

Kazakhstan

Ex-Post Evaluation of Japanese ODA Loan Project
Western Kazakhstan Road Network Rehabilitation Project

External Evaluator: Masami Tomita, International Development Associates Ltd.

0. Summary

This project aimed at improving transport efficiency and safety in Western Kazakhstan by rehabilitating road sections severely deteriorated, thereby contributing to regional development.

Relevance of this project is high, as the project is consistent with priority areas of Kazakhstan’s development plans and Japan’s ODA policy, and moreover development needs for the project are high. Efficiency of the project is fair, as the actual project cost exceeded the plan while actual project period was reasonable taking into account the large increase of outputs. Effectiveness of the project is high, as the project more or less achieved targets in major operation and effect indicators, and the overall goal of the project, which is to contribute to regional development, has also been mostly achieved. Sustainability of the project is fair, as some problems have been observed in terms of financial status of the operation and maintenance (O&M) agency and insufficient number of maintenance equipments, while no major problems have been observed in the O&M system and technical capacity.

In light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project Locations



Aktyubinsk- Khromtau Section

1.1 Background

The transportation sector has an important role in Kazakhstan which is approximately seven times the size of Japan and where population, industries and natural resources are scattered around in its vast territory. Historically rail transport used to have the largest share in terms of freight transport in land transportation. However, after the collapse of the Soviet Union, there

have been efforts to change specialized industrial structures centred around Moscow, and demands for short-to-medium-distance transportation networks (road networks) have been increasing as a result of development of service industries in Kazakhstan which need to respond promptly and flexibly to customer needs. Road transport has always had the largest share in terms of passenger transport in land transportation.

The main road in Western Kazakhstan is the Western Kazakhstan Road which connects Astana, Aktyubinsk, Uralsk, and Atyrau and crosses the country from east to west. The road is mainly used for transportation by trucks to carry natural resources, grains, oil products, and goods and materials necessary for infrastructure construction, and it has a role as an international corridor which supports commodity distribution to neighbouring countries including Russia, as well as contributing to smooth distribution of goods within the vast country. However, the road surface was severely deteriorated due to improper construction in the first place and many overloading trucks, which hindered smooth travelling and transport efficiency. Particularly some sections in Kostanai and Aktyubinsk oblasts were extremely deteriorated and impassable, and urgent rehabilitation was required because of the strategic importance of the road.

1.2 Project Outline

The objective of this project is to improve transport efficiency and safety in Western Kazakhstan by rehabilitating road sections severely deteriorated and providing trainings on operation and maintenance, thereby contributing to regional development. Figure 1 shows the location of the project.



Source: Edited based on Ezilon.com (<http://www.ezilon.com/maps/asia/kazakhstan-road-maps.html>)

Figure 1: Project Site¹

Loan Approved Amount/ Disbursed Amount	16,539million yen / 16,415million yen
Exchange of Notes Date/ Loan Agreement Signing Date	April, 2000 / December, 2000
Terms and Conditions	Interest Rate:2.2% Repayment Period:30 years (Grace Period: 10 years) General Untied (Consulting Service: Interest Rate: 0.75%, Repayment Period: 40 years (Grace Period: 10 years), Bilateral Tied)
Borrower / Executing Agency	The Government of the Republic of Kazakhstan/ Ministry of Transport and Communications
Final Disbursement Date	April, 2008
Main Contractor (Over 1 billion yen)	Alsım Alarko (Turkey) / Transstroy (Russia) (JV), Todini Costruzioni Generali S.P.A (Italy)

¹ While Special Assistance for Project Formation (SAPROF) covered the Uralsk-Aktyubinsk section and the Karabutak-Kyzylorda section, both sections were scoped out based on reasons that economic impact (EIRR) of the former section was low as the road was relatively in a good condition, and that the priority of the latter section was not high among the whole road network considering the limited amount of project budget. While there was a concern that scoping out the latter section might have a negative impact on future traffic volume in adjacent sections and hence on economic impact of the project as a whole, the latter section is under rehabilitation by the Kazakhstan Government and expected to be completed by the end of 2011.

Main Consultant (Over 100 million yen)	Nippon Koei (Japan) / Padeco (Japan) / Consult Co. Ltd (Kazakhstan) / Kazdoproject (Kazakhstan) (JV)
Feasibility Studies, etc.	<ul style="list-style-type: none"> • The Study on Development of Road Network in Western Kazakhstan in the Republic of Kazakhstan (JICA, Yachiyo Engineering, Pacific Consultants International: February, 1997) • Special Assistance for Project Formation (SAPROF) (JICA: September 1999)
Related Projects	None

2. Outline of the Evaluation Study

2.1 External Evaluator

Masami Tomita, International Development Associates Ltd.

2.2 Duration of Evaluation Study

Duration of the Study: October, 2010 – October, 2011

Duration of the Field Study: March 7, 2011 – March 19, 2011, May 15, 2011 – May 21, 2011

2.3 Constraints during the Evaluation Study

None

3. Results of the Evaluation (Overall Rating: B²)

3.1 Relevance (Rating: ③³)

3.1.1 Relevance with the Development Plan of Kazakhstan

“Kazakhstan-2030 (Prosperity, Security and Ever Growing Welfare of All the Kazakhstanis)” (October, 1997) emphasized a provision of transport infrastructure and in particular an increase of transportation capacity of major highways. Moreover, “Governmental Road Industry Development Program of the Republic of Kazakhstan for 2001-2005” aimed at construction and rehabilitation of 16,133 km in total of both domestic and international highways and improving 70% of entire domestic and international highways within the country during the plan period, among which the road sections covered by the project were specified as one of the top priority sections.

At the time of ex-post evaluation, while an improvement of 70% of entire domestic and international highways targeted in the above plan was not fulfilled (53% was improved) due to increased rehabilitation cost and budget constraints, the importance of international highways has increased and both “Road Sector Development Programme, Republic of Kazakhstan 2006-2012 years” and “Transport Sector Development Strategy 2006-2015” specify the

² A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

³ ③High, ②Fair, ①Low

Shymkent – Kyzylorda – Aktyubinsk – Uralsk – Samara section that includes the road sections covered by the project as one of the priority sections for rehabilitation.

Therefore, Kazakhstan’s development plans emphasize construction and rehabilitation of major highways including the road sections covered by the project both at the time of appraisal and ex-post evaluation.

3.1.2 Relevance with the Development Needs of Kazakhstan

After the collapse of the Soviet Union, demands for provision of short-to-medium-distance transportation networks (road networks) have increased and consequently road transport’s share has been increasing in terms of both freight and passenger transportation in Kazakhstan since the timing of project appraisal to the present. Tables below show the volume of freight and passenger transport by major modes of transportation in Kazakhstan. The percentage of freight transport by roads has increased from 11% in 1998 (before the project) to 20% in 2009, and the percentage of passenger transport by roads has increased from 60% in 1998 (before the project) to 85% in 2009.

Table 1: Volume of Freight Transport by Major Modes of Transport in Kazakhstan
(Unit: billion ton-km)

	1998	2007	2008	2009
Total	146	351	370	336
Rail	103	201	215	195
Pipeline	27	88	90	74
Road	16	62	64	66
Inland Water	0	0	0	1
Air	0	0	1	0

Source: 1998: appraisal document, other: Preliminary Data 2009 (National Statistical Agency)

Table 2: Volume of Passenger Transport by Major Modes of Transport in Kazakhstan
(Unit: million people-km)

	1998	2007	2008	2009
Total	33,906	124,367	127,455	130,466
Rail	10,669	14,587	14,719	14,520
Road	20,317	103,879	106,878	110,278
Urban Transport (trolleybus etc)	818	443	362	353
Inland Water	2	1	1	2
Air	2,100	5,457	5,495	5,313

Source: 1998: appraisal document, other: Preliminary Data 2009 (National Statistical Agency)

Atyrau has one of the largest refineries in Kazakhstan and it was expected that traffic volume from Atyrau to Uralsk would largely increase due to a large-scale construction and shipment of oil products as development of pipelines proceeds. On the other hand, this section of road runs parallel to the Ural River and snowmelt water used to cause a flood in the area in every spring,

and consequently part of the road was covered with water, which made the section impassable, and the surface and subgrade of many parts of the road were severely deteriorated, which urgently required rehabilitation of the road and improvement of drainage.

Moreover, the Kostanai – Aktyubinsk section was also severely deteriorated, as construction and maintenance of roads that run from east to west in Kazakhstan were inadequate during the Soviet era, and in particular, the section around Kostanai was almost impassable. However, it became important to improve road transportation networks connecting Astana with Western Kazakhstan since the capital of the country was moved from Almaty to Astana in 1997.

Western Kazakhstan is endowed with rich natural resources and development of these resources is expected to continue, which makes the road sections covered by the project that have a role as an international corridor strategically important for regional development, and development needs for the project are still high.

3.1.3 Relevance with Japan's ODA Policy

In Japan's Official Development Assistance Annual Report 1999, provision of support for development of human resources that contributes to democratization and market-oriented economic reform and financial cooperation for provision of economic infrastructures were emphasized as a priority area for assisting central Asia and Caucasus regions. Moreover, JICA's Policy for Overseas Economic Cooperation Operations emphasized provision of support for rehabilitation of deteriorated economic and social infrastructures as a priority area for assisting the region.

This project has been highly relevant with Kazakhstan's development plans, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

Table 3 shows outputs of the project (planned and actual).

Table 3: Project Outputs (Planned/Actual)

Section	Planned	Actual
Atyrau – Uralsk	<ul style="list-style-type: none"> • Length: 492km • Rehabilitated Length: 252km • Pavement: Asphalt • Reconstruction of Bridge: 6 • Repair of Bridge: 14 • Concrete Pipe Culvert: 1,715m • Concrete Box Culvert: 86m • Bus Shelter:28 	<ul style="list-style-type: none"> • Same as left • 488km • Same as left • As planned • As planned • 1,528m • 100m • 47
Kostanai border - Aktyubinsk	<ul style="list-style-type: none"> • Length: 462km • Rehabilitated Length: 326.5km • Pavement: Asphalt • Reconstruction of Bridge: 4 • Repair of Bridge: 17 • Concrete Pipe Culvert: 2,360m • Concrete Box Culvert: 30m 	<ul style="list-style-type: none"> • Same as left • 444km • Same as left • 6 • 15 • 3,040m • 40m
Consulting Service	<ol style="list-style-type: none"> 1. Detailed Design, Preparation of Bidding Documents 2. Evaluation of Bidding 3. Assistance for Contract Agreement 4. Construction Management 5. Documentation 6. Assistance for Environmental Monitoring 7. Training for O&M <p>1-6: Foreign: 225M/M, Local: 693M/M 7: Foreign: 56M/M, Local: 44M/M</p>	<p>Same as left</p> <p>1-6: Foreign: 169M/M, Local:1,653M/M 7: Foreign: 56M/M, Local: 56M/M</p>

Source: PCR / answer to questionnaire

Outputs of the project largely increased shown as above. Major reasons for the increase are as follows;

- 1) Rehabilitated Length: at the time of appraisal, it was agreed to rehabilitate the sections that had substantial needs for urgent rehabilitation, which were 326.5km (70.7%) of the Kostanai border – Aktyubinsk section (462km) and 252km (51.2%) of the Atyrau – Uralsk section (492km). However, at the timing of bidding agreement the Government of Kazakhstan requested to include the whole sections that were beyond the original scope into the project scope, which was approved based on the condition that the Government of Kazakhstan finance the increased project cost. However, the actual bid price turned out to be higher than the project budget estimated in bidding agreement, and consequently the Government of Kazakhstan requested to reduce the specification for rehabilitation of the 20km from Aktyubinsk in the Kostanai border – Aktyubinsk section and scope out of 18km around Kostanai, which was approved based on the condition that the Government of Kazakhstan rehabilitate the latter section (18km) separately by its own budget. The latter section has already been

rehabilitated by the Government.

- 2) Types of Rehabilitation: Four types of rehabilitation were planned at the time of appraisal; Type I: Overlay, Type II: Pavement Replacement, Type III: Reconstruction, and Type IV: Reconstruction with Raised Embankment. However, deterioration of roads turned out to be severer than expected at the timing of detailed design, and thus only Types III and IV were applied to almost all sections except for 20km from Aktyubinsk.
- 3) The Number of Bus Shelters: It was increased according to requests from local residents.
- 4) Length of Culverts in the Kostanai border – Aktyubinsk section: It was extended as there was an extensive flooding around the Aike Lake.
- 5) Consulting Service: M/M in total was increased due to a large increase of outputs, and the allocation of M/M among foreign and local consultants was changed in order to complete required works within a limited budget.



Uralsk – Chapaev Section



Bus Shelter

3.2.2 Project Inputs

3.2.2.1 Project Cost

The planned project cost at the time of appraisal was 22,052 million yen (foreign currency: 10,155 million yen, local currency: 11,897 million yen), of which Japan's ODA loan portion was 16,539 million yen. On the other hand, the actual project cost was 49,864 million yen (breakdown of foreign and local currency is unknown as the executing agency did not provide the figure), of which Japan's ODA loan portion was 16,415 million yen, and it was significantly higher than planned. However, the large increase of outputs needs to be taken into account in evaluating efficiency of the project. The Project Memorandum (P/M) was signed in November 2004 by JICA, the Ministry of Finance and the Ministry of Transport and Communications of Kazakhstan, which states the project output, cost and period after the amendment. According to the P/M, the planned project cost in total after the amendment was 37,921 million yen (of which

Japan's ODA loan portion was 16,539 million yen), and the actual project cost was 131% against the amended plan. The reasons for the increase of the cost are; 1) price escalation of construction materials and equipments and 2) unplanned project cost was required since radiation contamination was found in the embankment of the entrance to the Khromtau City in December 2003, which required special investigation and treatment.

3.2.2.2 Project Period

The planned project period at the time of appraisal was 56 months in total from December 2000 to July 2005 (the completion of the project was defined as the completion of civil works.⁴). On the other hand, the actual project period was 61 months in total from December 2000 to December 2005, and it was slightly longer than planned. However, the large increase of outputs needs to be taken into account as done for project cost. According to the P/M, the completion of civil works after the amendment was planned as February 2006, and the actual project period was 97% against the amended plan.

Although the project period was within the plan, the project cost exceeded the plan, therefore efficiency of the project is fair.

3.3 Effectiveness⁵ (Rating: ③)

3.3.1 Quantitative Effects

3.3.1.1 Results from Operation and Effect Indicators

(1) Annual Average Daily Traffic

Tables below show the estimated and actual volume of annual average daily traffic of the road sections covered by the project. When comparing the estimated and actual traffic volume five years after the completion of the project, the actual traffic volume in total exceeds the estimated volume. Traffic volume of the Atyrau – Inder section is particularly large, and according to people involved in the project, this is because there has been a large scale construction related to development of pipelines in Atyrau and transportation of construction materials from a quarry in Inder to the construction site in Atyrau has been increasing. On the other hand, the actual traffic volume of the Inder – Chapaev section is below the estimated volume, and this seems to be due to the fact that population of the area has been historically small compared with that of other sections and traffic volume was overestimated at the time of appraisal, according to the executing agency.

⁴ The completion of the project was defined as the completion of civil works in the P/M signed in November 2004. The completion of the defect liability period was December 2006 and consulting services were completed in March 2007.

⁵ The rating of the project's effectiveness takes into account the evaluation of the project's impact.

Table 4: Estimated Annual Average Daily Traffic

(Unit: vehicles/day)

Section		1998 (Baseline) (Before Project)	2005 (Project Completion)	2010 (5 years after Completion)
1	Aktyubinsk-Khromtau (89km)	1,480	921	1,120
2	Khromtau-Karabutak (124km)	236	1,020	1,241
3	Karabutak-Komsomolskoye (87km)	66	532	647
4	Komsomolskoye-Oblast Border (162km)	67	422	513
5	Atyrau-Mahambet (67km)	1,435	1,740	2,158
6	Mahambet-Zelenoye (53km)	N/A	771	953
7	Zelenoye-Kalmykovo (100km)	N/A	718	885
8	Kalmykovo-Chapaev (149km)	585	923	1,138
9	Chapaev-Uralsk (123km)	866	1,061	1,305
Total		N/A	8,108	9,960

Source: 1998: appraisal document, other: SAPROF Table 2.5.5 / Research on Internal Rate of Return and Operation and Effect Indicators in the Western Kazakhstan Road Network Rehabilitation Project (Padeco, 2000)

Note: Estimated values of section 1-4 in 2005 and 2010 were recalculated based on a condition that the Karabutak – Kyzylorda section was not rehabilitated. This section is currently under rehabilitation by the Kazakhstan Government and not completed yet, so the recalculated figures above are used in this evaluation.

Table 5: Actual Annual Average Daily Traffic

(Unit: vehicles/day)

Section		2006 (1 year after Completion)	2009 (4 years after Completion)	2010 (5 years after Completion)
1	Aktyubinsk-Khromtau (89km)	2,036	2,059	2,034
2	Khromtau-Karabutak (124km)	967	997	1,004
3	Karabutak-Komsomolskoye (87km)	727	758	667
4	Komsomolskoye-Oblast Border (162km)	412	776	684
5	Atyrau-Mahambet (67km)	3,233	3,507	3,304
6	Mahambet-Inder(122km)	2,825	3,749	3,238
7	Inder-Chapaev(180km)	332	380	467
8	Chapaev-Uralsk (123km)	812	1,108	1,027
Total		11,344	13,334	12,425

Source: answer to questionnaire

Note: Section 6 and 7 are different from sections on Table4, because in practice road management is conducted for the Mahambet – Inder section and the Inder – Chapaev section according to the oblast boundary, and traffic volume is also counted and recorded for each section above.

(2) International Roughness Index⁶

At the time of appraisal it was targeted at achieving IRI 3.0 in all sections covered by the project, however, IRI is not used for O&M of roads in Western Kazakhstan. An original method in Kazakhstan to measure roughness of road surface is used only in Aktyubinsk oblast (the result was 45% of sections covered by the project was very good, 32% was good, 23% was satisfactory and 0% was unsatisfactory on average in 2010), and this type

⁶ International Roughness Index: an index proposed by the World Bank to evaluate roughness of road surface. (for reference) Under 4: Good, 4-7: Fair, 7-9: Poor, Over 9: Very Poor

of measurement is not conducted in West Kazakhstan oblast or Atyrau oblast due to the lack of necessary equipments (only visual checks are conducted).

(3) Travelling Time

The table below shows the actual time required to run the road sections covered by the project before and after the project implementation. Travelling time after the project has largely been reduced as road surface was severely deteriorated before the project. However, below are approximate figures as rigorous time measurement has never been conducted by the O&M agency.

Table 6: Changes in Travelling Time

(Unit: hour)

Section		1999 (Before Project)	2006 (After Project)
1	Aktyubinsk-Khromtau (89km)	2.0	0.8~1.0
2	Khromtau-Karabutak (124km)	4.0	1.1~1.4
3	Karabutak-Komsomolskoye (87km)	3.0	0.8~1.0
4	Komsomolskoye-Oblast Border (162km)	4.0	1.5~1.8
5	Atyrau-Mahambet (67km)	2.0	0.6~0.7
6	Mahambet-Inder (122km)	4.0	1.1~1.4
7	Inder-Chapaev (180km)	6.0	1.6~2.0
8	Chapaev-Uralsk (123km)	2.0	1.2~1.4

Source: answer to questionnaire

(4) Average Velocity

Average velocity of the road sections covered by the project was approximately 30-45km/hour before the project, and it has largely been increased after the project. Rigorous measurement has never been conducted by the O&M agency like travelling time, and neither the executing agency nor the O&M agency possessed data on average velocity after the project. According to the executing agency, the maximum permissible speed is 90km/hour for trucks and 110km/hour for other vehicles and average velocity after the project would not be largely different from the maximum permissible speeds as many vehicles travel these sections with excessive speeds. The ex-post evaluation team travelled by a four-wheel-drive car about 20km of the Aktyubinsk – Khromtau section, the whole Atyrau – Mahambet section (67km), and the whole Chapaev – Uralsk section (123km) during the field survey, and average velocity was approximately 100-110 km/hour in all sections.

(5) The Number of Traffic Accidents

Figures below show the number of traffic accidents occurred before and after the project implementation. The number of traffic accidents has increased in many sections after the

project. The larger the traffic volume is, the more the number of accidents is. According to the executing agency, the main reason for the increase of traffic accidents is because average velocity has increased due to improvement of road surface after the project implementation (particularly due to speeding and drunk driving).

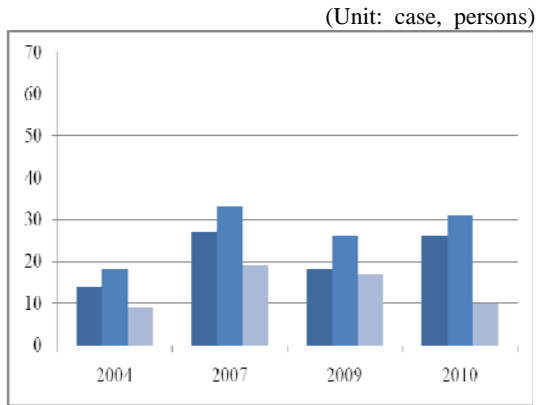


Figure 2: Aktyubinsk- Karabutak

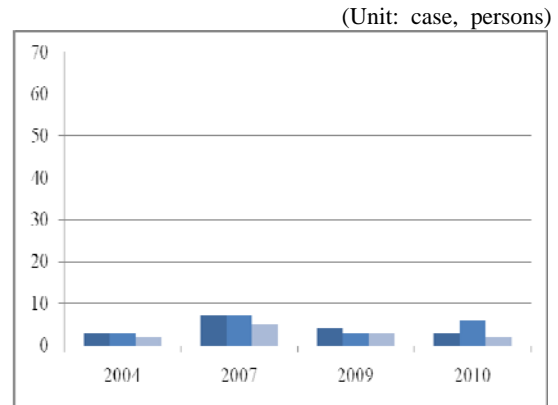


Figure 3: Karabutak-Kostanai Border

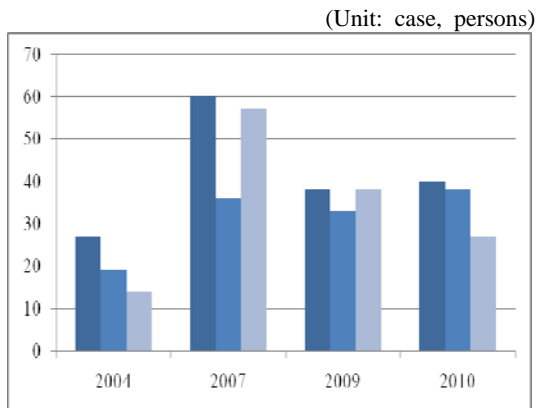
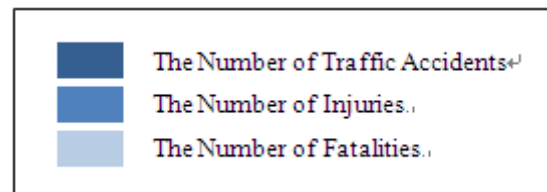


Figure 4: Atyrau- Uralsk



Source (all): answer to questionnaire

Note: The project was completed in 2005.

3.3.1.2 Results of Calculations of Internal Rates of Return (IRR)

(1) Financial Internal Rate of Return (FIRR)

FIRR was not calculated in appraisal documents, as tolls are not collected in Kazakhstan.

(2) Economic Internal Rate of Return (EIRR)

EIRR was to be calculated based on benefits derived from savings in Vehicle Operating Cost (VOC) materialized by the project (savings of VOC are to be calculated by deducting VOC after the project from VOC before the project, according to IRI of each section of road). However, EIRR cannot be calculated as IRI is not used for O&M of roads in Western Kazakhstan and necessary data for the calculation could not be collected.

3.3.2 Qualitative Effects

(1) Benefits to Companies and Residents along the Western Kazakhstan Road

According to the executing agency, transportation costs were reduced due to improvements of road surface after the project implementation, which made travelling between cities such as Atyrau, Uralsk and Aktyubinsk convenient, and it further contributed to the growth of small and medium-sized businesses and improvement of life for local citizens.

(2) Capacity Building of O&M Staff (Effects of O&M Training)

Consulting services for strengthening O&M capabilities were provided in this project from January 2002 to July 2003, and O&M manuals and trainings on O&M contract management, road surface survey methods, O&M methods, and procurement and management of O&M equipments etc (period: approximately three weeks, the number of trainees: approximately 40) were provided. Those who attended the training programs told that the trainings were very useful for learning new O&M techniques, which suggests the trainings contributed to improvement of capabilities of staff to some extent. On the other hand, the fact that the necessity for preventive maintenance is not recognized yet, that the period of training was only three weeks and that the number of trainees was only 40 suggests that the scale of the training was not large enough to achieve strengthening the capabilities of staff involved in the project.

This project has largely achieved its objectives, therefore its effectiveness is high.

3.4 Impact

3.4.1 Intended Impacts

(1) Regional Development

The table below shows Gross Regional Domestic Product (GRDP) of Western Kazakhstan before and after the project. GRDP of the region has largely increased after the project implementation. The increase of GRDP in Atyrau oblast is particularly large, and this seems to be due to the increased revenue from oil related industries (including development of pipelines). As explained above, there has been a large scale construction related to development of pipelines in Atyrau and transportation of construction materials from a quarry in Inder to the construction site in Atyrau has been increasing, which suggests that the project has contributed to the large increase of GRDP in the region.

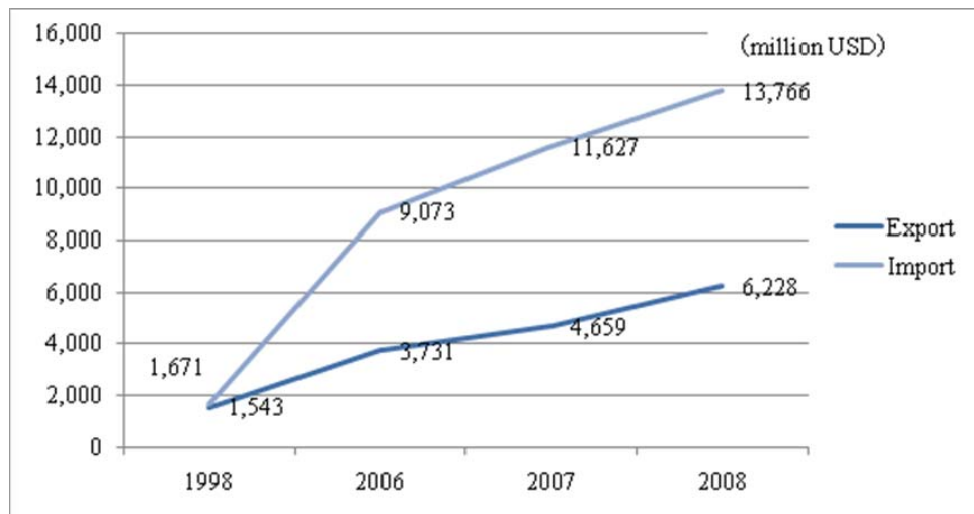
Table 7: Gross Regional Domestic Product

Oblast	GRDP (billion KZT)				Growth Rate 1997-2008(%)
	1997	2006	2007	2008	
Kazakhstan (GDP)	985.5	10,213.7	12,849.8	16,053.0	16.0
Western Kazakhstan	194.6	2,717.5	3,287.3	4,592.3	22.6
Akt'yubinsk	48.5	517.0	679.0	871.5	17.0
West Kazakhstan	34.0	512.3	617.7	826.5	23.3
Atyrau	69.4	1,094.2	1,234.0	1,798.5	24.9
Mangistau	42.7	594.0	756.6	1,095.8	24.7

Source: 1997: SAPROF Table 2.3.4, other: National Accounts of the Republic of Kazakhstan 2004-2008 (National Statistical Agency)

(2) Trade Volume with Neighbouring Country (Russia)

The volume of trade with Russia has increased after the project implementation. It is difficult to indicate to what extent the project has contributed to the volume increase, as data on the trade volume with neighbouring countries through the road sections covered by the project was not obtained. However, some sections covered by the project consist part of the corridor connected to Samara in Russia and a large portion of traffic on the road is transportation by trucks (approximately 50% of traffic on the project road is transportation by trucks, according to the executing agency), which suggests that the project has contributed to some extent to the increase of the trade volume.



Source: 1998: SAPROF Table 2.3.6, other: Kazakhstan 2008 (National Statistical Agency)

Figure 5: Trade Volume with Russia

3.4.2 Other Impacts

(1) Impacts on the Natural Environment

Radiation contamination was found in the embankment of the entrance to the Khromtau City in December 2003 during the sanitation survey of the road section Shymkent – Samara. The restricted area was established promptly and measurements of exposure to radiation

were conducted for the residents in the area, and no exceeding of the permissible rate was observed. Radioactive wastes were promptly collected, treated and buried by specialists of the National Nuclear Centre of Kazakhstan and the local company. According to the executing agency, no exceeding of the permissible rate was observed in measurements of exposure to radiation conducted afterwards and other negative impacts on natural environment have not been observed. While detailed information on Environmental Monitoring and Environmental Impact Assessment (EIA) was not available, necessary measures were taken, according to the executing agency.

(2) Land Acquisition and Resettlement

Neither land acquisition nor resettlement was required for the project.

From the above, the overall goal as contribution to regional development has mostly been achieved.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

The state-owned company under the Ministry of Transport and Communications called Kazakhavtodor is responsible for O&M of roads in Kazakhstan. Types of maintenance are classified as follows; 1) maintenance (removing snow, watering, and planting etc), 2) routine repair (fixing small cracks, road signs, and fences etc), 3) medium repair (fixing the surface of roads/overlay etc), 4) major repair (removing the surface of roads and laying new surface etc), and 5) reconstruction (widening roads and changing the alignment of road surface etc). 1) maintenance, 2) routine repair, traffic counts and a survey on traffic accidents are carried out by Kazakhavtodor, and the rest (3 to 5 above) are carried out by competitive bidding.

Kazakhavtodor has the headquarters in Astana and 16 branches (one in each oblast), and each oblast branch has several depots. The number of employees of Kazakhavtodor in total is 3,655, and the table below shows the numbers of depots and employees of Kazakhavtodor as a whole and of each branch.

Table 8: The Number of Depots and Employees of Kazakhavtodor

	The Number of Employees	The Number of Depots	The Number of Staff in Charge of Road Sections Covered by the Project
Kazakhavtodor	3,655	80	-
Aktyubinsk Oblast	251	5	85 (462km)
West Kazakhstan Oblast	174	4	35 (303km)
Atyrau Oblast	130	4	27 (189km)

Source: answer to questionnaire

The length of road maintained by one staff is about 5km in Aktyubinsk Oblast, about 9km in West Kazakhstan Oblast, and about 7km in Atyrau Oblast, all of which are within the planned level (about 10km) at the time of appraisal, and no major problem has been observed in the structure of O&M.

3.5.2 Technical Aspects of Operation and Maintenance

The table below shows educational levels of employees of Kazakhavtodor oblast branches.

Table 9: Educational Levels of Employees of Kazakhavtodor Oblast Branches

	Total Number of Employees	High Education	Special Secondary Education	Vocational Training	Other
Aktyubinsk Oblast	251	53	15	87	96
West Kazakhstan Oblast	174	32	15	11	116
Atyrau Oblast	130	15	7	10	98

Source: answer to questionnaire

The number of trainees who attended trainings on O&M in Aktyubinsk Oblast is 12 in 2008, 2 in 2009, and 3 in 2010. The number in West Kazakhstan Oblast is 2 in 2008, 14 in 2009, and 16 in 2010. The number in Atyrau Oblast is 8 in 2008, 6 in 2009 and 2 in 2010. As explained above, since Kazakhavtodor is responsible for maintenance and routine repair only, there seems to be no major problem regarding the number of engineers and/or technicians, however, the number of trainees above are small in all oblasts and themes of trainings are limited to the usage of O&M equipments and facilities. In the interviews with oblast branches during the field survey, some staff raised requests for provision of trainings on how to remove snow without damaging embankment of roads and new O&M techniques.

Apart from the above, consulting services for strengthening O&M capabilities were provided in this project from January 2002 to July 2003. While there are many O&M manuals and guidelines prepared by the Government of Kazakhstan and research institutes, the manual prepared as a training material by the consultant team was kept in none of the oblasts. In addition, the current trainings provided by Kazakhavtodor and other domestic institutions focus on the usage of O&M equipments and facilities only. All of these suggest that sustainability of the training program provided as part of consulting services is not very high.

3.5.3 Financial Aspects of Operation and Maintenance

Revenue of Kazakhavtodor is only the Government budget allocation and there is no toll revenue. Fuel levies and transit taxes are absorbed into general account of the Government, and these are not used for funding sources for roads. Tables below show the actual allocation of

Government budget for Kazakhavtdor, budget allocation to oblast branches and actual O&M cost of the road sections covered by the project.

Table 10: Government Budget Allocation to Kazakhavtdor

(Unit: million USD)

Year	2006	2007	2008	2009	2010
Amount	35	47	50	53	63

Source: answer to questionnaire

Note: Exchange Rate: 1USD=145KZT

Above figures are for maintenance and routine repair only.

Table 11: Budget Allocation to Oblast Branches and O&M Cost

(Unit: million USD)

Year	2006	2007	2008	2009	2010
Budget for Aktyubinsk Oblast (1,864km in total)	2.4	3.1	4.4	4.2	4.8
O&M Cost for Project Section (462km)	N/A	N/A	N/A	0.3	0.7
Budget for West Kazakhstan Oblast (1,287km in total)	1.8	2.2	2.4	2.5	2.7
O&M Cost for Project Section (303km)	N/A	N/A	0.3	0.3	0.4
Budget for Atyrau Oblast (990km in total)	1.1	2.0	1.9	2.3	2.4
O&M Cost for Project Section (189km)	N/A	N/A	0.3	0.3	0.3

Source: answer to questionnaire

Note: Exchange Rate: 1USD=145KZT

While 150 million USD was estimated to be required for maintenance of major roads in Kazakhstan at the time of appraisal⁷, in practice only one third of the amount has been allocated for maintenance. According to Kazakhavtdor HQ, only 30% of requested amount has been actually allocated (a large amount of budget has been allocated for road construction and amount allocated for maintenance has been small). Moreover, according to oblast branches, necessary O&M equipments cannot be purchased due to the lack of budget.

On the other hand, an introduction of Public Private Partnership (PPP) to road maintenance is currently considered in Kazakhstan, and an introduction of a toll system is also being considered as part of PPP (this is to introduce a concession contract in which contractors conduct O&M of roads after rehabilitation by collecting tolls). It is quite unlikely that PPP will be instantly introduced in the road sections covered by the project, considering the traffic volume of these sections, however, it is expected to improve budget deficit for O&M for roads in Kazakhstan at a national level, by utilizing a new system such as PPP.

⁷ Source: SAPROF Table 7.3.2

3.5.4 Current Status of Operation and Maintenance

Several depots of Kazakhavtodor oblast branches were visited during the field survey, and O&M equipments of West Kazakhstan oblast were particularly old and deteriorated, and staff of the depot was using these equipments by repairing them.



Deteriorated O&M Equipments

The ex-post evaluation team travelled 1) about 20km of the Aktyubinsk – Khromtau section, 2) the whole Atyrau – Mahambet section (67km), and 3) the whole Chapaev – Uralsk section (123km) during the field survey, and some cracks were

found on the No. 1 section. According to standards of Kazakhstan, medium repair is to be conducted after four to five years of construction and/or rehabilitation, and this was already conducted for the No. 2 and 3 sections in 2009 and 2010, and thus there was no problem on road surface of these sections. According to the Aktyubinsk oblast branch, medium repair for the No.1 section is planned to be conducted in 2011.

Some problems have been observed in terms of insufficient amount of financial resources for O&M; therefore sustainability of the project is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

Relevance of this project is high, as the project is consistent with priority areas of Kazakhstan's development plans and Japan's ODA policy, and moreover development needs for the project are high. Efficiency of the project is fair, as the actual project cost exceeded the plan while actual project period was reasonable taking into account the large increase of outputs. Effectiveness of the project is high, as the project more or less achieved targets in major operation and effect indicators, and the overall goal of the project, which is to contribute to regional development, has also been mostly achieved. Sustainability of the project is fair, as some problems have been observed in terms of financial status of the O&M agency and insufficient number of maintenance equipments, while no major problems have been observed in the O&M system and technical capacity.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

- (1) (Recommendation to the Executing Agency) Currently the Government of Kazakhstan is attempting to adopt PPP in O&M of roads and toll system is also considered to be adopted as part of PPP. It is quite unlikely that PPP will be instantly introduced in the road sections covered by the project, considering the traffic volume of these sections, however, budget deficit for O&M for roads in Kazakhstan should be improved at a national level, by utilizing a new system such as PPP.
- (2) (Recommendation to the Executing Agency, Traffic Police and National Road Safety Commission) Awareness should be increased among drivers through education against speeding and drunk-driving (at the timing of license renewal etc) and speeding control should be strengthened in order to decrease the number of traffic accidents in cooperation with traffic police and the National Road Safety Commission.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

- (1) At the time of appraisal there was a concern about the lack of O&M budget and deteriorated equipments, and both F/S and SAPROF proposed to include provision of O&M equipments into the project scope. Procurement and replacement of O&M equipments should be included in a project scope when necessary in order to enhance sustainability of a project. However, this should be accompanied by support for developing measures (financial measures in particular) that enable the executing agency to maintain and upgrade equipments independently in a long term.
- (2) EIRR was to be calculated based on benefits derived from savings in VOC materialized by the project (savings of VOC are to be calculated by deducting VOC after the project from VOC before the project, according to IRI of each section of road). However, EIRR cannot be calculated as IRI is not used for O&M of roads in Western Kazakhstan and necessary data for the calculation could not be collected. When selecting indicators to measure effectiveness of a project, indicators that are common in a recipient country should be selected or provision of necessary equipments and training should be included in a project scope.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs	<p>[Atyrau – Uralsk]</p> <ul style="list-style-type: none"> • Length: 492km • Rehabilitated Length: 252km • Pavement: Asphalt • Reconstruction of Bridge: 6 • Repair of Bridge: 14 • Concrete Pipe Culvert: 1,715m • Concrete Box Culvert: 86m • Bus Shelter: 28 <p>[Kostanai border – Aktyubinsk]</p> <ul style="list-style-type: none"> • Length: 462km • Rehabilitated Length: 326.5km • Pavement: Asphalt • Reconstruction of Bridge: 4 • Repair of Bridge: 17 • Concrete Pipe Culvert: 2,360m • Concrete Box Culvert: 30m <p>[Consulting Service]</p> <p>Foreign: 281M/M, Local: 737M/M</p>	<ul style="list-style-type: none"> • Same as left • 488km • Same as left • As planned • As planned • 1,528m • 100m • 47 <ul style="list-style-type: none"> • Same as left • 444km • Same as left • 6 • 15 • 3,040m • 40m <p>Foreign: 225M/M, Local: 1,709M/M</p>
2. Project Period	December 2000 – July 2005 (56 months)	December 2000 – December 2005 (61 months)
3. Project Cost		
Amount paid in Foreign currency	10,155 million yen	Unknown
Amount paid in Local currency	11,897 million yen	Unknown
Total	22,052 million yen	49,864 million yen
Japanese ODA loan portion	16,539 million yen	16,415 million yen
Exchange rate	1USD = 105.97 yen (As of October 1999)	1KZT = 0.87 yen (Average between December 2000 and April 2008)