

## 1. Project Profile and Japanese ODA Loan



Map of project area



Irtys River Suspension Bridge

### 1.1 Background

The city of Semipalatinsk,<sup>1</sup> located in northeastern Kazakhstan, is the country's fourth largest city as well as one of the important industrial cities in Kazakhstan's northern region. It is a base for road transport and rail transport that connect Kazakhstan with central Russia.

The city of Semipalatinsk developed along both sides of the Irtys River, a major river in Kazakhstan. One of Kazakhstan's major trunk roads crosses the Irtys River in the city of Semipalatinsk and leads to central Russia, traversing Omsk and Novosibirsk, as well as to the Chinese border. However, the only road bridge (hereinafter referred to as the "preexisting bridge") in the city was the one built for the above-mentioned trunk line. It was a concrete bridge constructed in the city center in the 1960s; it was severely aged due to the extreme climate and inadequate operation and maintenance and was in danger of collapse.

The traffic volume on the preexisting bridge at the time of the appraisal (1996) was 33,000 vehicles/day, and this figure was expected to increase. However, lane restrictions were applied (i.e., only 2 out of 4 lanes were used) due to the above-mentioned age-worn condition of the bridge, hindering the smooth flow of traffic. Moreover, if the deterioration of the preexisting bridge had progressed further leading to closure of the bridge, not only would the flow of city traffic have been completely blocked, there was

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<sup>1</sup> At the time of the appraisal, Semipalatinsk was the capital of Semipalatinsk Province. Since May 1997, it has been a city in Eastern Kazakhstan Province.

also concern that closure would have posed a serious impediment to traffic over a wide geographical area, from central to northeastern Kazakhstan as well as central Russia.

## 1.2 Objective

The project's objective is to ensure the safe and smooth flow of traffic on a major trunk road by constructing a new bridge across the Irtysh River and by constructing the approach and access roads in the city of Semipalatinsk, Eastern Kazakhstan Province, which is located in northeastern Kazakhstan, thereby contributing to the stimulation of the local economy.

## 1.3 Borrower/Executing Agency

Republic of Kazakhstan / Semipalatinsk Oblast Akim Apparatus (SOAA) (currently East Kazakhstan Oblast Akim Apparatus)

## 1.4 Outline of Loan Agreement

Loan Amount / Loan Disbursed Amount	21,530 million yen / 21,236 million yen
Exchange of Notes / Loan Agreement	February 1997 / March 1997
Terms and Conditions	
-Interest Rate	2.7% (Consultant portion: 2.3%)
-Repayment Period (Grace Period)	30 years (10 years)
-Procurement	General untied
Final Disbursement Date	June 2004
Main Contractors	Ishikawajima-Harima Heavy Industries Co., Ltd. (currently IHI Corporation) (Japan)
Consultant Services	Katahira & Engineers Inc. (Japan)
Feasibility Study (F/S), etc.	1989 Government of the former USSR 1996 Government of Kazakhstan

## 2. Evaluation Result (Rating: C)

### 2.1 Relevance (Rating: a)

It was confirmed that the objective of the project is consistent with the policy and needs of the government of Kazakhstan, and it was found that the project has high relevance.

#### 2.1.1 Relevance in relation to Kazakhstan's development policy and measures

In Kazakhstan, where people, natural resources, and centers of economic activity are dispersed over a vast area, the importance of transportation sector development has remained consistently high, and this sector is positioned as a high priority sector in both

the Medium-term Public Investment Program at the time of appraisal and in the National Development Strategy (a long-term development strategy up to 2030 [compiled in 1997]) at the time of the ex-post evaluation.

Regarding road sector measures, both the National Road Development Plan (1993) at the time of appraisal and the Road Sector Development Plan (2006–2012) at the time of the ex-post evaluation mention various plans for expansion of the road network through new construction and rehabilitation of national and local roads. In the Road Sector Development Plan, in addition to building a road network for the international traffic and transit traffic passing through Kazakhstan, emphasis is also placed on measures for building a road network connecting domestic industrial centers, and the national road which passes over this project’s bridge is included as a target of rehabilitation.

### 2.1.2 Relevance in relation to traffic demand

The increase in demand for road transport is discernable from the data on total road length and transport volume. As shown in Table 1, the total road length in Kazakhstan is growing due to growth of national roads. Because the bridge and roadway constructed by this project are in the city of Semipalatinsk, it is classified as local road; however, it is part of a major national road, and it is responsive to the need to build a national road network.

The road transport volume increased five-fold for passengers and four-fold for freight during the 10 years from 1994 to 2004, and the share of road transport out of overall transport volume also grew significantly.

Table 1: Kazakhstan’s Road Transport Indicators

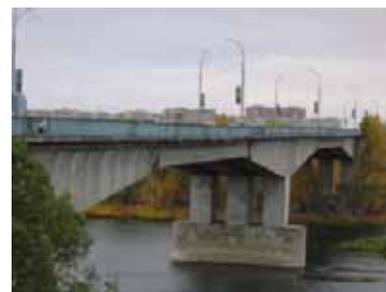
Road Length	1996	2006
Total road length(km)	87,572	90,845
National roads	17,420	23,508
Local roads	70,152	67,337
Road Transport Volume	1994	2004
Passenger transport volume (million person-km)	15,800	85,240
% of total passenger transport volume	43%	85%
Freight transport volume (million ton-km)	11,060	43,900
% of total freight transport volume	7%	21%

Source: Project appraisal materials, Ministry of Transportation and Communications, and statistical yearbooks

### 2.1.3 Relevance in relation to the need for the new bridge

As stated in “1.1 Background,” construction of a new Irtysh River Bridge was a necessary and urgent matter. The project plan called for construction of a new bridge near the preexisting bridge, rather than for repair of the preexisting bridge. This plan was considered appropriate because a study report, carried out at the time of project planning, found that a full-scale repair of the preexisting bridge would require thorough study and long-term

Preexisting Bridge



blockage of traffic due to the extreme danger posed by that bridge given the advanced deterioration of its concrete, and it was judged to be undesirable to maintain the bridge as the only route across the river.<sup>2</sup> Furthermore, following the start of this project, the preexisting bridge underwent small-scale repairs by the City of Semipalatinsk which enabled the removal of the lane restrictions and continued usage of the bridge, but since large vehicles cannot use the preexisting bridge due to weight restrictions, it does not affect the necessity of the new bridge.

## 2.2 Efficiency (Rating: b)

The project's output was larger than initially planned. Regarding the time required to achieve the output, the period planned for bridge construction was shortened, and the overall project period was as planned. However, the project cost exceeded the planned amount,<sup>3</sup> and so the project is evaluated as being moderately efficient.

### 2.2.1 Outputs

The planned output and actual output are as follows.

#### (1) Construction of new bridge

The construction of a steel suspension bridge was planned and carried out. In the plan at the time of appraisal, the bridge had a total length of 880 m, a central span of 670 m,<sup>4</sup> and a width of 34.27 m. However, the suspension bridge that was completed following the detailed design was expanded to a total length of 1,086 m, a central span of 750 m, and a width of 35 m. The number of lanes, at 6 lanes, was as planned. The suspension bridge was constructed 800 m downstream from the preexisting bridge.

#### (2) Construction of approach road (from regular road to bridge)

In the plan at the time of appraisal, the approach road was 750 m in length and 35.77 m wide. However, consideration was given in the detailed design to future increases in traffic volume, and the actual approach road was expanded to 1,564 m in length and 38.5 m wide.

#### (3) Widening and improvement of access roads (city streets connecting to the approach road)

Whereas the plan at the time of appraisal was for a total length of 6,900 m (3,400 m on the right bank and 3,500 m on the left bank), the actual output was 6,837 m

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<sup>2</sup> Prior to the project, to cope with traffic demand, a floating bridge was constructed and used 3 km upstream from the preexisting bridge. However, it had limitations in that it was usable only in summer and large-size vehicles could not use it.

<sup>3</sup> In JBIC's evaluation system, when either the project period or the project cost exceeds the plan, the efficiency is considered to be moderate.

<sup>4</sup> "Central span" refers to the distance between the two main bridge supports.

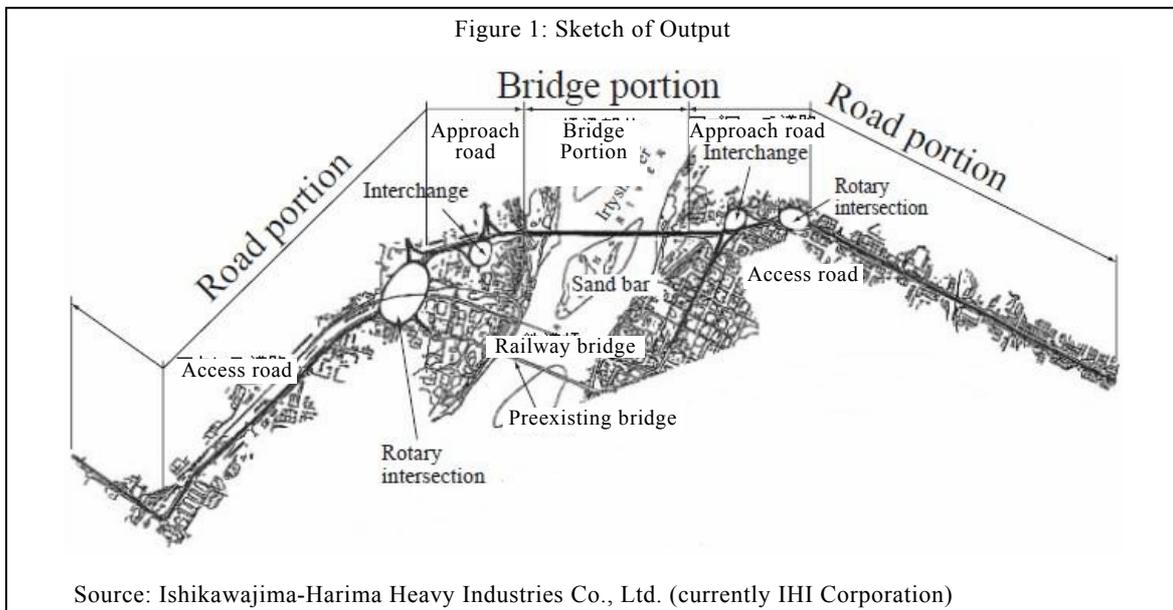
(3,855 m on the right bank and 2,982 m on the left bank).

(4) Other construction

As additional output at the request of Kazakhstan, there were installed parking lots, overpasses at city street intersections, left turn lanes, and improvement of the flood plain, etc. Moreover, a sewage pipe tunnel, funded completely by Kazakhstan, was installed on the river bottom.

(5) Consulting services

Consulting services consisted of review of traffic volume, etc., basic design, cost estimates, coordination with related bodies, bidding assistance, construction management, and technical guidance, etc. Consulting services were carried out as planned. The quantity of consulting services increased from the 1,465 man-months in the plan to 1,628 man-months due to the additional construction.



### 2.2.2 Project period

The time required to achieve the output planned at the time of appraisal was 5 years and 8 months from March 1997 to October 2002, the same as planned at the time of appraisal. As for the bridge and approach road component, the opening of the new bridge, which was scheduled for October 2001, actually took place in November 2000, 11 months ahead of the planned schedule. This was because (1) it was possible to construct the suspension bridge during the winter, unlike the bridges in proposed alternative plans,<sup>5</sup>

<sup>5</sup> The alternative bridge proposals studied at the time of the appraisal were for a concrete bridge, steel box girder bridge, steel cable-stayed bridge, and steel suspension bridge. Given the climate conditions and the urgency of construction, a steel suspension bridge was chosen. Because the suspension bridge was the only one among the proposed alternatives that does not require the construction of bridge piers and tower along

and so the risk of construction delays was low, (2) the contractor possessed abundant experience in constructing similar bridges, and (3) various aspects of construction could proceed simultaneously because the main supports, steel support girders, cables, and approach road materials, etc., were ordered as a package deal.

Furthermore, the completion of the project including the additional output and the tunnel construction by the government of Kazakhstan was June 2004, which is when consulting services were completed.

### 2.2.3 Project cost

The total project cost planned at the time of the appraisal was 28,321 million yen, and the actual project cost was 29,964 million yen (excluding the tunnel construction which was paid entirely by Kazakhstan), representing a 6% increase over the plan. Whereas the approved amount for Japanese ODA loan portion (equivalent to the foreign currency expenditure) was 21,530 million yen, the actual disbursed amount was 21,236 million yen, which was less than planned. Due to relocation of buried objects (such as water pipes) in association with the road construction and due to the additional construction, expenditure of local currency by Kazakhstan increased.

### 2.3 Effectiveness (Rating: a)

As a result of the completion of the new bridge, traffic volume on both banks of the Irtysh River increased to an extent that greatly exceeded the assumptions at the time of appraisal. Moreover, traffic flow became smooth. There was some concern with regard to safety, but the project objective has been satisfactorily achieved overall, and so the effectiveness is judged to be high.

#### 2.3.1 Ensuring smooth and safe trunk road traffic

##### (1) Increase in traffic volume

Table 2 displays the change in traffic volume on the new bridge and the preexisting bridge. The actual total traffic volume on both the preexisting and the new bridges at the time of the ex-post evaluation was 2.4 times the volume prior to the project and 1.9 times the predicted annual average daily traffic. Furthermore, the actual traffic volume on the new bridge alone exceeds the predicted traffic volume for both the preexisting and the new bridges.

As previously mentioned, the preexisting bridge is open to all vehicles except large-size ones. According to users of the new bridge, when in a passenger car, the

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the river's edge, year-round construction work was possible, even during the winter when the river's surface was frozen.

decision to use the preexisting or the new bridge depends on the destination (see Box 1 for frequency of usage of each bridge). Of course, since vehicles often travel over a part of the access road built by this project even when crossing the preexisting bridge, it may be said that the usage frequency and the effects (i.e., increase in traffic volume) of the project's output are sufficient.

Table 2: Traffic Volume on Irtysh River Bridges

	Actual volume before project (September 1995)	Forecast at appraisal (2006 average)	Actual volume at ex-post evaluation (September 2006)
Traffic volume (both directions) on bridges (vehicles/day)	Preexisting bridge + Floating bridge 33,000	Preexisting bridge + New bridge 42,215	Preexisting bridge + New bridge 79,289
Traffic volume by bridge	---	---	Preexisting bridge: 34,887 (44%) New bridge: 44,402(56%)

Note 1: Traffic volume is presented in terms of passenger cars, with consideration for road factors, by counting trucks and buses as 3 passenger cars and counting motorcycles as 0.75 passenger cars.

Note 2: For the actual figures for 1995 and 2006, the figures from 12-hour traffic volume studies conducted from 8 am to 8 pm were converted to 24-hour traffic volume figures. The conversion coefficient of 1.19 was used, following the precedent set by the appraisal.

Source: Appraisal materials and traffic volume study by City of Semipalatinsk (September 29, 2006)

At the time of the ex-post evaluation, an interview survey was conducted of new bridge users, companies in the city, and residents living near the bridges. Every type of respondent noted that this project smoothed the flow of traffic in the city (Box 1). (Excerpts of responses from companies in the city are also presented in Box 2).

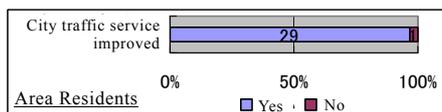
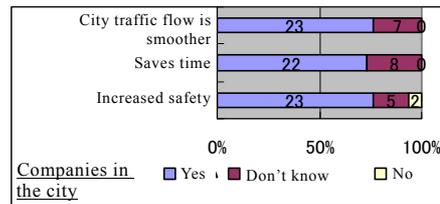
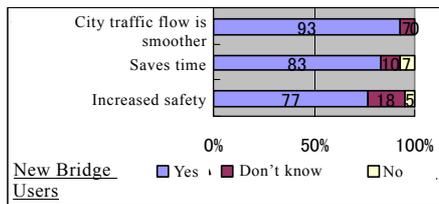
**Box 1: Results of Beneficiary Interview Survey concerning  
Bridge Usage and Traffic Flow Smoothness (excerpts)**

In undertaking the ex-post evaluation, an interview survey using a list of questions was conducted of (1) 100 new bridge users (40 professional drivers, 60 other drivers), (2) 30 companies in the city, and (3) 30 residents residing around the project site.

1) Average usage frequency of pre-existing bridge and new bridge (mathematical mode of responses)

	Pre-existing Bridge	New Bridge
New bridge users (100)	1 times/day	3 time/day
Companies in the city (30)	3 times/day	5 times/day

2) Effects of new bridge on city traffic



Interview of user of new bridge



(2) Time saving

The traffic congestion around the preexisting bridge was resolved by the availability of two bridges following the completion of the new bridge, the removal of lane restrictions on the preexisting bridge, and the construction of adjacent roads (approach roads, including the overpass).

Overpass



In the estimate at the time of appraisal, the required travel time from the beginning point to the end point on the segment of road that underwent construction was to be shortened from a time of 108 minutes prior to the project to 17 minutes on the route via the preexisting bridge (a 9 km distance) and to 9 minutes on the route via the new bridge (a distance of 8.5 km). When a driving trial was conducted during the field survey of the ex-post evaluation,<sup>6</sup> the time required on the preexisting bridge route was 21 minutes, and the time required on the new bridge route was 11 minutes. Thus, it was confirmed that the time saving was realized basically as assumed.

<sup>6</sup> By driving during morning rush hour, on a weekday in September 2006.

### (3) Increase in safety

According to the PIU of this project, the safety of road traffic was improved by this project's building of overpasses for an intersection and railroad crossing, construction of a left-turn lane, and separation of the sidewalk, and this was confirmed to a certain extent by the field survey of the ex-post evaluation as well.

However, in the interviews of 100 users of the new bridge, while the majority of opinions were positive as shown in Box 1, there were also opinions such as "snow removal in wintertime is inadequate" (22 persons) and "there are many accidents in the winter" (8 persons). Moreover, looking at the number of traffic accidents during the past three years reported to the Semipalatinsk City Police, whereas the number of accidents on the preexisting bridge was zero, the number on the new bridge was 4 in 2005 and 3 in 2006. Out of this total of 7 accident reports, 2 were attributed to excessive speed, and 5 were attributed to slippery winter roads.

Further detail will be presented in "2.5 Sustainability," but unlike the city streets and the preexisting bridge, the city is not responsible for management of the new bridge. Consequently, the city cannot set the speed limit on the bridge.<sup>7</sup> Due in part to the fact that the road surface is markedly better compared to the preexisting bridge, many vehicles were observed traveling at speeds in excess of 80 km per hour on the new bridge. Moreover, with the responsibility for management being in an ambiguous state, the city is conducting the minimum necessary operation and maintenance, but concerns remain over aspects of safety, including the inadequate snow removal.

#### 2.3.2 Recalculation of the internal rate of return

The economic internal rate of return (EIRR) calculated at the time of appraisal, which adopted time saving as the benefit, was 14.2%. When recalculated using the same conditions at the time of the ex-post evaluation, the EIRR was 19%. The reason for the increase when recalculated is that the actual traffic volume exceeded the forecast at the time of appraisal.

The financial internal rate of return (FIRR) was not calculated at the time of the appraisal or at the time of the ex-post evaluation. At the time of appraisal, a toll fee was collected at the preexisting bridge, and it was planned to collect a fee at the new bridge as well. In 1999, the city decided to abolish the toll on the preexisting bridge, and in 2001, the executing agency for the new bridge, East Kazakhstan Oblast Akim Apparatus, decided to make passage on the new bridge free of charge as well, with the reason given being that

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<sup>7</sup> The speed limit in the city is 60 km per hour, and the speed limit on the preexisting bridge is 40 km per hour.

these bridges have a highly public nature. Consequently, there is no toll income from vehicles traveling over the bridge.

## 2.4 Impact

### 2.4.1 Stimulation of local economy (achievement of superordinate objective)

A superordinate objective of the project is to stimulate the local economy. Because the project smoothed the road traffic flow in the city of Semipalatinsk, it may be surmised that it contributed to an increase in traffic volume over a wider area and to development of local industry, and the objective of stimulating the local economy is considered to have been achieved through this.

#### (1) Increase in traffic volume over a wide area

The freight transport volume in Kazakhstan increased 9% during 2003 to 2004, but in Eastern Kazakhstan Province, which includes the project area, an increase of 13.8% was witnessed during the same period. Moreover, the annual average daily traffic that passes over this bridge en route on the national highway between Omsk, Russia, and the Chinese border (total distance: 1,060 km) nearly doubled from 1,999 vehicles/day in 1993 to 4,403 vehicles/day in 2005.<sup>8</sup> If this project had not been implemented and if the preexisting Semipalatinsk bridge had become impassable, then passage over this entire segment of road would have been interrupted, and so a definite impact by this project is recognized on the increase in traffic over a wide area.



<sup>8</sup> Among the trunk roads in Kazakhstan, the only other segment of road where traffic volume more than doubled during the same period was the segment of Samara–Shymkent.

## (2) Development of local industry<sup>9</sup>

The Kazakhstani economy has continued to grow steadily together with the development of the market economy. The real GDP has displayed growth of 9% to 13% on annual average since 2000, and the per capita GDP more than doubled, from \$1,130 in 2000 to \$2,700 in 2004.

The oil and gas industry, which is a major factor in the economic growth of recent years, is located primarily in the western part of the country. In addition to an abundance of mineral resources such as gold, copper, and zinc, the northeastern region where the project area is located has light industries including textiles, food, and construction materials particularly in the city of Semipalatinsk as well as the largest cement factory in the country, and this region continues to develop as a base for the industrial belt in the north.

The industrial output of the country overall was \$27 trillion in 2004, a 10.4% increase YOY. The industrial output of Eastern Kazakhstan Province increased 8.5% YOY.<sup>10</sup> Meanwhile, the industrial output of the city of Semipalatinsk increased 21% YOY in 2004 and increased 15% YOY in 2005, to \$2.5 trillion, and so the industrial output growth rate of the city exceeded that of the country and that of Eastern Kazakhstan Province. Moreover, according to the statistics, investment in the city's major industries was approximately \$180,000 in 2000 but increased to approximately \$1.46 million in 2005.

Because the bridge constructed by the project is a necessity for road transport passing through Semipalatinsk, it may be said that it contributes to the development of local industry, as stated above. Moreover, it may be discerned from the interview survey of companies in the city that was undertaken as part of the ex-post evaluation that this project played an important role in the development of the companies that were interviewed (Box 2).

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<sup>9</sup> Monetary amounts given here were converted from tenge to dollars at the following rates: 142 tenge/\$ in 2000, 136 tenge/\$ in 2004, and 133 tenge/\$ in 2005.

<sup>10</sup> The monetary amount was unobtainable.

Box 2: Excerpts from Results of Interview Survey on Project's Impact on Companies in the City

In addition to the responses shown in Box 1, the following responses were received from companies in the city.

- Of the 30 companies interviewed, 3 were manufacturing companies, 10 were trading companies, 12 were transportation companies, and 5 were other companies.
- 4 companies (13%) responded that they travel everyday back and forth across the new bridge to other cities or neighboring countries.
- 13 companies (44%) responded that the new bridge is directly beneficial to the operation of the company and another 13 companies (44%) responded that the new bridge is indirectly beneficial to the operation of the company.
- 12 companies (40%) responded that "profit increased after the project."
- 12 companies (40%) responded that "customers increased after the project."

Furthermore, it is difficult to specify the presumed beneficiaries of this project, but it is clear that, at minimum, the entire population of the city of Semipalatinsk (population 300,000 in 2005) directly benefited. The population of Eastern Kazakhstan Province, where Semipalatinsk is located, is 1.5 million persons, and it appears that this population uses the bridge built by this project in almost all cases when accessing other cities by road.

#### 2.4.2 Impact of resident relocation

In implementing this project, no land acquisition was required because all of the land used for construction was state-owned land. However, it was necessary to relocate 680 households, a total of 1,744 persons, in order to dismantle houses and other structures. The residents involved were notified in 1989, and there was no opposition. As substitute housing, 16 9-storey apartment buildings were being constructed, but at the time of project appraisal, construction, which was 50% complete, was discontinued due to lack of funds.

Substitute Housing



During the project, construction of the substitute housing was resumed, funded by Kazakhstan. Following a review of the number of residents to be relocated, 14 9-storey apartment buildings (standard Russian size) were completed. Ultimately, the number relocated was 414 households and 7 corporations, and the relocation of all persons was completed before the beginning of the bridge construction.

According to PIU, there were 35 lawsuits concerning the terms and conditions of compensation, but they were all resolved at the municipal court level. The substitute housing was constructed next to other apartments along a trunk road in the central city

area, and it does not particularly appear to be inferior to the surrounding structures. Furthermore, neither the city nor PIU know the current conditions or the number of residents who were relocated, and during the ex-post evaluation, interview of the relocated residents was not undertaken.

#### 2.4.3 Impact on natural environment

No problems in particular were seen in the project's environmental measures. Installation of a soundproof wall along the approach road, which had been proposed at the time of appraisal, was confirmed during the field survey of the ex-post evaluation. Moreover, drainage from the bridge is collected in an underground tank installed on the flood plain and is sent to the sewage treatment plant.

Monitoring of the air quality and water quality in the city is conducted annually by the sanitation department of East Kazakhstan Oblast Akim Apparatus. Measurements around the project's bridge and roads are all within the standards.

#### 2.4.4 Other impact

##### (1) Promotion of friendship between Japan and Kazakhstan

According to interviews with Semipalatinsk city officials and residents, the residents feel strong pride in the fact that this is first suspension bridge in a CIS country and the fact that it is the 17<sup>th</sup> largest<sup>11</sup> in the world. There is a steady stream of people taking photographs in front of the bridge commemoration monument on the right bank by the bridge. Moreover, the area around the bridge has become a place of recreation and relaxation for citizens due to the improvement of the flood plain and construction of a water park, etc., funded by Kazakhstan. It is well known that the bridge was constructed with assistance from Japan, and it is a symbol of friendship between Japan and Kazakhstan.

##### (2) Transfer of advanced construction technology

For the construction, more than 500 local personnel were hired under the supervision of the Japanese consultant and contractor. Local engineers learned international standards of construction technology and construction management.<sup>12</sup> According to PIU and local engineers who participated in the construction, the experience of participating in this project is regarded in Kazakhstan as a high achievement, and at the time of the ex-post

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<sup>11</sup> In terms of the central span, the bridge is the 30<sup>th</sup> largest in the world (the largest being the Akashi Kaikyo Bridge (1,991 m) in Kobe. Moreover, a suspension bridge close in scale to the project bridge is the Akinada Bridge in Hiroshima Prefecture.

<sup>12</sup> Moreover, part of the structure was manufactured at a local factory with guidance from engineers dispatched from Japan.

evaluation as well, these local engineers were involved in other infrastructure construction projects. Given this, it appears that this project is contributing to quality improvements in Kazakhstan's construction industry.

## 2.5 Sustainability (Rating: c)

The condition of the bridge and the road is good overall. However, because as of April 2007 an operation and maintenance agency still did not exist and no budget allocations were being made for operation and maintenance, the sustainability is judged to be low.

### 2.5.1 Executing agency

#### 2.5.1.1 Technical capacity

The project bridge is the first modern and structurally complex bridge in Kazakhstan. According to the main contractor, the domestic technological level is adequate for coping with regular inspections and repairs to the structure. The project procured materials and equipment for bridge inspections and asphalt repairs. However, as stated in "2.5.1.2 Operation and maintenance system," because the operation and maintenance agency of the bridge is undecided, it is impossible to judge the technological level of the staff which will actually use the materials and equipment and carry out the work.<sup>13</sup> Since it has not been decided who will use the operation and maintenance manual prepared by the project, the manual is currently in the safekeeping of the City of Semipalatinsk.

For repair of the cable portion in future, engineers from outside Kazakhstan will be required, but the need for such outside assistance is not a situation peculiar to Kazakhstan since it is also true of suspension bridges built in other developing countries.

#### 2.5.1.2 Operation and maintenance system

At the time of the appraisal, the executing agency of the project was Semipalatinsk Oblast Akim Apparatus (SOAA), and it was planned that the PIU established under SOAA would become the operation and maintenance agency following completion of the project. In May 1997, SOAA was absorbed by East Kazakhstan Oblast Akim Apparatus, and the latter became the executing agency. PIU was also placed under the jurisdiction of East Kazakhstan Oblast Akim Apparatus; however, no action was taken to make PIU the operation and maintenance agency, and so the operation and maintenance agency remains non-existent.

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<sup>13</sup> As stated below, as minimum steps until the operation and maintenance agency is established, the City of Semipalatinsk is conducting cleaning and daily maintenance of the bridge and road, but the city is not using the operation and maintenance equipment procured by this project. According to the city, the necessary number of staff is 46 persons, but this is likely to be the number of the maintenance staff for all city streets, including the preexisting bridge.

According to the PIU, because there is no mention of the action to be taken following project completion in its founding documents, PIU bears responsibility only for project implementation. Because East Kazakhstan Oblast Akim Apparatus did not issue public documents to dissolve PIU following project completion, PIU continues to exist legally, but it essentially has already been dissolved. Moreover, PIU has no position within the organization of the province and no budget. At the time of the ex-post evaluation, the main contractor and the former accountant of PIU were managing the project office, construction materials and equipment, and the materials and equipment for operation and maintenance,<sup>14</sup> and they were working to organize data and documents and to have East Kazakhstan Oblast Akim Apparatus establish an operation and maintenance agency.

East Kazakhstan Oblast Akim Apparatus consented to accept the project bridge and road in a written document addressed to Kazakhstan's Prime Minister in September 2006.<sup>15</sup> At a meeting that same month, the provincial vice-governor in charge stated that, when the central government hands over the bridge and road, the province will establish an operation and maintenance agency and will secure a budget for it. Meanwhile in the central government, as of December 2006, agreement had been reached among the central government and related ministries<sup>16</sup> on a bill stating the government decision to hand over the facilities and establish an operation and maintenance agency in the province. However, as of April 2007, the bill had not yet been put into effect.

In Kazakhstan, the Cabinet was reshuffled accompanying the resignation of the Prime Minister in January 2007, and the governor of East Kazakhstan Oblast Akim Apparatus also changed. Several related parties explained that this was the reason for the delay in deciding on the bill and putting it into effect, but no decisive information could be obtained concerning the location the delay in the process.<sup>17</sup>

Given this situation, the City of Semipalatinsk is carrying out the cleaning and daily maintenance of the bridge and road. However, the city explained that, because these facilities are not legally the property of the city, it is exceeding its authority.

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<sup>14</sup> The former accountant of PIU is unsalaried. Moreover, the contractor is said to be bearing the administrative expense for the office and equipment, etc.

<sup>15</sup> According to parties involved, the reason why time was required for acceptance is that East Kazakhstan Oblast Akim Apparatus initially understood the central government to be responsible for operation and maintenance since the project was a national project. Moreover, it is assumed that another influence was the change in the view of the provincial government concerning the bridge, since at the start of the project the bridge was to be constructed in the capital of Semipalatinsk Province, and following the start of the project, East Kazakhstan Oblast Akim Apparatus newly became the executing agency and the provincial capital was moved 200 km away from Semipalatinsk, to Ust-Kamenogorsk.

<sup>16</sup> Ministry of Transportation and Communication, Ministry of Finance, Ministry of Economy and Budget Planning, and Ministry of Justice.

<sup>17</sup> The ex-post evaluator revisited Kazakhstan in February 2007, but the explanation of the facts varied depending on the speaker.

### 2.5.1.3 Financial status

As the operation and maintenance agency does not exist, neither does the operation and maintenance budget for this project exist. Generally, the operation and maintenance of infrastructure possessed by a local government is funded from the local budget, and if the local budget is inadequate, subsidies may be granted by the central government. For this project, in January 2006 the Ministry of Transportation and Communication<sup>18</sup> petitioned the Ministry of Economy and Budget Planning for 123 million tenge (approx. 108 million yen) for the FY2006 operation and maintenance budget for the bridge and road, but the petition was denied on the grounds that the funds should come from the local budget first. A similar petition for the FY2007 budget was denied on the same grounds.

Meanwhile, the policy of East Kazakhstan Oblast Akim Apparat is that it will allocate a budget when the project facilities are handed over to the province. The 2007 provincial government budget was approximately 47 billion tenge (approx. 41.3 billion yen), and of this, the road sector budget<sup>19</sup> was 950 million tenge (approx. 834 million yen) from the central government and 1.3 billion tenge (approx. 1.141 billion yen) from the local government. These figures do not include the budget for this project.

Currently the City of Semipalatinsk, which is essentially conducting the operation and maintenance, is expending about 26 million to 29 million tenge (approx. 23 million to 26 million yen) annually for its city street operation and maintenance budget. From this, in FY2006 approximately 2.4 million tenge (approx. 2.11 million yen) was expended for operation and maintenance of the project bridge and road, and 9.7 million tenge (approx. 8.54 million yen) was expended on operation and maintenance of lights.

Furthermore, at the time of the appraisal, it was planned to fund the operation and maintenance of the bridge and road with income from toll fees, but as already stated, because passage became free of charge, all expenses are disbursed by the local government or central government.

### 2.5.2 Operation and maintenance status

The operation and maintenance work related to the project being conducted by the City of Semipalatinsk consists of (1) snow removal, (2) cleaning (daily trash pick up and washing once every 2 weeks), (3) small-scale asphalt repairs, (4) maintenance of lighting fixtures, (5) maintenance of pedestrian fence, (6) maintenance of sewer and drainage

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<sup>18</sup> The Ministry of Transportation and Communication was not directly involved in the implementation of this project, but because the subsidies granted by the central government for local transportation infrastructure are distributed via the ministry, the ministry was the petitioner in this case. Moreover, due to the importance of the bridge for trunk road traffic, the ministry has a strong interest in the development of this matter.

<sup>19</sup> The accuracy of the figures is uncertain because no written data was available and the figures were obtained through oral interviews.

facilities.

Given that only a few years have elapsed since project completion, there were no visible problems in the structure and cables at the time of the ex-post evaluation. The pavement is also in generally good condition. This is probably due to the fact that strict quality standards were applied for the steel materials, welding, and asphalt because of the severe climate conditions in Semipalatinsk, where the annual temperature variation is plus or minus 50 degrees. Moreover, the lack of salt damage in this area, which is inland, is also related to the good condition of the facilities. However, bridge users have mentioned that “the road surface has deteriorated compared to when it first opened” and “snow removal is inadequate.” As already stated, the equipment for operation and maintenance procured by the project remains unused and is in storage.

Unused road operation and maintenance equipment in storage



### 3. Feedback

#### 3.1 Lessons Learned

##### (1) Lesson learned for shortening construction period (improvement of efficiency)

The potential for shortening the construction period is increased if construction materials, including the main supports, steel support girders, cables, and road materials, etc., are ordered as a package deal, as was done in this project.

##### (2) Lesson learned concerning establishment of Project Implementation Unit (PIU) (improvement of sustainability)

When there is a plan to newly establish a PIU for the implementation of the project and to have the PIU become the operation and maintenance agency following project completion, transition steps for reorganizing the PIU following project completion should be included in the documents that establish the PIU. In the case of this project, the transition steps were stated in the Letter of Intent between the executing agency and JBIC, but that alone was inadequate. It is desirable for JBIC to carefully check for the existence of a transition plan and detailed transition steps in the documents that establish a PIU and to monitor whether or not those steps are taken at the completion of a project.

#### 3.2 Recommendations

##### (1) Recommendations for East Kazakhstan Oblast Akim Apparatus

Although this project has proven highly effective, there are significant concerns

regarding its sustainability. It is desirable East Kazakhstan Oblast Akim Apparat to respond promptly to the issue of establishing an operation and maintenance agency. Specifically, the following points are recommended.

- (i) Clarify the factors that led to the delay in the handover process of the project facilities and take the necessary measures (e.g., obtain agreement of new provincial governor, have project operation and maintenance included in the provincial budget plan, and encourage the central government to take action).
- (ii) Once the facilities are handed over, immediately establish the operation and maintenance agency and secure a budget (if necessary, petition the central government for subsidies).
- (iii) Take the construction machinery and operation and maintenance equipment which were procured by this project from the contractor, and manage and use it in a suitable manner.
- (iv) Take the operation and maintenance manual prepared by this project from the City of Semipalatinsk and use it in an appropriate manner.
- (v) If time is required for the handover of the facilities, confer with the City of Semipalatinsk and study whether provisional measures should be taken. Specifically, study the expense burden of the inspection and maintenance currently being conducted by the city as well as introduction of safety measures such as a speed limit.

## (2) Recommendations for JBIC

To ensure sustainability, it is desirable for JBIC to monitor the handing over of the project facilities, the establishment and start of activities of the operation and maintenance agency, and the budget arrangements, and if necessary, to contact the Ministry of Economy and Budget Planning, the Ministry of Transportation and Communication, and the provincial government.

Comparison of Original and Actual Scope

Item	Plan	Actual
<p>1. Output</p> <p>1) Construction of new bridge</p> <p>2) Construction of approach road</p> <p>3) Improvement of access road</p> <p>4) Other construction</p> <p>5) Consulting services</p>	<p>Steel suspension bridge length: 880 m, width: 34.27 m</p> <p>length: 750 m, width: 35.77 m</p> <p>length: 6,900 m (right bank: 3,400 m, left bank: 3,500 m)</p> <p>N.A.</p> <p>Foreign: 439 MM Kazakhstani: 1,026 MM</p>	<p>Steel suspension bridge length: 1,086 m, width: 35 m</p> <p>length: 1,564 m, width: 38.5 m</p> <p>length: 6,837 m (right bank: 3,855 m, left bank: 2,982 m)</p> <p>Additional: parking lot, overpass, left-turn lane, flood plain improvement, etc.</p> <p>Foreign: 370 MM Kazakhstani: 1,258 MM</p>
<p>2. Project Period</p> <p>1) L/A signing</p> <p>2) Resident relocation</p> <p>3) Consultant selection</p> <p>4) Service provision</p> <p>5) Bidding</p> <p>6) Contracting</p> <p>7) Detailed design</p> <p>8) Construction</p> <p>9) Completion and opening of bridge</p>	<p>February 1997</p> <p>March 1997–February 1998</p> <p>December 1996–March 1997</p> <p>April 1997–October 2002</p> <p>April 1997–December 1997</p> <p>January 1998</p> <p>January 1998–June 1998</p> <p>April 1998–February 2000</p> <p>October 2001</p>	<p>March 1997</p> <p>March 1997–May 1998</p> <p>December 1996–March 1997</p> <p>April 1997–October 2002</p> <p>May 1997–December 1997</p> <p>January 1998</p> <p>January 1998–June 2002</p> <p>April 1998–November 2001</p> <p>November 2000</p>
<p>3. Project Cost</p> <p>Foreign Currency</p> <p>Local Currency</p> <p>Total</p> <p>ODA Loan Portion</p> <p>Exchange Rate</p>	<p>21,530 million yen</p> <p>6,791 million yen (4,271 million tenge)</p> <p>28,321 million yen</p> <p>21,530 million yen</p> <p>1 tenge = 1.59 yen (as of October 1996)</p>	<p>21,236 million yen</p> <p>8,728 million yen (10,148 million tenge)</p> <p>29,964 million yen</p> <p>21,236 million yen</p> <p>1 tenge = 0.86 yen (average of 1997–2006)</p>