

**ASIAN DEVELOPMENT BANK**

**RRP:KAZ 29568  
KGZ 32463**

**REPORT AND RECOMMENDATION  
OF THE  
PRESIDENT  
TO THE  
BOARD OF DIRECTORS  
ON  
PROPOSED LOANS AND  
TECHNICAL ASSISTANCE GRANTS  
TO THE  
REPUBLIC OF KAZAKHSTAN  
AND TO THE  
KYRGYZ REPUBLIC  
FOR THE  
ALMATY-BISHKEK REGIONAL ROAD REHABILITATION PROJECT**

**October 2000**

## **CURRENCY EQUIVALENTS**

(as of 31 August 2000)

### **KAZAKHSTAN**

Currency Unit	–	Tenge (T)
T1.00	=	\$0.0070
\$1.00	=	T142.40

### **THE KYRGYZ REPUBLIC**

Currency Unit	–	Som
Som1.00	=	\$0.0208
\$1.00	=	Som47.99

## **ABBREVIATIONS**

AADT	–	average annual daily traffic
ACCS	–	Automated Customs Clearance System
ADB	–	Asian Development Bank
CAR	–	Central Asian Republic
CBA	–	Cross-Border Agreement
CRRT	–	Committee of Road and Road Transport
DEB	–	Department of Ecology and Bioresources
EBRD	–	European Bank for Reconstruction and Development
ECO	–	Economic Cooperation Organization
EIRR	–	economic internal rate of return
EU	–	European Union
FSU	–	former Soviet Union
GDP	–	gross domestic product
HDM	–	Highway Design and Maintenance Model
IDB	–	Islamic Development Bank
IEE	–	initial environmental examination
IMF	–	International Monetary Fund
ISA	–	initial social assessment
JBIC	–	Japan Bank for International Cooperation
KAZDOR	–	Kazakh Department of Roads
KAZMOTC	–	Kazakh Ministry of Transport and Communications
KGZDOR	–	Kyrgyz Department of Roads
KGZMOTC	–	Kyrgyz Ministry of Transport and Communications
LMU	–	local maintenance unit
MEB	–	Ministry of Ecology and Bioresources

## **NOTES**

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

MSU	–	maintenance supervision unit
NRSC	–	national road safety council
PIA	–	project influence area
PIU	–	project implementation unit
PRC	–	People's Republic of China
PSC	–	project steering committee
RMTD	–	Roads and Marine Transport Department
RSA	–	Road Safety Act
RSPS	–	Road Sector Policy Statement
SIEE	–	summary initial environmental examination
SOE	–	statement of expenditures
SSIA	–	summary social impact assessment
TA	–	technical assistance
TIR	–	Transport International Routier
TRACECA	–	Transport Corridor Europe Caucasus Asia
VOC	–	vehicle operating cost
UNCTAD	–	United Nations Conference on Trade and Development

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## **LOAN AND PROJECT SUMMARY**

<b>Borrowers</b>	The Republic of Kazakhstan and the Kyrgyz Republic
<b>Project Description</b>	<p>The Project is designed to foster regional economic cooperation in Central Asia through the development of an efficient and safe road transport link for movement of people, goods, and vehicles between Almaty and Bishkek and across the Kazakh/Kyrgyz (Akzhol-Chu) border at Georgievka. The Project will assist the Governments of Kazakhstan and the Kyrgyz Republic in rehabilitating the Almaty-Bishkek road, removing physical and nonphysical cross-border barriers, improving coordination and management of road safety, and introducing a road maintenance system by contract.</p>
<b>Classification</b>	Economic growth
<b>Environmental Assessment</b>	Category B. An initial environmental examination (IEE) was undertaken, and the summary IEE is a core appendix.
<b>Rationale</b>	<p>Regional cooperation among the countries of Central Asia is required to develop their economies. The transport sector contributes substantially toward this end through the development of adequate transport infrastructure that allows new markets to be opened up, and through the emergence of efficient transport modes that facilitate the restructuring of trade and industry and expanding the scope for international trade in goods and services. Cross-border cooperation improves the efficiency of road transport. Safer and better-maintained roads reduce road accidents and travel costs. The Almaty-Bishkek road is at a cross-link between the road corridors that connect the Far East with Europe and Fergana Valley with Russia. Its rehabilitation, combined with removal of the physical and nonphysical barriers impeding cross-border transport, complements earlier assistance by the Asian Development Bank (ADB) in Kazakhstan, the Kyrgyz Republic, and Uzbekistan to create an improved regional road network and will contribute to regional economic cooperation. The Project has been given high priority by the Governments of Kazakhstan and the Kyrgyz Republic.</p>
<b>Objective and Scope:</b>	<p>The objective of the Project is to improve the efficiency and safety of the principal subregional road transport link between Almaty and Bishkek by rehabilitating road infrastructure, modernizing border control policies and procedures, upgrading cross-border facilities, improving the coordination and management of road safety, and introducing an efficient road maintenance system. The</p>

Project comprises (i) rehabilitation of about 245 kilometers (km) of the Almaty-Bishkek road (about 204 km in Kazakhstan, and 41 km in the Kyrgyz Republic), including consulting services for design and construction supervision; (ii) improvement of customs facilities at the Akzhol-Chu border; and (iii) road maintenance equipment for Kazakhstan.

### Cost Estimates

The total Project cost is estimated at \$119.1 million. The Kazakh component is estimated to cost \$112.4 million equivalent (foreign exchange cost \$58.9 million; local currency cost \$53.5 million equivalent), and the Kyrgyz component \$6.7 million equivalent (foreign exchange cost \$3.7 million; local currency cost \$3.0 million equivalent).

### Financing Plan

				\$ million
Source	Foreign Exchange	Local Currency	Total Cost	Percent
<b>Kazakh Component</b>				
ADB	46.0	19.0	65.0	57.8
EBRD	12.5	12.5	25.0	22.2
TRACECA	0.4	-	0.4	0.4
Government	-	22.0	22.0	19.6
<b>Total</b>	<b>58.9</b>	<b>53.5</b>	<b>112.4</b>	<b>100.0</b>
<b>Kyrgyz Component</b>				
ADB	3.3	1.7	5.0	74.6
TRACECA	0.4	-	0.4	6.0
Government	-	1.3	1.3	19.4
<b>Total</b>	<b>3.7</b>	<b>3.0</b>	<b>6.7</b>	<b>100.0</b>

ADB = Asian Development Bank, EBRD = European Bank for Reconstruction and Development, TRACECA = Transport Corridor Europe Caucasus Asia of the European Union.

### Loan Amounts and Terms

**Kazakh Component.** A \$65 million loan from ADB's ordinary capital resources will be provided. The loan will have an interest determined in accordance with ADB's pool-based variable lending rate system for US dollar loans, and an amortization period of 24 years including a grace period of 4 years, an annual commitment charge of 0.75 percent, and a front-end fee of 1 percent of the loan amount.

**Kyrgyz Component.** The loan in various currencies equivalent to Special Drawing Rights 3.832 million (\$5 million equivalent) from ADB's Special Funds resources with 1 percent interest charge during the grace period and 1.5 percent during the amortization period and with an

amortization period of 32 years, including a grace period of 8 years.

**Period of Utilization**

Kazakh Component: Until 30 June 2005

Kyrgyz Component: Until 30 June 2004

**Implementation Arrangements**

The project steering committees established for the ongoing ADB-financed projects in the two countries will also oversee the implementation of the proposed Project. For the Kazakh component, a project implementation unit (PIU) and a maintenance supervision unit will be established for day-to-day implementation activities. The Kyrgyz component will be handled by the PIU established under ADB's ongoing projects.

**Executing Agencies**

The Kazakh Ministry of Transport and Communications (KAZMOTC) for the Kazakh component and the Kyrgyz Ministry of Transport and Communications (KGZMOTC) for the Kyrgyz component.

**Procurement**

All procurement to be financed under the ADB loans will be carried out in accordance with ADB's *Guidelines for Procurement*. Civil works and equipment for the Kazakh component will be procured on an international competitive bidding basis, and those for the smaller Kyrgyz component on a local competitive bidding basis. Procurement for the European Bank for Reconstruction and Development (EBRD) contracts will follow EBRD's guidelines.

**Consulting Services**

Consulting services for design and construction supervision will be about 90 person-months international and 252 domestic for the Kazakh component, and 20 person-months international and 30 domestic for the Kyrgyz component. All consultants will be financed from the ADB loans and selected and engaged in accordance with ADB's *Guidelines on the Use of Consultants*.

**Estimated Project Completion Date**

Kazakh Component: 31 December 2004

Kyrgyz Component: 31 December 2003

**Project Benefits and Beneficiaries**

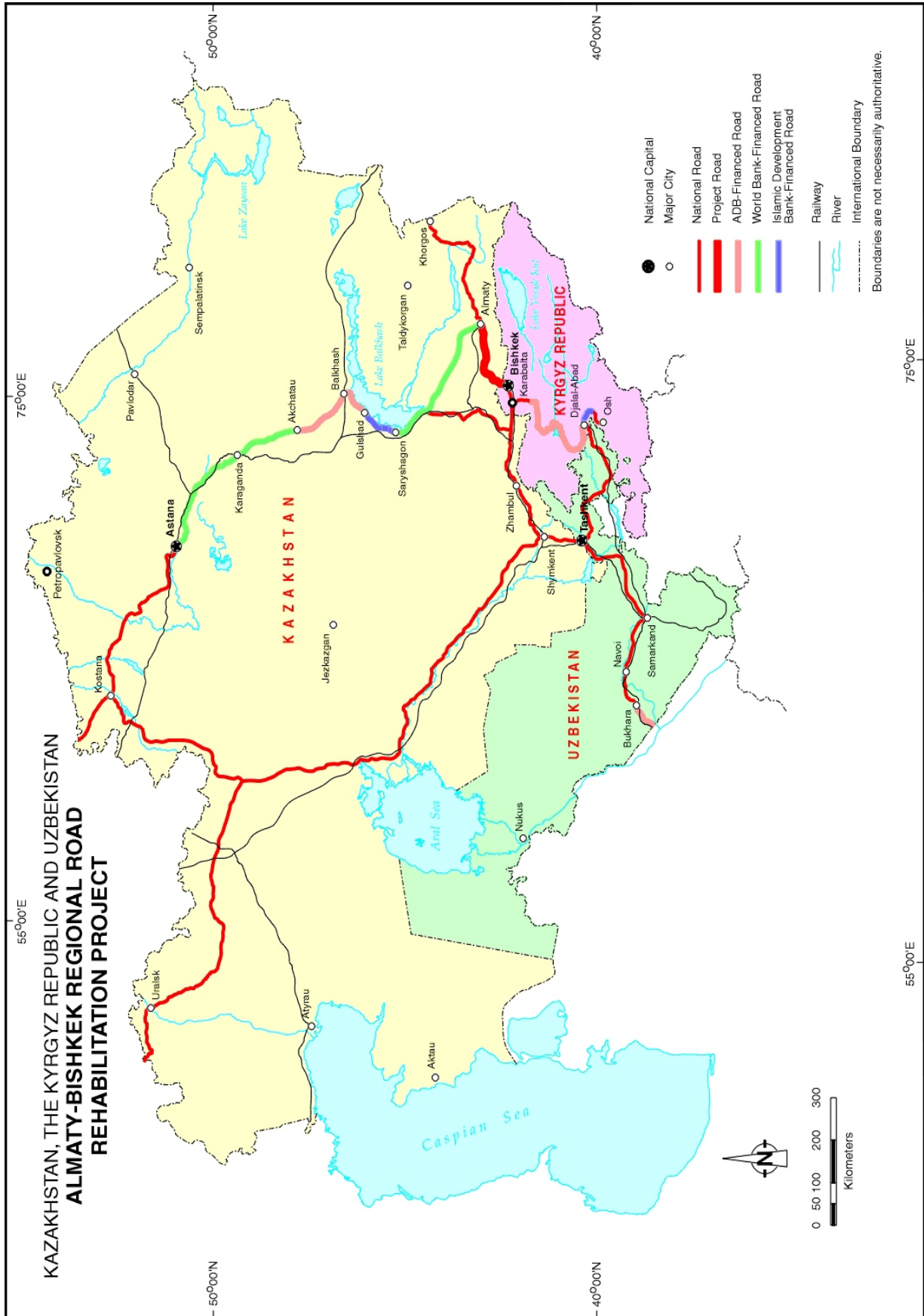
Efficient transport and cross-border services on the Almaty-Bishkek road will benefit the regional and international freight and passenger traffic, facilitate regional economic cooperation, and serve as an example of harmonizing and coordinating road transport and customs policies, regulations, and procedures. The economic internal rate of return of the Project is estimated at about 28.0 percent (including subregional and regional benefits). The Project will contribute to poverty reduction

through engagement of up to 300 local workers during the construction season in two of the poorest regions of Kazakhstan and the rural areas of Chui region in the Kyrgyz Republic. After the construction, maintenance by contract will generate job opportunities for about 160 local road engineers and workers.

**Technical Assistance**

Two advisory technical assistance grants, \$750,000 for Kazakhstan and \$440,000 for the Kyrgyz Republic, will help the governments implement the provisions of the Cross-Border Agreement, improve coordination and management of road safety, and provide support to KAZMOTC. The grants will be provided from the Japan Special Fund, funded by the Government of Japan. The advisory support to KGZMOTC will comprise streamlining functions and responsibilities, defining roles and sector objectives, and preparing the three-year national transport investment plan.





## I. THE PROPOSAL

1. I submit for your approval the following Report and Recommendation on the proposed loans to the Republic of Kazakhstan and the Kyrgyz Republic for the Almaty-Bishkek Regional Road Rehabilitation Project. The Report also describes proposed technical assistance (TA) for Improvement of the Road Sector Efficiency in each of Kazakhstan and the Kyrgyz Republic, and if the proposed loans are approved by the Board, I, acting under the authority delegated to me by the Board, shall approve the technical assistance for Kazakhstan and the Kyrgyz Republic.

## II. INTRODUCTION

2. Regional cooperation among the countries of Central Asia is required to develop their economies. The transport sector contributes substantially toward that end through the development of adequate transport infrastructure that allows new markets to be opened up.<sup>1</sup> The emergence of cost-effective and competitive transport modes facilitates the restructuring of trade and industry and expands the scope of international trade in goods and services. Streamlined transport logistics aimed at overcoming physical and nonphysical cross-border barriers have a major impact on the scope for international trade in goods and services. Physical barriers include poor road infrastructure, inadequate control points, and different axle load limits. Nonphysical barriers comprise excessive taxes and fees, inconsistent transport and customs documentation, and attitudinal problems of and unauthorized payments to border staff.

3. For road transport to contribute toward regional cooperation in addition to reducing road accidents and travel cost, an efficient road transport system and effective cross-border cooperation are essential. The proposed Project aims to improve the efficiency of transport on the Almaty-Bishkek road, one of the most important road links in the Central Asian region (Appendix 1). The Project is expected to contribute substantially to enhancing regional economic cooperation, initially between Kazakhstan and the Kyrgyz Republic, and in the longer term among all Central Asian Republics (CARs), as about 25 percent of the freight traffic on the road is international. The Project is timely in introducing the concept of cross-border modernization and cooperation, given the difficulties the CARs are facing in adjusting their administrative arrangements and regulations to overcome the impact of the Russian economic crisis.

4. The Asian Development Bank (ADB) has been supporting regional economic cooperation in the CARs and, since early 1997, has provided a number of TAs for this purpose (Appendix 2). The initiatives in the transport sector include coordination of sector reforms through country-specific projects, development of road standards, and preparation of road safety guidelines.

5. Feasibility studies for the Kazakh section of the Project were prepared by the consultants engaged under ADB's project preparatory TA<sup>2</sup> and those for the Kyrgyz section by the project supervision consultants engaged under the ongoing first ADB-financed project.<sup>3</sup> The feasibility studies were completed in April 1998 and May 1998, respectively. Fact-finding was undertaken in March 1999 to discuss key policy issues concerning cross-border cooperation, road safety, and road maintenance, and to review the preparatory work. An Appraisal Mission

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<sup>1</sup> The value addition by transport is estimated to account for 3-5 percent of the gross domestic product (GDP), The World Bank, Transport website.

<sup>2</sup> TA 2632-KAZ: *Feasibility Study of Selected Priority Road Sections*, for \$250,000, approved on 27 August 1996.

<sup>3</sup> Loan 1444-KGZ: *Road Rehabilitation Project*, for \$50 million, approved on 13 June 1996.

visited Kazakhstan and the Kyrgyz Republic from 14 June to 2 July 1999.<sup>4</sup> The Mission held discussions on issues concerning subregional transport cooperation and associated policy and institutional reforms with officials of the concerned Government entities, and representatives of transport organizations and external agencies active in the transport sector. This report is based on the findings of the feasibility studies and ADB missions, discussions with Government officials and road sector representatives, and various reports and data provided by the two Governments. Joint loan negotiations with the authorized representatives of the Governments were conducted in Manila from 4 to 7 September 2000.<sup>5</sup> If approved, the proposed loans will be ADB's second and third to the transport sectors of Kazakhstan and the Kyrgyz Republic, respectively.

### **III. BACKGROUND**

#### **A. Transport Infrastructure in the Central Asian Republics**

6. The existing transport infrastructure in the CARs, inherited from the former Soviet Union (FSU), was developed as a regional network to serve the FSU's needs, without taking into consideration the administrative boundaries of the CARs and paying little attention to the regional economic cooperation outside of the Council for Mutual Economic Assistance countries. The network was primarily designed to serve intra-FSU traffic. This has created a number of difficulties after independence, as the CARs found themselves with fragmented transport networks that frequently cross and recross the borders of neighboring countries.

7. The transport system has to be made efficient, and trade and transport regulations harmonized, in view of the economic reforms and political realignment, emerging free trade areas, and custom unions. Part of the difficulties of the CARs in competing in the global markets is attributable to bottlenecks in the transport infrastructure that constrain growth, and to inefficient administrative arrangements and regulations that govern freight and passenger transport. The transport sector faces the challenge of balancing investments in rehabilitating the deteriorating assets to restore and preserve the integrity of past investments, and those in improving system capacity and efficiency, including new construction, to meet domestic, regional, and global needs.

#### **1. The Transport Sector in Kazakhstan**

##### **a. General**

8. The major characteristic of the transport sector in Kazakhstan is the high demand for transport services due to (i) Kazakhstan's vast territory and scattered population, natural resources, and activities; and (ii) the existing trade pattern resulting from (a) the FSU's specialized economy in which Kazakhstan's earlier role was to serve as the source of raw materials and intermediate products for the FSU, and (b) the underpricing of transport services during the FSU era. The transport demand has been falling drastically since the FSU's breakup and the start of economic restructuring in 1992. The 99.5 billion ton-kilometer (km) of freight in 1999 was only less than one quarter of the 1990 figure of 455.9 billion ton-km. In passenger

<sup>4</sup> The Mission comprised S. Tamang, Mission Leader, Senior Project Specialist; Y. Zhang, Special Advisor to General Counsel; J. C. Alexander, Senior Programs Officer; T. David Hodgkinson, Senior Cofinancing Officer; J. Miller, Project Economist; Lan Wu, Economist; and Ma. T. Zappia, Socioeconomic Specialist.

<sup>5</sup> The loan negotiations were delayed because of the need to resolve issues concerning transit traffic in the Cross-Border Agreement (footnote 28) and delayed approval of the Kazakhstan's Public Investment Program (para. 11).

traffic, the 68.5 billion passenger-km recorded in 1990 decreased by one quarter to 17.1 billion passenger-km in 1997 (Appendix 3). However, these dramatic decreases need to be put in the context of the somewhat artificial nature of the demand for transport in a centrally planned economy, where tariffs and fares were set without consideration of the cost of the services provided.

9. The transport sector in Kazakhstan comprises roads, railways, civil aviation, and inland waterways. The railway is the dominant mode, transporting coal for energy production and carrying over 90 percent of all freight in 1994-1999. The remainder of the freight is carried by road. As transport demand will become much more diversified, specific quality features such as speed, reliability, waiting time, minimization of losses and damages, and the ability to move small loads efficiently will become much more important than in the past. These features require flexible, cost-efficient transport services that are market responsive. Consequently, with the inherently greater suitability of road transport than railways for meeting the increased demand for specialized services, the share of roads in freight transport is expected to increase from the current 5 percent to about 30 percent<sup>6</sup>, provided the road and road transport sectors are able to meet the efficiency and effectiveness demanded by the market through infrastructure rehabilitation, policy reform, and capacity development. With regard to passenger traffic, railways accounted for about 52 percent of passenger-km, roads for 35 percent, and air for 12 percent in 1999. A shift is also expected from railways to roads in passenger transport as the condition of roads improve, private car ownership grows, and intercity bus services are privatized.

#### **b. Transport Planning and Investment**

10. The Kazakh Ministry of Transport and Communications (KAZMOTC) is responsible for all transport infrastructure—roads, railways, airports, ports and inland waterways—and for telecommunications and tourism activities. KAZMOTC is in charge of sector policy, regulation, planning, and development. It is guided by the Cabinet of Ministers, Ministry of Finance and Ministry of Economy, which are involved in developing the Government's overall reform program and prioritizing capital expenditures. KAZMOTC is divided into eight departments and is headed by the minister, who is assisted by three vice ministers (Appendix 4).

11. The 1999-2001 Public Investment Program approved by the Parliament in August 2000 provides a prioritized summary of Kazakhstan's investment program for foreign assistance. The rehabilitation of the Almaty-Karaganda-Astana and Almaty-Bishkek-Shymkent road corridors has been accorded high priority. Within these corridors, the Almaty-Bishkek road is the most important link in view of its subregional importance. Other important transport projects include reconstruction of the Aktau port, construction of the Astana airport, development of urban transport in Astana, and railway development.

12. In terms of gross domestic product (GDP), public investment in the road sector dropped from 1.2 percent in 1990 to 0.3 percent during 1994 and even less in 1995 and 1996. The current annual allocation of about 0.5 percent of GDP needs to be increased to about 2.0 - 2.5 percent to meet the rehabilitation and maintenance requirements and avoid major reconstruction costs in the near future.

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<sup>6</sup> The share of road freight volume in the People's Republic of China is about 25 percent of the total freight volume. It is about 55 percent in India and above 50 percent in most European countries, e.g., Poland: 50 percent and Bulgaria: 55 percent.

### **c. The Road and Road Transport Sector**

#### **i. The Road Network**

13. Although the road network in Kazakhstan provides adequate connections to all 19 regions, the condition of about 17,380 km of national (republican) roads is not satisfactory and is deteriorating further. While 93 percent of the national roads are paved, more than 11,000 km needs rehabilitation. The other roads are also in poor condition; they include provincial (regional) roads (70,461 km, with 57 percent paved), urban roads (22,600 km, with 65 percent paved), and rural (economic) roads (57,000 km, with 5 percent paved). While the geometric standards of the roads have generally been generous, the condition of the pavement is poor mainly because of sloppy construction, inadequate maintenance, and the increasing use of heavy long-distance trucks (more than 10 tons) whereas the roads were designed as per the FSU standards for a maximum permissible single-axle loads of only 6 tons.

#### **ii. Sector Management**

14. After independence, joint-stock holding companies, such as Kazakhstan Zoldhary, were formed to manage the Government's interest in the road sector. In early 1995, these companies were reorganized into the Kazakh Department of Roads (KAZDOR), State Road Authority, and 19 regional road authorities. Recently, the Government further restructured the road administration by converting KAZDOR into a policy-making department and renaming it as the Committee of Road and Road Transport (CRRT) and setting up a central implementation unit, Kazakhavtodor (Republican State Road Enterprise), and its regional affiliates through a merger of the State Road Authority and regional road authorities. The organizational structure of Kazakhavtodor is shown in Appendix 4. With the establishment of CRRT, the Board of Investment Projects and PIUs have been transferred to the Committee from Kazakhavtodor.

15. Kazakhavtodor is responsible for construction as a contractor. While periodic maintenance and rehabilitation works are carried out by CRRT through competitive tendering, routine maintenance is undertaken on a force account basis where maintenance by contract is not feasible. Although the current institutional setup rightly separates road administration from the implementation functions, much still needs to be done to develop the sector's capacity, particularly in terms of creating an enabling environment for private sector participation and building up private sector capability for road sector activities (para. 47).<sup>7</sup>

16. In addition to CRRT and Kazakhavtodor, the Roads and Marine Transport Department (RMTD) is responsible for formulating road transport policies, regulating and coordinating road transport operations, and licensing the operators. RMTD's objectives include improving service levels and road transport technology, facilitating the road transport sector's transition to a market economy, and reducing transport costs; however, weaknesses in the legal framework and its enforcement still inhibit efficient road transport operations. Recognizing this, the Government has embarked on improvement and development of laws and regulations pertinent to road transport and their enforcement with the help of the World Bank's *Road Transport Restructuring Project*.<sup>8</sup>

<sup>7</sup> Initially, execution of routine and winter maintenance of the Almaty-Karaganda road and, at a later date, that of the Karaganda-Astana road are expected to be contracted out by renting Government-owned equipment to private contractors.

<sup>8</sup> For \$100 million, approved in January 1999.

### iii. Traffic and Vehicle Fleet

17. Traffic on the roads of Kazakhstan is generally light. Very few roads have an average annual daily traffic (AADT) of more than 5,000. Traffic flows on the national roads are in the range of 1,000-1,500 AADT comprising about 50 percent trucks, 7 percent buses, and 43 percent cars. Car traffic is expected to increase with increasing private car ownership in a market-based economy.

18. The motorized fleet in 1999 consisted of 1,278,347 vehicles, of which 205,687 were trucks, 43,421 buses, 987,724 cars, and 41,515 special vehicles. The truck and bus fleets are still dominated by makes from the FSU. Some trucking companies have procured secondhand trucks of larger capacity and more modern design, mainly for use on transnational routes. A substantial number of cars, most of them secondhand, are being imported privately from West Europe, and the foreign models account for about 20 percent of the country's car fleet. Previously, most trucks and buses were operated by state organizations, but since the introduction of the privatization program and auctions, private ownership of all vehicles has reached 93 percent (98 percent for cars).

### iv. Road Transport Industry

19. Privatization of the road transport industry in Kazakhstan began in 1993, and most of the industry is now with the private sector. A two-stage process was followed to privatize the trucking enterprises: first, about 20 percent of the trucks were auctioned off through open auctions, then the rest of the enterprises were corporatized and sold through either a small-scale or a mass privatization program assisted by the United States Agency for International Development.<sup>9</sup> Small enterprises (less than 100 vehicles or 200 employees) were sold through public auction for cash under the small-scale program, while larger enterprises were sold through coupons to investment funds.

20. For passenger transport, RMTD bids out the transport rights. The profitable routes are allotted based on the highest route-license bid for a fixed period of time, normally between one and three years. For routes that currently cannot sustain fully commercial operations but where transport services are to be provided in the public interest, the route allocation is based on the lowest offered cost of operation. On routes that are not attractive to private operators, the buses owned by the Government or cooperatives and joint-stock companies provide services. RMTD's role is limited to setting the level of service and tariffs, licensing, and monitoring the provision to passengers of such services as booking and departure facilities and emergency vehicle replacement.

21. By 1999, about 88 percent of the 206,187 trucks and 43,421 buses were owned by the private sector. The rest were owned and operated by State-owned transport companies and foreign companies or foreign-assisted projects (Appendix 5). While progress in privatization looks significant, a competitive environment in the trucking industry is yet to be developed because the trucking enterprises sold to the investment funds maintain monopolies in many areas through either their regional location advantage or commodity-based operations. The more efficient companies are trying to expand and compete by introducing larger, modern, diesel-driven units in their fleet and scrapping the inefficient petrol-driven vehicles. However, the absence of credit facilities due to the fiscal crisis and lack of proper accounting and

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<sup>9</sup> The two projects were the Small-Scale Privatization and Enterprise Support Project (1993) and the Mass Privatization Project (1995).

management practices have constrained their expansion plans and the development of a competitive market.

22. The industry is also suffering because of a sharp fall in transport demand resulting in substantial underutilization of trucks. In 1998, trucks typically traveled 5,000 km/year or only 20 percent of the 1990 figure of 25,000 km/year, which is low, compared with a normal economic utilization of about 80,000-100,000 km/year. For buses, the average annual utilization in 1998 was about 60,000-70,000 km/year, below the normal economic utilization level of about 80,000 km/year.

## **v. Road Revenues and Expenditures**

23. Extreme shortage of funds for road maintenance and rehabilitation has been the main reason for the poor state of Kazakhstan's roads. While funding in the early 1990s had amounted to about 570 million rubles (\$350 million) annually,<sup>10</sup> the allocation in 1998 was only about \$130 million equivalent, against a requirement of about \$350 million equivalent for maintenance of the national and regional roads alone. The funding for roads is provided by the Road Fund established through Decree No. 2701 on 21 December 1995<sup>11</sup> and managed by the Ministry of Finance, and is supplemented from the Government budget since the Road Fund collection alone has not been adequate. The Road Fund has been streamlined with the implementation of the following short-term recommendations of an ADB-financed study:<sup>12</sup> (i) reducing the enterprise tax (the main source for the Road Fund, but not related to road users) from 0.5 percent of the turnover to 0.2 percent; and (ii) moving the point of collection of the fuel tax from the retail level to the refinery/import level. These measures were implemented through amendments to the Road Fund Act by the Parliament in May 1998. Collecting the fuel tax at the refinery/import level increased the Road Fund collection for July-December 1998 to T2.3 billion, compared with T240 million during the previous six months. Despite its severe fiscal constraints, the Government is committed to (i) a provision of annual funding for maintenance and rehabilitation of national roads amounting to about \$125 million in 2000, and \$150 million in 2001 and thereafter; and (ii) a further review of road user charges and gradual increase of such charges for trucks and buses to allow 75 percent cost recovery by September 2000 and 100 percent cost recovery by September 2002.<sup>13</sup>

## **2. The Transport Sector in the Kyrgyz Republic**

### **a. General**

24. In the Kyrgyz Republic, road transport dominates the transport sector in providing services to the country's remote areas. The railways consist of two separate branch lines that link the north of the country to the Kazakh rail system, and the south of the country to the Uzbek system, with no direct connection between the two links<sup>14</sup> (see Map). In 1999, road transport accounted for about three fourths of freight traffic and almost the entire passenger traffic. Railways carry the rest of the freight traffic. Rail passenger traffic is not significant, accounting

<sup>10</sup> \$1 = 0.59 ruble in mid-1990.

<sup>11</sup> Initially, the Road Fund was sourced through (i) 0.5 percent tax on the revenues of all enterprises, (ii) a tax of T3.0 per liter on gasoline and diesel, and (iii) taxes on heavy vehicles (more than 10 tons) and international freight traffic (rates determined on case-to-case basis).

<sup>12</sup> TA 2631-KAZ: *Institutional Strengthening of the Road Sector*, for \$750,000, approved on 27 August 1996.

<sup>13</sup> Covenanted under the World Bank's *Road Transport Restructuring Project* (para. 16).

<sup>14</sup> The railway link between Bishkek and Osh is a low-priority project, given the country's other more urgent needs and the project's high cost (about \$600 million).

for less than 1 percent of passenger movements, mainly on the Bishkek-Osh route (Appendix 6). There is no water transport except for a few small vessels on Lake Yssyk-Kul.

25. The transport demand reached its lowest level in 1995 as a result of the disruption of the customary trading patterns of the FSU era. In terms of ton-km, the freight decreased to 14 percent of the 1990 level, and passenger movements to 33 percent. The end of the economic contraction in 1995 resulted in a GDP growth of 9.9 percent in 1997. As a result, the demand for freight and passenger transport in 1997 increased to 21 percent and 40 percent, respectively, of the 1990 level. However, GDP growth slowed down in 1998 because of (i) the impact of the economic crisis in Russia, (ii) damage to the infrastructure caused by a Fergana Valley flood, and (iii) a substantial reduction in tourism revenue caused by adverse publicity concerning the cyanide spillover in Lake Yssyk-Kul. Accordingly, the transport demand for freight has decreased in 1998 and 1999. Since most of the roads were designed for higher traffic capacities and are underutilized, the existing basic transport infrastructure is adequate for the current level of economic activity. The primary concern, therefore, is proper maintenance and rehabilitation of the deteriorating infrastructure to preserve the previous investment, rather than expansion or major upgrading of the transport system.

#### **b. Transport Planning, Coordination, and Investment**

26. The Kyrgyz Ministry of Transport and Communications (KGZMOTC) is responsible for policy, regulation, planning, and development of the transport and communications sectors in the Kyrgyz Republic. KGZMOTC currently performs its functions through 12 departments but is being restructured to 5 departments under the ongoing ADB-financed project<sup>15</sup> (Appendix 7). In addition to reducing the number of departments, the restructuring includes (i) divesting the responsibility for direct operation of the transportation systems through a program of privatization, and (ii) transferring all responsibilities relating to the road sector from the Vehicle Inspection Department of the Ministry of Internal Affairs and from the Ministry of Architecture and Construction<sup>16</sup> to KGZMOTC through the implementation of the Automobile Roads Act of May 1998. KGZMOTC also coordinates the activities of 10 agencies, which are at various stages of corporatization and privatization.

27. As in Kazakhstan, the 1998-2000 Public Investment Program prepared by the Ministry of Finance provides a prioritized summary of the country's investment program for foreign assistance. It gives high priority to infrastructure improvements, including rehabilitation of the Bishkek-Osh road, redevelopment of the Manas international airport, modernization of the telecommunications network, and upgrading and extension of the power transmission network. The public investment in the transport sector dropped significantly since 1990 from about 2 percent of GDP to near zero during 1995. As a result of such underinvestment, transport infrastructure has deteriorated to a point where major reconstruction will be required unless adequate funds are allocated for adequate maintenance. Transport investment needs a substantial increase to the level of about 4 percent of GDP to avoid major reconstruction in the future. The 1998 and 1999 expenditures in the transport sector were respectively Som751 million (2.2 percent of GDP), and Som800 million (2.3 percent of GDP), of which Som273 million was for roads.

<sup>15</sup> Loan 1630-KGZ(SF): *Second Road Rehabilitation Project*, for \$50 million, approved on 10 September 1998.

<sup>16</sup> The Vehicle Inspection Department within the Ministry of Internal Affairs is responsible for road surveys and inspection, traffic management and control, and road safety functions including vehicle registration and inspection. The Ministry of Architecture and Construction is responsible for developing road design and construction standards.



### **c. The Road and Road Transport Sector**

#### **i. The Road Network**

28. The 18,876 km of roads under KGZMOTC and about 15,000 km of rural and farm roads outside its jurisdiction provide road network links to all six regions and communities. The KGZMOTC roads comprise 9,803 km of State roads and 9,073 km of local roads. About 40 percent of the State roads are sealed, some with gravel mixed with bitumen binder. Over 50 percent is gravel roads, and less than 10 percent earth roads. About 60 percent of the KGZMOTC roads currently require periodic maintenance or rehabilitation. The situation is expected to gradually improve as the road maintenance capacity develops and more money becomes available through the Road Fund. Most of the rural and farm roads were formerly the responsibility of the State and collective farms. The responsibility for their maintenance is now with the local district administrations following the gradual breakup of the State and collective farming system.

#### **ii. Sector Management**

29. The main responsibility for planning and administering road sector policies, programs, and projects is entrusted to KGZMOTC by the Automobile Roads Act. The Kyrgyz Department of Roads (KGZDOR) under KGZMOTC is responsible for management of the road sector and carries out maintenance of roads through its six regional road maintenance agencies, which control the operations undertaken by 38 local maintenance units (LMUs) for State roads. Similarly, 33 LMUs exist for maintenance of local roads. In 1998, the Directorate General for Rehabilitation and Maintenance of the Bishkek-Osh Road, established through Decree No. 45 of 4 March 1996 under the Office of the Prime Minister, was integrated into KGZDOR. The management of the road sector will be streamlined after proper structure, systems, and procedures have been established in KGZDOR under the ongoing ADB-financed projects and when the road-related functions are transferred from the Ministry of Architecture and Construction and Vehicle Inspection Department of the Ministry of Internal Affairs.

30. Other important agencies in the road sector include (i) a joint-stock holding company, designated as Kyrgyzjoldoru (Kyrgyz Roads), which acts as an umbrella organization for 52 privatized road construction entities; (ii) KyrgyzIntrans, a holding agency for six freight transport companies and forwarding agencies engaged mainly in international trade; and (iii) technical agencies in various stages of divestment from KGZMOTC's control, including the Road Design Institute (Kyrgyzdortranproect), a small agency responsible for developing and testing new road construction techniques and equipment (Kyrgyzztranstekhnika), and a privatized training agency for equipment operators.

31. The Government's aim is to improve the efficiency of the road sector by commercializing and privatizing those construction and maintenance operations that are essentially commercial in nature. Where implementation with the help of private contractors is not feasible, particularly for maintenance of roads in remote areas, the LMUs will carry out the maintenance works using equipment owned by KGZMOTC.

#### **iii. Traffic and Vehicle Fleet**

32. The AADT on one of the busy main roads in the vicinity of Bishkek typically is about 13,200 vehicles. Traffic on the Bishkek-Osh road away from the large towns varies between 600

and 900 AADT, with large trucks accounting for more than 50 percent. The current traffic levels are generally well below the design capacities of the roads. Seasonal variations, reflecting changes in transport demand and weather-related constraints, are significant on roads crossing the central mountainous areas of the Kyrgyz Republic. Considering the need to preserve the integrity of the past investments, the Government is giving high priority to rehabilitation and proper maintenance of the existing road networks.

33. The country's 1999 vehicle fleet comprised 44,300 trucks, 11,500 buses, and 178,500 cars. About 95 percent of the cars are privately owned. Previously, most trucks and buses were owned and operated by State organizations. Following the privatization program and auctions, 26 percent of the trucks and 23 percent of the buses are now owned by individuals. The balance are owned and operated by transport companies. The majority of the fleet is still made up of vehicles manufactured in the FSU. A few modern buses have been procured under bilateral arrangements and assigned to selected bus companies. Some trucking companies have procured secondhand trucks of larger capacity and more modern design, mainly for use on transnational routes. A significant number of cars, most of them secondhand, are being imported privately from West Europe.

34. While the number of cars has fallen marginally because of the reduction in cars owned by Government departments and the contraction of the economy, the number of trucks has increased slightly since 1990 and the number of buses has been stable. The fleet, however, is aging, since few companies have been in a position to buy modern vehicles. In 1999, more than 70 percent of the truck fleet was between 7 and 12 years old and over half was with capacities of less than 7 tons. Only about 5 percent of the fleet had a capacity of 15 tons or more.

#### **iv. Road Transport Industry**

35. The Kyrgyz Auto Transport, a joint-stock holding company controlling transport companies, was abolished by Decree No. 61 in 1994 when the Department of Transport was established within KGZMOTC. As a result of the restructuring, there are currently 89 transport companies operating trucks and buses. All of them have been privatized except for urban bus enterprises in major cities and some enterprises connected with State security.

36. As a result of measures that the Government introduced in 1994 to increase competition, the national and provincial holding companies and associations (which had continued to exercise control over the operations of individual transport companies) were abolished and the Government's shareholding in companies reduced through the auction of surplus vehicles and assets to private bidders. While the privatized transport companies have financial autonomy, the privatization is far from success. At the present levels of demand resulting in low utilization of trucks (comparable with Kazakhstan, para. 22), few companies are commercially profitable. Most companies cover only their short-term operating costs and do not provide for depreciation and fleet replacement. Some companies supplement their income from the sale of older vehicles, while others lay off staff or rent vehicles to their drivers on a monthly basis for some business. Few appear to have access to conventional credit arrangements and knowledge of commercial business practices to sustain their businesses.

37. Freight transport customers are free to negotiate conditions in terms of price and quality of service directly with the operators. The role of the Department of Transport is limited to monitoring and regulating, including licensing, inspection, and safety audit. Freight forwarders are encouraged to negotiate and arrange intermodal transport services, thus facilitating door-to-door transport arrangements, and to offer services directly themselves. For passenger transport,

the route allocation mostly is on the basis of the lowest offered cost of operation since most of the routes are currently not commercially viable for route-license bidding.

#### **v. Road Revenues and Expenditures**

38. The Government expenditure in the road sector, funded by allocations from the State budget, is inadequate. Against an annual requirement for rehabilitation and maintenance of roads estimated at about Som1 billion, the amount actually made available in 1998 was only Som270 million, including disbursements from the ADB-financed Road Rehabilitation Project (footnote 3). Considering the severe funding constraints and following the recommendations of the ADB-financed study to improve road sector revenues to maintain and operate the road network,<sup>17</sup> the Government established the Road Fund by enacting the Road Fund Act on 1 June 1998.<sup>18</sup> The Road Fund is based on the road-user principle, removing the earlier system of collecting taxes for road works that were in no way related to the use of the roads.<sup>19</sup> The Road Fund is expected to cover the funding for the implementation of maintenance by contract, in case of a shortfall, the Government will make additional funds available from the budget.<sup>20</sup>

### **B. Government Policies and Plans**

#### **1. Kazakhstan**

39. The Government's overall strategic objectives for the transport sector are (i) ensuring the provision and maintenance of adequate transport infrastructure to support the transition to a market-based economy, (ii) promoting competition while addressing safety and environmental concerns, and (iii) increasing cost recovery. These objectives are pursued by (i) increasing the financial provisions for rehabilitation and maintenance of the road network; (ii) privatizing road transport operations and dismantling licensing controls that hinder competition; (iii) promoting, in collaboration with neighboring countries, the most efficient means of transport for large loads over long distances; (iv) privatizing inland waterway transport; (v) improving the civil aviation infrastructure and supporting services that encourage operations by foreign and local airlines; and (vi) increasing sector revenues through appropriate pricing and taxation.

40. The Government's strategy for poverty reduction includes reforms in the overall social assistance and pension systems, the development of labor market programs, and the creation of employment opportunities. Transport sector investments, such as road rehabilitation, enhance the possibilities for labor force participation (for both skilled and unskilled jobs) by the unemployed population during the construction and maintenance phases. The Government strategy includes labor-intensive methods of construction at places where they are feasible. The scope for the development of small individual businesses and enterprises, especially in the rural areas, is enhanced by accessibility as the demand for additional goods and services increases.

<sup>17</sup> TA 2587-KGZ: *Institutional Strengthening of the Road Sector*, for \$800,000, approved on 13 June 1996.

<sup>18</sup> The main sources of the Road Fund include 50 percent of the excise tax (\$45 per ton on gasoline and \$25 per ton on diesel), annual road user charges (vehicle tax depending on the size of the vehicle), vehicle registration charges, and budgetary allocations.

<sup>19</sup> The main source was 0.8 percent tax on the gross revenue of all enterprises, excluding road transport enterprises, which paid a 2 percent tax on gross revenue.

<sup>20</sup> Covenanted under Loan 1630-KGZ(SF) (footnote 15).

## 2. The Kyrgyz Republic

41. The Government's transport sector strategy and plans are included in the Public Investment Program prepared by the Ministry of Finance as well as in the Transport and Road Sector Policy Statement issued by KGZMOTC on 15 October 1997.<sup>21</sup> As in Kazakhstan, the Government's overall strategic objectives for the transport sector are (i) adequately maintaining transport infrastructure to support reform of the economy; (ii) privatizing transport operations and promoting competition among operators, while addressing safety and environmental concerns; and (iii) increasing cost recovery from users of the transport infrastructure. The measures to achieve these objectives include (i) increasing the financial provision for rehabilitation and maintenance of the road network; (ii) consolidating road sector responsibilities under KGZMOTC; (iii) promoting private sector participation in road maintenance; (iv) completing the privatization of road transport operations and dismantling the licensing controls, which hinder competition; (v) promoting, in collaboration with the neighboring countries, rail transport as the most efficient means of transporting bulk loads over long distances; (vi) privatizing lake shipping services; (vii) promoting the civil aviation infrastructure and supporting services that encourage foreign and local airline operations; and (viii) increasing sector revenues through appropriate pricing and taxation.

42. The Government declared 1998 as the year of poverty reduction, and initiated the formulation of a national poverty reduction strategy (Araket). The Araket program entails a number of measures to strengthen the national labor market, reduce unemployment, support employment creation activities, and provide microcredit schemes. In this regard, the Government is taking measures to attract significant investments in the national economy to create additional job opportunities. Ongoing transport projects in the country (e.g., ADB-financed road rehabilitation projects) have helped generate employment for poor people both in the construction and maintenance works.

### C. External Assistance to the Sectors

43. During the FSU era, no external assistance was provided to the road sector and road networks were built by mobilizing the country's resources with limited economic and cost recovery considerations. Since independence in 1991, both Kazakhstan and the Kyrgyz Republic have been actively mobilizing external assistance and have benefited from a number of country-specific as well as regional projects. The latter have included several regional TAs from ADB,<sup>22</sup> as well as TAs provided by the European Union (EU) to eight FSU countries, including Kazakhstan and the Kyrgyz Republic, in the areas of (i) standards and specifications for construction materials and plants, (ii) winter maintenance, (iii) road pavement and bridge testing, and (iv) prefeasibility studies for road and rail links (e.g., between Osh and Kashgar in the People's Republic of China, and Issyk-Kul and Kashgar). To ensure complementarity with operations of the World Bank and the Japan Bank for International Cooperation (JBIC), the proposed Project has been designed in close coordination with these institutions (paras. 44, 45 and 53).

<sup>21</sup> Prepared under TA 2587-KGZ (footnote 17).

<sup>22</sup> TA 5620-REG: *Regional Initiatives in Road Safety*, for \$600,000, approved on 4 January 1995; TA 5707-REG: *Regional Economic Cooperation in Central Asia*, for \$1,150,000, approved on 8 November 1996; TA 5733-REG: *A Review of Road Design and Construction Standards*, for \$600,000, approved on 3 April 1997; and TA 5818-REG: *Regional Economic Cooperation in Central Asia (Phase II)*, for \$1,350,000, approved on 11 December 1998.

## 1. Kazakhstan

44. Kazakhstan has been successful in mobilizing external assistance to develop its road sector. The ongoing projects include ADB's *Road Rehabilitation Project*,<sup>23</sup> the World Bank's *Road Transport Restructuring Project* (\$84 million), and Islamic Development Bank's (IDB's) *Saryshagan-Gulshad Road Project* (\$10 million), which complement each other in rehabilitating the Almaty-Astana road (1,260 km) and establishing the related road maintenance system. ADB has also provided three TA grants in the amount of \$1.6 million.<sup>24</sup> The Japan International Cooperation Agency and JBIC are carrying out feasibility studies for rehabilitation of road sections in the western provinces of Kazakhstan and for reconstruction of a bridge over Irtysh River, respectively. The World Bank is also assisting in the urban transport subsector through its *Urban Transport Project* (\$40 million). Assistance to the civil aviation and railways sectors covers the Astana airport and Druzhba-Aktogoj railway projects financed by JBIC, and the Almaty-Astana railway project funded by the European Bank for Reconstruction and Development (EBRD).

## 2. The Kyrgyz Republic

45. ADB's first and second loans of \$50 million each, with cofinancing of about \$28 million and \$41 million, respectively, from JBIC, have helped the Government rehabilitate part of the Bishkek-Osh road.<sup>25</sup> In addition, ADB has provided five TA grants totaling \$3.2 million to the road sector.<sup>26</sup> The World Bank approved a \$22 million loan for the *Urban Transport Project* in August 2000 to rehabilitate urban roads in Bishkek, Djabal-Abad, and Osh. IDB approved \$9 million in 1998 to rehabilitate 49 km of the southern part of the Bishkek-Osh road and provided grant assistance for a feasibility study for the rehabilitation of a section of the Bishkek-Naryn-Torugart road. In the Kyrgyz Republic too, ADB, JBIC, and IDB complement each other in an effort to rehabilitate the Bishkek-Osh road, the most important road corridor of the country.

## D. Lessons Learned

46. For the road sector in the CARs, ADB's focus has been on policy reforms to meet the changing market demands, develop institutions capable of effective planning and management, ensure adequate financing of road maintenance (particularly through road-user charges), and promote private sector participation. The most important lessons that have been learned to date concern (i) the development of competitive markets; (ii) implementation of a road fund, and (iii) improving road sector efficiency on a regional basis.

47. The development of competitive markets in the transport industry after the sale of State-owned property in the early 1990s has been a difficult process, particularly with regard to the introduction of market-friendly systems and policies, delegation of authority to take decisions, development of institutional capacity, and undertaking complementary reforms to support the systems. Competitive markets need a conducive environment. The road departments have neither adequate capacity nor a full understanding of the functioning of competitive markets.

<sup>23</sup> Loan 1455-KAZ: *Road Rehabilitation Project*, for \$50 million, approved on 27 August 1996.

<sup>24</sup> TA 2258-KAZ: *Preparation of Road Rehabilitation Project*, for \$600,000, approved on 11 January 1995; TA 2631-KAZ (footnote 12); and TA 2632-KAZ (footnote 2).

<sup>25</sup> Loan 1444-KGZ (footnote 3); and Loan 1630-KGZ (footnote 15).

<sup>26</sup> TA 2256-KGZ: *Road Rehabilitation Project*, for \$600,000, approved on 21 December 1994; TA 2587-KGZ (footnote 17); TA 2760-KGZ: *Second Road Rehabilitation Project*, for \$600,000, approved on 11 February 1997; TA 3065-KGZ: *Policy Support in the Transport Sector*, for \$600,000, approved on 10 September 1998; and TA 3335-KGZ: *Third Road Rehabilitation Project*, for \$600,000, approved on 10 December 1999.

Costing and pricing procedures based on local norms, without accurately reflecting actual cost, has been a hindrance to the introduction of competitive bidding. The existing FSU road standards are not suitable for operation in a market environment because of the tendency to regulate parameters that are the prerogative of contractors. As a result, the award of civil works in the CARs is often done by directly appointing the contractors and paying them based on local norms. ADB's regional TA 5733-REG (footnote 22) for the preparation of road design and construction standards incorporating Western practices to help implement road works based on competitive bidding has been much appreciated,<sup>27</sup> but the standards are yet to be fully adopted. The two Governments have agreed to do so effective 1 January 2002 [see para. 127 (vi) (e)].

48. The implementation of a road fund in the CARs is yet to bring the expected benefits in terms of improved road maintenance and increased involvement of road users. While the road funds in Kazakhstan and the Kyrgyz Republic have been redesigned to generate revenues mainly from sources that are closely related to road use, the concept that road-user costs generally dominate the cost pattern of road use (and therefore, it is economical to spend more on road maintenance) is yet to be accepted and implemented. Also, road ownership is yet to be established by involving road users and other stake-holders such as the road transport industry, insurance, contractors, and consultants (e.g., by creating independent road agencies with boards of directors that include representatives of such stakeholders).

49. Improving road sector efficiency on a regional basis, including implementation of road safety measures, needs to be given priority. While the ongoing road project focuses on improvement of the national institutional capacity and competitive markets, the development of regional transport networks for regional economic cooperation by improving efficiency and safety of the regional road links is important for landlocked CARs. The development of competitive markets, the creation of road sector institutions involving the road users, and regional cooperation are a long-term process that needs to be implemented in a staged manner. The proposed Project and the ongoing projects in the road sector financed by ADB and the World Bank support these processes.

## **E. ADB's Operational and Sector Strategies**

50. The main objective of ADB's operation strategy in the CARs is to facilitate the countries' transition to a market economy. This objective entails (i) supporting the countries' reform agenda and strengthening their development management, (ii) promoting the rehabilitation of the environmental resource base, (iii) strengthening the long-term potential by investing in physical infrastructure and human resources development, and (iv) encouraging the creation of a new structure of output and new production capacity through private sector investment and job creation.

51. ADB focuses its assistance program for Kazakhstan on a few priority sectors and subsectors: (i) management and reform at the central and local government levels; (ii) infrastructure, especially rehabilitation projects; (iii) education and training; (iv) industry, focusing on the problems of medium-size enterprises; and (v) agriculture. In the Kyrgyz Republic, to maximize the impact of ADB's limited resources, ADB's operation strategy focuses on (i) improvements in the provision of public services; (ii) agriculture, including rural finance; (iii) human resource development, especially education; (iv) infrastructure, especially

<sup>27</sup> In addition to directly benefiting Kazakhstan, the Kyrgyz Republic, Mongolia, and Uzbekistan, the road design standards have been distributed to Armenia, Azerbaijan, Georgia, Russia, Tajikistan, and Turkmenistan.

rehabilitation projects to preserve the economic utility of the past investment in the road and energy sectors; and (v) restructuring of the financial sector.

52. ADB's transport sector strategies in the two countries envisage support for (i) developing an efficient policy and regulatory framework; (ii) corporatizing/commercializing and, where appropriate, privatizing road transport operations and entities; (iii) restructuring Government organizations so that they can respond efficiently to market demands; (iv) creating an environment that encourages private sector participation; (v) promoting competition in the provision and operation of facilities and services; (vi) increasing funding by improving tax and duties collection, enhancing cost recovery, and removing subsidy-induced distortions in the pricing of services; (vii) rehabilitating road infrastructure and improving maintenance operations and safety standards of infrastructure facilities; (viii) developing human resources; and (ix) protecting the environment by improving the environmental standards.

## **F. Policy Dialogue**

53. Reforms in the Kazakh and Kyrgyz road sectors in the areas of policy and regulatory framework, institutional strengthening and capacity development, road funding and cost recovery, and road safety and maintenance are supported by the ongoing projects. As shown in Appendix 8, the policy issues discussed and agreed upon with the Governments during project processing strengthen and complement the earlier initiatives and provide a regional focus. The regional issues include (i) streamlining the cross-border road transport and customs policies, regulations, and documentation; (iii) improving coordination and management of road safety, and (iv) introducing road maintenance by contract. In addition, the dialogue has covered assistance to KAZMOTC to help define its functions and sector objectives, given the institutional dislocation and structural and staff changes due to the transfer of the capital from Almaty to Astana.

### **1. Cross-Border Policy and Regulatory Issues**

54. To facilitate regional economic cooperation, both Governments recognize the need for removing the various physical and nonphysical cross-border barriers. For this purpose, the Cross-Border Agreement (CBA) drafted with the help of ADB to regulate and ease the movement of people, goods, and vehicles across the common border was signed by the Governments of Kazakhstan and the Kyrgyz Republic on 15 November 1999<sup>28</sup> and will become effective and binding to both countries (see para. 128). In addition to cross-border issues, the CBA stipulates weights and dimensions of vehicles to bring them in line with the axle-load limits in the *Public Motor Roads: Design Standards and Regulations* prepared under TA 5733-REG (footnote 22).

55. Support for the timely implementation of the CBA provisions will be provided with the help of two advisory TAs processed in conjunction with the Project. The TAs will help (i) review all existing customs and transport documentation, and introduce changes in line with the provisions in the CBA; (ii) introduce proper customs procedures at the Kazakh/Kyrgyz (Akzhol-Chu) border at Georgievka; and (iii) train staff in Transport International Routier (TIR) Carnet processing,<sup>29</sup> vehicle inspection and clearance procedures, the use of risk assessment

<sup>28</sup> The CBA signed on 15 November 1999 excluded exemption of import/export duties and taxes on transit traffic. As agreed during loan negotiations, an amendment to CBA that deals with exemption to transit traffic will be signed by the two Governments by 25 October 2000.

<sup>29</sup> TIR Carnet is an international road transport logbook for international freight transporters.

techniques, and the use of computers for customs clearance. Equipment required for the Automated Customs Clearance System (ACCS) and training in the use of such equipment will be provided by EU's Transport Corridor Europe Caucasus Asia (TRACECA) project. The introduction of the ACCS and computerized cargo registration will be implemented as a pilot program to permit international electronic data processing and possible external input through direct trader input linkages. The introduction of the revised procedures and computerized ACCS will make the system transparent and will remove nonphysical customs barriers, including unauthorized payments, at the Akzhol-Chu border now and at other border crossings later. This is expected to give impetus to an overall reform of the customs departments in the two countries.

## **2. Road Safety**

56. Road safety is a multidimensional social problem involving many sectors: education, health, police, and transport as well as the private sector involved in insurance, fuel supply, and bus and freight transport operations. The activities have to be complementary and coordinated so that road safety measures can be optimized to avoid loss of resources on account of vehicle damage, medical treatment, police and administration costs, and damage to road facilities. Such coordination of, and participation by, the stakeholders can be achieved through the establishment of national road safety council (NRSC). While the issues in preparing safety action plans, improving collection and processing of road accident data, and developing better understanding of road safety problems have been addressed by the World Bank's *Road Transport Restructuring Project* (para. 16) for Kazakhstan and ADB's *Second Road Rehabilitation Project* (footnote 15) for the Kyrgyz Republic, the establishment of the NRSC in the Kyrgyz Republic and updating of the road safety acts (RSAs) of both the countries will help strengthen regional coordination and expedite the implementation of the road safety initiatives.

57. While an Interdepartmental Commission of Road Safety exists in Kazakhstan,<sup>30</sup> the Government of Kyrgyz Republic has agreed to establish the NRSC by 1 January 2002 with a full-time secretariat to coordinate road safety activities and involve the various stakeholders [para. 127 (vi) (a)]. The RSAs will be updated for submission to the Parliaments by 1 June 2002 [para. 127 (vi) (b)]. The RSAs will include legislation concerning safe driving, safety audit of road designs, safety education, road safety publicity, vehicle safety standards, road safety research, and emergency assistance to accident victims. In addition, the RSAs will include legal provisions regarding the responsibility of road maintenance contractors for environmental and social impact mitigation measures and road safety-related works (e.g., signposts, road markings, etc.), and liabilities in case the contractors fail to undertake/maintain such measures and works. The two advisory TAs will help the Governments in establishing the NRSC, updating the RSAs, preparing a Russian version of the *Road Safety Guidelines*,<sup>31</sup> and conducting road safety seminars to implement the *Road Safety Guidelines*.

## **3. Road Maintenance**

58. An equipment pool will be established in Kazakhstan with the help of the consultants under the ADB loan.<sup>32</sup> The pool, a State-owned joint-stock company, will manage and lease equipment for maintaining the Almaty-Astana and Almaty-Bishkek roads. Depending on

<sup>30</sup> Established by Government Decree No. 391 dated 28 April 1998.

<sup>31</sup> Prepared under TA 5620-REG (footnote 22).

<sup>32</sup> Such equipment pool is being established in the Kyrgyz Republic under the *Second Road Rehabilitation Project* (footnote 15).



availability, the pool may also rent out the equipment on a commercial basis for other construction and maintenance works to ensure its effective utilization and adequate return on the investment. The equipment will also be rented out to private contractors to help them compete for road construction and maintenance works. The concept will subsequently be extended to other parts of the country. The equipment pool is expected to be operational from 30 June 2002 [para. 127 (vi) (c)].

59. The ADB-financed consultants will help establish the equipment hire system, and the related servicing and repair workshop, and will provide guidance and on-the-job training to equipment operators, workshop mechanics, and the foreman. The equipment hire system will incorporate proper accounting, equipment hiring and maintenance procedures, and appropriate provisions for depreciation and operation and maintenance expenses.

60. Experience gained in other countries (particularly in the Philippines) shows that contracts consisting only of routine maintenance works are less attractive to construction contractors because of the need for a large resource commitment (e.g., equipment) to undertake a comparatively small amount of work spread over long distances. The proposed concept of road maintenance by contract will focus on creating an environment conducive to local contractors' participation in maintenance works by hiring equipment from the pool. A maintenance manual and contracts must be prepared, and both government supervisors and respective contractors trained before road maintenance by contract is implemented. There are several advantages to this approach: separation of the planning and supervision functions from the implementation functions, execution of road maintenance under a proper contract, local employment generation, effective equipment management, private sector development, and better maintenance of roads. While the Maintenance Operation Manual is being prepared under the ongoing *Road Rehabilitation Project* (footnote 23), the design and construction supervision consultants engaged under the proposed Project will establish equipment leasing system, prepare the contracts and train the maintenance supervision staff and local contractors. The two Governments have agreed to award maintenance contracts for the Almaty-Bishkek road on a competitive bidding basis from 1 January 2005 [para. 127 (vi) (d)].

#### **4. Advisory Support to KAZMOTC**

61. In view of the ongoing reform process in the road sector institutions and the institutional dislocation and structural and staff changes due to the transfer of the capital from Almaty to Astana, the Government of Kazakhstan has requested ADB assistance to help KAZMOTC streamline the functions and responsibilities of CRRT and Kazakhavtodor in line with the policies adopted under the Road Sector Policy Statement of 31 March 1996. Under the proposed advisory TA, a transport adviser will be engaged for transport policy review, transport planning, regulations, pricing, procurement, and preparation of a three-year national transport investment plan.

### **IV. THE PROPOSED PROJECT**

#### **A. Rationale**

62. The rehabilitation of the Almaty-Bishkek road is an integral component of ADB's strategy in Central Asia to promote economic growth and reduce poverty. A transport link such as the Almaty-Bishkek road, free of physical and human-made barriers, will contribute to bringing the separated and isolated domestic markets in each country into one integrated regional market. This, in turn, will allow the countries to exploit economies of scale and resource

complementarities. Conversely, without such an integrated market, these countries are likely to suffer from lower growth and slower poverty reduction because of their isolated geographic location and limited potentials for domestic market expansion. The increase in economic activities due to the improved road will have a general positive impact on poverty reduction in the region. More specifically, since the road goes through, or is adjacent to, some of the poorest areas of the two countries, the improved road efficiency will contribute to poverty reduction in the area through better and more reliable access to the economic mainstream.

63. The Almaty-Bishkek road is at a cross-link between the road corridors that connect the Far East with Europe and Fergana Valley with Russia. While it is part of the east-west corridor passing through Urumqui in the People's Republic of China (PRC) and the state capitals and most commercial centers in the CARs such as Almaty, Bishkek, Shymkent, Tashkent, Samarkand and Ashgabat, the Almaty-Bishkek road also links two important north-south roads, namely, Almaty-Astana and Bishkek-Osh. Improvement of these two north-south roads has been given high priority by both Governments and is supported by ADB, World Bank, JBIC and IDB (see Map). The Almaty-Bishkek road is a crucial section that requires rehabilitation to permit smooth and safe international and regional traffic flow in all seasons, thus fostering regional economic cooperation.

64. The Almaty-Bishkek road is an important conduit for imports and exports of the CARs. Bishkek is the main import center for the Kyrgyz Republic. The major imports transported by road are consumer goods, foodstuff, beverages and machinery from Europe, timber from Russia, and lower value consumer goods (such as garments) from the PRC. The road is also an important conduit for imports to Kazakhstan, including Kyrgyz agricultural products and cement. In general, the project road is an important link for the transport of agricultural and industrial goods in the region, including transit traffic to the PRC (e.g., cotton from Uzbekistan).

65. Economic reform and political realignment in Central Asia, and the emergence of free trade areas and custom unions underline the need for an efficient transport system and harmonization of trade and transport regulations. The former is one of the basic prerequisites for the future economic development of Kazakhstan and the Kyrgyz Republic, considering their landlocked character. Regarding the latter, efforts to streamline the international trade and customs issues and harmonize the regulations—which have started with the help of the United Nations Conference on Trade and Development (UNCTAD), EU, Economic Cooperation Organization (ECO), and the Customs Union—have to continue.<sup>33</sup> While the rehabilitation of road infrastructure will result in savings in vehicle operation costs (VOCs), the transport efficiency of an important regional road link such as the Almaty-Bishkek road will also depend on the removal of physical and nonphysical cross-border barriers, improved coordination and management of road safety initiatives, and adequate road maintenance. The proposed Project aims at achieving all these objectives, with a view to subsequently extending the concept to other cross-border links in the region.

66. ADB's TA 5707-REG (footnote 22) confirmed that the Almaty-Bishkek road is a critical section requiring improvement to permit smooth and safe traffic flow in all seasons. Almaty, the capital of Kazakhstan until 1997, is the largest city and a key center of finance, commerce, and industry such as textiles and canned goods plants, while Bishkek is the capital of the Kyrgyz

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<sup>33</sup> The three important agreements are ECO Transit Transport Agreement prepared with the help of UNCTAD; Multi-Lateral Agreement prepared with the help of EU; and Agreement Between the People's Republic of China, Kyrgyz Republic, and Uzbekistan on International Road Traffic, signed by the three countries.

Republic. Both Governments have given priority to the rehabilitation of the road linking Almaty with Bishkek.

67. There is a high incidence of road accidents in Kazakhstan and the Kyrgyz Republic, resulting in an annual rate of 30 fatalities per 10,000 vehicles. In 1996, 110 accidents on the Kazakh section of the Almaty-Bishkek road left 50 persons dead and 120 with serious injuries. Although no data are available to assess the related road accident costs, it can be assumed that at least 1 percent of GDP is lost annually through road accidents.<sup>34</sup> Well-coordinated road safety programs at both regional and national levels are therefore essential.

## **B. Objective and Scope**

68. The objective of the Project is to improve the efficiency and safety of the principal subregional road transport link between Almaty and Bishkek by rehabilitating the road infrastructure, modernizing border control policies and procedures, upgrading cross-border facilities, improving the coordination and management of road safety, and introducing an efficient road maintenance system.

69. The Project comprises (i) rehabilitation of about 245 km of the Almaty-Bishkek road, including consulting services for design and construction supervision; (ii) improvement of customs facilities at the Akzhol-Chu border; and (iii) road maintenance equipment for Kazakhstan. The associated advisory TAs will help implement the CBA and road safety initiatives in both countries, and will provide transport advisory support to KAZMOTC.

## **C. Technical Justification**

70. The Project will rehabilitate about 204 km of the road from the Almaty City boundary to the Akzhol-Chu border at Georgievka and about 41 km in the Kyrgyz Republic consisting of a 17 km section from the Akzhol-Chu border to the Bishkek City boundary and a 24 km bypass interconnecting the Bishkek-Akzhol-Chu border road with the Bishkek-Osh road. Much of the road between Almaty and Bishkek was completed 20-25 years ago and was designed according to the FSU standards. The pavement shows distress in the form of surface cracks on the entire length and rutting<sup>35</sup> at a number of places. The poor condition of the bituminous surface is attributable to past paving methods and lack of quality control. Rehabilitation is required to prevent the road from deteriorating further. The rehabilitation will consist of reconstructing failed embankments, providing a crushed aggregate base course, surfacing with asphalt concrete, and improving the shoulders and drainage facilities. Rehabilitation does not include any major widening or upgrading works.

71. The Almaty-Bishkek road has two critical sections (km 167–km 171 and km 184–km 191) over the Kurday mountain pass. They have been identified as most hazardous because of steep gradients and sharp curves at a number of places. The trucks and buses travel very slowly on these sections during summer and are unable to cross the mountain pass during winter when the road is slippery because of snow. A high rate of road accidents has been

<sup>34</sup> According to the World Bank and ADB studies, road accidents cost about 1-3 percent of a country's GDP. Assuming the lower bound, for the 1998 Kazakh GDP of T1,747 billion, the loss would have amounted to T17 billion or \$222 million; for the Kyrgyz GDP of Som33 billion, the loss would be about Som333 million or \$19 million.

<sup>35</sup> Furrows made by truck wheels, which develop due to densification and deformation in the lower pavement layers under traffic loading, and/or plastic flow in bituminous surfaces under high temperatures and tire pressures (normally forming where the bituminous materials are soft).

recorded, mainly due to overturning of vehicles going downhill. These two sections will be realigned to substantially improve their gradients and curvatures.

72. With the establishment of the equipment pool, the system for road maintenance by contract will be introduced along the Almaty-Bishkek road and compared with maintenance by force account for its efficiency and costs. The system will also incorporate service and safety considerations, and environmental and social impact mitigation measures.

## D. Cost Estimates

73. The total Project cost is estimated at \$119.1 million equivalent. For the Kazakh component, the cost estimate is \$112.4 million equivalent (foreign exchange cost of \$58.9 million and local currency cost of 53.5 million equivalent). For the Kyrgyz component, the cost estimate is \$6.7 million equivalent (foreign exchange cost of \$3.7 million and local currency cost of \$3.0 million equivalent). The estimates are summarized in Table 1, and presented in detail in Appendix 9.

**Table 1: Project Cost Summary**  
(\$ million)

Item	Kazakhstan			Kyrgyz Republic			Combined Total
	FX	LC	Total	FX	LC	Total	
<b>A. Base Cost</b>							
1. Road Rehabilitation							
(a) Civil Works	25.8	42.9	68.7	2.6	2.3	4.9	73.6
(b) Project Management and Supervision	2.0	1.7	3.7	0.3	0.1	0.4	4.1
2. Road Maintenance							
(a) Equipment	10.0	0.2	10.2	-	-	-	10.2
(b) Consulting Services	0.3	0.1	0.4	-	-	-	0.4
3. Custom Facilities							
(a) Equipment	0.3	-	0.3	0.3	-	0.3	0.6
(b) Training	0.1	-	0.1	0.1	-	0.1	0.2
4. Standards and Specifications							
(a) Laboratory Equipment	0.3	-	0.3	-	-	-	0.3
(b) Consulting Services	-	0.2	0.2	-	-	-	0.2
<b>Subtotal A <sup>a</sup></b>	<b>38.8</b>	<b>45.1</b>	<b>83.9</b>	<b>3.3</b>	<b>2.4</b>	<b>5.7</b>	<b>89.6</b>
<b>B. Contingencies</b>							
1. Physical <sup>b</sup>	2.3	4.5	6.8	0.2	0.4	0.6	7.4
2. Price Escalation <sup>c</sup>	2.2	3.9	6.1	0.1	0.2	0.3	6.4
<b>C. Interest and Other Charges During Construction and Front-end Fee</b>							
	15.6	-	15.6	0.1	-	0.1	15.7
<b>Total</b>	<b>58.9</b>	<b>53.5</b>	<b>112.4</b>	<b>3.7</b>	<b>3.0</b>	<b>6.7</b>	<b>119.1</b>

FX = foreign exchange; LC = local currency.

<sup>a</sup> In 1999 prices.

<sup>b</sup> About 10 percent of the base costs.

<sup>c</sup> Based on a price escalation factor of 2.4 percent per annum.

## E. Financing Plan

74. The financing plan for the Project is in Table 2. For the Kazakh component, the proposed ADB loan will be \$65.0 million (57.8 percent), with a parallel EBRD cofinancing of \$25.0 million (22.2 percent), Government financing of \$22.0 million equivalent (19.6 percent), and a TRACECA grant of \$0.4 million (0.4 percent). For the Kyrgyz component, the proposed ADB loan will be \$5.0 million (74.6 percent), supplemented by Government financing of \$1.3 million equivalent (19.4 percent), and a TRACECA grant of \$0.4 million (6.0 percent) (details in Appendix 9).

**Table 2: Financing Plan**  
(\$ million)

Source	Kazakhstan				Kyrgyz Republic				Combined Total %
	FX	LC	Total	%	FX	LC	Total	%	
ADB	46.0	19.0	65.0	57.8	3.3	1.7	5.0	74.6	59.3
EBRD	12.5	12.5	25.0	22.2	-	-	-	-	20.3
TRACECA	0.4	-	0.4	0.4	0.4	-	0.4	6.0	0.7
Government	-	22.0	22.0	19.6	-	1.3	1.3	19.4	19.7
<b>Total</b>	<b>58.9</b>	<b>53.5</b>	<b>112.4</b>	<b>100.0</b>	<b>3.7</b>	<b>3.0</b>	<b>6.7</b>	<b>100.0</b>	<b>100.0</b>

EBRD = European Bank for Reconstruction and Development, FX = foreign exchange, LC = local currency, TRACECA = Transport Corridor Europe Caucasus Asia.

75. While the TRACECA component has been approved by EU, EBRD is expected to approve parallel cofinancing in the amount of \$25.0 million in November 2000. EBRD will finance 50.4 km of civil works in Kazakhstan.

76. For the Kazakh component, the Borrower will be the Republic of Kazakhstan. The ADB loan will be provided in US dollars with interest rate determined in accordance with ADB's pool-based variable lending rate system for US dollar loans, and an amortization period of 24 years including a grace period of 4 years, an annual commitment charge of 0.75 percent per annum and a front-end fee of 1 percent of the loan amount. The proposed ADB loan will finance 78.1 percent of the foreign exchange cost and 35.5 percent of the local currency cost, EBRD will meet 21.2 percent of the foreign exchange cost and 23.4 percent of the local currency cost, and the TRACECA grant will finance 0.7 percent of the foreign exchange cost. The Government will finance the remaining 41.1 percent of the local currency cost.

77. For the Kyrgyz component, the Borrower will be the Kyrgyz Republic. The ADB loan will be provided from its Special Funds resources. The loan will have a 32-year amortization period including an 8-year grace period, with a 1.0 percent interest charge during the grace period and 1.5 percent thereafter. The proposed ADB loan will finance 89.2 percent of the foreign exchange cost, and 56.7 percent of the local currency cost. The TRACECA grant will finance the remaining 10.8 percent of the foreign exchange cost, and the Government the remaining 43.3 percent of the local currency cost.

78. The economic slowdown following the Russian crisis that began in 1998 has profoundly affected both the Kazakh and Kyrgyz economies. As a result, fiscal constraints facing the Governments have become even tighter. During 1999, the Government of Kazakhstan has continued its efforts at domestic resource mobilization as evidenced by spending cuts

incorporated in the second budget revision adopted in June 1999. At present, the Government is working with the International Monetary Fund (IMF) on further reducing expenditure and other measures to strengthen fiscal stability. The Government of Kyrgyz Republic, in consultation with the IMF under the ESAF program, has been engaged in working out measures for further fiscal strengthening. Meanwhile, the severe fiscal constraints are likely to persist during the project implementation period in both countries since the economic and fiscal situation can only improve gradually. Therefore, local cost financing is considered appropriate for the project.

## **F. Implementation Arrangements**

### **1. Basic Approach**

79. For the project objectives to be achieved, it will be necessary to coordinate the implementation of both physical and nonphysical components in Kazakhstan and in the Kyrgyz Republic for concurrent progress and completion. It will also be necessary to lower in concert the nonphysical barriers to movement across the border so that regardless of the direction of movement, similar procedures are applied and delays are avoided. The loan documents include a number of cross-conditionality provisions to ensure that the various components are synchronized during project implementation.

### **2. The Executing Agencies**

#### **a. Kazakhstan**

80. The KAZMOTC will be the Executing Agency. The project steering committee (PSC) established under the ongoing project in June 1996 will be responsible for (i) overseeing and coordinating the project activities, including liaison among the agencies involved in project implementation, and sector reforms; (ii) reviewing the status of the implementation of the project components; (iii) monitoring the progress achieved and resolving difficulties encountered; and (iv) serving as a forum for discussions on and review of the project impact on regional development. The PSC is chaired by the Minister of KAZMOTC (or his representative), and the members are the chairman of CRRT, director general of Kazakhavtodor, Chief of Investment Project Division of KAZMOTC, and representatives from the Ministry of Finance and the Ministry of Economy.

81. KAZMOTC will discharge its functions through a project implementation unit (PIU) reporting to the Board of Investment Projects. The PIU will be established by 1 November 2000 and will be headed by a qualified project manager responsible for the rehabilitation component. By 1 July 2003, a maintenance supervision unit (MSU) will be established in the PIU, headed by a maintenance manager responsible for the road maintenance component. The project manager will be supported by road engineers, materials and soils engineer, bridge engineer, and supporting financial and clerical staff. The PIU and MSU will remain adequately staffed throughout project implementation and will be assisted by the international and domestic consultants for design and construction supervision financed under the proposed ADB loan. The PIU and MSU will undertake day-to-day implementation of the Project and provide the necessary liaison between KAZMOTC, contractors, suppliers, and ADB.

## **b. The Kyrgyz Republic**

82. The KGZMOTC will be the Executing Agency. The PSC similar to that in Kazakhstan has been established within KGZMOTC for the ongoing projects in the Kyrgyz Republic. The PSC will carry out the same functions as its Kazakh counterpart.

83. Considering the small size of the Kyrgyz component, the PIU established under the ongoing projects will also be given the responsibility for implementation of the proposed Project. To strengthen the PIU's capacity, two additional technical staff will be made available on a full-time basis during the implementation period. The PIU will be assisted by the international and domestic consultants to be recruited for design and construction supervision and will provide the necessary liaison among KGZMOTC, contractors, suppliers, and ADB.

## **3. Implementation Schedule**

84. Project implementation will commence in the beginning of 2001. The Kyrgyz component is expected to be completed in three years, i.e., by the end of 2003, and the Kazakh component in four years, i.e., by the end of 2004 (Appendix 10).

## **4. Procurement**

85. Procurement of goods and services under the ADB loans will follow ADB's *Guidelines for Procurement*. As shown in Appendix 11, the civil works for the Kazakh component will be split into two packages. The ADB-financed package (covering 154 km of civil works) and road maintenance equipment will be procured through international competitive bidding and the cofinanced package (50.4 km of civil works) will follow EBRD's procurement guidelines. Customs equipment will be procured following TRACECA's international shopping procedures, and laboratory equipment following ADB's international shopping procedures.

86. The civil works for the Kyrgyz component will be procured using local competitive bidding procedures acceptable to ADB,<sup>36</sup> mainly because such small contracts are not attractive to international contractors, given the need to mobilize resources such as road construction equipment to Central Asia. The rehabilitation works involved—overlays and drainage works—are simple, and the local contractors have adequate capability to undertake contracts for them. Also, the Kyrgyz Republic is experiencing severe financial difficulties and the Government is keen to provide employment opportunities to its people without sacrificing the integrity of the Project. Integrity will be ensured by following proper bidding procedures and international consultants supervising the works.

## **5. Consulting Services**

87. Design and construction supervision in each country, including for the section in Kazakhstan to be financed by EBRD, will be undertaken by international consultants in association with domestic consultants financed by ADB. The consultants will be selected and engaged in accordance with ADB's *Guidelines on the Use of Consultants* and other procedures satisfactory to ADB for recruitment of domestic consultants. The terms of reference for the consulting services are in Appendix 12.

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<sup>36</sup> With the option that international contractors interested to participate in the tendering will be allowed to bid.

88. The consulting services in Kazakhstan will comprise about 342 person-months (90 international and 252 domestic). In the Kyrgyz Republic, the input will be about 50 person-months (20 international and 30 domestic). In providing the services, the international consultants will ensure on-the-job training of and transfer of expertise to staff of the Executing Agencies and domestic design and construction supervision companies, particularly in project and contract management, and environment protection and road safety measures.

## **6. Disbursement**

89. Direct payment procedures described in ADB's *Loan Disbursement Handbook* will be used for the civil works, road maintenance equipment, and consulting services contracts. Disbursement to meet the incremental project administration cost (project management) will be reimbursed using the statement of expenditures (SOE) procedure with SOE ceilings of \$60,000 and \$30,000 per individual payment for Kazakhstan and the Kyrgyz Republic, respectively. The CRRT has been showing administrative capability to maintain SOE records and accounts in accordance with generally accepted accounting principles.

## **7. Reports, Accounts, and Audits**

90. The project supervision consultants in Kazakhstan will prepare and submit quarterly reports on the progress of implementation to KAZMOTC, ADB, and EBRD, and in the Kyrgyz Republic to KGZMOTC and ADB. The TA consultants will prepare and submit brief monthly progress reports on the implementation of the CBA. The format of the reports will be discussed and agreed upon before the start of the consulting services. To facilitate postevaluation of the Project, KAZMOTC and KGZMOTC will arrange for the consultants to submit to ADB and EBRD project completion reports covering the execution and initial operation of the facilities, within three months of the physical completion of the Project.

91. For their respective components, KAZMOTC and KGZMOTC will maintain separate records and accounts adequate to (i) identify the goods and services financed out of the proceeds of the loans from counterpart local funds; (ii) identify the use of these goods and services on the components; (iii) record the progress of the components, including their costs; and (iv) reflect, in accordance with consistently maintained sound accounting, the components' operations and financial condition.

92. The project accounts and related financial statements will be audited annually by external auditors acceptable to ADB for the ADB-financed portion and to EBRD for the EBRD-financed component. If qualified State auditors are not available, private auditors will be recruited following the competitive recruitment procedures of the Governments and using their own resources or loan funds. The audited accounts and auditors' report, prepared in accordance with internationally accepted accounting standards, will be submitted to ADB within nine months of the end of the fiscal year.

## **8. Tripartite Coordination Meeting**

93. Representatives of Kazakhstan (KAZMOTC and Kazakh Customs), the Kyrgyz Republic (KGZMOTC and Kyrgyz Customs), and the financiers (ADB, EBRD, and TRACECA) will meet twice a year alternatively in Almaty and Bishkek to discuss the project implementation status, resolve common problems, and, most importantly, ensure full implementation of the CBA. KAZMOTC and KGZMOTC will finance the costs incurred in preparing for and attending these meetings through the project management component of their respective loans.



## 9. Midterm Review

94. Toward the end of 2002, ADB with KAZMOTC and KGZMOTC, will undertake a detailed review of the Project and its implementation status. The objectives will be to (i) evaluate the Governments' progress in implementing policy reforms; (ii) examine the implementation of the Project and determine whether any adjustments to the scope and implementation arrangements are warranted; (iii) determine compliance with relevant standards, (iv) address any potential procurement, financing, and scheduling issues; and (iii) examine compliance with the loan covenants.

## 10. Monitoring and Evaluation

95. KAZMOTC and KGZMOTC, with the assistance of their respective supervision consultants, will carry out benefit monitoring and evaluation by compiling and analyzing the appropriate border crossing, traffic, axle load, and socioeconomic data. For this purpose, KAZMOTC and KGZMOTC will agree on appropriate surveys to establish baseline data before project implementation, and direct their respective supervision consultants to carry them out. Socioeconomic indicators to be monitored will include passenger fares and freight rates, traffic speed and accidents, agricultural and industrial goods transported on the road, vehicle operation and maintenance costs, and number and type of jobs created in the construction and maintenance activities. The data provided will be disaggregated by gender and collected during project implementation and after completion. Environmental monitoring will be undertaken as detailed in the summary initial environmental examination (SIEE) report. The findings and supporting data will be incorporated in the project completion reports. KAZMOTC and KGZMOTC will evaluate the benefits from their components in accordance with the schedules and terms of reference to be agreed upon with ADB.

## 11. Anticorruption Policy

96. During project processing, ADB's anticorruption policy was explained to the Kazakh and Kyrgyz Government officials. Attention was drawn to the section on fraud and corruption in ADB's *Guidelines for Procurement* and *Guidelines on the Use of Consultants*. It was emphasized that ADB's anticorruption policy requires the borrowers (including beneficiaries of ADB loans), as well as the consultants/bidders/suppliers/contractors under ADB-financed contracts, to observe the highest standard of ethics during the recruitment, procurement, and execution of such contracts; and that sanctions, as per the guidelines, would be taken if fraud and corruption are discovered. The Governments are committed to creating corruption-free environments and would like the Project to be implemented strictly following ADB's guidelines. ADB has conducted a number of seminars<sup>37</sup> on its operation policies and procedures in which corrupt and fraudulent practices were spelled out and ADB's anticorruption policy explained to the participants. The Governments' pricing and procurement procedures are being strengthened<sup>38</sup> to conform with the requirements of the relevant law, and audits of project accounts are being carried out with the help of external auditors in accordance with generally accepted auditing standards.

<sup>37</sup> TA 2732-KAZ: *Seminars on Bank Operation Policies and Procedures*, for \$85,000, approved on 24 December 1996; and TA 2982-KGZ: *Seminars on Bank Operation Policies and Procedures*, for \$114,000, approved on 23 January 1998.

<sup>38</sup> The assistance will be provided by the transport adviser under the Project for Kazakhstan and under Loan 1630-KGZ (footnote 15) for the Kyrgyz Republic.

## **G. Environmental and Social Measures**

### **1. Environmental Impacts**

97. ADB has classified the Project in environmental category B. Initial environmental examination (IEE) was carried out with the help of TA 2632-KAZ for the Kazakh component (footnote 2) and by construction supervision consultants under Loan 1444-KGZ for the Kyrgyz component (footnote 3) in accordance with ADB's *Environmental Assessment Requirements* and *Environmental Guidelines for Selected Infrastructure Projects*. The SIEE in Appendix 13 presents the main findings and recommendations.

98. The project road passes through varied terrain, valleys, high mountains and mountain passes, agricultural (farmland and grazing grounds) and nonagricultural lands, and areas with low and medium population densities. No designated wetlands, forests, nature conservation areas, and places of archaeological importance exist within the project area. Trees have been planted along the road in many sections as protection against embankment erosion and noise and dust pollution in the nearby settlements.

99. Road rehabilitation will be carried out on the existing alignment, except at two sections with a total length of 12 km in the mountainous areas of Kurday Pass in Kazakhstan. The area affected by the realignment is a wasteland. Rehabilitation will include reconstructing failed embankments, removing and replacing some layers of road structure, and improving the drainage systems. Borrow areas and quarries, construction and camps, road haulage, and road diversions will have some temporary impacts during construction.

100. The IEE indicates that the potential negative environmental impacts can be mitigated to an acceptable level. The mitigation measures include (i) selecting land for construction camps, borrow areas, and quarries in wasteland areas and restoring them soon after the completion of construction; (ii) preventing any aggravation in the soil erosion-prone areas; (iii) controlling sewage discharge and other waste fluids from construction camps, and hazardous and toxic materials from asphalt and crushing plants and from construction equipment; (iv) maintaining proper drainage to avoid stagnation and controlling downstream water pollution; (v) reinstating vegetation and trees that are affected by construction activities but are needed to prevent soil erosion; (vi) controlling disturbance to animals and pastures; (vii) minimizing noise, dust, emissions and other pollutants associated with road rehabilitation works through limitations on working hours, dust control devices, and water sprays; (viii) minimizing the potential negative impacts on the approach roads in the vicinity of the project road through appropriate maintenance activities; and (ix) training the contractors' workforce in the prevention of communicable and infectious diseases. The civil works contracts will include these mitigation measures, and the construction supervision consultants, Executing Agencies, and the concerned national environmental organizations will monitor their implementation. No significant impacts are expected after project completion. The road maintenance contracts will include mitigation measures during operation of the project road to enhance environmental sustainability.

101. In Kazakhstan, environmental monitoring and coordination, and implementation of policies and legislation are carried out by the Ministry of Ecology and Bioresources (MEB) at the national level and by MEB's Department of Ecology and Bioresources (DEB) at the regional level. The IEE indicated that the current institutional setup is adequate. The DEB of Almaty and Zhambul regions will be closely associated with the implementation of the Project. Similarly, in the Kyrgyz Republic the Ministry of Environmental Protection is responsible for environmental

policy, regulations, and monitoring. Since Chui where the Project road is located is on the periphery of Bishkek, the ministry, with the help of the construction supervision consultants, will monitor the environmental impacts during implementation and operation of the Kyrgyz portion of the project road.

## **2. Social Impacts**

102. The summary social impact assessment (SSIA) in Appendix 14 describes the results of the initial social assessment prepared under TA 2632-KAZ (footnote 2) and identifies the social impacts related to the Project and the recommended mitigation measures.

103. The project influence area (PIA) consists of Almaty City, and Almaty and Zhambul regions in Kazakhstan, and Chui region, including Bishkek City, in the Kyrgyz Republic. The total population in the PIA is about 4.5 million. Excluding Bishkek and Almaty, up to 70 percent of the population is rural. The agriculture sector provides employment in the settlements crossed by the road. Industrial and service sectors (e.g., mining, agroprocessing, textile and mechanic industries) are developed in Almaty City, Almaty region, the border city of Georgievka, and Chui region.

104. Residents in the PIA have been reacting very positively to the idea of rehabilitating the Almaty-Bishkek road as they expect (i) employment in construction and construction-related jobs; (ii) benefits from the additional demand for construction materials and services, and faster and cheaper access to Almaty, Bishkek, and other markets in the area; and (iii) proper traffic management, road safety, and environmental provisions including more trees planted along the road. The residents also expressed concerns about the safety of the villagers living in the settlements crossed by the road, restoration and improvement of the existing drainage system, and maintenance of the road after rehabilitation. Representatives of drivers' union associations and transport operators stated the need for more organized service stations along the road, and expressed dissatisfaction with customs procedures and waiting time at the Akzhol-Chu border.

105. During construction, some temporary adverse impacts associated with road diversion, noise, dust, disruption of drainage systems, borrow areas and quarries, and the establishment of labor camps are expected. Also, pressure on the existing health facilities in the PIA will increase due to the influx of construction workers, and the associated greater risk of diseases (e.g., communicable diseases) and health hazards at the construction site.

106. Although no severe and/or permanent adverse social impacts are expected as a result of the Project, the recommended mitigation measures will be implemented and monitored at all stages of construction. To ensure road safety, fencing will be installed and pedestrian crossings will be marked in the residential areas. Since the influx of workers involved in the rehabilitation works could increase the spread of communicable and infectious diseases in the PIA, the KAZMOTC and KGZMOTC will advise the consultants and contractors to distribute information materials and make basic training in the prevention of these diseases as part of the safety training for the workforce.

107. Road rehabilitation will follow the current alignment, with the exception of two sections at the Kurday mountain pass, and does not involve any upgrading or major widening. In those sections where minor widening is required (e.g., to improve drainage structures), the existing right-of-way provides sufficient space. At the Kurday pass, the new realignment will traverse unused mountainous land that can be classified as wasteland. Agricultural land is the property of the state in Kazakhstan. Accordingly, there is no need to transfer the land title or to budget for

it the project cost. Overall, no permanent impacts are expected on land and other assets along the road, and no land acquisition and resettlement in terms of housing and nonhousing relocation are needed.

108. A temporary land borrow will be maintained during implementation, but it will be restored in accordance with the recommendations and mitigation measures detailed in the SIEE. Borrow areas will be defined and clearly located during the finalization of the detailed design. If any resettlement effects arise from temporary land borrow or permanent land acquisition (e.g., because of changes in project design), all requirements as stated in ADB's *Policy on Involuntary Resettlement* (1995) and in the *Handbook on Resettlement: A Guide to Good Practice* (1998) will be met. The social impacts of the Project will be monitored and evaluated during implementation and after completion (para. 95).

### 3. Impact on Poverty

109. The main findings of the 1996 poverty survey in Kazakhstan<sup>39</sup> are that (i) a third of the population (about 5.5 million) lived below a "subsistence minimum" living standard,<sup>40</sup> (ii) there was a marked regional variation in the incidence of poverty, with over two thirds of the poor living in the south and east of the country; and (iii) poverty was highly correlated with large family size and unemployment. The Kazakh portion of the project road is located in the poorer eastern Zhambul and Almaty regions with populations of 1.0 million and 2.1 million, respectively. Of the total national poor in 1996, 42 percent resided in the south, 24 percent in the east, 15 percent in the west, 14 percent in the center, and 5 percent in the north. This distribution reflected the lower resource endowment, limited employment opportunities, and higher percentage of poor people living in the rural areas of the south and of part of the east of Kazakhstan (55 percent against the national average of 45 percent). Poverty was found to be higher in the rural (39 percent) than in the urban areas (30 percent).

110. The Kyrgyz Poverty Monitoring Survey carried out by the National Statistical Committee in collaboration with the World Bank provided household data for 1996 and 1997. These surveys indicated that about 50 percent of the population (2.3 million) were classified as poor.<sup>41</sup> As in Kazakhstan, poverty was higher in the rural areas: more than 70 percent of the poor lived in the rural areas. Poverty was very high in the southern part of the country (in Naryn region 90 percent of the population was poor). In the PIA, the poverty levels of both Bishkek (with 6 percent) and Chui region (27 percent) were significantly lower than the national average. However, poverty in the rural areas of Chui region was close to the national rural average (59 percent of the population in 1996).

111. Transport investments play an important role in stimulating economic growth through the market widening effect and, thus reducing poverty. The main direct impact of the project road will be the creation of employment opportunities in road construction and maintenance in Zhambul and Almaty regions, and the rural areas of Chui region. There may be additional opportunities in trade and other informal sectors, mainly through organized business practices such as the establishment of service centers along the road. Since the project focuses on rehabilitating the existing road, it is not expected to provide additional access to public services such as education, health care, and utilities.

<sup>39</sup> The World Bank, *Household Survey on Living Standards*, 1997.

<sup>40</sup> The World Bank's survey considers the Government's "subsistence minimum" as the poverty line. This figure in 1996 was T2,861 (\$40) per capita per month.

<sup>41</sup> In 1997, the poverty line was Som388 (\$23) per capita per month.

## H. Technical Assistance

112. The two advisory TAs will help Kazakhstan and the Kyrgyz Republic in implementing measures to improve the efficiency and safety of transport on the Almaty-Bishkek road. The Kazakh TA will have three phases and the Kyrgyz TA two (see the terms of reference in Appendix 15).

113. The primary objective of phase I will be to assist the two Governments to implement the CBA for regulating and easing the movement of people, goods, and vehicles across the Akzhol-Chu border in Georgievka, and to formulate longer term strategies for expanded use of the CBA at other border crossings to foster regional economic cooperation. Phase II will focus on improving coordination and management of road safety in both countries, including the incorporation, in cooperation with the project supervision consultants, of adequate environmental and social mitigation and safety measures in the maintenance by contract. Phase III will help KAZMOTC streamline its functions and responsibilities, define sector objectives taking into account reforms implemented so far on the basis of the Road Sector Policy Statement adopted on 31 March 1996, and prepare the three-year national transport investment plan. The advisory support will also address issues concerning transport policy review and analysis, regulations, pricing, and procurement. Phase III will be implemented with the help of a transport policy adviser.

114. About 32 person-months of international consulting services (Kazakhstan, 22; the Kyrgyz Republic, 10) and 30 of domestic (Kazakhstan, 18; the Kyrgyz Republic, 12) will be required. The same consulting firm will be engaged by ADB for both TAs in accordance with ADB's *Guidelines on the Use of Consultants*. The work will commence in August 2001, and is expected to be completed in less than one year for Phases I and II in the two countries. The services of the transport policy adviser in Kazakhstan under phase III will be provided on a staggered basis until mid-2004.

115. Detailed cost estimates for the two TAs are given in Appendixes 16 and 17. The total cost of the Kazakh TA is estimated at \$1,080,000 equivalent comprising \$634,000 in foreign exchange cost and \$446,000 equivalent in local currency cost. The Government has requested ADB to finance \$750,000 equivalent, covering the entire foreign exchange cost and \$116,000 equivalent of the local currency expenditure. The Government will finance the remaining local currency cost of \$330,000 equivalent. The total cost of the Kyrgyz TA is estimated at \$515,000 equivalent comprising \$370,000 in foreign exchange cost and \$145,000 equivalent in local currency cost. The Government has requested ADB to finance \$440,000, covering the entire foreign exchange cost and \$70,000 equivalent of the local currency expenditures. The Government will finance the remaining local currency cost of \$75,000 equivalent. The TAs will be financed by ADB on a grant basis from the Japan Special Fund, funded by the Government of Japan.

## V. PROJECT JUSTIFICATION

### A. Economic Analysis

116. The economic analysis of the rehabilitation of the Almaty-Bishkek road was carried out with a comparison of the with-and without-Project scenarios. The Project involves providing new base courses, resurfacing and other improvements on the entire road, and new alignment in parts of the Kurday Pass area. The without Project scenario involves routine and periodic maintenance at current levels to keep the road in its current condition. The economic analysis

covers the construction period 2001-2004 plus the subsequent 20 years operation. Assumptions underlying the traffic forecasts for the Project are described in Appendix 18. Appendix 19 gives the economic internal rates of return (EIRRs) calculated for four scenarios: (i) the Kazakh portion of the project road including benefits from road rehabilitation but excluding subregional benefits; (ii) the Kyrgyz portion with rehabilitation benefits without subregional benefits; (iii) the overall Project and the country components including subregional benefits; and (iv) the overall Project including both subregional benefits and regional benefits arising from transit traffic.

117. The main sources of economic benefits from improvement of the project road are savings in (i) VOCs for normal traffic, (ii) VOCs for generated traffic, and (iii) time because of the improved alignment and increased speeds in the Kurday Pass area for freight and passenger traffic. The VOC savings due to the improved road conditions comprise the largest category of savings, accounting for 70-80 percent of total benefits. The wider shoulders of the project road and the improved alignment in the Kurday Pass area will significantly improve the safety conditions of the road. Since available data are insufficient to quantify the value of the reduced level of vehicle accidents, such benefits have not been included in the EIRR calculation.

118. The improvement in cross-border policies and procedures will result in less time spent at the Akzhol-Chu border crossing and will thus reduce costs, facilitate trade between the two countries, and generate new economic activities. Two categories of such subregional benefits will arise from the Project: (i) time savings, and (ii) new economic activity to meet the increased demand for goods due to lower costs of trade. The improved border control procedures will result in time savings from the removal of (i) control point delays, (ii) border processing delays, and (iii) clearance delays. The time savings will reduce the costs of trade. No sufficient data are available to estimate the benefits from the new economic activities; however, such activities are expected to be significant. The reduced cost of trade and new economic activities will increase the volume of trade and the amount of traffic necessary to transport it. The increased trade will involve products such as fresh produce and other agricultural goods and will generate increased traffic on the project road. The subregional benefits have been distributed approximately evenly between Kazakhstan and the Kyrgyz Republic on the basis of the flow of cargo vehicles through the border crossing.

119. A summary of the results of the economic analysis is in Table 3. The EIRR for the overall Project, including subregional benefits, is estimated at 27.6 percent. Due to the much smaller scale of the Kyrgyz portion relative to the Kazakh portion and the approximately equal distribution of subregional benefits, the inclusion of subregional benefits has a larger impact in the former case, which has an EIRR of 48.8 percent, versus 25.6 percent for the Kazakh component. If the subregional benefits are excluded, the EIRR for the overall Project decreases to 23.8 percent, and the EIRRs for the Kazakh and Kyrgyz components decrease to 23.7 percent and 25.9 percent, respectively. The above EIRR calculations do not include transit traffic benefits as these do not accrue to either of the project countries. They will accrue to other countries in the region (primarily Russia and Uzbekistan). Inclusion of direct regional benefits in the form of VOC savings increases the EIRR to 28.0 percent. Secondary regional benefits are difficult to quantify, but are expected to further increase the level of project benefits.

Table 3: Base Case EIRRs and NPVs

Item	Without Subregional Benefits			With Subregional Benefits			Overall With Subregional and Regional Benefits
	KAZ	KGZ	Overall	KAZ	KGZ	Overall	
EIRR (%)	23.7	25.9	23.8	25.6	48.8	27.6	28.0
NPV (\$ million)	68.0	4.5	72.5	81.0	20.6	101.6	105.1

EIRR = economic internal rate of return; KAZ = Kazakhstan; KGZ = Kyrgyzstan; NPV = net present value.

120. Sensitivity analysis was carried out to test the impact of negative changes on key parameters determining the costs and benefits of the Project. The results for the overall Project, including subregional benefits, indicate that it would take an increase in costs of 170 percent or a decrease in benefits of 63 percent for the EIRR to decline to the cutoff level of 12 percent. The switching values for the Project excluding subregional benefits are smaller than those for the Project including those benefits, but are still high overall. Given that both countries now have experience in implementing ADB-financed road projects, it is not likely that such large increases in costs will occur. Similarly, given the somewhat conservative nature of the traffic forecast, it is not likely that such large decreases in benefits will occur.

## B. Project Risks

121. Since the EIRRs remain acceptable even with adverse changes in the cost and benefit parameters, the Project is not subject to substantial economic risks. The Russian economic crisis appears to have relatively limited impact on the Project. The only significant impact to date has been the difficulty experienced by the Governments in allocating adequate funds to maintain the Almaty-Bishkek road. The conservative traffic forecast, especially in the short term, takes the impact of the Russian crisis into account. The concern relating to road maintenance will be addressed by implementing road maintenance by contract. The funding terms will be adequately addressed in the maintenance contract. With improvement in the Road Fund collection and the Governments' specific commitment to allocate funds for maintenance, the funding constraints are expected to be eased in the future.

122. There is a risk that improvement of the cross-border regulations and procedures will not meet expectations because of the delays in implementing the CBA that calls for relaxing and streamlining the procedures to simplify and make them transparent. To guard against this, assistance will be provided in the form of equipment and consulting support to introduce revised systems and documentation and to train staff as per the provisions of the CBA to be approved and signed by the Governments of Kazakhstan and the Kyrgyz Republic.

123. Considering the current fiscal deficits in Kazakhstan and the Kyrgyz Republic, particular attention needs to be given to avoiding delays in project implementation because of a shortage of counterpart funds. The potential counterpart fund risk is mitigated by following ADB's recommendations concerning the Road Fund (para. 23) for Kazakhstan and with the establishment of the Road Fund for the Kyrgyz Republic (para. 38). The pressure on the Road Fund in Kazakhstan will be eased by the end of 2001 when ADB's ongoing *Road Rehabilitation Project* is expected to be completed.

## C. Social Dimensions

124. The Project will have significant positive effects on both national and regional economies. The rehabilitation of the Almaty-Bishkek road will facilitate movements of goods and people during the winter months by improving road safety and road conditions in the mountainous area of Kurday Pass. It will also enhance industrial, agricultural, and commercial activities along the road and in the PIA as a whole. Streamlining the cross-border procedures will result in time savings and a more efficient trading corridor for goods and services.

125. In terms of job opportunities, the Project will have a significant positive impact during construction. Based on experience with the ongoing projects in Kazakhstan and the Kyrgyz Republic, it is be estimated that the Project will generate up to 450 jobs per month in the construction season for skilled, semiskilled, and unskilled workers. Of these, about 300 jobs will be for local workers. Indirect employment associated with the Project through the supply of other goods and services (e.g., service stations, canteens, and kiosks) will be considerable as well. After completion of the rehabilitation, road maintenance by contract will generate local employment. The maintenance crew will comprise about 130 workers on Kazakh and 30 on Kyrgyz roads.

126. With respect to poverty reduction, the location of the Project and the high correlation between poverty and unemployment in the PIA ensure that the additional job opportunities created during construction and maintenance of the project road will benefit the poor.<sup>42</sup> Moreover, the living standard household surveys conducted in 1996 and 1997 by the Governments and the World Bank indicate that income from informal activities, especially trade, represents a large portion of the household budget of the poor and vulnerable groups in the PIA. The business opportunities along the project road will supplement household incomes.

## VI. ASSURANCES

### A. Specific Assurances

127. The Governments have given the following assurances, in addition to the standard assurances, which have been incorporated in the legal document:

- (i) Project implementation. By 1 February 2001, KAZMOTC will establish the PIU headed by a qualified Project Manager and supported by road engineers, materials and soils engineer, bridge engineers, and supporting financial and clerical staff, and by 1 July 2003 the maintenance supervision unit in the PIU headed by maintenance manager.
- (ii) Policy and regulatory framework. By 1 January 2002, the Government of Kazakhstan will submit to the Parliament the revised Automobiles Road Act for consideration, taking into account the recommendations of TA 2631-KAZ and the transport policy adviser engaged under the advisory TA.
- (iii) Cross-border issues. By 1 July 2002, the Governments will introduce revised transport and customs documentation and procedures for cross-border

<sup>42</sup> In 1997, Almaty and Zhambyl regions recorded the lowest average income per capita in Kazakhstan, while poverty in Chui region affected about 27 percent of the total population.



road transport at the Akzhol-Chu border in accordance with the provisions of the CBA and taking into account the recommendations in the two advisory TAs.

(iv) The Government of Kazakhstan and the Kyrgyz Republic will take all actions required from their side to enable effective implementation of the CBA. In particular, they will engage in consultations and enter into protocols, agreements and other arrangements and issue decisions and regulations as required under the CBA, and aimed at facilitating cross-border traffic between Kazakhstan and the Kyrgyz Republic.

(v) Road transport regulation. By 1 July 2002, the Governments will implement the vehicle weights and dimensions control as indicated in the Annex of the CBA, introducing necessary regulations to control the movement of overweight vehicles.

(vi) Road safety and maintenance, and road standards.

(a) By 1 July 2002, the Government of Kyrgyz Republic will establish multidisciplinary NRSC with a full-time secretariat.

(b) By 1 July 2002, the Governments will review the existing law on traffic safety and update it for submission to the Parliaments.

(c) By 30 June 2002, the Government of Kazakhstan will establish a State joint-stock company to manage the road equipment pool and rent out the equipment on a commercial basis.

(d) From 1 January 2005 onward, the Governments will award the contracts for maintenance of the Almaty-Bishkek road to private contractors or State-owned companies selected through competitive bidding procedures, and establish supervision and monitoring mechanisms acceptable to ADB.

(e) By 1 July 2002, the Governments will adopt the *Public Motor Roads: Design Standards and Regulations* and *Public Motor Roads: Construction Specifications* prepared under ADB's TA 5733-REG (footnote 22).

(vii) Environment and social measures

(a) The Governments will ensure that appropriate environmental protection and safety measures are included in the design of the project facilities, and will construct, operate, and maintain the facilities in accordance with the findings and recommendations of the IEE.

(b) The Governments will ensure that measures are taken to reduce the risk of socially transmitted diseases, including HIV-AIDS,<sup>43</sup> in cooperation with the Ministry of Health and its district offices in the

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<sup>43</sup> Human immunodeficiency virus-acquired immunodeficiency syndrome.

Project influence area. The Governments will assist the project supervision consultants and civil works contractors in organizing training and disseminating publicity materials targeted to road construction workers and users. The Governments will ensure that such information is also disseminated to transport operators who will be using the project road.

(viii) Gender and development. The Governments will ensure that women are actively involved in the job opportunities directly or indirectly arising from the Project. The Government will ensure ADB's Policy on Gender and Development is followed during Project implementation.

## **B. Condition for Loan Effectiveness**

128. The Loan Agreement will have the following condition of effectiveness: the Cross-Border Agreement shall have become effective.

## **VII. RECOMMENDATION**

129. I am satisfied that the proposed loans would comply with the Articles of Agreement of ADB and recommend that the Board approve

- (i) the loan of \$65,000,000 from ADB's ordinary capital resources to the Republic of Kazakhstan, for the Almaty-Bishkek Regional Road Rehabilitation Project (the Project), with a term of 24 years, including a grace period of 4 years, and with interest to be determined in accordance with ADB's pool-based variable lending rate system for US dollar loans, and such other terms and conditions as are substantially in accordance with those set forth in the relevant draft Loan Agreement presented to the Board; and
- (ii) the loan in various currencies equivalent to Special Drawing Rights 3,832,000 to the Kyrgyz Republic for the Project, with a term of 32 years, including a grace period of 8 years, and with an interest charge at the rate of 1 percent per annum during the grace period and 1.5 percent per annum thereafter, and such other terms and conditions as are substantially in accordance with those set forth in the relevant draft Loan Agreement presented to the Board.

TADAO CHINO  
President

4 October 2000

**APPENDIXES**

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**SUPPLEMENTARY APPENDIX**  
(available on request)

Cross-Border Agreement

## PROJECT FRAMEWORK

Design Summary	Performance Targets	Monitoring Mechanisms	Assumptions & Risks
<b>Goals</b>			
<ul style="list-style-type: none"> <li>Improved regional transport link and cooperation to promote economic growth.</li> </ul>	<ul style="list-style-type: none"> <li>Physical and nonphysical road transport barriers removed.</li> </ul>	<ul style="list-style-type: none"> <li>Transport documents, road safety programs and adoption of regulations on axle loads</li> </ul>	<ul style="list-style-type: none"> <li>Kazakhstan and the Kyrgyz Republic will harmonize road transport regulations.</li> </ul>
	<ul style="list-style-type: none"> <li>Vehicle operating costs reduced.</li> </ul>	<ul style="list-style-type: none"> <li>ADB's Project completion report</li> </ul>	
	<ul style="list-style-type: none"> <li>Road accidents reduced.</li> </ul>	<ul style="list-style-type: none"> <li>Road accident data</li> </ul>	
<b>Purpose</b>			
<ul style="list-style-type: none"> <li>Improved efficiency and safety of an important regional road transport link.</li> </ul>	<ul style="list-style-type: none"> <li>Customs and transport policies, procedures, and documents streamlined at the Georgievka border.</li> <li>International road roughness index reduced from 6/7 m/km IRI to less than 3 m/km IRI.</li> <li>Axle load limits harmonized.</li> <li>Road accident reduced substantially from existing 36 fatalities/10,000 vehicles (f/v) on the Almaty-Bishkek road.</li> <li>Unauthorized payments eliminated.</li> </ul>	<ul style="list-style-type: none"> <li>Travel time reduced by about 1 hour and the procedures are made simple and transparent.</li> <li>ADB's Project completion report</li> <li>Axle load standards</li> <li>Road accident data</li> <li>Random sample survey</li> </ul>	<ul style="list-style-type: none"> <li>Kazakh and Kyrgyz authorities maintain good cooperation.</li> <li>Governments' strong support to remove corruption.</li> </ul>
<b>Outputs</b>			
<ul style="list-style-type: none"> <li>Improved 245 km of roads between Almaty and Bishkek.</li> </ul>	<ul style="list-style-type: none"> <li>Civil works completed by 2004.</li> </ul>	<ul style="list-style-type: none"> <li>Project implementation progress reports</li> </ul>	
<ul style="list-style-type: none"> <li>Reduced number of control points.</li> </ul>	<ul style="list-style-type: none"> <li>Three out of five control points removed from the Almaty-Bishkek road.</li> </ul>	<ul style="list-style-type: none"> <li>ADB's Project implementation missions</li> </ul>	<ul style="list-style-type: none"> <li>Police and immigration agree to remove control points.</li> </ul>
<ul style="list-style-type: none"> <li>Standardized axle load limits.</li> </ul>	<ul style="list-style-type: none"> <li>Cross-Border Agreement and revised road design standards adopted.</li> </ul>	<ul style="list-style-type: none"> <li>Governments' resolution adopting the standard</li> </ul>	<ul style="list-style-type: none"> <li>Local engineers may not use revised standards.</li> </ul>
<ul style="list-style-type: none"> <li>Cross-Border Agreement.</li> </ul>	<ul style="list-style-type: none"> <li>Completed</li> </ul>	<ul style="list-style-type: none"> <li>Completed</li> </ul>	

Design Summary	Performance Targets	Monitoring Mechanisms	Assumptions & Risks
<ul style="list-style-type: none"> <li>Transport and Customs Document streamlined.</li> </ul>	<ul style="list-style-type: none"> <li>Simplified revised documents introduced.</li> </ul>	<ul style="list-style-type: none"> <li>Transport and customs documents</li> </ul>	
<ul style="list-style-type: none"> <li>Organized Kazakh road sector institutions.</li> </ul>	<ul style="list-style-type: none"> <li>Ministerial and departmental functions defined.</li> </ul>	<ul style="list-style-type: none"> <li>Advisory consultants reports</li> </ul>	<ul style="list-style-type: none"> <li>Government is committed to undertake institutional changes on a rational ground.</li> </ul>
<ul style="list-style-type: none"> <li>Maintenance by contract system.</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance works awarded to private contractors.</li> </ul>	<ul style="list-style-type: none"> <li>Tender and contract documents</li> </ul>	
<ul style="list-style-type: none"> <li>Equipment pool</li> </ul>	<ul style="list-style-type: none"> <li>Private sector able to hire equipment from the pool.</li> </ul>	<ul style="list-style-type: none"> <li>Tender and contract documents</li> </ul>	
<ul style="list-style-type: none"> <li>National Road Safety Councils (NRSC) and full-time secretariats, and Road Safety Acts.</li> </ul>	<ul style="list-style-type: none"> <li>NRSC operationalized and Road Safety Acts adopted.</li> </ul>	<ul style="list-style-type: none"> <li>Road safety audit reports</li> </ul>	
<b>Inputs</b>			
<ul style="list-style-type: none"> <li>Civil works</li> </ul>	<u>Kazakhstan (million)</u> <ul style="list-style-type: none"> <li>Civil works \$68.70</li> <li>Equipment \$10.80</li> <li>Consultants \$4.45</li> <li>Contingencies \$12.80</li> <li>IDC \$15.65</li> <li><b>Total \$112.40</b></li> </ul>	<ul style="list-style-type: none"> <li>Project implementation progress reports</li> </ul>	
<ul style="list-style-type: none"> <li>Consultants</li> </ul>		<ul style="list-style-type: none"> <li>Audited project accounts</li> </ul>	
<ul style="list-style-type: none"> <li>Salaries and other input from the Government</li> </ul>	<u>Kyrgyz Republic (million)</u> <ul style="list-style-type: none"> <li>Civil works \$4.9</li> <li>Equipment \$0.3</li> <li>Consultants \$0.6</li> <li>Contingencies \$0.8</li> <li>IDC \$0.1</li> <li><b>Total \$6.7</b></li> </ul>		

ADB = Asian Development Bank, IDC = interest during construction.

## **THE ASIAN DEVELOPMENT BANK'S INITIATIVES IN SUPPORT OF REGIONAL ECONOMIC COOPERATION IN CENTRAL ASIA**

### **A. Background**

1. Strengthening regional economic cooperation is especially important for realizing the development aspirations of the Central Asian Republics (CARs). Central Asia is an area with deeply rooted traditions of economic interaction. Situated along the historic Silk Road, the people living in this region have engaged in extensive commerce and trade from as early as 3000 BC. In the 20<sup>th</sup> century, geopolitical factors reduced the exchange of goods and services in the region. Expansion of the economic linkages again became possible with the collapse of the former Soviet Union (FSU) and the opening of trade in the early 1990s by the People's Republic of China (PRC).

2. The CARs face daunting constraints to economic development as they undergo a difficult period of transition from a command economy to one that relies on market institutions. They constitute a relatively large geographic area that is distant and, until recently, isolated from the modern market economies of Western Europe and Asia. The breakup of the FSU left these countries with little demand for their products, few sources for industrial inputs and manufactured goods, and inadequate administrative and political frameworks for functioning in the modern world. Furthermore, they are sparsely populated and have very low per capita incomes, which means that internal markets for domestically produced goods and services are limited. Their economic growth depends on developing new trading partners in place of their former dependence on a centralized structure that no longer exists.

3. The Xinjiang Uygur Autonomous Region—the far-western territory of the PRC—shares borders, economic interests, and cultural ties with the CARs. Even more important than these ethnic ties, however, is the potential resource and market complementarity among the CARs and Xinjiang, PRC.

### **B. Regional Economic Cooperation**

4. Since early 1997, the Asian Development Bank (ADB) has been providing technical assistance (TA) to encourage regional economic cooperation among its developing member countries in Central Asia—Kazakhstan, the Kyrgyz Republic, and Uzbekistan—and the PRC, focusing on the Xinjiang Uygur Autonomous Region. Activities under the technical assistance concentrated on identifying infrastructure needs and policy issues impeding cross-border trade and traffic, specifically in the areas of energy, trade, and transportation.<sup>1</sup> The findings and recommendations of the study were reviewed and validated in a series of workshops conducted in 1998 at ADB headquarters and in the region.<sup>2</sup> The first workshop tackled the challenges and opportunities in transportation and, the second, in energy. The third and fourth workshops covered cross-border trade cooperation between Kazakhstan and the PRC, and the fifth workshop deliberated on Kazakhstan-Kyrgyz Republic trade cooperation.

5. The TA (Phase II) commenced in 1999 and will support ADB's continuing policy dialogue in the context of regional cooperation.<sup>3</sup> The work involves the preliminary analysis of previously

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<sup>1</sup> TA 5707-REG: *Regional Economic Cooperation in Central Asia*, for \$1.15 million, approved on 8 November 1996.

<sup>2</sup> TA 5760-REG: *Workshops on Economic Cooperation in Central Asia*, for \$344,000, approved on 14 November 1997.

<sup>3</sup> TA 5818-REG: *Regional Economic Cooperation in Central Asia, Phase II*, for \$1.35 million, approved on 11 December 1998.

identified high-priority infrastructure investments such as the rehabilitation and improvement of the interconnected power grid of Central Asia and the development of various intercountry transport corridors. Phase II furthermore offers the opportunity to widen the initiative to promote economic cooperation in Central Asia with the recent membership of Tajikistan in ADB.

### C. Cooperation in the Transport Sector

6. The CARs are attaching very high priority to cooperation in the transport sector because of the poor state of transport infrastructure to facilitate regional economic cooperation. The main thrusts of the cooperation are (i) developing the east-west corridor along the Silk Road connecting the Far East with Europe, and the north-south corridor linking the Indian subcontinent with Russia; (ii) developing adequate transport infrastructure links to permit exploitation of the rich natural resources of Central Asia; (iii) linking major centers of economic activity, population, and tourist destination; and (iv) helping develop remote and low-income areas.

7. In addition to helping the CARs to improve the road infrastructure in line with the above priority, ADB has assisted them in undertaking sector reforms that are well coordinated, and developing standards and specifications that are responsive to the needs of market-oriented economies to permit the introduction of performance-based specifications and encourage the transfer of productivity-enhancing technologies. The bilingual (Russian/English) *Public Motor Roads: Design Standards and Regulations* and *Public Motor Roads: Construction Specifications* were prepared under ADB's TA<sup>4</sup> for Kazakhstan, Kyrgyz Republic, Mongolia, and Uzbekistan. The standards are expected to make important contributions to the introduction of road design based on economy and efficiency, and creation of an opportunity for the private sector to participate in the road sector. This principle is not followed in the FSU standards because such standards were developed for operations on a force account basis aimed at efficient utilization of State-owned resources (input-based), and had the force of law.

8. The development of technical standards has been difficult because of their bearing on the education system. Therefore, the integration of the FSU and western standards was technically difficult. Considering the difficulties in developing such standards, and to carry through the benefits of the TA to other countries in the region, the standards have been distributed to Armenia, Azerbaijan, Georgia, Russia, Tajikistan, and Turkmenistan.

9. The *Road Safety Guidelines for the Asian and Pacific Region*, which was developed under ADB's regional TA<sup>5</sup> aims to provide a source of reference and guidelines and introduce a concept of coordinated road safety initiatives. Road safety is a multidimensional social problem involving many sectors: education, health, police, and transport as well as the private sector involved in insurance, fuel supply, and bus and freight transport operations. The activities have to be complementary and coordinated among the sectors and countries of the region so that road safety measures can be optimized to avoid loss of resources on account of vehicle damage, medical treatment, police and administration costs, and damage to road facilities. The *Road Safety Guidelines* introduces such an approach to the CARs for dealing with the road safety problems.

<sup>4</sup> TA 5733-REG: *A Review of Road Design and Construction Standards*, for \$600,000, approved on 3 April 1997.

<sup>5</sup> TA 5620-REG: *Regional Initiatives in Road Safety*, for \$600,000, approved on 4 January 1995.

**TRANSPORT DEMAND  
(KAZAKHSTAN)**

Transport Mode	Year									
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>A. Freight Transport</b>										
<b>1. Demand (in billion ton-kilometers)</b>										
Railway	407.00	374.00	286.00	192.00	147.00	124.50	112.69	106.43	177.57	94.9
Road	45.00	44.00	40.00	29.00	11.00	10.77	9.59	6.42	4.64	4.51 <sup>a</sup>
Water	3.80	3.40	2.50	1.50	0.80	0.80	0.41	0.33	0.14	0.03
Air	0.09	0.10	0.08	0.06	0.07	0.14	0.14	0.08	0.05	0.06
<b>Total</b>	<b>455.89</b>	<b>421.50</b>	<b>328.58</b>	<b>222.56</b>	<b>158.87</b>	<b>136.21</b>	<b>122.83</b>	<b>113.26</b>	<b>182.40</b>	<b>99.5</b>
Railway (percent)	89.3	88.7	87.0	86.3	92.5	91.4	91.7	94.0	97.4	95.4
Road (percent)	9.9	10.4	12.2	13.0	6.9	7.9	7.8	5.7	2.5	4.5
Water (percent)	0.8	0.8	0.8	0.7	0.5	0.6	0.3	0.3	0.1	-
Air (percent)	-	-	-	-	-	-	-	-	-	-
<b>2. Demand (in million tons)</b>										
Railway	345.00	328.00	289.00	261.00	173.00	161.10	140.20	136.40	169.98	133.69
Road	2,236.00	2,154.00	2,011.00	1,382.00	979.50	954.20	802.60	620.70	471.16	423.47 <sup>a</sup>
Water	11.00	11.00	7.00	4.00	2.00	2.00	1.20	1.00	0.45	0.18
Air	0.07	0.05	0.03	0.03	0.03	0.03	0.03	0.02	0.01	0.02
<b>Total</b>	<b>2,592.07</b>	<b>2,493.05</b>	<b>2,307.03</b>	<b>1,647.03</b>	<b>1,154.53</b>	<b>1,117.33</b>	<b>944.03</b>	<b>758.12</b>	<b>641.16</b>	<b>557.36</b>
Railway (percent)	13.3	13.2	12.5	15.8	15.0	14.4	14.9	18.0	26.5	24.0
Road (percent)	86.3	86.4	87.2	83.9	84.8	85.4	85.0	81.9	73.5	76.0
Water (percent)	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	-
Air (percent)	-	-	-	-	-	-	-	-	-	-
<b>B. Passenger Transport</b>										
<b>1. Demand (in billion passenger-kilometers)</b>										
Railway	19.70	19.40	19.70	20.50	17.50	13.16	14.19	12.80	10.67	8.86
Road	35.40	33.20	26.20	19.90	13.60	13.24	9.64	8.03	8.10	6.03 <sup>b</sup>
Water	0.10	0.10	0.04	0.02	0.01	0.06	0.06	0.03	0.02	0.04
Air	13.30	12.60	8.80	6.80	4.60	4.71	3.31	2.20	2.10	2.14
<b>Total</b>	<b>68.50</b>	<b>65.30</b>	<b>54.74</b>	<b>47.22</b>	<b>35.71</b>	<b>31.17</b>	<b>27.20</b>	<b>23.06</b>	<b>20.89</b>	<b>17.07</b>
Railway (percent)	28.8	29.7	36.0	43.4	49.0	42.2	52.2	55.5	51.1	51.9
Road (percent)	51.7	50.8	47.9	42.1	38.1	42.5	35.4	34.8	38.8	35.3
Water (percent)	0.1	0.2	0.1	-	-	-	-	-	-	0.2
Air (percent)	19.4	19.3	16.1	14.4	12.9	15.1	12.2	9.5	10.1	12.5
<b>2. Demand (in million passengers)</b>										
Railway	42.6	40.0	39.7	41.2	41.1	37.4	31.8	20.1	15.6	14.3
Road	3,844.4	3,540.8	2,946.3	2,599.7	1,776.7	1,550.6	1,220.8	1,025.5	784.1	598.9
Water	3.1	3.1	1.6	1.2	0.6	0.4	0.4	0.3	0.1	0.07
Air	8.6	7.9	5.2	3.6	2.4	2.0	1.5	1.7	1.0	0.8
<b>Total</b>	<b>3,898.7</b>	<b>3,591.8</b>	<b>2,992.8</b>	<b>2,645.7</b>	<b>1,820.8</b>	<b>1,590.4</b>	<b>1,254.5</b>	<b>1,047.6</b>	<b>800.8</b>	<b>614.1</b>
Railway (percent)	1.1	1.1	1.3	1.6	2.3	2.4	2.5	1.9	1.9	1.9
Road (percent)	98.6	98.6	98.4	98.3	97.6	97.5	97.3	97.9	97.9	97.9
Water (percent)	0.1	0.1	0.1	-	-	-	-	-	-	-
Air (percent)	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2

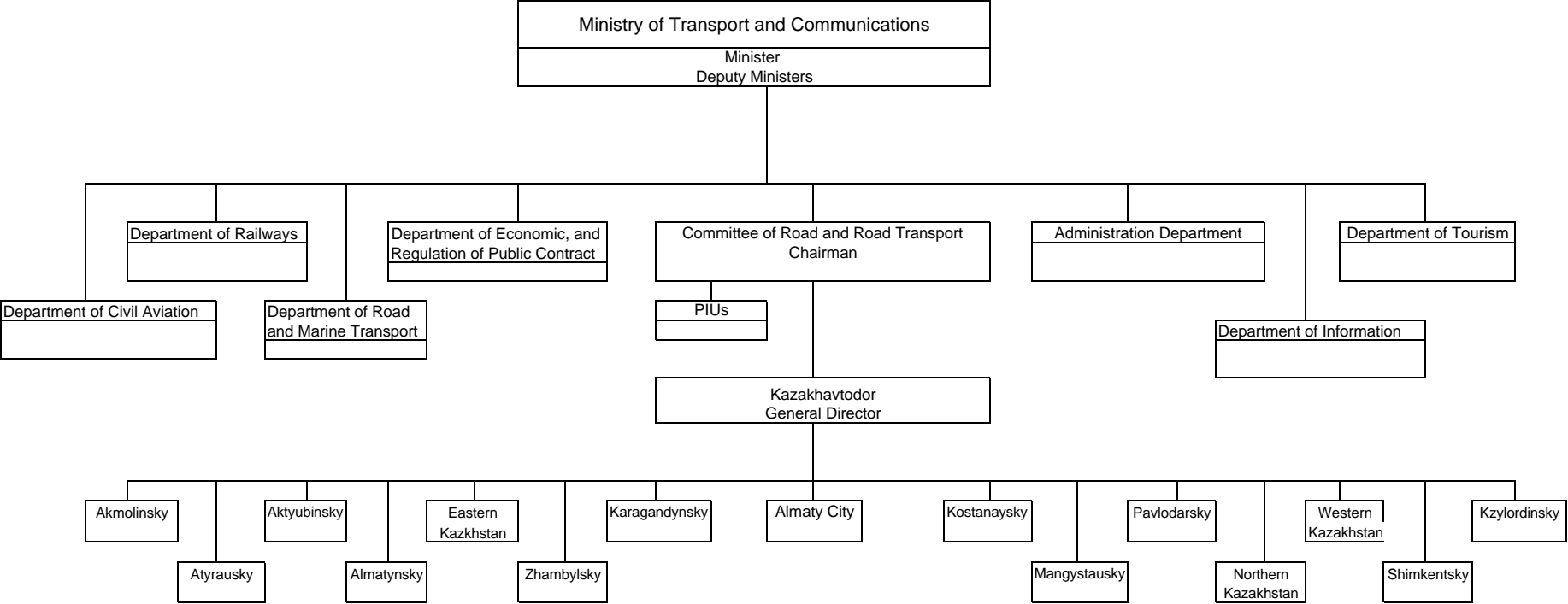
<sup>a</sup> This reflects official statistics and may not include substantial traffic carried by privatized trucking companies.

<sup>b</sup> This reflects official statistics and may not include traffic carried by privatized bus companies.

Source: The World Bank, Transport Sector Review, September 1996 and the Ministry of Transport, Communications and Tourism.



ORGANIZATION STRUCTURE OF KAZAKHAVTODOR



# VEHICLE OWNERSHIP IN KAZAKHSTAN (1999)

	Oblast (Province)/City																
	Akmola	Aktubinsk	Almaty	Atyrau	East Kazakhstan	Dzhambul	West Kazakhstan	Karaganda	Kzildorda	Kostanay	Mengistau	Pavlodar	North Kazakhstan	South Kazakhstan	Astana City	Almaty City	Total
<b>Truck</b>																	
Private (numbers)	13,164	9,327	19,106	6,923	17,146	10,282	8,138	13,753	7,641	19,238	5,203	9,249	11,014	10,013	6,546	13,726	180,469
Government (numbers)	1,624	883	2,294	738	2,603	1,284	1,058	2,027	803	1,960	483	1,578	1,274	1,559	962	1,254	22,384
Foreign (numbers)	-	2	67	56	19	3	51	1,715	-	2	4	275	122	3	49	466	2,834
<b>Total</b>	<b>14,788</b>	<b>10,212</b>	<b>21,467</b>	<b>7,717</b>	<b>19,768</b>	<b>11,569</b>	<b>9,247</b>	<b>17,495</b>	<b>8,444</b>	<b>21,200</b>	<b>5,690</b>	<b>11,102</b>	<b>12,410</b>	<b>11,575</b>	<b>7,557</b>	<b>15,446</b>	<b>205,687</b>
Private (percent)	89	91	89	90	87	89	88	79	90	91	91	83	89	87	87	89	88
Government (percent)	11	9	11	10	13	11	11	12	10	9	8	14	10	13	13	8	11
Foreign (percent)	-	0	-	-	-	0	1	-	-	0	0	2	1	0	1	3	-
<b>Bus</b>																	
Private (numbers)	1,677	1,923	3,246	1,891	2,928	2,204	1,561	4,080	1,594	2,723	1,762	1,769	1,180	3,631	980	4,856	38,005
Government (numbers)	273	126	262	236	682	166	178	371	141	290	122	684	188	228	249	443	4,639
Foreign (numbers)	-	2	21	19	4	-	1	482	-	1	-	143	15	2	5	82	777
<b>Total</b>	<b>1,950</b>	<b>2,051</b>	<b>3,529</b>	<b>2,146</b>	<b>3,614</b>	<b>2,370</b>	<b>1,740</b>	<b>4,933</b>	<b>1,735</b>	<b>3,014</b>	<b>1,884</b>	<b>2,596</b>	<b>1,383</b>	<b>3,861</b>	<b>1,234</b>	<b>5,381</b>	<b>43,421</b>
Private (percent)	86	94	92	88	81	93	90	83	92	90	94	68	85	94	79	90	88
Government (percent)	14	6	7	11	19	7	10	8	8	10	6	26	14	6	20	8	11
Foreign (percent)	-	0	1	-	-	-	0	-	-	0	-	6	1	0	0	2	2
<b>Car</b>																	
Private (numbers)	58,262	47,440	77,000	19,749	99,785	43,002	39,867	101,651	12,350	99,491	17,133	60,051	48,436	65,539	22,167	160,811	972,734
Government (numbers)	1,114	450	749	657	1,204	451	722	1,090	557	1,541	417	557	1,139	603	1,485	1,089	13,825
Foreign (numbers)	10	2	34	48	26	-	10	313	-	-	3	109	25	3	41	541	1,165
<b>Total</b>	<b>59,386</b>	<b>47,892</b>	<b>77,783</b>	<b>20,454</b>	<b>101,015</b>	<b>43,453</b>	<b>40,599</b>	<b>103,054</b>	<b>12,907</b>	<b>101,032</b>	<b>17,553</b>	<b>60,717</b>	<b>49,600</b>	<b>66,145</b>	<b>23,693</b>	<b>162,441</b>	<b>987,724</b>
Private (percent)	98	99	99	97	99	99	98	99	96	98	98	99	98	99	94	99	98
Government (percent)	2	1	1	3	1	1	2	1	4	2	2	1	2	1	6	1	1
Foreign (percent)	0	0	0	0	-	-	0	-	-	-	0	-	-	0	0	-	-
<b>Special Vehicle</b> <sup>a</sup>																	
Private (numbers)	1,913	1,294	1,822	1,141	1,896	800	1,041	2,118	421	2,694	1,427	894	1,444	745	682	1,743	22,075
Government (numbers)	1,118	888	1,258	663	2,135	1,150	867	1,847	648	1,719	512	1,281	867	1,158	706	1,569	18,386
Foreign (numbers)	-	-	40	37	8	-	5	506	-	-	-	124	63	-	4	267	1,054
<b>Total</b>	<b>3,031</b>	<b>2,182</b>	<b>3,120</b>	<b>1,841</b>	<b>4,039</b>	<b>1,950</b>	<b>1,913</b>	<b>4,471</b>	<b>1,069</b>	<b>4,413</b>	<b>1,939</b>	<b>2,299</b>	<b>2,374</b>	<b>1,903</b>	<b>1,392</b>	<b>3,579</b>	<b>41,515</b>
Private (percent)	63	59	58	62	47	41	54	47	39	61	74	39	61	39	49	49	53
Government (percent)	37	41	40	36	53	59	45	41	61	39	26	56	37	61	51	44	44
Foreign (percent)	-	-	1	2	-	-	0	-	-	-	-	-	-	-	0	7	-
<b>Total</b>																	
Private (numbers)	75,016	59,984	101,174	29,704	121,755	56,288	50,607	121,602	22,006	124,146	25,525	71,963	62,074	79,928	30,375	181,136	1,213,283
Government (numbers)	4,129	2,347	4,563	2,294	6,624	3,051	2,825	5,335	2,149	5,510	1,534	4,100	3,468	3,548	3,402	4,355	59,234
Foreign (numbers)	10	6	162	160	57	3	67	3,016	-	3	7	651	225	8	99	1,356	5,830
<b>Total</b>	<b>79,155</b>	<b>62,337</b>	<b>105,899</b>	<b>32,158</b>	<b>128,436</b>	<b>59,342</b>	<b>53,499</b>	<b>129,953</b>	<b>24,155</b>	<b>129,659</b>	<b>27,066</b>	<b>76,714</b>	<b>65,767</b>	<b>83,484</b>	<b>33,876</b>	<b>186,847</b>	<b>1,278,347</b>
Private (percent)	95	96	96	92	95	95	95	94	91	96	94	94	94	96	90	97	95
Government (percent)	5	4	4	7	5	5	5	4	9	4	6	5	5	4	10	2	5
Foreign (percent)	0	0	-	-	-	0	0	-	-	0	0	1	-	0	0	-	-

<sup>a</sup> Special vehicles include trailers, tractors, ambulances, postal vehicles and vehicles owned by the military, and the ministries of agriculture and industry.  
Source: The Committee of Statistics and Analysis

# **TRANSPORT DEMAND IN THE KYRGYZ REPUBLIC**

## **A. Freight Traffic**

Transport Mode	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
1. Total in million tons	338.7	366.1	237.7	71.1	42.0	28.1	28.6	35.9	35.6	36.1
Road	330.0	359.0	231.9	67.7	39.9	27.2	27.3	34.4	34.2	35.0
Railway	8.0	6.5	5.5	3.3	2.0	0.9	1.3	1.5	1.4	1.1
Waterway	0.7	0.6	0.3	0.1	0.1	-	-	-	-	-
Civil Aviation <sup>a</sup>	-	-	-	-	-	-	-	-	-	-
Percent										
Road	97.4	98.1	97.5	95.2	95.1	96.8	95.5	95.8	96.1	97.0
Railway	2.4	1.8	2.3	4.6	4.8	3.2	4.5	4.2	3.9	3.0
Waterway	0.2	0.2	0.1	0.2	0.1	-	-	-	-	-
Civil Aviation	-	-	-	-	-	-	-	-	-	-
2. Total in million ton-kilometers	8,737	8,813	5,632	2,263	1,435	1,212	1,454	1,824	1,573.7	1,650.6
Road	5,631	5,936	3,759	1,271	787	709	865	1,253	1,015.0	1,220.0
Railway	2,620	2,415	1,589	923	575	403	481	472	466.0	354.0
Waterway	114	98	61	23	9	6	6	2	6.1	8.7
Civil Aviation	372	364	223	46	64	94	102	97	86.6	67.9
Percent										
Road	64.5	67.4	66.7	56.2	55.9	58.4	59.5	68.7	64.5	73.9
Railway	30.0	27.4	28.2	40.8	44.0	33.3	33.1	25.9	29.6	21.4
Waterway	1.3	1.1	1.1	1.0	0.6	0.5	0.4	0.1	0.4	0.5
Civil Aviation	4.3	4.1	4.0	2.0	4.5	7.8	7.0	5.3	5.5	4.1

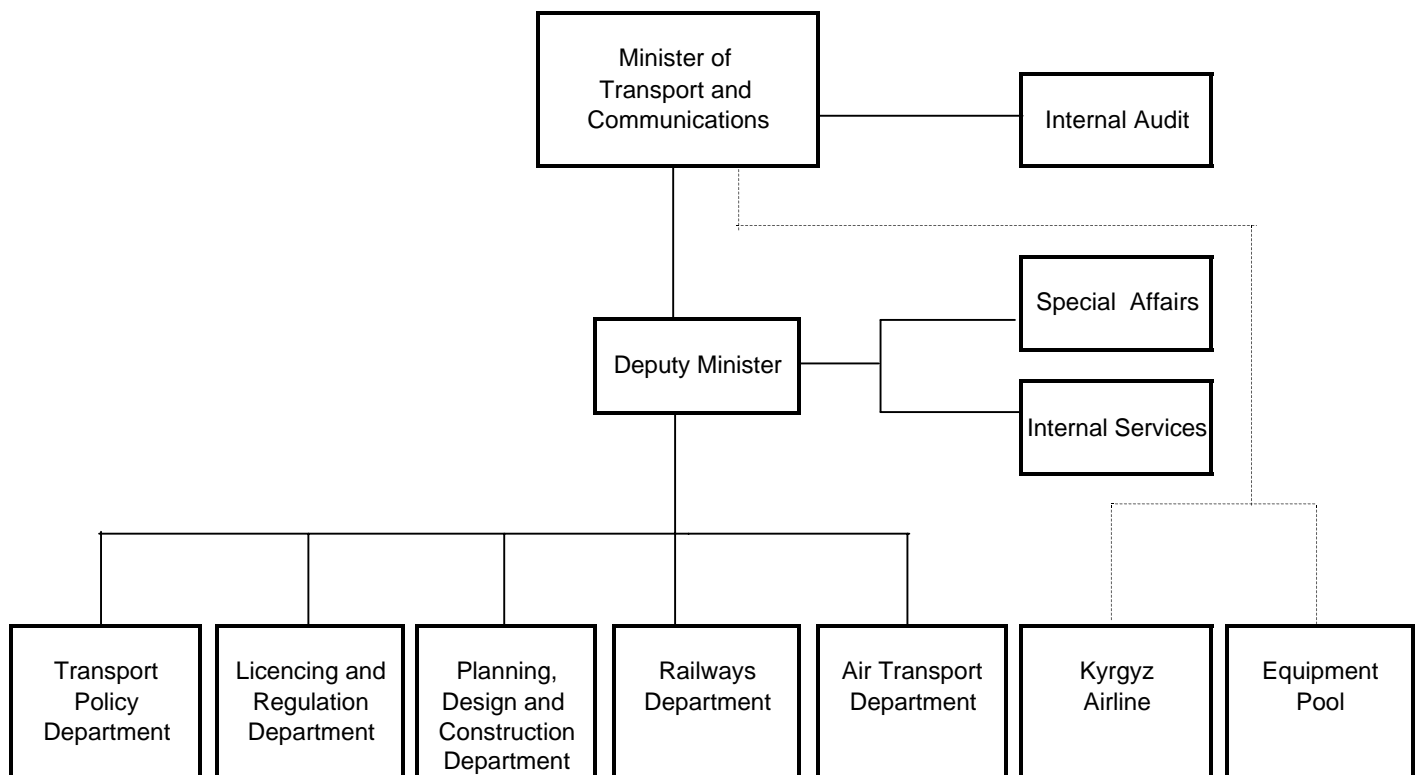
<sup>a</sup> Freight traffic for civil aviation in million tons is negligible.

## **B. Passenger Traffic**

Transport Mode	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
1. Total in million passengers	656.6	609.7	445.0	273.9	269.7	213.6	257.2	308.1	367.5	354.8
Road	653.4	606.6	442.3	271.3	267.1	212.3	255.6	306.6	366.4	354.0
Railway	1.4	1.4	1.7	2.3	2.2	0.8	1.0	1.0	0.6	0.4
Civil Aviation	1.8	1.7	1.0	0.3	0.4	0.5	0.6	0.5	0.4	0.3
Percent										
Road	99.5	99.5	99.4	99.1	99.0	99.4	99.4	99.5	99.7	99.8
Railway	0.2	0.2	0.4	0.8	0.8	0.4	0.4	0.3	0.2	0.1
Civil Aviation	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1
2. Total in million passenger-kilometers	9,524	9,495	6,576	2,935	2,849	3,279	3,633	3,807	4,362	4,480
Road	5,501	5,530	3,835	2,182	2,051	2,336	2,675	3,029	3,698.5	3,916.8
Railway	205	200	231	295	192	87	90	93	59.3	31.3
Civil Aviation	3,818	3,765	2,510	458	606	856	868	685	603.7	531.6
Percent										
Road	57.8	58.2	58.3	74.3	72.0	71.2	73.6	79.6	84.8	87.4
Railway	2.2	2.1	3.5	10.1	6.7	2.7	2.5	2.4	1.4	0.7
Civil Aviation	40.1	39.7	38.2	15.6	21.3	26.1	23.9	18.0	13.8	11.9

Source: The Ministry of Transport and Communications.

**ORGANIZATION STRUCTURE OF THE  
MINISTRY OF TRANSPORT AND COMMUNICATIONS (THE KYRGYZ REPUBLIC)**



## ROAD SECTOR REFORM COORDINATION

Reform Agenda	Kazakhstan Current Status	The Project		Kyrgyz Republic Current Status
		Kazakhstan	Kyrgyz Republic	
1. Policy and Regulatory Framework	<ul style="list-style-type: none"> <li>Road Sector Policy Statement (adopted 31 March 1996).<sup>a</sup></li> <li>The Automobiles Road Act revised under TA 2631-KAZ was not implemented because of frequent institutional changes.</li> </ul>	<ul style="list-style-type: none"> <li>Automobile Road Act will be updated for Parliament consideration, taking into account institutional reorganization carried out by the Government (as a result of the transfer of the capital from Almaty to Astana).</li> </ul>		<ul style="list-style-type: none"> <li>Transport and Road Sector Policy Statement (adopted on 15 October 1997).<sup>c</sup></li> <li>Revised Automobile Roads Act (enacted on 2 June 1998).<sup>d</sup></li> </ul>
2. Institutional Reform and Capacity Development	<ul style="list-style-type: none"> <li>Road sector institutional restructuring (separation of policy-making and implementation functions) (completed).<sup>a</sup></li> <li>Tendering and bidding procedures (basic completed, for bigger contracts ongoing).<sup>a b</sup></li> <li>Financial management and control systems (study completed, introduction ongoing).<sup>a b</sup></li> <li>Training road sector staff and private contractors in contract management and implementation (basic completed, training to continue).<sup>a b</sup></li> <li>Human resource development plan (completed).<sup>a</sup></li> </ul>	<ul style="list-style-type: none"> <li>Advisory assistance on transport policy issues such as review of transport regulations, pricing, and planning will be provided.</li> <li>Road sector structures, functions and sector objectives will be defined and planning, management, and monitoring systems established.</li> <li>Road maintenance by contract through the concept of equipment pool will be introduced.</li> </ul>	<ul style="list-style-type: none"> <li>Road maintenance by contract through the concept of equipment pool will be introduced.</li> </ul>	<ul style="list-style-type: none"> <li>Transport institutional restructuring (within the Ministry of Transport and Communications, and by transferring road-related works from other ministries) (ongoing).<sup>d</sup></li> <li>Advisory assistance on transport policy issues (ongoing).<sup>d</sup></li> <li>Road sector structures, functions and sector objectives, and planning, management and monitoring systems (ongoing).<sup>d</sup></li> <li>Tendering and Bidding Procedures (ongoing).<sup>d</sup></li> <li>Financial management and control systems (ongoing).<sup>d</sup></li> <li>Training road sector staff and private contractors in contract management and implementation (ongoing).<sup>d</sup></li> <li>Human resource development plan (completed).<sup>c</sup></li> </ul>
3. Road Fund and Cost Recovery	<ul style="list-style-type: none"> <li>Cost recovery study (completed).<sup>a</sup></li> <li>Revised Road Fund Act (approved by the Parliament in May 1998).<sup>a</sup></li> <li>Introduction of user-pays principle into the road fund (continuing).<sup>a b</sup></li> </ul>			<ul style="list-style-type: none"> <li>Cost recovery study (completed).<sup>c</sup></li> <li>Road Fund Act enacted on 1 June 1998.<sup>d</sup></li> <li>Introduction of user-pays principle into the road fund (ongoing).<sup>d</sup></li> </ul>

Reform Agenda	Kazakhstan Current Status	The Project		Kyrgyz Republic Current Status
		Kazakhstan	Kyrgyz Republic	
4. Road Safety	<ul style="list-style-type: none"> <li>• Road accident data collection and processing (ongoing).<sup>b</sup></li> <li>• Road safety action plan (ongoing).<sup>b</sup></li> <li>• Road safety education (ongoing).<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>• National Road Safety Board will be established.</li> <li>• Road Safety Act will be enacted.</li> <li>• Axle load and vehicle size regulation will be adopted.</li> <li>• Road safety initiatives through road maintenance contract will be implemented.</li> </ul>	<ul style="list-style-type: none"> <li>• National Road Safety Board will be established.</li> <li>• Road Safety Act will be enacted.</li> <li>• Axle load and vehicle size regulation will be adopted.</li> <li>• Road safety initiatives through road maintenance contract will be implemented.</li> </ul>	<ul style="list-style-type: none"> <li>• Road accident data collection and processing (ongoing).<sup>b</sup></li> <li>• Road safety action plan (ongoing).<sup>b</sup></li> <li>• Road safety education (ongoing).<sup>b</sup></li> </ul>
5. Road Maintenance	<ul style="list-style-type: none"> <li>• Maintenance Manual (completed).<sup>a</sup></li> <li>• Maintenance funds allocation (assurance by the Government).<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Equipment pool system and maintenance by contract procedures will be developed.</li> <li>• Maintenance training will be provided.</li> </ul>		<ul style="list-style-type: none"> <li>• Equipment pool system and maintenance by contract procedures (ongoing).<sup>d</sup></li> <li>• Maintenance training (ongoing).<sup>d</sup></li> <li>• Maintenance funds allocation (Road Fund, if not adequate from budget).<sup>d</sup></li> <li>• Road maintenance by contract (Bishkek-Osh road) (ongoing).<sup>d</sup></li> </ul>
6. Regional Transport Issues		<ul style="list-style-type: none"> <li>• Cross-Border Agreement will be implemented and customs and transport regulations, procedures and documentation will be revised.</li> <li>• Vehicle weight and dimension limits will be revised.</li> <li>• Road design and construction standards will be adopted.</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-Border Agreement will be implemented and customs and transport regulations, procedures and documentation will be revised.</li> <li>• Vehicle weight and dimension limits will be revised.</li> <li>• Road design and construction standards will be adopted.</li> </ul>	

<sup>a</sup> Loan 1455-KAZ: *Road Rehabilitation Project*, for \$50 million, approved on 27 August 1996.

<sup>b</sup> World Bank's KAZ: *Road Transport Restructuring*

<sup>c</sup> Loan 1444-KGZ: *Road Rehabilitation Project*, for \$50 million, approved on 13 June 1996.

<sup>d</sup> Loan No. 1630-KGZ(SF): *Second Road Rehabilitation Project*, for \$50 million, approved on 10 September 1998.

# **COST ESTIMATES AND FINANCING PLAN** (\$ million)

Item	ADB			European Union (TRACECA)			EBRD			Government			Total		
	FX	a	LC	b	Total	FX	LC	LC	Total	FX	LC	LC	Total	FX	Total
<b>KAZAKHSTAN COMPONENT</b>															
<b>Part A: Civil Works</b>															
1. Road Rehabilitation (km 11.6 - km 62.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Road Rehabilitation (km 63.0 - km 216.0)	17.30	14.50	31.80	-	-	8.50	11.50	20.00	-	2.50	2.50	14.40	14.40	8.50	22.50
<b>Part B: Equipment</b>															
1. Road Maintenance Equipment	10.00	-	10.00	-	-	-	-	-	-	-	0.20	-	0.20	10.00	10.20
2. Customs Equipment	-	-	-	0.30	-	-	-	-	-	-	-	-	-	0.30	0.30
3. Laboratory Equipment	0.30	-	0.30	-	-	-	-	-	-	-	-	-	-	0.30	0.30
<b>Part C: Consulting Services</b>															
1. Project Supervision	2.00	1.25	3.25	-	-	-	-	-	-	-	-	-	-	2.00	3.25
2. Project Management	-	0.50	0.50	-	-	-	-	-	-	-	-	-	-	-	0.50
3. Road Maintenance	0.30	0.10	0.40	-	-	-	-	-	-	-	-	-	-	0.30	0.40
4. Material Testing and Standards	-	0.20	0.20	-	-	-	-	-	-	-	-	-	-	-	0.20
5. Training Customs Officials	-	-	-	0.10	-	-	-	-	-	-	-	-	-	0.10	0.10
<b>Part D: Contingencies</b>															
1. Physical	2.00	1.25	3.25	-	-	0.30	0.55	0.85	-	2.65	2.65	-	2.65	2.30	6.75
2. Price	1.95	1.20	3.15	-	-	0.20	0.45	0.65	-	2.25	2.25	-	2.25	2.15	6.05
<b>Part E: Interest and Other Charges During Construction and Front-end Fee</b>															
12.15	-	-	-	-	-	3.50	-	3.50	-	-	-	-	-	15.65	15.65
<b>Total</b>	<b>46.00</b>	<b>19.00</b>	<b>65.00</b>	<b>0.40</b>	<b>0.40</b>	<b>12.50</b>	<b>12.50</b>	<b>25.00</b>	<b>-</b>	<b>22.00</b>	<b>22.00</b>	<b>-</b>	<b>22.00</b>	<b>58.90</b>	<b>112.40</b>
<b>The KYRGYZ REPUBLIC COMPONENT</b>															
<b>Part A: Civil Works</b>															
<b>Part A: Civil Works</b>															
Road Rehabilitation (40.8 km)	2.57	1.23	3.80	-	-	-	-	-	-	-	1.12	1.12	1.12	2.57	4.92
<b>Part B: Equipment</b>															
Customs Equipment	-	-	-	0.30	-	0.30	-	-	-	-	-	-	-	0.30	0.30
<b>Part C: Consulting Services</b>															
1. Detailed Design and Construction Supervision	0.30	0.10	0.40	-	-	-	-	-	-	-	-	-	-	0.30	0.40
2. Project Management	-	0.10	0.10	-	-	-	-	-	-	-	-	-	-	-	0.10
3. Training Customs Officials	-	-	-	0.10	-	0.10	-	-	-	-	-	-	-	0.10	0.10
<b>Part D: Contingencies</b>															
1. Physical	0.20	0.15	0.35	-	-	-	-	-	-	-	0.10	0.10	0.10	0.20	0.45
2. Price	0.13	0.12	0.25	-	-	-	-	-	-	-	0.08	0.08	0.08	0.13	0.33
<b>Part E: Interest and Other Charges During C</b>															
0.10	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	0.10
<b>Total</b>	<b>3.30</b>	<b>1.70</b>	<b>5.00</b>	<b>0.40</b>	<b>0.40</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1.30</b>	<b>1.30</b>	<b>-</b>	<b>1.30</b>	<b>3.70</b>	<b>6.70</b>

ADB = Asian Development Bank, EBRD = European Bank for Reconstruction and Development, FX = foreign exchange, LC = local currency, TRACECA = Transport Corridor Europe Caucasus Asia.

## IMPLEMENTATION SCHEDULE

Item	2000												2001												2002												2003												2004																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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## PROPOSED CONTRACT PACKAGES

Contract Description	Number of Contracts	Estimated Contract Value (\$ million)	Procurement Method <sup>a</sup>
<b>KAZAKHSTAN COMPONENT</b>			
<b>A. Road Rehabilitation</b>			
Civil Works for Rehabilitation of 50.4 km (km 11.6 - km 62) of Road Section from Almaty to Georgievka Border	1	22.5	PPE
Civil Works for Rehabilitation of 178.0 km (km 38 - km 216) of Road Section from Almaty to Georgievka Border	1	46.2	ICB
<b>B. Road Maintenance</b>			
Equipment	1	10.0	ICB
<b>C. Customs Facilities</b>			
Equipment	1	0.3	IST
<b>D. Material Testing and Standards</b>			
Laboratory Equipment	1	0.3	ISB
<b>E. Consulting Services</b>			
Project Supervision and Road Maintenance	1	3.7	ICR
<b>THE KYRGYZ REPUBLIC COMPONENT</b>			
<b>A. Road Rehabilitation</b>			
Civil Works for Rehabilitation of 40.8 km of Road Section from Bishkek to Akzhol/Chu Border	1	4.9	LCB
<b>B. Consulting Services</b>			
Project Supervision and Road Maintenance	1	0.4	ICR

<sup>a</sup> PPE = procurement procedures of the European Bank for Reconstruction and Development (EBRD), ICB = international competitive bidding, IST = international shopping procedure of the Transport Corridor Europe Caucasus Asia (TRACECA), ISB = international shopping procedures of the Asian Development Bank, ICR = international competitive recruitment, LCB = local competitive bidding.

## **TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PROJECT SUPERVISION**

### **A. Introduction**

1. The terms of reference indicate the work to be undertaken, and the staffing resources to be provided by the consultants to be appointed by the concerned Executing Agency (EA) to supervise the civil works.

2. The consulting services will comprise two parts:

Part I: construction supervision of civil works (applicable to both Kazakh and Kyrgyz components), and

Part II: assistance for road maintenance by contract (applicable to only the Kazakh component).

### **B. Background**

3. The civil works contract will be administered under the FIDIC (Fourth Edition) Conditions of Contract and will have contract periods of about 33 months. The works will include earthworks, natural gravel or stabilized subbase, crushed rock base and asphalt concrete surfacing, drainage works, and repair of existing bridges. The works will be carried out following the standards and specifications prepared under the Asian Development Bank's (ADB's) regional technical assistance 5733.<sup>1</sup>

### **C. Construction Supervision**

#### **1. Objectives**

4. The main objective of Part I is to ensure that the Project is completed within the agreed-upon time for construction, at the agreed-upon cost, and in accordance with standards set out in the contract document and to the satisfaction of the Government and ADB. Supervision of all construction works will be thorough to ensure that they are carried out in full compliance with the engineering design, technical specifications, summary initial environmental examination and summary social impact assessment recommendations, and other contract documentation. An additional objective is to promote technology transfer by requiring the consultants to employ suitably qualified domestic professionals, appointing personnel from Kazakhstan/Kyrgyz Republic as counterparts to be incorporated into the consultants' site supervision team, providing appropriate formal and on-the-job training to site staff, and monitoring the training programs to be developed and implemented by the civil works contractors. A third objective is to provide effective liaison between the Project, concerned Government and local organizations, and ADB.

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<sup>1</sup> TA 5733-REG: *A Review of Road Design and Construction Standards*, for \$600,000, approved on 3 April 1997.

## **2. Scope of the Services**

5. The services to be provided by the consultants will include
  - (i) reviewing the designs prepared by the domestic consultants to identify inconsistencies and incorporate appropriate corrections, if necessary;
  - (ii) administering the civil works contracts as Engineer as defined in the contract document;
  - (iii) supervising day-to-day works on site by provision of suitably qualified and experienced site supervision staff;
  - (iv) ensuring compliance with the environmental and social impact mitigation requirements of the civil works contracts, including those related to socially transmitted diseases;
  - (v) preparing regular process and other reports;
  - (vi) assisting EA in preparing loan withdrawal applications for submission to ADB; and
  - (vii) providing the staff of EA and their respective domestic consultants with on-site training in contract administration and other procedures relevant to site supervision.
6. On present scheduling, the consultants will be involved in assisting the EA in selecting the contractors.
7. Specific services will be to
  - (i) assist in reviewing, and amending as necessary, the contract documents, taking into account the fact that by the time the consultant is appointed the selection of the civil works contractor will have been completed, and that any amendments proposed must be assessed for their contractual and cost implications;
  - (ii) administer the contract as the Engineers;
  - (iii) provide comprehensive day-to-day contract supervision and administration services at the site;
  - (iv) ensure that the notice to commence the works has been issued;
  - (v) ensure that the contractor has arranged proper insurance cover;
  - (vi) ensure that the contractor has provided a performance bond;
  - (vii) certify advance payments in accordance with the contracts;
  - (viii) receive and assess the contractor's implementation program;

- (ix) ensure that the contractor has possession of the site;
- (x) provide the contractor with all necessary survey data and reference for setting out the works;
- (xi) liaise with the appropriate authorities to ensure that all the affected utility services are promptly relocated;
- (xii) carry out checks on the contractor's setting out and ensuring that the works are carried out in accordance with drawings and other design details;
- (xiii) provide direct day-to-day control of the site materials testing laboratory and its activities;
- (xiv) ensure that the works are executed in accordance with all the provisions of the contract, including those concerning standards of workmanship, ordinance clearance, and other safety provisions and protections of the environment;
- (xv) measure the works, agreeing and certifying to interim and final payment certificates for submission to the employer, and assisting the employer in preparing loan withdrawal documentation for submission to ADB;
- (xvi) administer, assess and, where appropriate, make recommendations on applications for extension of time, claims for additional payment, and contractual disputes;
- (xvii) issue site instructions, variation orders, provisional sum orders, and day works orders as appropriate;
- (xviii) maintain regular estimates of the cost to completion and time to completion for each contract;
- (xix) ensure that as-built drawings are prepared;
- (xx) prepare monthly progress reports, in a form agreed upon with the EA and ADB, and submit these within 10 days of the end of the month to which they refer;
- (xxi) maintain full and detailed permanent site records, which will include site correspondence, survey data, quality acceptance data, site diaries, measurement and certification, minutes of meetings, and records of all other contractually relevant matters;
- (xxii) administer the completion of the contract, including all activities in relation to the issue of the Taking Over Certificate and Defects Liability Certificate;
- (xxiii) throughout the services, maintain close liaison with the EA and other relevant agencies, including the police and other Government and regional authorities;

- (xxiv) prepare a final report, which will be a compilation and condensation of data presented in regular monthly progress reports, together with copies of as-built drawings within two months of the issue of the Defects Liability Certificate;
- (xxv) provide on-the-job training for the EA's staff and the staff of domestic consultants in carrying out construction supervision including contract administration, quality control, monitoring and evaluation, and other relevant activities. The on-the-job training will specifically cover the operation of the environmental monitoring and reporting system;
- (xxvi) monitor land acquisition and resettlement activities being undertaken by the Governments and the provincial authorities, and report on the activities through the monthly progress report;
- (xxvii) carry out benefit monitoring and evaluation by compiling and analyzing appropriate border crossing traffic, axle load and other socioeconomic data. Socioeconomic indicators to be monitored will include passenger fares and freight rates, traffic speed and accidents, agricultural and industrial goods transported on the road, vehicle operation and maintenance costs, and number and type of jobs created in the construction and maintenance activities. The data provided will be disaggregated by gender and collected during project implementation and after completion;
- (xxviii) undertake environmental monitoring as detailed in the summary initial environmental examination (SIEE) report, and incorporate the findings and supporting data in the project completion reports; and
- (xxix) ensure that measures are taken to reduce the risk of socially transmitted diseases, including HIV-AIDS,<sup>2</sup> in cooperation with the Ministry of Health and its district offices. The consultants and the civil works contractors will organize training and disseminate publicity materials targeted to road construction workers and users.

#### **D. Road Maintenance (Applicable to Kazakh Component)**

##### **(a) Equipment Leasing System**

13. To put the equipment fleet into more effective and efficient use and to facilitate development of private road maintenance capabilities, the equipment pool will be established with the help of the consultants. The assistance to be provided will include

- (i) developing the equipment hire system incorporating appropriate provisions for depreciation and operation and maintenance expenses;
- (ii) introducing accounting procedures;
  - (a) short- and long-term assets;
  - (b) short- and long-term liabilities;

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<sup>2</sup> Human immunodeficiency virus-acquired immunodeficiency syndrome.

- (c) establishment of equity accounts;
  - (d) revenues including nonoperating revenues; and
  - (e) expenses including depreciation, interest expenses, and non-operating expenses.
- (iii) establishing equipment servicing and repair workshop; and
  - (iv) providing guidance and on-the-job training to operators, mechanics, and foremen.

**(b) Road Maintenance by Contract**

14. The services for road maintenance by contract will include:

- (i) reviewing the operation and maintenance requirements of the Almaty-Bishkek road and defining in detail the operation and maintenance works including environmental and social impact mitigation and road safety measures, terms and conditions, timing, and duration to permit tendering;
- (ii) preparing prequalification and tender documents;
- (iii) providing necessary assistance in the invitation, review, and evaluation of prequalification submissions;
- (iv) assisting Kazakhavtodor in tendering by
  - (a) issuing tender documents to prequalified bidders;
  - (b) providing on-site assistance to prequalified contractors;
  - (c) organizing prebid conferences for prequalified and invited bidders;
  - (d) providing interpretation of plans, specifications, and contract conditions;
  - (e) evaluating bids and preparing evaluation reports; and
  - (f) preparing documents necessary to finalize the contracts with the successful bidders and providing advisory assistance to Kazakhavtodor in completing the signing of contracts and issuing orders to proceed.
- (v) recommending supervision and monitoring mechanisms to assess the effectiveness of road maintenance by contract.

## SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

### A. Introduction

1. This summary initial environmental examination (SIEE) concerns the proposed Almaty-Bishkek Regional Road Rehabilitation Project in Kazakhstan and the Kyrgyz Republic. The initial environmental examination (IEE) was prepared under TA 2632-KAZ and Loan 1444-KGZ in accordance with the Asian Development Bank's (ADB's) *Environmental Assessment Requirements* and *Environmental Guidelines for Selected Infrastructure Projects*. The SIEE presents the data, findings, and recommendations of the IEE as well as the results of ADB's investigations during project processing.

2. The IEE was prepared in a number of steps. First, secondary data and reports on relevant previous projects were analyzed. In addition, discussions were held with representatives of the local environment authorities and of the road design institutes responsible for the detailed engineering design. Second, the data collected for the Project (e.g. geological, social, and environmental baseline data) were reviewed. Third, field investigations assessed the present condition of the environment along the project road. Fourth, possible environmental impacts were estimated, and mitigating measures were selected and planned to minimize the adverse effects expected during and after construction.

### B. Description of the Project

3. The Project entails the rehabilitation of the Almaty-Bishkek road. The project road passes through varied terrain, valleys, high mountains and mountain passes, agricultural (farmland and grazing grounds) and nonagricultural lands and areas of low and medium population density.

4. Road rehabilitation will be carried out on the existing alignment, except at two sections (total length of 12 kilometers [km]) in the mountainous areas of Kurday Pass in Kazakhstan. Rehabilitation will include minor widening, removal and replacement of some layers of road structure, and improvement of drainage systems. The land that will be affected by the needed road realignment is currently not used due to its mountainous character and can be classified as wasteland. In the sections where some widening will occur (e.g., to improve drainage structures), the existing road right-of-way provides sufficient space for the needed improvement, and no permanent impacts are expected on land and other assets along the road. No resettlement effects in terms of both housing and nonhousing relocation are expected.

5. The borrow areas and quarries, construction and labor camps, road haulage, and road diversions will have some temporary impacts during project construction. Although no severe and permanent environmental impacts are expected as a result of the road rehabilitation, attention must be given to good practice during the different stages of project planning, design, and implementation to prevent any adverse impacts.

### C. Description of the Environment

#### 1. Physical and Agricultural Resources

6. The Kazakh section of the project road is situated in the two regions of Almaty and Zhambul. Kurday Mountain is situated in the latter. This is part of the Alatou mountain, which extends as a ridge with decreasing elevation from east to west near the border between

Kazakhstan and the Kyrgyz Republic, where the Project road crosses Kurday mountain pass. This acts as a major regional watershed.

7. The perennial and nonperennial streams flowing south of the mountain pass have produced five types of landform: (i) rugged mountain with thin soil cover and high rate of water loss by runoff; (ii) alluvial fans at the foot of the mountain formed of unsorted grain size materials, leading to rapid loss of water; (iii) amphitheater-shaped undulating river basins; (iv) flat plains along the median river made of materials of homogenous size, which lead to impeded drainage; and (v) terraces formed of extremely fine-grained silt, which act as local watersheds. The project road in the southern part of the Kazakhstan section traverses all these five types.

8. Given the above physical characteristics, special attention should be paid to the construction of a large number of cross drainage structures and to the protection of the road from erosion from the parallel flowing streams especially in its mountainous areas. The sustained erosion is also due to the very ancient age of the rock geology. Major climatic changes take place especially during the winter season. A long winter period is characterized by very rigid temperatures manifested by freezing and thawing of surface water and groundwater, spring floods, snow, and dust and hail storms. The remaining part- the less mountainous area- of the environment along the project road is cultivated, and wheat and grain are grown with limited irrigation. The alluvial fans support orchards and vegetable fields in Almaty region. Many flat, nonirrigated areas are used for animal grazing and fodder.

9. The Kyrgyz section of the road is located entirely in the northern half of the administrative district of Alamedin within Chui region. The area surrounding the road is mainly flat and intensively cultivated. Grain, sugar beet, potatoes, vegetables, and milk represent the main agricultural products cultivated. The climate is continental, but quite variable due to the differences in altitude. Precipitation varies considerably, being highest in the mountains and lowest in the valleys. It rains mainly during the cold season, which means that on the mountains the major part of the precipitation is snow. East of the project road many mineral resources and thermal springs can be found. In particular, around Lake Issyk-Kul, medicinal mud and other natural resources attract many tourists especially during summer. Erosion is among the most significant environmental problems in the country. It represents a threat to the physical and biological environment, affecting 25 percent of the total land available for farming and grazing.

10. There are no designated wetlands, forests, nature conservation areas, and places of archaeological importance within the study area. Trees are planted along the road in many sections and provide useful protection against embankment erosion as well as against noise and dust for the settlements traversed by the project road.

## **2. Socioeconomic Environment**

11. The project road will connect 37 settlements on the Kazakhstan road corridor. Of these, only four are crossed by the road (i.e., Samsy, Targap, Alga, and Georgievka). The primary sector provides employment in the settlements of Samsy, Targap and Alga, while in Almaty City, Kaskelen (2.3 km from the project road), and Georgievka, the industrial and service sectors are also developed. The Kazakhstan portion of the project influence area (PIA) has a population of about 3.7 million people (1998). This area contributed to approximately 25 percent of the total value added produced in the country in 1997.

12. In the Kyrgyz Republic, the project road traverses Chui region and the Alamedin district (110,000 people in 1998). The 11 settlements found along the road have a total population of



80,000. Chui region had a population of approximately 765,000 people in 1998. In that year, the region produced 36 percent of the industrial activity of the country, 31 percent of the national agricultural production (i.e., wheat, barley, dairy products, fruits, and vegetables), and 57 percent of the exports (i.e., agricultural, agroprocessing, construction, and light industry products).

#### **D. Screening of Potential Environmental Impacts and Mitigation Measures**

13. To determine the depth of environmental study required for the Project, screening used the checklist of ADB's *Environmental Guidelines for Selected Infrastructure Project*. Using such criteria as type, sensitivity of the environment, and magnitude of impact, a scale was designed to identify the potentially significant adverse impacts. The impacts were also separated into temporary and permanent. Mitigation measures were identified and recommended when adverse environmental impacts were considered unavoidable. Distinction was also made between the impacts associated with project construction and those with project operation.

14. The results of the environmental examination show no significant potential adverse impacts from the Project. However, several cost-effective practices, especially during project construction, can reduce and/or avoid small-scale impacts due to road rehabilitation.

##### **1. Environmental Problems due to Project Location**

15. The road will be rehabilitated along the existing alignment with the exception of two sections (total length of 12 km) in the mountainous area of Kurday Pass. The area to be affected by the realignment of the project road is currently wasteland: it is not used for residence, cultivation, or other activities. The Project is not expected to cause resettlement of houses and/or any negative impact on land and other assets. In addition, no negative impacts on women or vulnerable groups are foreseen. Overall, the population living along the road is expected to benefit from the road rehabilitation in the medium and long term through additional job opportunities created in the construction phase and the expected economic growth induced by a more efficient national and international transport system.

##### **2. Environmental Problems Related to Design**

16. Many of the environmental problems associated with road rehabilitation, maintenance, and traffic will be taken care of starting from the engineering design stage. An engineer trained in environmental engineering will be responsible for considering cost-effective practices to avoid adverse environmental impacts in the detailed design and will be in charge of the environmental quality of the design. Measures related to traffic safety issues, soil erosion, drainage structures, water flows and systems, location and restoration of quarries and borrow areas, establishment of construction camps, road haulage and diversions, and maintenance of approach roads will be included in the design.

##### **3. Environmental Problems Associated with the Construction Stage**

17. The potential impacts during project construction are grouped by environmental/social component.

- a. **Land Resources and Soil Erosion.** Land borrow will be necessary for storage of construction materials, establishment of construction camps, and road diversion. Along the road the embankments provide some space in most areas

for both purposes. However, where more land is required the contractor will select wasteland areas to reduce any negative impacts on the nearby residential areas and assets. To avoid permanent impacts, the land temporarily occupied will be restored as soon as construction in that section is completed, and the surface will be rehabilitated to at least its original state to allow the uses, if any, previously made of it. The same criteria, i.e. minimize disruption to the residential, farmland, industrial areas, and restoration through backfilling, landscaping, regeneration of vegetation, and planting trees, will be applied to quarries, borrow areas, and asphalt and crushing plants. Several mitigation measures will be employed to prevent any aggravation, especially at the construction stage, in the soil erosion-prone areas. These will include (i) preparing, re-vegetating, and reforestation exposed areas (slopes) upon completion of the earthworks; (ii) building ditches and culverts in appropriate locations; and (iii) building retaining walls to prevent landslides where slopes are very steep. These measures will be monitored weekly as part of the monitoring plan.

- b. **Water Resources:** Discharges of sewage and other waste fluids from construction camps and asphalt and crushing plants, and of other construction materials will need to be prevented. To mitigate these potential impacts, all labor camps will be equipped with appropriate sanitation facilities for liquid and solid wastes. Standard precautions will also be taken in the use and storage of hazardous materials, including storage away from waterways, oil separation facilities, and other measures to avoid accidental spills. Dumping of spoils directly in the waterways and drainage system will not be permitted. The drainage system will need as well to be maintained to avoid pollution spillage, especially during thunderstorms and winter periods. The contractor will ensure the implementation of appropriate waste disposal and wastewater treatment measures during construction. As part of the monitoring plan, the contractor will control daily solid waste disposal, spillage of fluids, and drainage structures during construction. These last, together with water courses and flows, will be fully restored after rehabilitation of the relevant road sections and monitored after project completion.
- c. **Biological Resources:** Many sections of the road are delimited by trees. To avoid permanent impacts, the contractor should reduce any effects on the trees. Where the trees are affected, proper restoration and vegetation are required. Replanting of trees will be monitored weekly until the vegetation grows steadily; special attention will be given to erosion-prone areas. Grazing grounds along the road are common and any disturbance to animals and pastures should be avoided.
- d. **Air Quality and Noise:** Noise and pollution associated with road rehabilitation works should be minimized by avoiding movement of construction equipment in residential areas. Dust and emissions from plant and equipment will also be minimized and closely monitored through dust control devices and water sprays.
- e. **Approach Roads:** Secondary roads in the surroundings of the project road will be used for haulage of construction materials and for traffic diverted during construction. To mitigate the potential negative impacts due to excess traffic and overloading, the contractor in collaboration with the EA will ensure that the

approach roads receive appropriate maintenance and their conditions monitored on a weekly basis.

- f. **Health Prevention:** The influx of a large number of workers involved in the rehabilitation works could increase the spread of communicable and infectious diseases in the project area. Adequate health training on the prevention of these diseases will be provided as part of the safety training compulsory for the entire workforce.

18. All measures, practices, and activities necessary to prevent the adverse environmental impacts will be carefully detailed and specified in the contract documents. Heavy penalties will also be included as a deterrent. Furthermore, the engineer in charge of environmental monitoring will be assigned specific responsibilities and ensure that the requirements indicated in the preceding paras. for each environmental component are met in a timely manner.

#### **4. Environmental Problems During Project Operations**

19. After project completion, no significant impacts are expected unless the mitigation measures indicated during the construction phase is not undertaken as planned and properly monitored. However, the increased traffic, vehicle speed, noise, pollution, and effects on road safety will need to be taken into account starting from project design so as to minimize their magnitude. The rehabilitated road will be maintained with the help of contractors. The contracts will include conditions and measures that will enhance environmental sustainability.

#### **E. Institutional Requirement and Environmental Monitoring Program**

20. In Kazakhstan, environmental monitoring, coordination, and implementation of policies and legislation are carried out by the Ministry of Ecology and Bioresources (MEB) at the national level and with the help of its Departments of Ecology and Bioresources (DEBs) at the regional level. The IEE indicated that the institutional setup existing in the country for environmental monitoring and reporting is adequate. DEBs closely monitor the environmental impacts at different stages of the implementation of projects. The DEBs of Almaty and Zhambul regions will be closely associated with the implementation of the Project. In the Kyrgyz Republic, the Ministry of Environmental Protection (MEP) is responsible for environmental policy and regulations, and monitoring. Since Chui region, where the Project road is located, is on the Bishkek township boundary, the MEP will directly monitor the environmental impacts during implementation and operation of the Kyrgyz portion of the project road.

21. Prior to the formal acceptance of the construction works, a full examination of the contractors' compliance with the specifications relating to environmental provisions should be undertaken. The examination will include verification of the required clean-up activities, restoration of all temporary works sites, landscaping, planting, and reinstatement of drainage structures.

22. After project completion, the government maintenance supervisors along with region environment authorities will be in charge of environmental monitoring of the project area at regular intervals. The maintenance contractors will be responsible for implementing measures relating to social, environmental and road safety aspects, for which proper maintenance contracts with terms and conditions and manuals will be prepared by the project supervision consultants.

## **F. Findings and Recommendations**

23. The IEE clearly indicates that the majority of the impacts resulting from the rehabilitation of the project road are not expected to be significant provided that the recommendations set out below are complied with. Accordingly, there is no need to prepare a full environmental impact assessment for this Project.

24. The following recommendations result from the IEE:

- (i) The design of the rehabilitated road will be followed and all major changes that occur should be considered in terms of the associated potential environmental impacts.
- (ii) The designs will make full provision for the incorporation of the various mitigation measures indicated in paras. 17-19.
- (iii) Contract documents will include, but will not be limited to, all the appropriate clauses to cover the environmental protection requirements listed in para. 24.
- (iv) Through loan covenants, provision will be made for adequate maintenance for the project road and the approach roads.
- (v) Close monitoring of the critical activities that have environmental impacts during project construction and operation should be undertaken.

## **G. Conclusions**

25. It is concluded that the potential negative environmental impacts of rehabilitating the Almaty-Bishkek road can be mitigated to insignificant levels, and the Executing Agencies will ensure that the recommended mitigating measures contained in the summary IEE and sound engineering design and practice will be undertaken to minimize the impacts. A full-scale environmental assessment is not required.

## **SUMMARY SOCIAL IMPACT ASSESSMENT**

### **A. Introduction**

1. This summary social impact assessment (SSIA) concerns the proposed Almaty-Bishkek Regional Road Rehabilitation Project in Kazakhstan and the Kyrgyz Republic. The initial social assessment (ISA) was prepared under TA 2632-KAZ and Loan 1444-KGZ. The SSIA reflects the results of the ISA; additional secondary data collected for the project influence area (PIA); discussions with representatives of both central and local governments and non-government agencies in charge of social and transport sectors, international organizations, transport associations, and with the residents of the project area during interviews and public meetings. On the basis of the information gathered, the social impacts related to the Project were identified. In addition, mitigation measures for adverse effects during project construction and operation were recommended.

### **B. Economic Activities in the Project Influence Area**

2. The PIA consists of Almaty City, and the two regions of Almaty and Zhambul in the Kazakhstan portion of the road, and of Chui region (including Bishkek City) in the Kyrgyz section. The total population in the PIA is about 4.5 million (1998), of whom approximately 3.7 million are in Kazakhstan and 800,000 are in the Kyrgyz territory. Excluding Bishkek and Almaty City, up to 70 percent of the population in the PIA is rural. On the Kazakhstan road corridor are 37 settlements, but only 4 are crossed by the road (Samsy, Targap, Alga, and Georgievka). The project road in the Kyrgyz Republic traverses the northern half of the Alamedin district (110,000 people in 1998) within Chui region, and serves 11 settlements of various dimensions (80,000 people).

3. The primary sector (e.g., cattle, poultry, milk, eggs, grains, fruits, and vegetables) provides employment in the settlements of Samsy, Targap, and Alga; in Almaty City, Almaty region, and Georgievka, the industrial and service sectors (e.g., mining, agroprocessing, textile and mechanic industries) are also developed. This area contributed to approximately 25 percent of the total value added produced in the Republic of Kazakhstan in 1997. In particular, Almaty City contributed more than 16 percent of it, and Almaty and Zhambul regions around 6 and 3 percent, respectively.

4. In 1998, Chui region produced 36 percent of the industrial (e.g., nonferrous metal products, manufactured goods, and construction materials) and 31 percent of the agricultural products (e.g., wheat, sugar beet, barley, dairy products, fruits, and vegetables) in the Kyrgyz Republic. In the same year, 57 percent of the country's total exports came from Chui region (e.g., cement, granite, marble).

### **C. Living Conditions in the Project Influence Area**

5. With respect to the average income per capita per month in the PIA, Almaty and Zhambul regions had the lowest levels across all regions in Kazakhstan (about T1,750 or less than \$25), while the average income recorded for Almaty City (T5,369 or \$71) was significantly higher than the national average (T2,849 or \$38) in 1997. In the Kyrgyz Republic, the average income per capita for Chui region was Som629 (\$36) per month in 1997, which is considerably

higher than the national monthly average Som374 (\$21), and only slightly lower than the value recorded for Bishkek (Som684 or \$39).<sup>1</sup>

6. The data in Table A14.1 provide information on living standards in the PIA

**Table A14.1: Indicators of Living Standards in the PIA (1998 data)**

Item	Kazakhstan	Almaty City	Almaty Region	Zhambul Region	Kyrgyz Republic	Bishkek	Chui Region
Average monthly (money) income p.c.	2,849 (Tenge)	5,369 (Tenge)	1,628 (Tenge)	1,875 (Tenge)	374 (Som)	684 (Som)	629 (Som)
Households with central heating (%)	49	84	25	25	20	69	19
Households with sewerage (%)	51	86	31	41	24	65	20
Households with access to water (%)	59	99	39	52	77	98	99
Households with telephones (%)	41	49	29	35	25	60	24
Officially registered unemployment (%), 1998 data	3.7	1.8	1.6	4.6	3.1	3.8	2.8
Average family size (persons), 1998 data	3.5	2.5	4	3.8	4.7	3.6	4.0
Deaths under 1 year of age per 1,000 live births, 1998 data	22	17	12	19	27	29	20
Fertility rates (live births per 1,000 people), 1998 data	14	11	15	16	22	15	14
Life expectancy at birth (years) (male/female)	59/70	60/71	62/72	60/70	63/71	63/72	62/72

p.c. = per capita, PIA = project influence area.

Sources: Goskomstat for Kazakhstan, and National Statistics Committee for the Kyrgyz Republic.

7. In Kazakhstan, Russians represented the first ethnic group by order of magnitude in Almaty City and the second in the two regions of the PIA in 1998. In Almaty and Zhambul regions, Kazakhs are the largest ethnic group, followed by Russians, Ukrainians, Tatars, and Germans. In the Kyrgyz Republic in 1998, Kyrgyz and Russian nationals represented 41 and 35 percent of the population in Chui region, and 62 and 15 percent of the national population, respectively.

8. The official unemployment rates in Table A14.1 refer only to the percentage of the economically active population registered with the state employment service, and hence eligible for the unemployment subsidy. In late 1996, the extent of "real" unemployment in the Kyrgyz Republic, as measured by a World Bank survey of 2,000 households, was around 13 percent, and varied from 18 to 21.4 percent between the rural and urban areas. Disaggregated by gender, the unemployment rate was 14 percent for men and around 12 percent for women. The household survey also indicated that out of the sampled unemployed population, around 72 percent had been unemployed for more than 12 months. In Kazakhstan, a survey by the Economic and Social Commission for Asia and the Pacific of 10 settlements in Almaty region recorded an unemployment rate of 15 percent in 1998. The decline in employment recorded

<sup>1</sup> The income data for the Kyrgyz Republic are the results of a household survey carried out for 2,010 families in autumn 1997 as part of the poverty monitoring program.

between 1985 and 1995 in Almaty City (28 percent), Almaty region (36 percent), and Zhambul (28 percent) was higher than the one experienced in the Republic as a whole (26 percent).

9. Traveling along the project road shows how the crisis after independence has strongly touched the PIA. Many of the industrial and agroprocessing plants along the road look abandoned and unemployment remains the main issue of concern in the regions traversed by the Project. Surveys in the PIA indicated that, in 1997, up to 50 percent of the total expenditure per household was on food, about 14 percent on services, and approximately 30 percent on nonfood products. Informal sector activities like kiosks, bars, restaurants, small trading activities, and repair shops are numerous along the project road, but the business is far from enough to allow for the necessary household income in most cases.

#### **D. Project Beneficiaries and Project Impacts**

10. Given the main sectors of activity in the PIA and the living conditions of the population, the rehabilitation of the project road is expected to have significant positive effects on both the national and regional economies. The rehabilitation of the road will improve the movement of goods and people during the winter months by improving road safety and road conditions in the mountainous area of Kurday Pass. Currently, drivers, including professional truck drivers and transport operators, reduce substantially the number of trips from Almaty to Bishkek during winter (up to 4 months) because of the poor and dangerous road conditions in the Kurday area. The rehabilitation of the road will reduce trading and transportation difficulties experienced during the winter season, and enhance these activities as well as the industrial, agricultural, and commercial businesses located along the road and in the PIA as a whole.

11. Apart from the rehabilitation of the road, the Project aims to improve the customs procedures at the (Georgievka) border between the two republics. At present, transporting cargoes across the borders can take from a minimum of five hours to a maximum of two days because of customs clearance and related procedures. The streamlining of customs procedures within each country and between the two republics, is expected to reduce substantially the waiting time at the borders for traded goods and to induce a more efficient trading corridor for people, goods, and services.

12. In terms of job opportunities, the Project will have a very significant positive impact especially during construction. In the Kyrgyz Republic, the contractor will be local, therefore, an increase in job opportunities for local skilled and unskilled workers is expected. Since in both countries there is no shortage of highly skilled and qualified workers among the unemployed population, it is envisaged that unemployment in the area will be reduced during project construction. From the data on the ongoing Road Rehabilitation Project in Kazakhstan, it is estimated that the project road will entail up to 800 jobs per month for skilled, semiskilled and unskilled workers in the construction season. Indirect employment associated with the Project by way of provision of supply of goods and services (e.g., service stations, canteens, kiosks, and bars) will also play a considerable role.

13. Table A14.2 presents the different groups of Project beneficiaries, the social impacts of the Project and the recommended measures to minimize adverse impacts.

**Table A14.2: Identification of Project Beneficiaries, Impacts, and Mitigation Measures**

<b>Beneficiaries</b>	<b>Beneficial Impact</b>	<b>Adverse Impact</b>	<b>Mitigation Measures</b>
1. Roadside service providers	Expansion in businesses through demand growth during construction and operation	Temporary disturbances linked to construction (noise, dust, road diversion)	Recommendations of the SIEE to be included in contractors' tender documents
2. Road passengers	Quicker and safer movement, removal of illegal customs and police stops	Same as (1)	Same as (1)
3. Small vehicle owners and truck drivers	VOC savings; improved road safety; time savings at border and police stops	Same as (1)	Same as (1)
4. Residents along the road	Job opportunities in construction and other trading activities; safer access to health and education facilities, and to regional and international markets after project completion	Same as (1); Greater risk of communicable diseases and health hazards due to the influx/establishment of construction workers and camps	Same as (1); Diffusion of information materials and basic training among construction workers to increase awareness of health standards and communicable diseases
5. Transport operators, owners, and managers	VOC savings; decrease in accidents; streamlining of customs and police procedures; increased business especially during winter months	Nil	Nil
6. Agro-industrial producers; traders in fruits, vegetables, dairy, and industrial products	Lower freight costs; time savings at customs; better access to national and international markets; increase in number of trips/deliveries	Nil	Nil
7. Tourism operators	Improved access to tourist resources (e.g., Lake Issyk-Kul)	Nil	Nil
8. Cash crop and animal husbandry farmers	Greater demand for farmers' produce by traders, with traders visiting the project area more often	Temporary effect on some grazing grounds	As per the SIEE recommendations, the contractor will minimize disruptions.
9. Customs operators	Better working conditions due to streamlining of customs procedures	Nil	Nil
10. Women	Growth in trading and business opportunities	Nil	Nil
11. Vulnerable groups	Pensioners, unemployed, and disabled will benefit from new job opportunities.	Nil	Nil
12. Health providers	Better access to main health facilities in the project area	Pressure on existing health and sanitation facilities due to the growth in patients and potential increase in communicable diseases	Collaboration between contractors and EAs in providing appropriate health measures and services for construction camps and workers (see also 4)

SIEE = summary initial environmental examination, VOC = vehicle operating cost.



## **E. Beneficiary Needs and Demands**

14. Public meetings and interviews in the PIA explaining the features of the Project revealed the people's concerns and expectations.<sup>2</sup> These can be summarized as follows:

- (i) expectations to find employment in construction and construction-related jobs (e.g., drivers, electricians, welder, security, cooks, cleaners, etc.);
- (ii) expectations to see an increase in the demand for construction materials and services;
- (iii) concern about the safety of the villagers, especially in those settlements crossed by the road;
- (iv) expectations that the project design includes road signs to indicate pedestrian crossings and that traffic speed is closely monitored in built-up areas;
- (v) concern about the restoration and improvement of the existing drainage system;
- (vi) concern for the trees along the road, and expectation that more trees will be planted to reduce noise and the effect of car emissions;
- (vii) expectation to benefit from a faster and cheaper access to Almaty, Bishkek, and other markets in the PIA; and
- (viii) concern about the maintenance of the road after rehabilitation.

15. Meetings with the drivers' union association and with the council of transport operators in both countries indicated that safety was their main concern during the winter months and that accidents were a major cost for their activities. The need for more organized service stations along the road and dissatisfaction with customs procedures and waiting time at the Georgievka border were also expressed.

## **F. Gender Issues**

16. Traditionally, women are not involved in unskilled/manual construction jobs in the PIA. However, representatives of gender bureaus in both countries pointed out that women form a large part of the skilled unemployed population (e.g., engineers and surveyors) and could avail of job opportunities arising in these technical fields.<sup>3</sup> Furthermore, surveys carried out by these offices in Almaty and Chui regions show that up to 40 percent of the surveyed women are active in trading activities and could benefit from the increased traffic and related business opportunities along the project road.

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<sup>2</sup> In Kazakhstan, these meetings included public forums facilitated by the governors or deputy governors of Almaty City, Kaskelen, and Uzunagach; and unofficial meetings and interviews in Samsy and Targap. In the Kyrgyz Republic, meetings were held with the governor of Chui region and the deputy governor of Alamedin district.

<sup>3</sup> In Kazakhstan, consultations were held with the Association of Business Women. In the Kyrgyz Republic, discussions took place with the Director of the UNDP-funded Gender Bureau.

## **G. Potential Adverse Impacts**

17. No resettlement effects in terms of both housing and nonhousing relocation are expected. The road will be rehabilitated along its current alignment with the exception of two sections (for an approximate total length of 12 km) in the mountainous area of Kurday Pass in Kazakhstan. It will maintain its current number of lanes, and will be only marginally widened in some areas. Where road realignment is required, the land to be affected is currently not used due to the altitude and can be classified as wasteland. In the sections where some widening will occur (e.g., to improve drainage structures), the existing shoulders provide sufficient space for the needed improvement. No permanent impacts are expected on land and other assets along the road.

18. As highlighted in Table A14.2, the road rehabilitation activities during project construction will have some temporary adverse impacts associated with road diversion, noise, dust, disruption of drainage systems, borrow areas and quarries, and the establishment of labor camps. Moreover, the pressure on the existing health facilities in the PIA is expected to increase due to the influx of construction workers and the associated greater risk of diseases (e.g., communicable diseases) and health hazards.

19. Speed limits along the road will not be changed. Hence, the residents of the project area will not suffer from increased traffic speed. However, as indicated by the persons interviewed, the safety of the villagers and animals crossing the road is a concern, especially in settlements along the road.

## **H. Mitigation Measures and Monitoring**

20. Although no severe and/or permanent social impacts are expected as a result of the road rehabilitation, attention must be given to good practice during the different stages of project planning, design, and implementation to prevent any adverse impacts. The mitigation measures recommended in the summary initial environmental examination should be implemented and accurately monitored in all stages of project construction. Moreover, road safety should be ensured through fencing and marked pedestrian crossings in the residential areas along the road.

21. Since the influx of workers involved in the rehabilitation works could increase the spread of communicable and infectious diseases in the PIA, it is recommended that the EAs assist the contractors in distributing information materials and providing basic training in the prevention of these diseases as part of the safety training compulsory for the entire workforce.

## **TERMS OF REFERENCE FOR TECHNICAL ASSISTANCE FOR IMPROVEMENT OF THE ROAD SECTOR EFFICIENCY**

### **A. Background**

1. The Governments of Kazakhstan and the Kyrgyz Republic are committed to implementing market-based reforms for the road transport sector, which need to be looked into in terms of (i) developing an efficient policy and regulatory framework; (ii) corporatizing/commercializing and, where appropriate, privatizing transport operations and entities; (iii) restructuring of Government organizations so that they can respond efficiently to market demands; (iv) creating in the transport sector an environment that encourages private sector participation; (v) promoting competition in the provision and operation of transport facilities and services; (vi) increasing funding by improving tax and duties collection, enhancing cost recovery, and removing subsidy-induced distortions in the pricing of transport services; (vii) rehabilitating and improving maintenance operations and safety standards of infrastructure facilities; (viii) developing human resources; and (ix) protecting the environment by improving environmental standards.

2. In Kazakhstan, the Asian Development Bank (ADB) has so far focused on adopting the Road Sector Policy Statement (RSPS) and undertaking measures in line with RSPS, including forming a Committee for Transport Sector Legal Reforms to update the existing Road Act and Road Transport Act, and establishing a National Transport Advisory Committee (NTAC).

3. The restructuring and streamlining of the Kyrgyz Republic road sector have been ongoing; as a result, the Directorate General for Rehabilitation and Maintenance of Bishkek-Osh Road (DGRMBOR) was established. Under the Automobile Road Act enacted on 2 June 1998, the responsibility for the road sector is streamlined by merging all road activities within the Kyrgyz Ministry of Transport and Communications (KGZMOTC). The road financing is expected to improve through the implementation of the Road Fund Act enacted by the Government on 1 June 1998 introducing, to a certain extent, the user-pay principle in road financing.

4. Considering the progress in both countries, and keeping in view the demands of the market and the roles the Governments and the private sectors are expected to play in economies in transition, the road transport's role in fostering subregional cooperation is crucial. The focus of the consulting services will be to improve the efficiency and safety of the Almaty-Bishkek road through streamlining the cross-border road transport and customs policy and regulations and documentation, and improving the coordination and management of road safety in the corridor. In addition, assistance to Kazakhstan will help implement market-oriented policies and procedures in line with the studies carried out under ADB's technical assistance (TA), and help define the road sector functions of the Kazakh Ministry of Transport and Communications (KAZMOTC) in line with the road reforms that have been implemented or are proposed to be carried out in the future.

5. The TA will comprise three phases: (i) improving cross-border road transport and customs documentation and procedures, (ii) road safety, and (iii) policy advisory support to KAZMOTC.

6. The issues relating to the Road Fund and Road Act have been covered by the earlier ADB-financed projects. The consultants are expected to monitor progress on those issues in fulfilling the objectives of the consulting services.

## **B. Objectives**

7. The advisory TA is aimed at assisting the two Governments in increasing subregional trade through improved road transportation between Kazakhstan and the Kyrgyz Republic. The TA will consist of three phases.

8. The prime objectives of phase I will be to assist the two Governments to implement the Cross-Border Agreement, including formulating long-term strategies for expanded use of the Agreement at other borders, with a view to foster regional economic cooperation.

9. Phase II will focus on improving coordination and management of road safety in both countries, including coordination with the project supervision consultants, to ensure that maintenance by contract includes adequate provisions relating to environmental and social mitigation measures and road safety considerations.

10. Based on the overall reallocation of activities between the Committee of Road and Road Transport (CRRT) and Kazakhavtodor, phase III will streamline the ministerial and departmental responsibilities, assign roles based on the redefined functions, and help implement the RSPS in Kazakhstan.

## **C. Scope of Services**

11. It is estimated that consulting services of about 32 person-months international and 30 domestic will be required.<sup>1</sup>

### **1. Cross Border Documentation and Procedures**

#### **a. Transport and Customs Documentation**

12. The consultants will review all existing cross-border documentation and introduce changes at the Akzhol/Chu border in accordance with the provisions in the Cross-Border Agreement signed by Kazakhstan and the Kyrgyz Republic.

13. The following minimum documentation will be introduced for vehicles transiting through the Akzhol/Chu border crossing:

#### Freight transport:

For the driver

- (i) Driving License
- (ii) Passport or Identity Card

For the vehicle

- (i) International Operating Permit
- (ii) Registration Documents
- (iii) Special Permit (if necessary)

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<sup>1</sup> Kazakhstan: 22 international and 18 domestic consulting services; the Kyrgyz Republic: 10 international and 12 domestic.

For the goods

- (i) Cargo Customs Declaration
- (ii) Cargo Waybill
- (iii) Cargo Shipment Control Document
- (iv) TIR (Transport International Routier) Carnet (if traveling under TIR conditions)
- (v) International Waybill CMR (Convention Merchandise Route) Certificate (for traveling under CMR cover)

Passenger transport:

For the driver

- (i) Driving License
- (ii) Passport or Identity Card

For the vehicle

- (i) Registration Documents
- (ii) Authorization Certificate (if regular bus service or alternative authorization document if irregular bus service)

14. The inspection at the Akzhol/Chu border will be limited to these documents. Drivers may be required to carry additional support documentation to enable final clearance of the cargo, but those should not be subject to production at the border control zone. To ensure smooth and expeditious movement of traffic, the consultants will design the formats for the above documents, which will be simple and harmonious, and include all data required to implement the automated customs system.

**b. Transport and Customs Procedures**

15. With the introduction of the preceding documentation, the consultants will train the Kazakh and the Kyrgyz officers at the Akzhol/Chu border in the execution of modern customs procedures to ensure consistent application on both sides of the border. Specific training will include

- (i) processing of TIR carnets,
- (ii) use of risk assessment techniques,
- (iii) vehicle inspection system, and
- (iv) use of a computer for customs clearance.

16. The consultants will introduce the Automated Customs Clearance System (ACCS) for implementation as a pilot program. The system should be both reliable and tested, of international electronic data processing standard, and allow external input through direct trader input linkages. The consultants will introduce computerized cargo registration with possible linkage with a centralized ACCS.

17. The consultants will review all the bilateral and multilateral agreements with similar objectives that are in effect or binding on Kazakhstan and the Kyrgyz Republic and identify

conflicting provisions with regard to the CBA, and recommend revisions, if necessary, to eliminate such conflicts and ensure a smooth implementation of the CBA.

18. Based on the implementation of the revised documentation and procedures at the Akzhol/Chu border, the consultants will recommend strategies to implement the Cross-Border Agreement with other neighboring countries, particularly with the People's Republic of China, Russia and Uzbekistan to facilitate and promote regional trade through efficient movement of goods, luggage, and passengers.

## **2. Road Safety**

19. Road safety is a multidimensional social problem involving many sectors: education, health, police, and transport as well as the private sector involved in insurance, fuel supply, and bus and freight transport operations. The activities have to be complementary and coordinated so that the road safety measures to avoid loss of current resources on account of vehicle damage, medical treatment, police and administration costs, and damage to the street furniture can be undertaken. Such coordination can be achieved only through the establishment of the national road safety council (NRSC).

20. The Government's role in improving road safety should consist of three elements: legal framework, safety education, and maintenance of a traffic safety plan. The consultants will prepare the road safety acts (RSAs) for Kazakhstan and the Kyrgyz Republic. The main purpose of the RSA is to safeguard the interests of the road users with regard to road safety standards and practices, and to establish a legal basis for the establishment of NRSCs.

21. The road safety component will include the following tasks:

- (i) reviewing existing legislation and prosecution patterns to identify the areas that need revision and drafting RSAs for both the countries. The RSAs will define the functions and responsibilities of various government sectors (education, health, police, and transport) and private companies (insurance, fuel, bus and freight transport) involved in road safety. The RSAs will include legislation concerning safe driving,<sup>2</sup> safety audit of the road designs, safety education, road safety publicity, vehicle safety standards, road safety research, and emergency assistance to accident victims;
- (ii) assisting in the establishment of the multidisciplinary NRSC in the Kyrgyz Republic with a full-time secretariat, and defining functions and responsibilities;
- (iii) translating the Road Safety Guidelines prepared under ADB's TA 5620-REG<sup>3</sup> and conducting seminars familiarizing NRSCs and the concerned sector representatives with the provisions of the guidelines;

<sup>2</sup> Safe driving considerations, among others, include drunk-driving limits and enforcement, speed zones and speed enforcement, seat belt and helmet regulations, motor insurance policies, and driver training and testing.

<sup>3</sup> *Regional Initiatives in Road Safety*, for \$600,000, approved on 4 January 1995.

- (iv) undertaking a statistical analysis of road accident records in the Almaty-Bishkek road and identifying underlying factors influencing safety on the road (with specific attention to winter accidents), with a view to include in the maintenance contract the provisions for maintaining all safety measures (e.g. signposts, road markings, etc.) and environmental and social impact mitigation measures, and of the liabilities thereof if the contractor fails to implement the measures; and
- (v) reviewing the draft contracts prepared by the supervision consultants and providing inputs relating to road safety as a result of the findings from the accident statistical analysis.

22. The road maintenance contract should be seen as the way to improving road safety, where competition and threat of legal action would raise safety standards. The consultants will coordinate with the construction supervision consultants so that road safety provisions, and also environmental and social impact mitigation requirements are incorporated in the provisions of maintenance by contract.

### **3. Advisory Support to KAZMOTC**

23. The advisory TA to the transport sector will be provided, with the help of the transport adviser, to assist the minister and senior personnel of the Ministry of Transport, Communications and Tourism to adopt market-oriented policies and laws and regulations, and help in defining the road sector functions of KAZMOTC in line with the road reforms that have taken place or are proposed to be carried out in future.

24. The transport advisor will assist in the following areas:

- (i) define KAZMOTC's role, objectives, and its relationship with CRRT, its departments, and transport operators in transition to a market economy in line with the policy framework adopted through the RSPS and consistent with the pace of reforms that have taken place so far and have been proposed for the future, and update the Automobiles Road Act;
- (ii) assist in implementing the provisions in the RSPS;
- (iii) adopt transport regulations that promote equitable competition among transport modes (e.g., between road and rail) and help develop private transport operators while assisting the Government in the promotion of safe and environmentally acceptable transport operations;
- (iv) review pricing policies in the transport sector, including the price of transport inputs, and make recommendations on reducing price distortions, road-user cost recovery and subsidy policies and strategies, and transport operators' autonomy in setting transport prices;
- (v) assist in the preparation of the three-year national transportation investment plan, paying particular attention to providing advice on analytical methods for assessing the potential for complementary

operations among transport modes, especially between the road and rail modes, and between aviation and road network development; and

- (vi) assist KAZMOTC to implement the Human Resources Development Plan and Systems Development Plan prepared under ADB's TA No. 2631-KAZ: *Institutional Strengthening of the Road Sector*.<sup>4</sup>

25. The Adviser will bear in mind that, for each road to have an effective, unique owner, the road system should be divided, in a manner appropriate to the country concerned, into subsystems of appropriate size and character; and a fee-for-use system of road user cost recovery (vis-a-vis fee-for-funding maintenance and operation) should be encouraged.

#### **D. Implementation Arrangements and Timing**

26. KAZMOTC and KGZMOTC will be the Executing Agencies (EAs) and will provide overall guidance in the activities under the TA. The EAs will appoint suitable senior counterparts who will be responsible for the day-to-day supervision and coordination activities- including monitoring progress achieved and resolution of any difficulties that may arise during implementation, and will maintain a close working relationship with each other. The consulting services are expected to start in the first quarter of 2001. The services of the transport policy adviser will be provided on a staggered basis, and the TA is expected to be completed before the end of 2004.

#### **E. Counterpart Staff and Facilities**

27. KAZMOTC and KGZMOTC will provide counterpart staff who will be trained by the TA consultants, office accommodations, local communications, and administrative support.

#### **F. Required Expertise**

28. For phase I, the services of customs and road transport specialists experienced in dealing with cross-border road trade and transport issues, including establishing ACCS, will be required. The specialist should be able to design and implement the system, and train the local staff in modern customs and vehicle inspection procedures.

29. For phase II, expertise in road safety will be required. A highway engineer experienced in establishing NRSC, undertaking statistical analysis of road accidents, and training the counterpart staff will be essential. In addition, the services of a legal expert experienced in drafting the RSAs and preparing civil works contract documents will be required.

30. For phase III, transport policy adviser, who will be a senior transport economist, must have extensive experience in transport policy review and analysis, transport regulations, transport pricing, and procurement. The assignment will be for nine months over the three-year duration of the Project.

#### **G. Submission of Reports**

31. For phases I and II, the consultants will provide the following reports in both English and Russian:

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<sup>4</sup> For \$750,000, approved on 27 August 1996.



- (i) an inception report detailing the work program, deliverables under the TA, and timetable for achievements, within four weeks of the commencement of the consultancy (five copies for the Government and three for ADB);
- (ii) brief monthly reports on the status of the consultancy and its achievements (three copies for the Government and one copy for ADB);
- (iii) draft transport and customs documentation to be introduced, with a brief manual explaining the procedures for completing the documentation and their relevance;
- (iv) ACCS manual;
- (v) draft RSAs for comments and RSAs after incorporating the comments;
- (vi) Russian version of Road Safety Guidelines;
- (vii) draft final report, within 18 weeks of the commencement of the consultancy (five copies for the Government and three for ADB), which will include all tasks undertaken by the consultants, including a review of the training conducted for both cross-border and safety aspects, and assessment of impact including difficulties encountered and remedial measures taken; and
- (viii) final report incorporating the Governments' and ADB's comments, within two weeks of receiving all comment (five copies for the Governments and three for ADB).

32. For phase III, the policy adviser will prepare a short progress report for KAZMOTC and ADB after every six weeks in the field, giving a summary of the transport reform and proposing a detailed work program for the rest of his/her assignment. The output of the policy adviser will include (i) a report on the KAZMOTC's role and policy objectives, and its relationship with CRRT, other departments of KAZMOTC, and contractors and transport operators; (ii) transport regulations for entry into and exit from the transport market; (iii) pricing policies and price setting; (iv) transport investment plan; (vi) transport procurement procedures; and (vii) status of implementation of RSPS, Human Resources Development Plan, and Systems Development Plan.

**COST ESTIMATES FOR  
TECHNICAL ASSISTANCE FOR IMPROVEMENT OF THE ROAD SECTOR EFFICIENCY  
(KAZAKHSTAN)  
(\$'000)**

Item	Foreign Exchange	Local Currency	Total Cost
<b>A. ADB Financing (Japan Special Fund)</b>			
<b>Phase I: Cross Border Regulation and System</b>			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultant	154.0	-	154.0
ii. Domestic Consultants	-	7.5	7.5
iii. Interpreter/Translation Services	-	4.0	4.0
b. International Travel	10.0	-	10.0
c. Reports and Communications	1.0	2.0	3.0
2. Office Equipment <sup>a</sup>	10.0	-	10.0
3. Vehicle Hiring	-	8.0	8.0
4. Government Representatives for Contract Negotiations <sup>b</sup>	10.0	-	10.0
5. Logistical and Administration	1.0	1.0	2.0
6. Contingencies	29.0	4.5	33.5
<b>Subtotal (Phase I)</b>	<b>215.0</b>	<b>27.0</b>	<b>242.0</b>
<b>Phase II: Road Safety</b>			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultant	110.0	-	110.0
ii. Domestic Consultants	-	7.5	7.5
iii. Interpreter/Translation Services	-	7.5	7.5
b. International Travel	15.0	-	15.0
c. Reports and Communications	2.0	2.5	4.5
2. Translation and Printing of Road Safety Guidelines	-	15.0	15.0
3. Vehicle Hiring	-	6.0	6.0
4. Logistical and Administration	-	3.0	3.0
5. Contingencies	20.0	7.5	27.5
<b>Subtotal (Phase II)</b>	<b>147.0</b>	<b>49.0</b>	<b>196.0</b>
<b>Phase III: Transport Advisory Support to Kazakstan</b>			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultant	220.0	-	220.0
ii. Domestic Consultants	-	12.5	12.5
iii. Interpreter/Translation Services	-	8.0	8.0
b. International Travel	15.0	-	15.0
c. Reports and Communications	1.0	2.0	3.0
2. Vehicle Hiring	-	8.0	8.0
3. Logistical and Administration	-	3.0	3.0
4. Contingencies	36.0	6.5	42.5
<b>Subtotal (Phase III)</b>	<b>272.0</b>	<b>40.0</b>	<b>312.0</b>
<b>Subtotal (A)</b>	<b>634.0</b>	<b>116.0</b>	<b>750.0</b>
<b>B. Government Financing</b>			
1. Office Accommodations	-	110.0	110.0
2. Counterpart Staff and Support Services	-	90.0	90.0
3. Customs Equipment, Data and Local Communications	-	130.0	130.0
<b>Subtotal (B)</b>	<b>-</b>	<b>330.0</b>	<b>330.0</b>
<b>Total</b>	<b>634.0</b>	<b>446.0</b>	<b>1,080.0</b>

- = magnitude zero.

<sup>a</sup> Office equipment includes photocopiers, fax machines, printers, and computers with software.

<sup>b</sup> Provision for Government officials to attend contract negotiations and engage in policy dialogue at Asian Development Bank headquarters.

Source: Staff estimates.

**COST ESTIMATES FOR  
TECHNICAL ASSISTANCE FOR IMPROVEMENT OF THE ROAD SECTOR EFFICIENCY  
(THE KYRGYZ REPUBLIC)  
(\$'000)**

Item	Foreign Exchange	Local Currency	Total Cost
<b>A. ADB Financing (Japan Special Fund)</b>			
<b>Phase I: Cross-Border Regulation and System</b>			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultant	88.0	-	88.0
ii. Domestic Consultants	-	7.5	7.5
iii. Interpreter/Translation Services	-	4.0	4.0
b. International Travel	10.0	-	10.0
c. Reports and Communications	1.0	2.0	3.0
2. Office Equipment <sup>a</sup>	10.0	-	10.0
3. Customs Equipment	50.0	-	50.0
4. Vehicle Hiring	-	8.0	8.0
5. Government Representatives for Contract Negotiations <sup>b</sup>	10.0	-	10.0
6. Logistical and Administration	1.0	1.0	2.0
7. Contingencies	26.0	2.5	28.5
<b>Subtotal (Phase I)</b>	<b>196.0</b>	<b>25.0</b>	<b>221.0</b>
<b>Phase II: Road Safety</b>			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultant	132.0	-	132.0
ii. Domestic Consultants	-	7.5	7.5
iii. Interpreter/Translation Services	-	7.5	7.5
b. International Travel	15.0	-	15.0
c. Reports and Communications	2.0	2.5	4.5
2. Translation and Printing of Road Safety Guidelines	-	15.0	-
3. Vehicle Hiring	-	6.0	6.0
4. Logistical and Administration	-	3.0	3.0
5. Contingencies	25.0	3.5	28.5
<b>Subtotal (Phase II)</b>	<b>174.0</b>	<b>45.0</b>	<b>204.0</b>
<b>Subtotal (A)</b>	<b>370.0</b>	<b>70.0</b>	<b>440.0</b>
<b>B. Government Financing</b>			
1. Office Accommodations	-	30.0	30.0
2. Counterpart Staff and Support Services	-	15.0	15.0
3. Customs Equipment, Data and Local Communications	-	30.0	30.0
<b>Subtotal (B)</b>	<b>-</b>	<b>75.0</b>	<b>75.0</b>
<b>Total</b>	<b>370.0</b>	<b>145.0</b>	<b>515.0</b>

- = magnitude zero.

<sup>a</sup> Office equipment includes photocopiers, fax machines, printers, and computers with software.

<sup>b</sup> Provision for Government officials to attend contract negotiations and engage in policy dialogue at Asian Development Bank headquarters.

Source: Staff estimates.

## TRAFFIC FORECASTS

1. For preparing the traffic forecast, the Project road was divided into eight sections (four each for Kazakh and Kyrgyz components), based on traffic and road characteristics. The analysis covers the construction period 2001-2004 plus the subsequent 20 years of operation. The traffic forecasts have been prepared for each section based on actual traffic and economic data as well as forecasts of economic and population growth in the Project area. Transit traffic, which accounts for 8-25 percent of truck traffic, is included in the traffic forecasts. Both Kazakhstan and the Kyrgyz Republic are facing difficult economic situations at the present time, due to the impact of the Russian economic crisis and low prices for the commodities comprising Kazakhstan's principal exports. However, the longer-term future for both countries is considered brighter: Kazakhstan has substantial natural resources, and the Kyrgyz Republic has made substantial progress in its transformation to a market-based economy. The relocation of the Kazakh capital from Almaty to Astana will not affect traffic on the Project road as traffic which previously used Project road to reach Almaty will still need to use it to reach Astana.

2. For the Kazakh portion, the traffic forecast is based on the assumption that traffic levels will remain constant at their 1997 levels through 2001, due to Kazakhstan's ongoing economic difficulties. After 2001, traffic levels will grow at average annual growth rates of 4.5-5.9 percent, reflecting the economy's long-term potential for growth. Cars are by far the largest category of vehicle, accounting for 77-87 percent of the traffic on the four sections during the period of analysis. In addition to personal transport, vehicles categorized as cars are also used commercially for transport of small loads of cargo. The remainder of the traffic is fairly evenly distributed among buses, light trucks, and heavy trucks, although heavy trucks constitute the smallest category.

3. As there are no viable road or rail alternatives to the Project road, the traffic forecast does not include any traffic diverted to or from the Project road. The Kazakh portion of the road includes traffic generated by: (i) decreases in vehicle operating costs (VOCs) resulting from resurfacing and other road improvements, including realignment in the Kurday pass area, carried out under the Project, and (ii) increased trade and new economic activities arising from the improvement of cross-border procedures under the Project. Traffic generated by decreases in VOCs generally ranges from 2 percent of total traffic in the early years of the period of analysis to about 20 percent in the latter years. Traffic generated as part of the subregional benefits of the Project accounts for 3-5 percent of total truck traffic and approximately 1 percent of total traffic.

4. The traffic forecast for the Kyrgyz portion is based on annual growth of 3 percent through 2001, and that of approximately 5 percent from 2001 to 2024. This reflects the slightly better medium-term growth prospects compared to Kazakhstan. The decrease in VOCs from the road improvement along the Kyrgyz portion of the road is not expected to produce a significant amount of generated traffic as a larger portion of the vehicle trips on the Kyrgyz sections are of a local nature and shorter in length than those on the Kazakh sections. Traffic generated as a result of the subregional benefits represents 5 percent of truck traffic, but less than 1 percent of total traffic. Cars account for 89-93 percent of total traffic during the period of analysis and, as in the Kazakh case, are used for personal transport as well as transport of small loads of cargo. The remainder of the traffic is distributed among buses and trucks.

5. A traffic forecast for the Project road has been prepared based on actual traffic and economic data as well as forecasts of economic and population growth in the Project area (Appendix 19). For the Kazakh portion, traffic is forecast to remain constant at 1997 levels (3,143-9,655 AADT depending on the road section) through 2001, due to Kazakhstan's ongoing economic difficulties. After 2001, traffic levels will grow at average annual growth rates of 4.5-5.9 percent, reaching 11,643-26,379 AADT in 2024, reflecting the long-term potential for economic growth. For the Kyrgyz portion, traffic is forecast to grow at an annual rate of 3.0 percent through 2001 and approximately 5.0 percent in the succeeding years. Depending on the section, traffic levels on the Kyrgyz portion of the Project road are forecast to increase from 3,361-9,342 AADT in 1998 to 10,537-29,140 AADT in 2024. Cars comprise the largest category of vehicle, accounting for 77-93 percent of traffic on the road sections. The traffic forecast includes traffic generated by (i) decreased vehicle operating costs (for the Kazakh part only) and (ii) increased trade and new economic activities arising from the improvement of cross-border procedures (for both parts). The forecast does not include diverted traffic, as there are no viable road or rail alternatives to the Project.

**Table A18: Forecast of Total Traffic (Including Transit Traffic)  
(Average Annual Daily Traffic)**

<b>Road Section</b>	<b>Year</b>	<b>Private Cars</b>	<b>Buses</b>	<b>Light Trucks</b>	<b>Heavy Trucks</b>	<b>Total</b>
<b>Kazakh Sections</b>						
Almaty City-Kaskelen	1998	8,315	440	743	157	9,655
	2005	9,772	511	830	201	11,314
	2014	15,086	673	1,307	352	17,417
	2024	23,060	927	1,850	542	26,379
Kaskelen-Uzunagach	1998	3,636	413	401	180	4,631
	2005	4,391	480	456	229	5,556
	2014	8,120	634	746	387	9,887
	2024	13,565	872	1,083	588	16,109
Uzunagach-Otar	1998	2,402	311	276	154	3,143
	2005	2,925	363	305	187	3,779
	2014	5,653	481	497	313	6,944
	2024	9,711	668	762	502	11,643
Otar-Georgievka	1998	2,970	334	320	173	3,797
	2005	3,679	396	372	217	4,665
	2014	7,112	533	584	355	8,584
	2024	11,531	685	814	514	13,543
<b>Kyrgyz Sections</b>						
Bishkek-Bypass Intersection (Link 1)	1998	8,522	339	351	130	9,342
	2005	10,577	393	484	178	11,632
	2014	16,251	507	811	298	17,867
	2024	26,473	682	1,453	534	29,140
Bypass Intersection-Georgievka (Link 2)	1998	6,337	214	324	188	7,064
	2005	7,865	248	447	257	8,818
	2014	12,086	321	748	431	13,586
	2024	19,687	431	1,338	774	22,229
Bypass Intersection-Maevka (Link 3A)	1998	6,893	108	392	213	7,606
	2005	8,555	125	542	291	9,512
	2014	13,144	162	906	488	14,699
	2024	21,411	217	1,621	874	24,123
Maevka-Osh Highway (Link 3B)	1998	3,131	65	73	92	3,361
	2005	3,886	75	100	126	4,188
	2014	5,971	98	168	211	6,448
	2024	9,726	131	302	379	10,537

Source: Consultants' reports.

## **ECONOMIC ANALYSIS**

### **A. General**

1. The economic analysis of the rehabilitation of the Almaty-Bishkek road was carried out on the basis of a comparison of the with- and without Project situations and using the world price numeraire. The Project involves providing new base courses, resurfacing, and other improvements on the entire project road and new alignments in parts of the Kurday Pass. The without-Project scenario involves routine and periodic maintenance at current levels to keep the road in its current condition. Economic internal rates of return (EIRRs) were calculated for four primary scenarios: (i) the Kazakh portion of the project road including benefits from road rehabilitation but excluding subregional benefits, (ii) the Kyrgyz portion with road rehabilitation benefits but excluding subregional benefits, (iii) overall project and country components including subregional benefits, and (iv) overall Project including regional benefits arising from transit traffic. The economic analysis covered a period of 24 years (2001-2024) including four years of construction. All costs and benefits were estimated in constant 1999 prices. The economic analysis of the Project was based on separate studies prepared on the Kazakhstan portion of the road, the Kyrgyz Republic portion, and on subregional benefits.<sup>1</sup>

### **B. Costs**

2. Project economic costs include the resource costs of road improvement and maintenance. Costs for the subregional component include costs for equipment and training. As part of the calculation of economic costs, the local currency costs were divided into tradable and nontradable groups. A standard conversion factor of 0.9 (for both Kazakhstan and the Kyrgyz Republic) was then applied to the nontradable portion. A shadow wage rate was applied to the financial costs of unskilled labor to convert them to economic costs.

### **C. Benefits**

3. Economic benefits used in the four EIRR scenarios were estimated for the Kazakhstan portion of the project road (Almaty-Georgievka); the Kyrgyz Republic portion of the road (Georgievka/Chui-Bishkek); the subregional aspects of the Project, i.e., improvements in cross-border policies and procedures; and transit traffic, which provides benefits to other countries in the region.

#### **1. Kazakhstan**

4. The main sources of economic benefits from the Kazakh portion of the Project (205 km), excluding subregional benefits, include savings (i) in vehicle operating costs (VOCs) for normal traffic, (ii) from traffic generated by the reduction in VOCs, and (iii) in time because of the improved alignment in the Kurday Pass for freight and passenger traffic. In most years, the maintenance costs without the Project, which are based on actual expenditures, are less than those estimated to be incurred after completion of the project road so that there are no net savings in maintenance expenditures due to the Project. VOC savings by vehicle type are shown in Table A19.1. Benefits from VOC savings for generated traffic are estimated at half the value for normal traffic.

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<sup>1</sup> Asian Development Bank, Cross-Border Issues Study, September 1998.

5. VOC savings due to the Project's improvement of road conditions comprise the largest category of savings, accounting for 70-80 percent of total benefits. Unit economic VOCs for passenger and freight vehicles were estimated using the latest version of the Highway Design and Maintenance Model (HDM-Manager). VOC savings will accrue primarily from improvements in the road surface, horizontal and vertical alignment, and increased average speed in some sections.

6. The new alignment of the Almaty-Bishkek road in the Kurday Pass and resulting increased speeds will reduce travel times on the road by 30 minutes for cars, one hour for buses, and 1.5 hours for trucks. Estimates of benefits from these time savings use estimated wages for passengers and drivers. The wider shoulders of the Project road and the improved alignment in the Kurday Pass area will significantly improve the safety conditions of the road. While insufficient data is available to quantify the savings from reducing the level of vehicle accidents, these benefits are expected to increase the overall level of benefits from the Project.

**Table A19.1: Representative Vehicle Operating Costs, by Vehicle Type  
(\$ per vehicle-km)**

Scenario	Car	Bus	Light/Medium Truck	Heavy Truck
<b>A. Kazakhstan</b>				
1. Two-Lane Section				
Without Project	0.14	0.55	0.17	0.34
With Project	0.13	0.53	0.16	0.33
VOC Savings	0.01	0.02	0.01	0.01
2. Mountain Pass Section				
Without Project	0.18	1.13	0.33	0.63
With Project	0.14	0.80	0.22	0.48
VOC Savings	0.04	0.33	0.11	0.15
<b>B. Kyrgyz Republic</b>				
Without Project	0.14	0.52	0.34	0.32
With Project	0.13	0.50	0.32	0.29
VOC Savings	0.01	0.02	0.02	0.03

## **2. The Kyrgyz Republic**

7. Benefits for the portion of the Project road located in the Kyrgyz Republic (40 km), excluding subregional benefits, are limited to savings in VOCs for normal traffic. The speed on the Kyrgyz portion of the project road is restricted by the posted speed limits rather than the conditions of the road so there will be no time savings from the road improvements. In most years, the maintenance costs without the Project, based on actual expenditures, are lower than what they will be once the Project is implemented so that there are no net savings in the maintenance expenditures due to the Project. VOC savings due to the Project's improvement of road conditions were based on estimates from the VOC module of HDM-Manager. During the project period, it will be necessary to complete resealing and overlays of the road in the without-Project case, which will lower the VOC savings in the years immediately following this roadwork compared with the preceding years. The reductions in VOCs are not expected to be great enough to produce a significant amount of generated traffic on this portion of the project road as a larger portion of the vehicle trips on the Kyrgyz sections are of a local nature and are shorter in length than those on the Kazakh sections. Traffic will be generated as part of the subregional aspects of the Project, however.



### 3. Subregional Benefits

8. The improvement in cross-border policies and procedures will result in a decrease in the amount of time spent at the Georgievka-Chui border crossing. Two categories of subregional benefits arise from the project: (i) time savings, and (iii) new economic activity to meet the increased demand for goods due to lower costs of trade. The improved border control procedures will result in time savings from the removal of (i) control point delays, (ii) border processing delays, and (iii) clearance delays. The time savings will lower the costs of trade. Available data to estimate the benefits from the new economic activity are insufficient; however, the benefits are expected to increase the overall level of project benefits. The decreased cost of trade and the new economic activity will result in an increase in the volume of trade and the amount of traffic necessary to transport it. The increased trade will involve products such as fresh produce and other agricultural goods and is estimated to generate an increase in bus and truck traffic equivalent to 5 percent of the estimated normal traffic of these vehicle types on the project road. The subregional benefits were allocated between Kazakhstan and the Kyrgyz Republic, using proportions of 48 percent and 52 percent, respectively. These proportions were determined on the basis of the direction of traffic flow of heavy vehicles through the border crossing.

#### D. Results of Economic Analysis

9. The EIRR for the overall Project, including subregional benefits, is estimated at 27.6 percent (Table A19.2). Due to the much smaller scale of the Kyrgyz portion of the Project relative to the Kazakh portion and the approximately equal distribution of subregional benefits, the inclusion of subregional benefits has a larger impact on the EIRR for the Kyrgyz component, which has an EIRR of 48.8 percent versus 25.6 percent for the Kazakh component. The EIRR for the overall Project, excluding subregional benefits, is estimated at 23.8 percent. The EIRRs for the Kazakh and Kyrgyz components are much closer, 23.7 and 25.9, respectively, when subregional benefits are excluded. Transit traffic has been excluded from these EIRR calculations as the benefits associated with this traffic do not accrue to either country. Benefits from transit traffic will accrue to other countries in the region (principally Russia and Uzbekistan). Inclusion of direct regional benefits in the form of VOC savings along with the subregional benefits increases the EIRR to 28.0 percent. Secondary regional benefits are difficult to quantify, but are expected to further increase the level of project benefits. Details of the EIRR calculations are shown in Tables A19.3-A19.9.

10. Sensitivity analysis was carried out to test the impact of negative changes in key parameters determining the costs and benefits of the Project. The sensitivity analysis for the overall Project, including subregional benefits, indicates that it would take an increase in costs of 170 percent or a decrease in benefits of 63 percent for the EIRR to decline to the cutoff level of 12 percent. The switching values for the Project including subregional benefits are lower for the Kazakh component than for the Kyrgyz component. The switching values for the Project excluding subregional benefits are smaller than those for the Project including these benefits, but still quite high overall. Given that both countries now have experience in implementing ADB-financed road projects, it is not likely that such large increases in costs will occur. Similarly, given the somewhat conservative nature of the traffic forecast, it is not likely that such large decreases in benefits will occur.

Table A19.2: Base Case EIRRs and Sensitivity Analysis

	EIRR (%)							
	1 Base Case EIRR (%)	2 Base Case NPV (\$ million)	3 Increase Costs 10% (EIRR) (%)	4 Increase Costs Switching Value (EIRR) (%)	5 Decrease Benefits 20% (EIRR) (%)	6 Decrease Benefits Switching Value (EIRR) (%)	7 Delay Implementation by one year (EIRR) (%)	8 Combination of 3, 5, & 7 (EIRR) (%)
<b>Without Subregional Benefits</b>								
Overall Project	23.8	72.5	21.4	115.0	19.4	53.0	20.3	16.0
Kazakhstan	23.7	68.0	21.3	115.0	19.4	54.0	20.3	16.0
The Kyrgyz Republic	25.9	4.5	21.8	90.0	19.3	47.0	21.0	15.5
<b>With Subregional Benefits</b>								
Overall Project	27.6	101.6	25.8	170.0	23.5	63.0	25.1	20.1
Kazakhstan	25.6	81.0	23.9	145.0	21.7	60.0	23.5	18.8
The Kyrgyz Republic	48.8	20.6	45.9	445.0	42.1	81.5	41.5	34.1
<b>With Regional and Subregional Benefits</b>								
Overall Project	28.0	105.1	-	-	-	-	-	-

EIRR = economic internal rate of return, NPV = net present value.

**Table A19.3: Economic Internal Rate of Return (EIRR) for Almaty-Bishkek Road Rehabilitation Project (Excluding Subregional Benefits)**

km = 245.700

Year	Costs			Benefits				Total Benefits	Net Benefits
	Construction	Maintenance	Total Costs	Maintenance W/O Project	VOC Savings	Time Savings	Generated Traffic		
2001	13.798		13.798	0.300				0.300	(13.498)
2002	17.937		17.937	0.300				0.300	(17.637)
2003	18.627		18.627	0.300				0.300	(18.327)
2004	18.627		18.627	1.033				1.033	(17.594)
2005	0.000	0.893	0.893	0.300	11.222	4.515	0.156	16.194	15.301
2006	0.000	0.893	0.893	0.300	12.996	4.642	0.216	18.155	17.262
2007	0.000	0.893	0.893	1.189	14.214	4.849	0.305	20.557	19.664
2008	0.000	0.893	0.893	0.300	16.449	5.067	0.430	22.247	21.353
2009	0.000	0.893	0.893	0.300	18.894	5.297	0.593	25.085	24.192
2010	0.000	0.893	0.893	0.448	21.523	5.539	0.817	28.326	27.433
2011	0.000	0.893	0.893	0.300	24.492	5.793	1.125	31.711	30.818
2012	0.000	0.893	0.893	7.393	14.546	6.006	0.748	28.693	27.799
2013	0.000	0.893	0.893	0.713	16.984	6.227	1.056	24.980	24.087
2014	0.101	0.893	0.994	0.300	19.548	6.458	1.273	27.578	26.584
2015	0.000	0.893	0.893	0.981	20.762	6.697	1.524	29.964	29.071
2016	18.037	0.893	18.930	0.661	22.884	6.947	1.816	32.307	13.377
2017	0.000	0.893	0.893	0.300	25.800	7.173	2.138	35.411	34.518
2018	0.000	0.893	0.893	0.300	28.772	7.407	2.509	38.989	38.096
2019	0.253	0.893	1.146	0.448	31.752	7.650	2.955	42.804	41.658
2020	0.000	0.893	0.893	0.300	34.911	7.900	3.471	46.583	45.690
2021	0.000	0.893	0.893	0.300	38.569	8.160	4.066	51.095	50.202
2022	0.000	0.893	0.893	0.300	42.802	8.428	4.753	56.284	55.391
2023	0.000	0.893	0.893	0.713	45.662	8.706	5.545	60.626	59.733
2024	0.000	0.893	0.893	8.620	22.160	8.993	2.473	42.247	41.353

NPV = net present value, VOC: vehicle operating cost.

EIRR= 23.8%

NPV= 72.5

**Table A19.4: Summary for Kazakh Portion of Project Road (Four Sections From Almaty to Georgievka), Excluding Subregional Benefits**

km = 205.000		(\$ million)							
Year	Costs			Benefits				Total Benefits	Net Benefits
	Construction	Maintenance	Total Costs	Maintenance W/O Project	VOC Savings	Time Savings	Generated Traffic		
2001	12.831		12.831	0.271				0.271	(12.561)
2002	16.681		16.681	0.271				0.271	(16.410)
2003	17.322		17.322	0.271				0.271	(17.052)
2004	17.322		17.322	0.271				0.271	(17.052)
2005	0.000	0.771	0.771	0.271	9.853	4.515	0.156	14.795	14.024
2006	0.000	0.771	0.771	0.271	11.321	4.642	0.216	16.450	15.679
2007	0.000	0.771	0.771	0.271	13.156	4.849	0.305	18.581	17.810
2008	0.000	0.771	0.771	0.271	15.191	5.067	0.430	20.959	20.188
2009	0.000	0.771	0.771	0.271	17.446	5.297	0.593	23.607	22.836
2010	0.000	0.771	0.771	0.271	19.944	5.539	0.817	26.570	25.799
2011	0.000	0.771	0.771	0.271	22.708	5.793	1.125	29.897	29.126
2012	0.000	0.771	0.771	7.363	12.648	6.006	0.748	26.765	25.994
2013	0.000	0.771	0.771	0.271	14.655	6.227	1.056	22.209	21.438
2014	0.000	0.771	0.771	0.271	16.839	6.458	1.273	24.840	24.069
2015	0.000	0.771	0.771	0.271	19.214	6.697	1.524	27.706	26.935
2016	17.571	0.771	18.342	0.271	21.794	6.947	1.816	30.827	12.485
2017	0.000	0.771	0.771	0.271	24.427	7.173	2.138	34.009	33.238
2018	0.000	0.771	0.771	0.271	27.258	7.407	2.509	37.444	36.673
2019	0.000	0.771	0.771	0.271	30.297	7.650	2.955	41.173	40.402
2020	0.000	0.771	0.771	0.271	33.560	7.900	3.471	45.202	44.431
2021	0.000	0.771	0.771	0.271	37.061	8.160	4.066	49.557	48.786
2022	0.000	0.771	0.771	0.271	40.814	8.428	4.753	54.266	53.495
2023	0.000	0.771	0.771	0.271	44.837	8.706	5.545	59.359	58.588
2024	0.000	0.771	0.771	8.590	20.502	8.993	2.473	40.559	39.788

EIRR: economic internal rate of return, NPV = net present value, VOC: vehicle operating cost.

EIRR= 23.7%

NPV= 68.0

**Table A19.5: Summary for Kyrgyz Portion of Road (Links 1, 2, 3A, & 3B), Excluding Subregional Benefits**

km = 40.700

(\$ million)

Year	Costs			Benefits				Total Benefits	Net Benefits
	Construction	Maintenance	Total Costs	Maintenance W/O Project	VOC Savings	Time Savings	Generated Traffic		
2001	0.967		0.967	0.030				0.030	(0.937)
2002	1.257		1.257	0.030				0.030	(1.227)
2003	1.305		1.305	0.030				0.030	(1.275)
2004	1.305		1.305	0.763				0.763	(0.542)
2005	0.000	0.122	0.122	0.030	1.369			1.398	1.276
2006	0.000	0.122	0.122	0.030	1.675			1.705	1.583
2007	0.000	0.122	0.122	0.918	1.058			1.977	1.855
2008	0.000	0.122	0.122	0.030	1.258			1.288	1.165
2009	0.000	0.122	0.122	0.030	1.448			1.478	1.356
2010	0.000	0.122	0.122	0.177	1.579			1.756	1.634
2011	0.000	0.122	0.122	0.030	1.784			1.814	1.692
2012	0.000	0.122	0.122	0.030	1.898			1.927	1.805
2013	0.000	0.122	0.122	0.442	2.329			2.771	2.649
2014	0.101	0.122	0.223	0.030	2.708			2.738	2.515
2015	0.000	0.122	0.122	0.711	1.548			2.259	2.137
2016	0.466	0.122	0.588	0.390	1.090			1.480	0.892
2017	0.000	0.122	0.122	0.030	1.372			1.402	1.280
2018	0.000	0.122	0.122	0.030	1.515			1.544	1.422
2019	0.253	0.122	0.375	0.177	1.454			1.631	1.256
2020	0.000	0.122	0.122	0.030	1.351			1.381	1.259
2021	0.000	0.122	0.122	0.030	1.508			1.538	1.416
2022	0.000	0.122	0.122	0.030	1.988			2.017	1.895
2023	0.000	0.122	0.122	0.442	0.825			1.267	1.145
2024	0.000	0.122	0.122	0.030	1.658			1.688	1.566

EIRR: economic internal rate of return, NPV = net present value, VOC: vehicle operating cost.

EIRR= 25.9%

NPV= 4.5

**Table A19.6: Economic Internal Rate of Return for Almaty-Bishkek Road Rehabilitation Project (Including Subregional Benefits)**

km = 245.700

Year	Costs				Benefits							
	Road Rehabilitation		Subregional Cross-Border	Total Costs	Road Rehabilitation			Subregional		Total Benefits	Net Benefits	
	Construction	Maintenance			Maintenance W/O Project	VOC Savings	Time Savings	Generated Traffic	Time Savings			Generated Traffic
2001	13.798		0.800	13.798	0.300						0.300	(13.498)
2002	17.937			18.737	0.300						0.300	(18.437)
2003	18.627			18.627	0.300						0.300	(18.327)
2004	18.627			18.627	1.033						1.033	(17.594)
2005	0.000	0.893		0.893	0.300	11.222	4.515	0.156	5.296	0.095	21.585	20.691
2006	0.000	0.893		0.893	0.300	12.996	4.642	0.216	5.397	0.107	23.658	22.765
2007	0.000	0.893		0.893	1.189	14.214	4.849	0.305	5.624	0.117	26.298	25.405
2008	0.000	0.893		0.893	0.300	16.449	5.067	0.430	5.861	0.132	28.239	27.346
2009	0.000	0.893		0.893	0.300	18.894	5.297	0.593	6.110	0.147	31.341	30.448
2010	0.000	0.893		0.893	0.448	21.523	5.539	0.817	6.369	0.164	34.859	33.966
2011	0.000	0.893		0.893	0.300	24.492	5.793	1.125	6.641	0.182	38.534	37.641
2012	0.000	0.893		0.893	0.300	14.546	6.006	0.748	6.859	0.091	28.550	27.657
2013	0.000	0.893		0.893	0.713	16.984	6.227	1.056	7.084	0.106	32.170	31.277
2014	0.101	0.893		0.994	0.300	19.548	6.458	1.273	7.317	0.121	35.017	34.022
2015	0.000	0.893		0.893	0.981	20.762	6.697	1.524	7.558	0.131	37.653	36.760
2016	18.037	0.893		18.930	0.661	22.884	6.947	1.816	7.807	0.145	40.259	21.329
2017	0.000	0.893		0.893	0.300	25.800	7.173	2.138	8.031	0.163	43.605	42.712
2018	0.000	0.893		0.893	0.300	28.772	7.407	2.509	8.261	0.181	47.430	46.537
2019	0.253	0.893		1.146	0.448	31.752	7.650	2.955	8.498	0.199	51.501	50.355
2020	0.000	0.893		0.893	0.713	34.911	7.900	3.471	8.742	0.218	55.955	55.062
2021	0.000	0.893		0.893	0.300	38.569	8.160	4.066	8.993	0.239	60.328	59.435
2022	0.000	0.893		0.893	0.300	42.802	8.428	4.753	9.251	0.263	65.798	64.905
2023	0.000	0.893		0.893	0.300	45.662	8.706	5.545	9.517	0.282	70.013	69.120
2024	0.000	0.893		0.893	0.300	22.160	8.993	2.473	9.791	0.126	43.843	42.950

NPV = net present value, VOC = vehicle operating cost.

EIRR= 27.6%

NPV= 101.6

NPV= 105.1

**Table A19.7: Summary for Kazakh Portion of Project Road (Four Sections from Almaty to Georgievka), Including Subregional Benefits**

km = 205.000

(\$ million)

Year	Costs				Benefits							
	Road Rehabilitation		Subregional Cross-Border	Total Costs	Road Rehabilitation			Subregional		Total Benefits	Net Benefits	
	Construction	Maintenance			Maintenance W/O Project	VOC Savings	Time Savings	Generated Traffic	Time Savings			Generated Traffic
2001	12.831		0.400	12.831	0.271						0.271	(12.561)
2002	16.681			17.081	0.271						0.271	(16.810)
2003	17.322			17.322	0.271						0.271	(17.052)
2004	17.322			17.322	0.271						0.271	(17.052)
2005	0.000	0.771		0.771	0.271	9.853	4.515	0.156	2.542	0.089	17.426	16.655
2006	0.000	0.771		0.771	0.271	11.321	4.642	0.216	2.591	0.099	19.139	18.368
2007	0.000	0.771		0.771	0.271	13.156	4.849	0.305	2.699	0.112	21.392	20.621
2008	0.000	0.771		0.771	0.271	15.191	5.067	0.430	2.813	0.125	23.898	23.127
2009	0.000	0.771		0.771	0.271	17.446	5.297	0.593	2.933	0.140	26.680	25.909
2010	0.000	0.771		0.771	0.271	19.944	5.539	0.817	3.057	0.156	29.784	29.013
2011	0.000	0.771		0.771	0.271	22.708	5.793	1.125	3.188	0.173	33.258	32.487
2012	0.000	0.771		0.771	0.271	12.648	6.006	0.748	3.292	0.082	23.047	22.276
2013	0.000	0.771		0.771	0.271	14.655	6.227	1.056	3.400	0.095	25.705	24.934
2014	0.000	0.771		0.771	0.271	16.839	6.458	1.273	3.512	0.109	28.462	27.691
2015	0.000	0.771		0.771	0.271	19.214	6.697	1.524	3.628	0.124	31.458	30.687
2016	17.571	0.771		18.342	0.271	21.794	6.947	1.816	3.747	0.140	34.714	16.373
2017	0.000	0.771		0.771	0.271	24.427	7.173	2.138	3.855	0.157	38.021	37.250
2018	0.000	0.771		0.771	0.271	27.258	7.407	2.509	3.965	0.175	41.584	40.813
2019	0.000	0.771		0.771	0.271	30.297	7.650	2.955	4.079	0.193	45.445	44.674
2020	0.000	0.771		0.771	0.271	33.560	7.900	3.471	4.196	0.213	49.611	48.840
2021	0.000	0.771		0.771	0.271	37.061	8.160	4.066	4.317	0.234	54.108	53.337
2022	0.000	0.771		0.771	0.271	40.814	8.428	4.753	4.441	0.256	58.963	58.192
2023	0.000	0.771		0.771	0.271	44.837	8.706	5.545	4.568	0.279	64.206	63.435
2024	0.000	0.771		0.771	0.271	20.502	8.993	2.473	4.699	0.119	37.058	36.287

EIRR = economic internal rate of return, NPV = net present value, VOC = vehicle operating cost.

EIRR= 25.6%

NPV= 81.0

**Table A19.8: Summary for Kyrgyz Portion of Road (Links 1, 2, 3A, & 3B) Including Subregional Benefits**

km = 40.700

(\$ million)

Year	Costs				Benefits							
	Road Rehabilitation		Subregional Cross-Border	Total Costs	Road Rehabilitation			Subregional		Total Benefits	Net Benefits	
	Construction	Maintenance			Maintenance W/O Project	VOC Savings	Time Savings	Generated Traffic	Time Savings			Generated Traffic
2001	0.967		0.400	0.967	0.030						0.030	(0.937)
2002	1.257			1.657	0.030						0.030	(1.627)
2003	1.305			1.305	0.030						0.030	(1.275)
2004	1.305			1.305	0.763						0.763	(0.542)
2005	0.000	0.122		0.122	0.030	1.369			2.754	0.006	4.158	4.036
2006	0.000	0.122		0.122	0.030	1.675			2.806	0.007	4.519	4.397
2007	0.000	0.122		0.122	0.918	1.058			2.924	0.005	4.906	4.784
2008	0.000	0.122		0.122	0.030	1.258			3.048	0.006	4.342	4.220
2009	0.000	0.122		0.122	0.030	1.448			3.177	0.007	4.662	4.540
2010	0.000	0.122		0.122	0.177	1.579			3.312	0.008	5.076	4.954
2011	0.000	0.122		0.122	0.030	1.784			3.453	0.008	5.276	5.154
2012	0.000	0.122		0.122	0.030	1.898			3.567	0.009	5.503	5.381
2013	0.000	0.122		0.122	0.442	2.329			3.684	0.011	6.465	6.343
2014	0.101	0.122		0.223	0.030	2.708			3.805	0.012	6.555	6.331
2015	0.000	0.122		0.122	0.711	1.548			3.930	0.006	6.195	6.073
2016	0.466	0.122		0.588	0.390	1.090			4.060	0.005	5.545	4.957
2017	0.000	0.122		0.122	0.030	1.372			4.176	0.006	5.584	5.461
2018	0.000	0.122		0.122	0.030	1.515			4.296	0.006	5.846	5.724
2019	0.253	0.122		0.375	0.177	1.454			4.419	0.006	6.056	5.681
2020	0.000	0.122		0.122	0.442	1.351			4.546	0.005	6.344	6.222
2021	0.000	0.122		0.122	0.030	1.508			4.676	0.006	6.220	6.098
2022	0.000	0.122		0.122	0.030	1.988			4.811	0.008	6.836	6.713
2023	0.000	0.122		0.122	0.030	0.825			4.949	0.003	5.807	5.685
2024	0.000	0.122		0.122	0.030	1.658			5.091	0.007	6.786	6.664

EIRR = economic internal rate of return, NPV = net present value, VOC = vehicle operating cost.

EIRR= 48.8%

NPV= 20.6



**Table A19.9: Economic Internal Rate of Return(EIRR) for Almaty-Bishkek Road Rehabilitation Project (Including Regional and Subregional Benefits)**

km = 245.700

Year	Costs				Benefits							
	Road Rehabilitation		Subreg'l Cross- Border	Total Costs	Road Rehabilitation			Subregional		Total Benefits	Net Benefits	
	Construction	Maintenance			Maintenance W/O Project	VOC Savings	Time Savings	Generated Traffic	Time Savings			Generated Traffic
2001	13.798		0.800	13.798	0.300						0.300	(13.498)
2002	17.937			18.737	0.300						0.300	(18.437)
2003	18.627			18.627	0.300						0.300	(18.327)
2004	18.627			18.627	1.033						1.033	(17.594)
2005	0.000	0.893		0.893	0.300	11.670	4.515	0.156	5.296	0.107	22.044	21.151
2006	0.000	0.893		0.893	0.300	13.508	4.642	0.216	5.397	0.119	24.182	23.289
2007	0.000	0.893		0.893	1.189	14.777	4.849	0.305	5.624	0.131	26.875	25.982
2008	0.000	0.893		0.893	0.300	17.099	5.067	0.430	5.861	0.148	28.906	28.013
2009	0.000	0.893		0.893	0.300	19.640	5.297	0.593	6.110	0.166	32.105	31.212
2010	0.000	0.893		0.893	0.448	22.373	5.539	0.817	6.369	0.185	35.731	34.838
2011	0.000	0.893		0.893	0.300	25.452	5.793	1.125	6.641	0.206	39.518	38.624
2012	0.000	0.893		0.893	0.300	14.998	6.006	0.748	6.859	0.102	29.014	28.121
2013	0.000	0.893		0.893	0.713	17.519	6.227	1.056	7.084	0.119	32.719	31.826
2014	0.101	0.893		0.994	0.300	20.169	6.458	1.273	7.317	0.137	35.653	34.659
2015	0.000	0.893		0.893	0.981	21.435	6.697	1.524	7.558	0.148	38.343	37.450
2016	18.037	0.893		18.930	0.661	23.647	6.947	1.816	7.807	0.164	41.041	22.111
2017	0.000	0.893		0.893	0.300	26.662	7.173	2.138	8.031	0.184	44.489	43.596
2018	0.000	0.893		0.893	0.300	29.744	7.407	2.509	8.261	0.205	48.426	47.533
2019	0.253	0.893		1.146	0.448	32.837	7.650	2.955	8.498	0.226	52.614	51.468
2020	0.000	0.893		0.893	0.713	36.109	7.900	3.471	8.742	0.248	57.183	56.290
2021	0.000	0.893		0.893	0.300	39.894	8.160	4.066	8.993	0.273	61.686	60.793
2022	0.000	0.893		0.893	0.300	44.272	8.428	4.753	9.251	0.300	67.305	66.412
2023	0.000	0.893		0.893	0.300	47.243	8.706	5.545	9.517	0.322	71.634	70.740
2024	0.000	0.893		0.893	0.300	22.822	8.993	2.473	9.791	0.142	44.522	43.629

NPV = net present value, VOC = vehicle operating cost.

EIRR= 28.0%

NPV= 105.1