>	<p>L2755, Sch. 5, para. 10</p>	<p>Complied with. Although there were initial delays with the allocation of counterpart funds, the government fully met the shortfall in financing during project implementation, and all payments were made before the project closing date. Upon completion, a</p>

Particulars	Reference in Loan/Grant Agreements	Status of Compliance
		total of \$17.6 million equivalent was allocated to the project.
The Borrower shall allocate and make available to MOTR on a timely basis sufficient funds for the operation and maintenance of roads. MOTR shall prioritize the allocation on a timely basis sufficient funds for the operation and maintenance of the road section reconstructed or rehabilitated under the Project."	L3204 and G0418, Sch. 3, para. 4	Complied with. The state fiscal allocation to road improvement and maintenance increased substantially from Som1,059 million in 2007 to Som2,037 million in 2017, with average 6.6% increase per annum.
Governance and Anticorruption		
The Borrower shall (a) comply with ADB's Anticorruption Policy (1998, as amended to date) and acknowledge that ADB reserves the right to investigate directly, or through its agents, any alleged corrupt, fraudulent, collusive or coercive practice relating to the Project; and (b) cooperate with any such investigation and extend all necessary assistance for satisfactory completion of such investigation.	L2755, Sch. 5, para. 11	Complied with. During project preparation, ADB's Anticorruption Policy was explained to and discussed with the Ministry of Finance and MOTR. Key measures were included in the project documents. The IPIG staff was aware of and understood the requirements.
The Borrower shall ensure that the anticorruption provisions acceptable to ADB are included in all bidding documents and contracts, including provisions specifying the right of ADB to audit and examine the records and accounts of the executing and implementing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the Project.	L2755, Sch. 5, para. 12	Complied with. The requirements and supplementary measures on the anticorruption were included in all contracts and project documents.

ADB = Asian Development Bank, APFS = Audited Project Financial Statements, EIA = environmental impact assessment, EMP = environment management plan, FA = financing agreement, FY = fiscal year, G = Grant, IPIG = Investment Projects Implementation Group, L = loan, LA = loan agreement, LARP = land acquisition and resettlement plan, MOTR = Ministry of Transport and Roads, NGO = nongovernmental organization, PAM = project administration manual, PCR = project completion review, RP = resettlement plan, SOE = statement of expenditures, SPS = Safeguard Policy Statement.

Source: ADB's project completion review mission.

MAJOR CAPACITY DEVELOPMENT PROGRAMS UNDER THE PROJECT

Subject		Scope and Activities	Consultant/Trainer	Participants
Skills Development				
1	On-job training	Training was provided on various subjects (e.g., environment management, FIDIC contracts, road operation and maintenance, road financing and PPPs, procurement, portfolio management, and information technology).	Renardet and RAM	712 staff members of MOTR and related agencies
2	Enhance MOTR's training and research capacity	Capacity and training needs of MOTR were assessed, proposals were developed for training programs and training delivery institutional structure, and a complete set of translated training materials prepared.	Renardet and RAM	
3	Develop local capacity for road sector technology transfer	An institutional structure for capacity transfer was proposed, and a medium-term road sector technology transfer and research plan aimed at modernizing future road development and maintenance technologies was defined.	Renardet and RAM	
Institutional Reform				
1	Draft Normative Legal Acts	Draft normative legal acts were developed, including government decrees, ministerial orders, and department normative acts.	Individual consultants	
2	Develop resolutions on optimization and reform	Draft reform resolutions were prepared and submitted to the government, with a focus on road development and management, including rules on road utilization and protection, taxation and budget, regulation approval procedures, road repair and maintenance, and construction supervision. Of 19 legal acts, 17 were enacted by the government, whilst the others are awaiting approval.	Individual consultants	
Road Sector Development Strategy Study				
	Develop road sector development strategy up to 2025	A new long-term road sector development strategy was developed aimed at improving road management to achieve road sector sustainability. The strategy adopted in July 2016 includes objectives, policy, action plan, and indicators for evaluation of the strategy implementation.	A team of individual consultants	
Others				
1	Training on environment management	Training on environment protection and management, and spill management was provided to theKJSNR and related road maintenance units.	TERA (supervision consultants)	Staff of KJSNR and local road maintenance unit
2	Training on equipment utilization	Training on the use of the equipment for monitoring environmental and water-related conditions was conducted for the KJSNR.	Equipment suppliers	Staff of related national agency and KJSNR

FIDIC = The International Federation of Consulting Engineers, KJSNR = Karatal-Japaryk State Nature Reserve, MOTR = Ministry of Transport and Roads, PPP = Public-Private Partnership

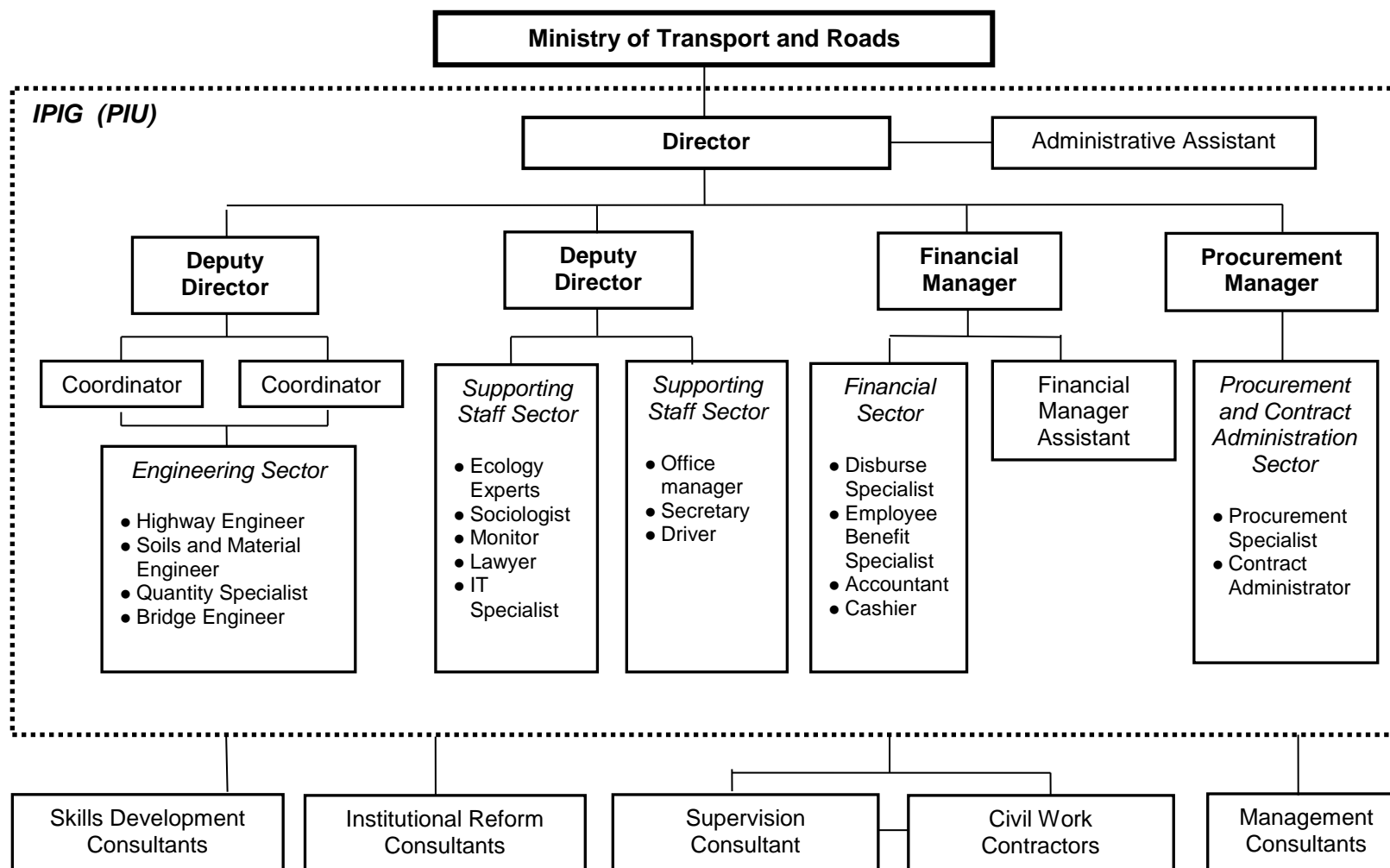
Source: Reports of capacity development programs under the project, the Investment Projects Implementation Group, and the project supervision consultant.

ACTUAL PROJECT IMPLEMENTATION SCHEDULE

Item		2011				2012				2013				2014				2015				2016				2017			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Civil Works																													
Procurement																													
Implementation																													
Construction Supervision																													
Recruitment																													
Implementation																													
Skill Development																													
Recruitment																													
Implementation																													
Procurement/recruitment																													
Implementation																													

Q = quarter

ORGANIZATIONAL STRUCTURE FOR PROJECT IMPLEMENTATION



ADB = Asian Development Bank; IPIG = Investment Projects Implementation Unit; IT = Information Technology; PIU = project implementation unit.
 Source: Ministry of Transport and Roads

PROJECT CONTRACT PACKAGES

PCSS	Package	Consultant/Contractor	Procurement Mode	Contract Dates	Original Contract Cost (\$ if not som)	Additional Contract Cost (\$)	Total Actual Cost (\$)		
							ADB	Government	Total
A.	Civil Works								
0003	Civil works (design-build)	CHINA ROAD AND BRIDGE CORPORATION	ICB	21/08/2012	46 248 581,66	13 057 650,59	59 306 232,25	17 051 368,45	76 357 600,70
B.	Consulting Services								
0001	Construction Supervision	TERA INTERNATIONAL GROUP	QCBS	17/05/2012.	2 551 717,28	334 114,67	2 885 831,95	320 413,02	3 206 244,97
0005	Environmental Management	DAVID GREEN		01/11/2012	201 641,11		201 641,11	20 823,56	222 464,67
0007	International Transport Expert	MICHAEL BEHR		07/10/2014	32 650,84		32 650,84	8 162,71	40 813,55
0008	Training and conference Expenses	VARIOUS	Others	31/03/2015	13 014,89		13 014,89	3 253,72	16 268,61
0009	International Transport Expert	RAIMO SALLANMAA		07/10/2014	54 276,35		54 276,35	13 569,09	67 845,44
0015	Road Engineer (national)	ERLAN BERDIBAEV		27/06/2016	10 178,68		10 178,68	2 420,30	12 598,90
0016	Road Engineer (national)	DUIHOK UULU TOLONBEK		27/06/2016	10 178,68		10 178,68	2 420,30	12 598,90
0017	Road Engineer (national)	EMIL BAYSEITOV		27/06/2016	-		-	-	
0018	Lawyer (national)	BAKYTBK SAMAKOV		27/06/2016	10 178,68		10 178,68	2 420,30	12 598,98
0019	Lawyer (national)	AIDAI SOLTOBAEVA		27/06/2016	10 133,16		10 133,16	2 409,00	12 542,16
0020	Lawyer (national)	SYRGAK OKEEV		27/06/2016	8 805,43		8 805,43	2 172,40	10 977,83
0021	Financial/Economist	ALMAZBEK DUISHEBAEV		04/07/2016	4 850,52		4 850,52	1 220,54	6 071,06
0022	Team Leader	NURLANBEK KAIYNBAEV		04/07/2016	14 628,48		14 628,48	3 945,21	18 573,69
0024	Financial/Economist	GULIRA BORUBAEVA		12/05/2017	1 522,19		1 522,19	595,03	2 117,22
0023	Infrastructure Management Skills Improvement	RENARDET S CONSULTING ENGINEERS RAM ENGINEE	QCBS	11/08/2016	385 632,20		384 992,20	96 248,07	481 240,27
C.	Project Management								
0002	PIU Consultants	VARIOUS	Others	30/04/2012	18,709,219.48 (som)		332 270,29	37 105,62	369 375,91
0004	PIU Operation Expenses	VARIOUS	Others	11/10/2012	3,073,200.30 (som)		53 948,81	6 144,31	60 093,12
0006	Audit	LLC MARKA AUDIT BISHKEK	CQS	26/05/2014	123 799,70		123 799,70	14 149,54	137 949,24
0010	Disbursement Specialist	JYLDYZ ALAMANOVA		04/01/2016	831,600.00 (som)		11 954,37	1 328,26	13 282,63
0011	Project Monitoring Specialist	SANJAR ASANALIEV		04/01/2016	958,783.50 (som)		13 777,54	1 530,84	15 308,38
0012	IPIG Director	KUBANYCHBEK MAMAEV		14/01/2016	1,265,022.68 (som)		18 231,80	2 025,76	20 257,56
0013	Environment Specialist	ASYLBK ABDYGULOV		04/01/2016	903,960.00 (som)		12 994,55	1 443,84	14 438,39
0014	Road Engineer	AIDAR ASANOV		04/01/2016	970,920.00 (som)		13 957,13	1 550,79	15 507,92
	Total						63 530 049,60	17 596 720,66	81 126 770,26

ADB = Asian Development Bank, CQS = consultant quality selection, ICB = international competitive bidding, IPIG = Investment Projects Implementation Group, QCBS = quality- and cost-based selection, PCSS = procurement contract summary sheet, PIU = project implementation unit
 Sources: ADB loan and grant information system; ADB project completion review mission; and Ministry of Transport and Roads.

ECONOMIC REEVALUATION

A. General

1. At completion, 60 kilometers (km) of road (km 478–538) along the Bishkek–Torugart road corridor was improved to national Category III road standard with two lanes of carriage, asphalt pavement, and a design speed of 90 km per hour. During the Asian Development Bank (ADB) project completion review (PCR) mission, an economic reevaluation of the project was carried out using a similar methodology as that at the additional financing appraisal, and employing the most recent data. The actual traffic counts collected by the supervision consultant were analyzed and the traffic forecasts updated accordingly. Economic benefits were calculated by comparing the “with-project” and “without-project” cases. In the “without-project” case, it was assumed that the roads would remain in their original state. In the “with-project” case, the roads were improved so that vehicles could drive at faster speeds with lower operating costs and less travel time. The reevaluation calculated the project road’s economic internal rate of return (EIRR) and assessed its economic viability.

B. Traffic Analysis and Forecast

2. During project implementation, traffic surveys were conducted in July 2011, September 2013, and September 2016. The surveys counted traffic travelling in two directions, and identified nine vehicles types. Counts were collected at four locations along the Bishkek–Torugart road corridor, including at Naryn (km 348), At-Bashy (km 351), the bridge (km 399), and Kara-Bulun village (km 420). The traffic on the project road section was measured by actual vehicle flows recorded at the Torugart check post (km 478). Actual traffic volume increased during 2011–2016 by an average of about 14% per year, with light trucks increasing by about 62% and truck trailers by 59% per year. Light trucks were used mainly for local socioeconomic development activities in the border areas. The truck trailers were mainly cross-border traffic between Bishkek and Kashgar in the People’s Republic of China (PRC). The actual traffic counts on the project road section were adjusted by the supervision consultant to annual average daily traffic (AADT) levels by considering seasonal factors, resulting in an AADT level of 81 vehicles in 2011, 123 vehicles in 2013, and 130 vehicles in 2016. It was found that the actual traffic level is lower than the baseline figure of 151 vehicles used at appraisal for the original loan in 2010.¹ The traffic survey results are in Table A12.1.

Table A12.1: Traffic Survey Results
(vehicles per day)

	Car	Light Bus/Van	Medium Bus	Large Bus	Light Truck	Medium Truck	Heavy Truck	Truck Trailer	Truck Semi- Trailer	Total
2011	25	3	0	1	1	1	0	5	56	91
2013	46	5	0	1	2	1	0	10	103	168
2016	34	4	1	2	12	1	7	55	62	178

Note: these are actual traffic counts collected during surveys, not annual average daily traffic after adjustment.

Source: TERA. Project Performance Monitoring Reports for 2013 and 2016.

¹ ADB. May 2011. *Report and Recommendation of the President to the Board of Directors on the Proposed Loan to Kyrgyz Republic: CAREC Corridor 1 (Bishkek–Torugart Road) Project* 3. Manila gives a traffic count of 151 vehicles for the Ak Beit Pass–Torugart Pass road section; this was prior to establishment of the Customs Union in July 2010, when trade between the PRC and the Kyrgyz Republic was at a peak. To ensure consistency in the analysis, the traffic count from the 2011 survey was used as the baseline for the economic reevaluation.

3. Since 2000, the foreign trade between the Kyrgyz Republic and the PRC has increased dramatically. The total value of imports and exports increased from \$81 million in 2000 to \$5,677 million in 2017 (with a temporary drop in 2016 to \$4,341 million due to accession of the country to the Eurasian Economic Union in August 2015). Development of the Central Asia Regional Economic Cooperation program corridor, economic development, and implementation of the PRC government's "one belt, one road" initiative are causing foreign trade to increase rapidly. Domestically, the gross domestic product growth rate in the Kyrgyz Republic has averaged 4.7% per year in 2002–2017. The country's economic development patterns has been restructured, with the service sector advanced rapidly, and accounting for about 57% of the economy in 2015 compared with 32% in 2000. In addition, the full opening of the road corridor may substantially improve corridor performance and lead to a large increase in traffic. The project road traffic forecast was updated based on: (i) actual traffic data, (ii) completion of the Bishkek–Torugart road corridor, (iii) rapid international traffic growth and gross domestic product growth forecast, and (iv) the country's socioeconomic development status. This resulted in projected growth in AADT of 19% per year in 2017–2020, 14% in 2021–2025, 8% in 2026–2030, and 4% in 2031 and onwards (Table A12.2)

Table A12.2: Revised Traffic Growth Rates and Forecast Results
(AADT)

	Car	Light Bus or Van	Med- Bus	Large Bus	Light Truck	Med- Truck	Heavy Truck	Truck Trailer	Truck Semi Trailer	Average /Total
<i>Revised Traffic Growth Rates</i>										
2017–2020	10%	10%	8%	20%	30%	10%	20%	30%	10%	19%
2021–2025	8%	8%	8%	10%	10%	8%	10%	20%	8%	14%
2026–2030	6%	6%	6%	8%	6%	6%	6%	10%	4%	8%
2031–2035	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
<i>Traffic Forecast (normal traffic, vehicles)</i>										
2017	33	4	2	2	5	2	5	55	44	153
2020	44	6	3	4	11	3	8	120	59	258
2025	65	9	4	7	18	4	13	298	86	504
2030	86	12	5	10	25	6	18	481	105	747

AADT = annual average daily traffic, Med = medium

Source: Asian Development Bank project completion review mission

C. Economic Costs and Benefits

4. The project costs comprised capital and maintenance costs. Upon completion, the total project cost was \$82.15 million, which was about 17.4% higher than at original loan appraisal. The actual annual investment costs for the project were used in the economic reevaluation, which excluded taxes and duties, financial charges, and the cost of capacity development. The unit maintenance costs, adopted from other similar project in the country, were used in the analysis, including \$1,350 per kilometer (km) for routine maintenance and \$35,000 per km for periodic maintenance. In accordance with general practice and road condition, it was assumed that the routine maintenance cost would increase by 2% per year as a result of road deterioration and periodic maintenance would take place every 8 years, mainly for re-pavement of the project road. In the economic evaluation, the financial capital costs were converted into economic costs and a shadow exchange rate factor of 1.11 and a shadow wage rate factor of 0.75 were applied, as

adopted at appraisal.

5. As at appraisal, the main sources of economic benefits were (i) savings in vehicle operation costs (VOCs) and (ii) savings in passenger travel time costs. The project supervision consultants calculated the unit VOCs, using 2017 prices. The VOC savings per vehicle-km by comparing the “with-project” and “without-project” cases were estimated at \$0.07 for cars, \$0.13 for medium buses, \$0.15 for light trucks, and \$0.65 for truck trailers. Average passenger vehicle speeds were assumed to be 80–90 km per hour for the “with-project” case and 20–25 km per hour for the “without-project” case. The passengers’ travel time cost savings were recalculated by different types of passenger vehicles for working and nonworking time values, with the nonworking values calculated as 30% of working values. The unit passenger time cost is derived from the national average gross domestic product per capita.² The unit truck driver time cost is based on the average salary of transport workers drawn from national statistical data. Other factors taken into account in the calculation for passenger time cost savings include average vehicle loads, percentage of work-related trips, time costs by different road users, and travel speeds for different types of passenger vehicles and trucks. For generated traffic, half of the benefits were considered. The benefit calculation results showed that the VOC savings were about 69.2% of the total benefits in 2016, but the passenger time-cost benefits increased along with socioeconomic development and income growth and would reach 51.8% of the total benefits in 2035.

D. Economic Reevaluation and Sensitivity Test

6. Based on these assumptions and estimations, the EIRR has been recalculated by comparing the project costs and benefits over a 25-year period, including 5 years of construction (2012–2016) and 20 years of operation (2016–2035). The residual value was considered to be 36.6% of the capital costs according to the engineering design and estimated amortization (which is consistent with the figure of 36.1% of the capital cost estimated during the additional financing appraisal), and added to the last year of the period. At appraisal for the initial loan, the economic evaluation was for the entire Bishkek–Torugart road corridor, with an EIRR of 34%, but no EIRR was provided for the project section in the appraisal document (either in the main report or supplementary appendix), which mentioned only that “the EIRR on the project road (km 479–km 539) is very low”.³ The additional loan appraisal estimated the EIRR for the project road section as 12.3%. The recalculated EIRR for the project road at completion is slightly lower, at 12.1%. The lower EIRR is mainly caused by lower traffic levels. The traffic forecast results at additional financing were 668 passenger car units (PCUs) in 2017, 844 PCUs in 2020, and 2,576s PCU in 2030, which are higher than that predicted at appraisal for the original loan, and also higher than the actual traffic in 2016 (178 vehicles per day) by about 15%.⁴

7. The project road is the last rehabilitated section of the Bishkek–Torugart road. Upon completion, the entire international road corridor has been fully improved, which has led to better performance of the whole corridor and significantly facilitated international traffic. Current traffic levels remain low as a result of issues related to foreign trade and trade facilitation. It is estimated that cross-border traffic at Torugart carries only about 35% of the total cargo transported from the

² The gross domestic product per capita of the Kyrgyz Republic was Som 68,773 in 2014 (about \$1,282).

³ ADB. 2011. *Report and Recommendation of the President to the Board of Directors on the Proposed Loan to Kyrgyz Republic: CAREC Corridor 1 (Bishkek–Torugart Road) Project 3* – Linked document #7 “Economic Analysis”, page 4. Manila.

⁴ Generally, the number of vehicles should be used in economic evaluation, instead of PCUs. It is unclear how PCUs were used in the economic evaluation at appraisal for the additional financing.

PRC.⁵ Based on experience, the full effects of the improvement of the transport corridor will be seen after 2–3 years. Along with the fast growing economic and social linkages between the Kyrgyz Republic and the PRC, cross-border traffic will most likely increase in the near future. Trade facilitation plays an important role in cross-border transport development, and may serve to increase cross-border traffic. Trade facilitation among all Central Asia Regional Economic Cooperation program countries is being advanced with the help of development partners. Logistics services along the project road corridor are being developed, and the project has and will continue to generate substantial socioeconomic impacts in the project areas (Appendix 13). The project has achieved its intended outcome, with a large potential for expanded future benefits, and a recalculated EIRR of slightly higher than 12%.

8. The EIRR was subjected to sensitivity analysis to test different costs–benefit scenarios. The worst-case scenario—a 20% maintenance cost increase combined with a 20% benefit reduction—would yield an EIRR of 10.1% for the project. The sensitivity analysis also showed that the EIRR was very sensitive to changes in benefits. Therefore, the government should be attentive to socioeconomic development in the project area, promote cross-border transport, foster transport services, and increase incomes for rural road users. The results of the sensitivity analysis are in Table A12.3. The cost and benefit streams of the EIRR calculation are in Table A12.4.

Table A12.3. Sensitivity Test

Scenarios		EIRR (%)	ENPV (at 12%, \$ million)
Base Case		12.1	1.20
Sensitivity Tests			
1	Maintenance cost 10% higher	12.1	0.98
2	Maintenance cost 20% higher	12.1	0.75
3	Maintenance cost 100% higher	11.9	(1.06)
4	Benefits 10% higher	13.0	8.51
5	Benefits 20% higher	13.8	15.81
6	Benefits 100% higher	19.2	74.23
7	Benefits 10% lower	11.2	(6.10)
8	Benefits 20% lower	10.2	(13.40)
9	Maintenance cost 10% higher & benefits 10% lower	11.2	(6.32)
10	Maintenance cost 20% higher & benefits 20% lower	10.1	(13.85)

() = negative, EIRR = economic internal rate of return, ENPV = economic net present value.

Source: Asian Development Bank project completion review mission.

⁵ The international freight volume from the PRC to the Kyrgyz Republic increased from 182,248 tons in 2006 to about 1.75 million tons in 2016. The cross-border freight volume at Torugart was estimated at 0.6 million tons in 2016.

Table A12.4. Economic Reevaluation

(\$ million)

	Costs			Benefits			Net Benefit	Net Present Value
	Capital Cost	Maint. Cost	Total	VOC Saving	Time Cost Saving	Total		
2012	10.02		10.02				(10.02)	(17.66)
2013	7.53		7.53				(7.53)	(11.84)
2014	16.97		16.97				(16.97)	(23.84)
2015	8.10		8.10				(8.10)	(10.16)
2016	6.64		6.64	1.53	0.68	2.21	(4.43)	(4.96)
2017	1.02	0.09	1.11	1.82	0.84	2.66	1.55	1.55
2018		0.09	0.09	2.17	1.05	3.23	3.13	2.80
2019		0.09	0.09	2.62	1.32	3.94	3.85	3.07
2020		0.10	0.10	3.18	1.67	4.85	4.76	3.38
2021		0.10	0.10	3.66	2.00	5.66	5.56	3.54
2022		0.10	0.10	4.23	2.39	6.62	6.53	3.70
2023		0.10	0.10	4.89	2.88	7.78	7.67	3.89
2024	2.33	0.09	2.42	5.68	3.48	9.15	6.73	3.04
2025		0.09	0.09	6.60	4.20	10.80	10.71	4.33
2026		0.09	0.09	7.15	4.79	11.94	11.85	4.27
2027		0.10	0.10	7.75	5.47	13.22	13.13	4.23
2028		0.10	0.10	8.41	6.24	14.65	14.56	4.18
2029		0.10	0.10	9.13	7.13	16.26	16.16	4.15
2030		0.10	0.10	9.91	8.15	18.06	17.96	4.12
2031		0.10	0.10	10.31	8.94	19.25	19.15	3.92
2032	2.33	0.09	2.42	10.72	9.81	20.53	18.11	3.31
2033		0.09	0.09	10.72	10.35	21.07	20.98	3.42
2034		0.09	0.09	11.15	11.36	22.51	22.41	3.26
2035	(18.41)	0.10	-18.32	11.59	12.46	24.05	42.37	5.51
Economic Net Present Value:								1.20
Economic Internal Rate of Return:								12.1%
Discount Rate:								12%

() = negative, VOC = vehicle operating cost

Source: Asian Development Bank project completion review mission

SUMMARY OF SOCIOECONOMIC IMPACTS

1. The expected project outcome was increased regional traffic and trade, and improved access to markets and social services for the people living along the corridor. For monitoring the socioeconomic impacts, a project monitoring framework was designed at project appraisal for the initial loan. During implementation, the supervision consultant carried out three surveys (in 2011, 2013, and 2016). The surveys covered general socioeconomic development status of the project areas, impacts of the project implementation and operation, and traffic surveys. A summary of the survey results follows.

2. **Project impact areas.** The project road is the last section of the Bishkek–Torugart road corridor. The elevation of the road varies between 2,500 and 3,750 meters above sea level. The climatic conditions are quite diverse in different parts of the project area, depending on elevation gradient and slope, and wind vector and velocity. The climate is sharply continental, with harsh and severe winters, and short cool summers. The project road is within the restricted border zone and there is no village along the project road. Local users of the project road are primarily herders from nearby villages, trailers that provide services at border areas, and residents of the At-Bashy Rayon who commute between towns and villages and the border areas. An upgraded road was a priority for residents, with benefits accruing most to people whose livelihoods are closely linked to the road, including truck owners and drivers, shuttle and taxi service drivers, merchants, café owners and employees, fuel station and maintenance shops owners, and farmers.

Table 13.1. Population Statistics of At-Bashy Rayon
(as of January 2016)

Ayil Okmotu	Village	Population	Household	Person/HH	Male	Female	Ethnicity
At-Bashy	At-Bashy	13,839	2,832	4.9	6,698	7,141	98% Kyrgyz, 2% others
Ak-Jar	Ak-Jar	5,323	1,197	4.4	2,588	2,735	100% Kyrgyz
Kara-Suu	Kara-Suu	5,532	1,173	4.7	2,756	2,776	100% Kyrgyz
	Dyikan	1,049	214	4.9	502	547	100% Kyrgyz
Kara-Koyun	Kara-Bulun	1,763	379	4.7	902	861	100% Kyrgyz
	Kyzyl-Tuu	2,121	428	5.0	1,086	1,035	100% Kyrgyz
Kazybek	Jany-Kuch	1,113	241	4.6	563	550	100% Kyrgyz
	Kazybek	4,613	896	5.1	2,295	2,318	100% Kyrgyz
Ak-Talaa	Kalinin	3,530	712	5.0	1,773	1,757	100% Kyrgyz
	Terek-Suu	2,018	419	4.8	1,000	1,018	100% Kyrgyz
Ak-Moyun	Birlik	1,478	344	4.8	757	721	100% Kyrgyz
	Ak-Moyun	2,508	567	4.4	1,286	1,222	100% Kyrgyz
Ak-Muz	Ak-Muz	3,890	791	4.9	2,017	1,873	100% Kyrgyz
Acha-Kayingdy	Acha-Kayindy	4,529	748	6.1	2,324	2,205	100% Kyrgyz
Bash-Kayindy	Bolshevik	1,027	227	4.5	514	513	100% Kyrgyz
	Bash-Kayindy	4,829	1,083	4.5	2,450	2,379	100% Kyrgyz
Taldy-Suu	Ozgorush	766	172	4.5	389	377	100% Kyrgyz
	Taldy-Suu	1,665	364	4.6	833	832	99% Kyrgyz, 1% others
	1 st of May	1,112	240	4.6	583	529	100% Kyrgyz
Total		62,705	13,027	4.8	31,316	31,389	

Source: Ministry of Transport and Roads. 2016. *Socioeconomic Impact Monitoring Report*. Bishkek

3. **General socioeconomic status.** The project road is located in the southeastern part of the country, where agriculture and livestock are the main source of income and the poverty

incidence is among the highest in the Kyrgyz Republic. Agricultural land produces mainly barley and potato, with 22,878 hectares of permanent grass land and 698,435 hectares of pasture land. In 2016 major livestock consisted of sheep (186,376), goats (44,010), cattle (35,975), horses (24,875), and fowl (21,948). The population of the the At-Bashy Rayon increased from about 53,000 in 2011 to 62,700 in 2016. At-Bashy is the largest village near the project road, which is located at kilometer (km) 387 of the Bishkek–Torugart road, with a population of about 14,000 people in 2016. About 99% of the people in the project impact areas are ethnic Kyrgyz. The remaining ethnic groups (Uzbeks, Uigurs, Tatars, Kazakhs, Ukrainians, Russians, and Dungans) have been integrated into the respective towns and villages. About 41.5% of families in the At-Bashy Rayon in January 2016 were classified as low-income (living on less than Som1,465.7 per person per month), which represented a decrease from 58.7% in 2012. However, it is one of the most isolated areas in the country and the poverty ratio is above the national average of about 32.1% in 2015.

4. **Connectivity improvement.** Before the project, the road section from km 479 to km 539 was almost unpaved, often water logged, and unusable on some winter days. The poor condition of the road resulted in low vehicle speeds and long transit times between the People's Republic of China (PRC) border and Naryn, with travel over the 200 km distance taking many hours. At completion, 60 km of the project road along the Bishkek–Torugart road corridor was improved to national category III road standards with two lanes of carriage, asphalt pavement, and a design speed of 90 km per hour. This increased connectivity considerably. Average vehicle speeds are now about 80–90 km per hour compared to 20–30 km per hour prior to the road rehabilitation. Travel time between Bishkek and At-Bashy has been reduced from about 7 hours to 4.5 hours. Travel time between At-Bashy and Torugart (at the border with the PRC) has been reduced from 2.5 hours to 1.75 hours. The road is now passable in all weather, and closures during harsh winter weather do not occur.

5. **Working opportunities.** During construction, the project provided significant working opportunities to the local people. In 2015 up to 400 people worked on the project, including up to 35 female workers. The supervision consultant hired a range of staff including engineers, surveyors, and technicians, and required over 400 person-months of national consulting services. Implementation of the project has assisted economic development in the project areas. Data provided by the National Statistics Committee indicates 1,167 businesses were registered and active in the Naryn region in 2016, including more than 5 companies providing freight transport services. There were 110 shops and/or kiosks in At-Bashy Rayon in 2010, and 158 in 2015. Before the project 11 trailers provided a variety of services to truck drivers in the border areas. Traffic has increased, and the trailers have become more active. A newly constructed customs building now provides a cafeteria and duty-free shops. These developments indicate that there are more income-earning and employment opportunities for local people. Incomes rose by nearly 50% in At-Bashy town from 2012 to 2016, primarily because of increased income from salaries, agricultural production and working opportunities.

6. **Foreign trade and cross-border traffic.** Since 2000, foreign trade between the Kyrgyz Republic and PRC increased sharply. The total value of imports and exports increased from \$81 million in 2000 to \$5,677 million in 2017. Trade with the PRC increased from 182,248 tons in 2006 to an estimated 1.75 million tons in 2016. The fast-growing foreign trade has also boosted traffic on the project road, which has grown at an average of 14% per year, with light truck traffic growing 62% per year, and truck trailer traffic growing by 59% per year (Appendix 12). The light trucks were used mainly for local socioeconomic development activities in border areas, and the truck trailers mainly consisted of cross-border traffic between Bishkek and Kashgar (PRC).

7. **Local traffic development.** Traffic surveys were conducted in 2011, 2013, and 2016 at four locations along the Bishkek–Torugart road corridor, including at Naryn (km 348), At-Bashy (km 351), the At-Bashi river bridge (km 399), and Kara-Bulun village (km 420). At At-Bashy road, the actual average daily traffic was 268 in 2011, 968 in 2013, and 1,301 in 2016. Of the actual traffic in 2016, cars accounted for about 61.8% and heavy trucks about 9.8% (mainly cross-border traffic). Bus services have also increased with several At-Bashy–Bishkek buses per day, shuttles going through villages to At-Bashy and to Naryn, and a Bishkek–Kashgar bus service (two times per week in winter and three times per week in summer). In addition, dedicated tour buses travel to Tash Rabat, an archaeological monument from the 10th century located about 15 km from km 450, while Silk Road tours travel between Bishkek and Kashgar. These growing services are clearly a result of the improved connectivity along the road corridor.

8. **Social services.** Implementation of the project and traffic development has also promoted the social services in the project area. As expected, trade activity has increased in amount and variety in the larger villages and the administrative center. In the At-Bashy Rayon, 2 hospitals and 11 first aid stations provide major medical care. In 2016 there were 21 schools in the project area with a pupil–teacher ratio of 9.7. All villages have elementary schools; if a village lacks a secondary school or health facilities students and residents travel to other villages along the road alignment. The overall attendance rate for students increased to 98% in 2016, from 93% in 2010. Higher education (e.g., universities and technical colleges) are largely only available in Bishkek and other areas outside of project impact area. The proportion of children enrolled in kindergarten increased by about 50% from 2010 to 2016. There have been no reports of human trafficking or the use of child labor during project implementation. Importantly, the construction contractor was familiar with the awareness and practices needed associated with combating HIV/AIDS and implemented an appropriate program. In addition, local health officials in the rayon and oblast have carried out a community awareness and prevention program that utilizes best practices. However, there were new HIV cases reported in At-Bashy Rayon in 2008 (1), 2010 (1), and 2011 (1), 2013 (3) and 2014 (3), and 2015 (5).

9. **Women and children.** Females accounted for 50.1% of the population in the At-Bashy Rayon in 2015. There were 10,014 students enrolled in school (4,051 students in classes 1–4, 4,617 in classes 5–9, and 1,346 in classes 10–11) as of January 2016, representing 98% of all school-age children. Implementation of the road project did not have adverse impacts on women and children. The project has improved access to social services, markets and goods, and this has benefited the entire At-Bashy population, including women and children. At the peak of construction in 2015, there were 35 females employed by the construction contractor, including 21 that were local. As noted, income earning opportunities and rising incomes are benefiting all people, including women and the poor.

10. **Road safety and environmental impacts.** In the At-Bashy Rayon, there were 9 traffic accidents in 2008, 5 in 2010, 15 in 2011, 22 in 2012, 18 in 2013, 22 in 2014, and 29 in 2015.¹ The 2015 accidents resulted in 7 deaths, with 29 people injured. Traffic signage and concrete barriers on roadsides on curves and elevated areas are important safety features. In addition, bridges and general visibility along the route have been improved. Safety remains an issue as vehicle speeds and traffic density have increased. There were no significant adverse environmental impacts during project implementation. The main issues arising during construction—including dust and site restoration—were assessed, and mitigations measures

¹ None of the traffic accidents were happened on the project road section.

were identified and implemented. The camp and manufacturing areas were demobilized and returned to their pre-project condition. A project specific spill control system was designed and constructed within the Karatal-Japaryk State Nature Reserve protected area adjacent to the alignment to trap any accidental spills and prevent them reaching the Chatyr-Kul Lake. In addition, spill control equipment was handed over and training of the local road maintenance unit personnel carried out. To improve the management capacity of the Karatal-Japaryk State Nature Reserve, training in monitoring and management was carried out and equipment provided, including a four-wheel drive vehicle, boat, mobile accommodation (trailer), water quality monitoring equipment, camera traps, and laptops and printers.

CONTRIBUTION TO ADB RESULTS FRAMEWORK

No.	Level 2 Result Framework Indicator	Target	Revised Target	Aggregate Output	Methods/Comments
<i>Transport</i>					
1	Use of roads built or upgraded (average daily vehicle-km in the first full year of operation)	11,122 vehicle-km in 2016		Average daily traffic was 7,800 vehicle-km in 2016	At appraisal for the additional financing, the target was “Average daily traffic crossing the border at Torugart increased to 310 (2010 baseline: 100)”. The traffic survey in 2016 shows that the actual traffic averaged 130 vehicles per day in 2016.
2	Roads built or upgraded—expressways and national highways (km)	60 km of the two-lane Bishkek–Torugart road (km 479–539)		60.033 km of road (km 478.580–538.613) along the Bishkek–Torugart road corridor was improved.	The improvement included subgrade enforcement, surface repaving, construction of bridges and culverts and drainage system, and installation of road safety facilities (traffic signs and road markings). The road section was designed to national Category III road standards with two lanes (carriage width of 7.0 meters) and a shoulder (width of 2 meters) on each side. The design speed is 90 km per hour.
<i>Regional Cooperation and Integration</i>					
1	Cross-border cargo volume facilitated (tons per year)	(no target was provided)		About 0.6 million tons in 2016	The traffic surveys show that there were an average of 82 truck trailers per day in 2016, which were mainly cross-border traffic with cargo. The cargos were mainly from the People's Republic of China. About half of trucks were loaded. The average load was 40 tons per truck. Total tonnage was calculated at 0.6 million tons in 2016.

ADB = Asian Development Bank, km = kilometer

Source: Asian Development Bank project completion review mission