

JBIC ODA Loan Project Mid-Term Review 2006

Evaluator: Hiroshi Oita (OPMAC Corporation)
Field Survey: January, 2007

Project Name: People's Republic of China, Gansu Province Road Construction Project (L/A No.C01-P161)

Outline of Loan Agreement

Loan Amount/Contract Amount/Disbursed Amount	: 20,013 million yen / 14,691 million yen / 11,217 million yen (as of end of February 2007)
Loan Agreement	: March 2002 (5th year after L/A concluded)
Completion Date (Planned)	: Main road (highway) completed in December 2005, road portion of regional road completed in December 2003. Facilities similar to "road stations" are expected to be completed at the end of 2007.
Final Disbursement Date	: July 2008
Executing Agency	: The People's Government of Gansu Province (Communications Department)
Operation & Maintenance Institutions	: Main road (highway) : Gansu Changda Highway Co., Ltd. Regional road : the Communications Bureaus of Baiyin City (Jingtai County) and Lanzhou City (Yongdeng County).
Mid-Term Review Selection Criteria	: Local government cooperation

Project Objective

To construct a main road (highway) in Gansu Province between Liusaike (Jingyuan County, Baiyin City) and Baiyin District with a total length of about 110km, together with improvements to a total of about 100km of regional road between Jingtai County (Baiyin City) and Xicao (Yongdeng County, Lanzhou City), in order to improve access to markets and promote regional development, and thereby contribute to improve people's welfare and reduce poverty in an inland region.

Consultant: Pacific Consultants International (Japan)

Contractors: (Contractors with total contracts of 1 billion yen or more)

GANSU PROVINCIAL HIGHWAY ENGINEERING GENERAL COMPANY (China), GANSU TIANDI ROAD BRIDGE ENGINEERING CO., LTD. (China)
RBG, 1ST ENGINEERING SUB OF 2ND HIGHWAY ENGINEERING BUREAU (China), GANSU WUHUAN HIGHWAY ENGINEERING CO., LTD. (China)
THE 2ND ENGINEERING CO., LTD. OF CHINA TIESIJU CIVIL ENGINEERING (China), YUEYANG ROAD & BRIDGE CONSTRUCTION CO. (China)
THE 3RD ENGINEERING CO., LTD. OF THE 12TH GROUP OF CRCC (China), SHENGYANG HIGH ROAD BUILDING COMPANY (China)

Overview of Results

Item	Ex-Ante Evaluation Results (March 2002)	Mid-Term Review Results and Expected Ex-Post Evaluation Results at the Time of Mid-Term Review
<p>Relevance (1) National Policy Level</p>	<p>(1) National policy level</p> <p>In China, economic disparities are developing between coastal and inland regions, and the launch of “Great Western Development” (Note) for the Western Regions which are lagging in development was taken up in the 10th Five Year Plan (2001 to 2005). This emphasized the importance of accelerating infrastructure construction in the Western Regions. In particular, road development is essential for economic development of the regions, improvement of people’s welfare, promotion of economic interaction with the coastal regions, etc.</p> <p>Inland regions comprise about 90% of the national land area. However, as of the end of the year 2000, the road density of inland regions was 0.11km/km², far below the 0.42km/km² of coastal regions. This kind of regional disparity in road development leads to limited access to markets and lower transport efficiency, so its improvement is ranked as a priority policy.</p> <p>Gansu Province, which was targeted by this project, had a per capita GDP of 3,836 yuan in the year 2000, below the national average of 7,078 yuan. It is a poor province, as this ranks it as 30th among the country’s 31 special municipalities, provinces, and autonomous regions (excluding Taiwan).</p> <p>(Note) The Great Western Development is a focused mission over the</p>	<p>(1) National policy level</p> <p>The 11th Five Year Plan (2006 to 2010) aims at a shift towards sustainable development, with a particular emphasis on infrastructure development in rural areas. In this plan, road development as basic infrastructure continues to be ranked as a priority in order to achieve harmonious development between urban and rural areas, maintaining consistency with policies from the 10th Five Year Plan. There is also no change in the position of Great Western Development as a long term development goal.</p> <p>The level of per capita GDP in Gansu Province was 7,455 yuan in 2005, below the national average of 13,985 yuan. It still remains the poorest province after Guizhou province, as there was no change in its rank as 30th among the country’s 31 special municipalities, provinces, and autonomous regions.</p> <p>As such, the significance of completing this project continues at the national policy level, and the relevance of project implementation has not been lost.</p>

	<p>10-year period from 2001 to 2010, based on the outline in the “State Council Notification on Several Policy Measures for Great Western Development,” proposed by President Jiang Zemin in June 1999, and announced in December 2000. It aims to correct the disparities that arose as a result of the prioritized development of eastern coastal regions. Infrastructure development, ecological and environmental protection, agricultural improvements, science and technology education, etc. are to be implemented in 10 western provinces, 2 central autonomous regions, and autonomous prefectures in 3 central provinces.</p>	
<p>(2) Policy Measure Level</p>	<p>(2) Policy measure level</p> <p>Road construction was a priority development target in the 10th Five Year Plan. To make road transport the artery for China’s passenger and freight transport, it set the goal of promoting the development of high standard main national trunk roads which cover the entire territory of China. For regional economic development, it also raised the goal of increasing the percentage of paved roads focusing on development of national roads and provincial roads, improving the road network throughout the country.</p> <p>The “5 Vertical 7 Horizontal” routes criss-cross the entire country as main trunk roads. Development targeted the parts of this network which pertain to the western regions. The target of this project was the highway between Liusaike and Baiyin, which is part of the highway between Dandong (Liaoning province) and Lhasa (Tibet Autonomous Region), one of the “7 Horizontal.”</p> <p>The 10th Five Year Plan of Gansu Province also raised construction of 12 trunk roads in the province (called “4 Vertical, 4 Horizontal, 4 Heavy”) as a priority goal, along</p>	<p>(2) Policy measure level</p> <p>Similar to the national plan, the 11th Five Year Plan for Gansu Province also strongly calls for balanced development among regions. Completion of the road network by 2020 continues to be a goal, and the road targeted by the Japanese ODA loan is an important part of the “4 Vertical, 4 Horizontal, 4 Heavy” road plan of Gansu Province.</p> <p>The highway between Liusaike and Baiyin is also a national priority road (GZ25) which links Dandong to Lhasa. At the same time, it was the last remaining section which links the capital of Ningxia Hui Autonomous Region (Yinchuan City) with the capital of Gansu Province (Lanzhou). Thus, this road is regarded as fulfilling an important role for development of the western regions.</p>

	<p>with putting effort into development of regional roads and rural roads as poverty reduction. Development of these roads was announced as the “Main Points of the Western Regions Development Gansu Province Road Transportation Development Plan,” aiming at completion of the road network in the province by 2020.</p>																																																																																													
<p>(3) Planning Level</p>	<p>(3) Planning level</p> <p>As described above, these roads are constructed as part of the national and provincial plans. According to domestic standards, the main road is constructed as a highway, with the regional road repaired as a secondary road. This contributes to improvement in access to markets, regional development, poverty reduction, etc.</p>	<p>(3) Planning level</p> <p>The project is being implemented according to the planning described on the left.</p>																																																																																												
<p>Effectiveness (1) Operation and Effect Indicators</p>	<p>(1) Operation and effect indicators</p> <p>(a) Quantitative effects</p> <table border="1" data-bbox="474 849 1272 1398"> <thead> <tr> <th>Indicator</th> <th>Road name</th> <th>2000 ex-ante evaluation</th> <th>2008 Target year</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Increase in traffic volume (converted into number of small cars, cars/day)</td> <td>Liusaike to Baiyin</td> <td>9,106</td> <td>13,304</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>4,750</td> <td>5,770</td> </tr> <tr> <td rowspan="2">Reduction in travel time (hours)</td> <td>Liusaike to Baiyin</td> <td>2.9</td> <td>1.4</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>2.9</td> <td>1.8</td> </tr> <tr> <td rowspan="2">Increase in travel speed (km/hr)</td> <td>Liusaike to Baiyin</td> <td>56</td> <td>78</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>37</td> <td>58</td> </tr> <tr> <td rowspan="2">Reduction in time to access market (hours)</td> <td>Liusaike to Baiyin</td> <td>3.7</td> <td>1.4</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>3.1</td> <td>1.5</td> </tr> <tr> <td rowspan="2">Increase in volume of agricultural produce shipments (10,000 tons/year)</td> <td>Liusaike to Baiyin</td> <td>4.3</td> <td>8.0</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>4.8</td> <td>8.6</td> </tr> <tr> <td rowspan="2">Employment opportunities for the poverty group at road related facilities (people)</td> <td>Liusaike to Baiyin</td> <td>–</td> <td>55</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>–</td> <td>20</td> </tr> </tbody> </table>	Indicator	Road name	2000 ex-ante evaluation	2008 Target year	Increase in traffic volume (converted into number of small cars, cars/day)	Liusaike to Baiyin	9,106	13,304	Jingtai to Xicao	4,750	5,770	Reduction in travel time (hours)	Liusaike to Baiyin	2.9	1.4	Jingtai to Xicao	2.9	1.8	Increase in travel speed (km/hr)	Liusaike to Baiyin	56	78	Jingtai to Xicao	37	58	Reduction in time to access market (hours)	Liusaike to Baiyin	3.7	1.4	Jingtai to Xicao	3.1	1.5	Increase in volume of agricultural produce shipments (10,000 tons/year)	Liusaike to Baiyin	4.3	8.0	Jingtai to Xicao	4.8	8.6	Employment opportunities for the poverty group at road related facilities (people)	Liusaike to Baiyin	–	55	Jingtai to Xicao	–	20	<p>(1) Operation and effect indicators</p> <p>(a) Quantitative effects</p> <table border="1" data-bbox="1299 849 2089 1423"> <thead> <tr> <th>Indicator</th> <th>Road name</th> <th>2006 Mid-term Review</th> <th>2008 Target year</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Increase in traffic volume (converted into number of small cars, cars/day)</td> <td>Liusaike to Baiyin</td> <td>7,370</td> <td>13,304</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>3,741</td> <td>5,770</td> </tr> <tr> <td rowspan="2">Reduction in travel time (hours)</td> <td>Liusaike to Baiyin</td> <td>1.11</td> <td>1.4</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>1.66</td> <td>1.8</td> </tr> <tr> <td rowspan="2">Increase in travel speed (km/hr)</td> <td>Liusaike to Baiyin</td> <td>100</td> <td>78</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>70</td> <td>58</td> </tr> <tr> <td rowspan="2">Reduction in time to access market (hours)</td> <td>Liusaike to Baiyin</td> <td>1.5</td> <td>1.4</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>1.65</td> <td>1.5</td> </tr> <tr> <td rowspan="2">Increase in volume of agricultural produce shipments (10,000 tons/year)</td> <td>Liusaike to Baiyin</td> <td>11.41</td> <td>8.0</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>n.a.</td> <td>8.6</td> </tr> <tr> <td rowspan="2">Employment opportunities for the poverty group at road related facilities (people)</td> <td>Liusaike to Baiyin</td> <td>100</td> <td>55</td> </tr> <tr> <td>Jingtai to Xicao</td> <td>60</td> <td>20</td> </tr> </tbody> </table>	Indicator	Road name	2006 Mid-term Review	2008 Target year	Increase in traffic volume (converted into number of small cars, cars/day)	Liusaike to Baiyin	7,370	13,304	Jingtai to Xicao	3,741	5,770	Reduction in travel time (hours)	Liusaike to Baiyin	1.11	1.4	Jingtai to Xicao	1.66	1.8	Increase in travel speed (km/hr)	Liusaike to Baiyin	100	78	Jingtai to Xicao	70	58	Reduction in time to access market (hours)	Liusaike to Baiyin	1.5	1.4	Jingtai to Xicao	1.65	1.5	Increase in volume of agricultural produce shipments (10,000 tons/year)	Liusaike to Baiyin	11.41	8.0	Jingtai to Xicao	n.a.	8.6	Employment opportunities for the poverty group at road related facilities (people)	Liusaike to Baiyin	100	55	Jingtai to Xicao	60	20
Indicator	Road name	2000 ex-ante evaluation	2008 Target year																																																																																											
Increase in traffic volume (converted into number of small cars, cars/day)	Liusaike to Baiyin	9,106	13,304																																																																																											
	Jingtai to Xicao	4,750	5,770																																																																																											
Reduction in travel time (hours)	Liusaike to Baiyin	2.9	1.4																																																																																											
	Jingtai to Xicao	2.9	1.8																																																																																											
Increase in travel speed (km/hr)	Liusaike to Baiyin	56	78																																																																																											
	Jingtai to Xicao	37	58																																																																																											
Reduction in time to access market (hours)	Liusaike to Baiyin	3.7	1.4																																																																																											
	Jingtai to Xicao	3.1	1.5																																																																																											
Increase in volume of agricultural produce shipments (10,000 tons/year)	Liusaike to Baiyin	4.3	8.0																																																																																											
	Jingtai to Xicao	4.8	8.6																																																																																											
Employment opportunities for the poverty group at road related facilities (people)	Liusaike to Baiyin	–	55																																																																																											
	Jingtai to Xicao	–	20																																																																																											
Indicator	Road name	2006 Mid-term Review	2008 Target year																																																																																											
Increase in traffic volume (converted into number of small cars, cars/day)	Liusaike to Baiyin	7,370	13,304																																																																																											
	Jingtai to Xicao	3,741	5,770																																																																																											
Reduction in travel time (hours)	Liusaike to Baiyin	1.11	1.4																																																																																											
	Jingtai to Xicao	1.66	1.8																																																																																											
Increase in travel speed (km/hr)	Liusaike to Baiyin	100	78																																																																																											
	Jingtai to Xicao	70	58																																																																																											
Reduction in time to access market (hours)	Liusaike to Baiyin	1.5	1.4																																																																																											
	Jingtai to Xicao	1.65	1.5																																																																																											
Increase in volume of agricultural produce shipments (10,000 tons/year)	Liusaike to Baiyin	11.41	8.0																																																																																											
	Jingtai to Xicao	n.a.	8.6																																																																																											
Employment opportunities for the poverty group at road related facilities (people)	Liusaike to Baiyin	100	55																																																																																											
	Jingtai to Xicao	60	20																																																																																											

Increase in per capita GDP of regions along the roads (yuan/year)	Liusaike to Baiyin	5,561	10,736
	Jingtai to Xicao	2,735	4,727
Increase in per capita income of regions along the roads (yuan/year)	Liusaike to Baiyin	2,028	3,458
	Jingtai to Xicao	1,667	2,946

(Note) Regarding the traffic volume in the year 2000, the 9,106 cars/day figure for the main road (Liusaike to Baiyin) is from current data for National Road 109. 2008 data is traffic volume for the highway.

Internal Rates of Return

EIRR : Main road 18.1%
: Regional road 22.3%
FIRR : Main road 6.2%

(Source) Ex-ante evaluation report (however, figures of “Employment opportunities for the poverty group at road related facilities” are from JBIC internal data)

Increase in per capita GDP of regions along the roads (yuan/year)	Liusaike to Baiyin	n.a.	10,736
	Jingtai to Xicao	n.a.	4,727
Increase in per capita income of regions along the roads (yuan/year)	Liusaike to Baiyin	n.a.	3,458
	Jingtai to Xicao	n.a.	2,946

(Note) There are no changes to the target values or target year. The 7,370 cars/day for Liusaike to Baiyin is the highway portion. Traffic volume on National Road 109 is 4,836 cars/day.

(Source) Responses from the Gansu Changda Highway Co., Ltd. and Gansu Province Communications Department

The 7,370 cars/day on the main road (highway) Liusaike to Baiyin in 2006 is far below the 11,353 cars/day estimated for 2006 at the time of ex-ante evaluation. On the other hand, traffic volume on National Road 109 (which runs partially parallels the highway) was estimated at 4,211 cars/day for 2006, and 4,799 for 2008, but the actual figure for 2006 was 4,836 cars/day. This actual result is a little higher than estimated, but it is not a great difference.

Traffic volume on the Jingtai to Xicao regional road is also below the volume forecast at the time of the ex-ante evaluation. The estimate for 2006 was 5,074 cars/day, but it decreased to 3,741 cars/day instead. Regarding this point, the Gansu Province Communications Department indicates that this is due to different measurement sites. According to an explanation by the Communications Department, measurements of traffic volume are the volume of traffic that passes one location, and also, the measurement location in the year 2000 was set up near the Jingtai County Castle which is close to an urban area with relatively heavy traffic volume. Then it decreased in 2006 because the observation site was moved to the Jingxi Road Overloading Inspection

	<p>(b) Qualitative effects</p> <p>1) Promotion of regional development</p> <p>Shorter routes, improvement in the road pavement situation, etc. lead to effects of reduced travel time, distribution cost reductions, etc. This leads to increased traffic volume which promotes increased distribution, resulting in increased economic activity in the region. Formation of the provincial road network, improved market access which benefits poor regions, and associated regional development along the roads are also promoted.</p>	<p>Station, where there is less traffic volume than at County Castle.</p> <p>Large growth in traffic volume is forecast on sections of both the highway and regional road near the provincial capital of Lanzhou. This is because as mentioned below, construction of development districts is progressing along the road near Lanzhou, and the movement of people and goods is forecast to become more active due to population growth of those development districts and factory operations.</p> <p>Regarding travel time on the targeted sections, on the main road it fell dramatically from 2.9 hours before construction to 1.1 hours, and from 2.9 hours to 1.7 hours on the regional road.</p> <p>(b) Qualitative effects</p> <p>1) Promotion of regional development</p> <p>Due to road improvements, travel times on the targeted sections fell by 1 hour or more on both the highway and regional road, resulting in the large achievement of 1.5 to 2 hours shorter time to access markets. Improvements in the investment environment due to this kind of road development are leading to growth of development districts as shown below.</p> <p>Development districts are being constructed along the main road, called “One park, three districts”: Chinese Academy of Sciences High Tech Industrial Park, West District, Pingchuan Central District, and Longchuan Concentrated Industry District. There still remain unoccupied sites in each development district, but a large truck factory, food processor, and factories for furs, etc. have already moved in. By completing this road, Lanzhou (the</p>
--	--	---

	<p>2) Poverty alleviation</p> <p>Of the five administrative areas along the routes of this project, four are national level poverty-stricken counties (“Jingyuan County”, “Pingchuan District”, “Jingtai County”, “Yongdeng County”). The following effects are expected through completion of this project:</p> <ul style="list-style-type: none"> • Through improved market access from poor areas, increased opportunities to sell agricultural produce etc., and accompanying income growth. • Reduced transport time and decreased shipping damage etc. enables a shift in cultivation from grains to high value added produce, resulting in income growth. • Employment during the construction period, and increased employment opportunities after completion at service 	<p>provincial capital of Gansu Province) is within 1 hour by car, and future development is expected in this economic zone which includes Lanzhou.</p> <p>Also along the regional road, the Circular Economy Industrial Park is being developed near the road’s start on the Xicao end, and Geely Automobile is already building an automobile factory with a capacity to produce 100,000 autos per year, and production begins in 2007. Also, the Qinwangchuan Agriculture High Tech Model Base is being built since 2003 about 8km from the starting point at Xicao, aiming to become a research and development base for high tech agriculture focusing on potato research. A total of about 30,000 people will live there if this base is completed.</p> <p>In this way, development is progressing along both the main road and regional road, with steady growth expected in road users.</p> <p>2) Poverty alleviation</p> <p>Due to improvements in time to access markets, the volume of agricultural produce shipments also grew dramatically by threefold on the targeted section of the highway. According to a poultry farmer in Pingchuan District which is along the highway, highway use has led to reduced transport time and decreased freight damages due to the improved road surface, enabling sales of eggs to Sichuan Province and Xinjiang area, greatly contributing to improvements in life. Incidentally, the four administrative districts designated as national level poverty-stricken counties were already removed from this classification in 2006. (Refer to data attached below)</p> <p>Also, 1,460 local people are employed during</p>
--	---	--

	<p>areas and operation management facilities such as toll stations on the main road.</p> <ul style="list-style-type: none"> Improved living environment due to improved access to schools and hospitals. 	<p>construction, with 50 jobs after completion for cooks, boiler men, cleaners, etc. in service areas, etc.</p>
<p>(2) Analysis of Factors Influencing Effectiveness and Impact</p>	<p>(2) Analysis of Factors Influencing Effectiveness and Impact</p> <p>(a) Cooperation with the local government</p> <p>Gansu Province and Akita Prefecture signed a friendship partnership in August 1982. At the same time, a friendship partnership was also signed between Lanzhou City and Akita City. Over the 10 years from 2001 until 2010, multifaceted cultural interchange has been carried out, such as both sides sending two people each for cultural exchange.</p> <p>(b) Land acquisition and relocation</p> <p>About 730ha of lands are expected to be acquired by this project for the main road, and about 130ha for the regional road. Also, an estimate was received that about 1,250 residents are subject to being relocated for the main road, and about 690 residents for the regional road.</p>	<p>(2) Analysis of Factors Influencing Effectiveness and Impact</p> <p>(a) Cooperation with the local government</p> <p>From July 31 until August 5, 2004, a JBIC mission with Akita Prefecture “road station” authorities as members met with the head of the Gansu Communications Department, President of Gansu Changda Highway Co., Ltd., and other Gansu province government and local government authorities. They inspected planned sites for “road stations” and held a workshop. Regarding plans to build a facility similar to a “road station” along the regional road, Akita Prefecture has shown its intention to actively cooperate, and methods of specific cooperation are being investigated by Akita Prefecture and JBIC.</p> <p>(b) Land acquisition and relocation</p> <p>423ha of lands were acquired for the main road by this project, and 59ha for the regional road. Also, 99 households with 542 residents were relocated for the main road, and 3 households with 15 residents for the regional road.</p> <p>The area of lands acquired and number of residents relocated decreased because almost all the requisitioned lands were mountainous and rough terrain. Also, in the initial forecast, if farmland was requisitioned, the entire families of the owners were included as possible residents to be relocated. For the actual move, only the houses were subject to eviction, and the people subject to being relocated were</p>

	<p>(c) Consideration for the environment The effects of air pollution, water pollution, soil erosion, and noise are anticipated, and measures are taken.</p> <p>(d) Consideration for social aspects The following considerations are taken.</p> <ul style="list-style-type: none"> • For socially vulnerable people living in areas along the project route, such as elderly people living alone, and people who are poor or disabled, concrete measures will be taken such as providing labor for home construction after being relocated. • During construction, about 5000 people from the poverty group will be employed as civil construction workers. After completion, about 300 people from the poverty group will be employed at operation facilities such as service areas, toll stations, etc. <p>(e) Construction of facilities similar to “road stations” On the regional road, facilities similar to Japan’s “road stations” are to be built as service areas. A parking lot, rest area, place to sell local specialty products, tourist information desk, etc. will be placed together, aiming at promoting interaction between road users and the local area, and stimulation of the local economy. The local county</p>	<p>less than the initial forecast.</p> <p>(c) Consideration for the environment It was explained that proper measures were taken during construction against air pollution, water pollution, and noise. As countermeasures after completion, greenery is being planted along the roads and measures taken against soil erosion from slopes. There are no areas where soundproofing walls and double paned windows are currently thought necessary as noise countermeasures.</p> <p>(d) Consideration for social aspects After the relocation, problems regarding elderly people living alone and disabled people are not arising. There is active employment during construction (1,460 people), and the project is also working hard to employ local residents after completion (50 people).</p> <p>(e) Construction of facilities similar to “road stations” Of the two service area locations planned to be built on the regional road, one location has been eliminated due to lack of expected demand. The location to establish the other service area has been decided, but specific details of its development are being further investigated. As it will be located in a poor area, items for sale and targeted customers</p>
--	---	--

	<p>governments will manage operations.</p> <p>(f) Traffic safety measures There is nothing particular to note at the ex-ante evaluation stage.</p>	<p>should be thoroughly studied to make it an attractive facility for users so that sales by producers of agricultural produce and local specialties at the service area can provide them a reliable livelihood. Providing it with functions as a multipurpose assembly place for residents including education and training, as a crisis headquarters and refuge areas during disasters, etc. should also be studied.</p> <p>(f) Traffic safety measures Improving the road surface on the regional road leads to much faster driving speeds. As a result, there are fears that speeding will lead to an increase in traffic accidents. Traffic accidents create not only human losses but also large economic losses, so even more consideration must also be given to thorough safety education and development of safety facilities.</p>
<p>(3) Factors Affecting Sustainability</p>	<p>(3) Factors affecting sustainability</p> <ul style="list-style-type: none"> • Operation and maintenance system <p>Gansu Changda Highway Co., Ltd. will be in charge of operation and maintenance. Toll income etc. of this project will be allocated to operation and maintenance expenses, etc. In case there is a lack of operation and maintenance expenditures, the Gansu Provincial People’s Government will handle them with a fiscal subsidy. This company is planning to operate it with 35 staff who have rich experience in road operation and maintenance. It also plans to use foreign consultants, etc. to strengthen the organization of its operating structure. Thus there are no particular concerns regarding operation and maintenance capabilities.</p>	<p>(3) Factors affecting sustainability</p> <ul style="list-style-type: none"> • Operation and maintenance system <p>Gansu Changda Highway Co., Ltd. is in charge of operation and maintenance. The operation and maintenance system is established, and no particular problems can be seen.</p> <p>As for the highway, problems concerning operation and maintenance are expected following the increase in traffic volume. Weight regulations for large trucks are currently insufficient, so increased maintenance expenses due to road surface damage are a concern. Operation and maintenance will be implemented based on national standards, but performing timely and proper maintenance is important for smooth traffic, so attention should be paid to thoroughly</p>

		implementing weight limits, securing sources of funds, and making timely expenditures. Also, in the future, policies for efficient management will become an issue which should be investigated.
Reference Information		
Efficiency (1) Outputs	<p>(1) Outputs</p> <p>(a) Main road: Replacement for the current road (No. 109)</p> <ul style="list-style-type: none"> • Section: Liusaike (Jingyuan County, Baiyin City) to Baiyin District (Baiyin City) • Total length: about 110km • Road standard and lanes: Highway, 2 lanes each direction • Width: 24.5m • Center divider: Fixed type • Pavement: asphalt • Bridges: About 40 locations (including the approximately 1km Yellow River Bridge) • Interchanges: 6 locations • Service areas: 2 locations • Toll stations: 7 locations • Machinery and electrical facilities: toll collection, communications, surveillance control systems, etc. • Construction and maintenance equipment: Civil work and paving equipment, inspection vehicles <p>(b) Regional road: Upgrade of the current road (number 201) (3rd Class → 2nd Class)</p>	<p>(1) Outputs</p> <p>(a) Main road: No changes except for those shown below (completed).</p> <ul style="list-style-type: none"> • There are 34 major bridges. The Xintian Yellow River Grand Bridge is 860m. • Toll stations: Changed to 6 locations. One location became unnecessary due to connection with the Baiyin to Lanzhou Highway. <p>(b) Regional road (road portion is complete)</p>

<p>(2) Period</p>	<ul style="list-style-type: none"> • Section: Jingtai County (Baiyin City) to Xicao (Yongdeng County, Lanzhou City) • Total length: About 100km • Road standard and number of lanes: 2nd class road, 1 lanes each direction • Width: 12m • Pavement: asphalt • Bridges: 14 locations • Service areas: 2 locations (facilities similar to “road stations”) <p>(c) Consulting services (50 man months)</p> <ul style="list-style-type: none"> • Construction work supervision • Environmental measures (Handling problems of water pollution, air pollution, noise, soil erosion, etc. Technology transfer) • Support for the road management system (strengthening the organization, establishing proper toll levels, traffic safety measures, guidance for operating service areas, etc.) • Overseas training <p>(2) Period</p> <ul style="list-style-type: none"> • Main road: March 2002 to May 2006 • Regional road: March 2002 to December 2004 <p>(According to the project ex-ante evaluation report, the project was to start in February 2002)</p>	<ul style="list-style-type: none"> • Service area: One location on the Jingtai County end. It was judged that demand is not expected at the Yongdeng County end near Lanzhou City, so its construction was eliminated. <p>(c) Consulting services (36.6 man months)</p> <ul style="list-style-type: none"> • Man months were reduced due to a shorter work schedule, winter work stoppages, etc. <p>(2) Period</p> <ul style="list-style-type: none"> • Main road: March 2002 to December 2005 (complete) (46 months) • Regional road: March 2002 to December 2003 (Road portion complete. Completion of facility similar to a “road station” expected)
--------------------------	---	---

		<p>at the end of 2007) (Project start was at the time when L/A was concluded) Completion of construction work was earlier than planned because land acquisition and procedures to relocate residents progressed rapidly, thorough project management was conducted, and winter construction work became possible due to improvements of construction methods.</p>
<p>Lessons Learned and Recommendations</p>	<p>Lessons Learned</p> <ul style="list-style-type: none"> • Regarding plans to build service areas similar to Japan’s “road stations” on the regional road, the implementation plan must be studied while recognizing the standard of living differences between Japan and China (in the subject regions) and differences in the stages of development of their societies. <p>Recommendations</p> <ul style="list-style-type: none"> • For construction and operation of facilities similar to “road stations”, JBIC should seek the cooperation of Akita Prefecture, and continue to support further strengthening of friendship relations of Akita Prefecture with Gansu Province. • For the regional road, in the targeted regions along the road it is necessary to continue to work on thorough safety education in schools, implementation of activities for raising awareness in traffic safety via bus companies and transportation businesses, development of safety facilities, etc. 	
<p>Indicators Established for Use at the Time of Ex-Post Evaluation</p>	<p>The following were shown at the time of project ex-ante evaluation.</p> <ul style="list-style-type: none"> • Increase in traffic volume (converted into number of small cars, cars/day) • Reduction in travel time (hours) • Increase in travel speed (km/hour) • Reduction in time to access market (hours) • Increase in volume of agricultural produce shipments (10,000 tons/year) • Internal rates of return (FIRR, EIRR) (%) 	<ul style="list-style-type: none"> • The operation and effect indicators were established based on the project ex-ante evaluation report. When these indicators were confirmed at the time of the mid-term review, the Chinese parties did not object to following up on them. On the other hand, in the contents of the Minutes of Discussion (M/D) exchanged in November 2001 between the JBIC ex-ante evaluation mission and the Gansu Province government, and in the Project Memorandum (P/M) agreed upon in May 2002 which expanded on it, more detailed indicators were shown which became the basis of the operation and effect indicators in the project ex-ante evaluation report. The

		<p>latest values of detailed indicators based on the P/M were sought at the time of the mid-term review, but figures beyond the project ex-ante evaluation report were not provided.</p> <ul style="list-style-type: none">• Regarding follow up on the operation and effect indicators based on the project ex-ante evaluation report, Gansu Changda Highway Co., Ltd. is the contact point for Gansu Province. However, this company's principal responsibility is the main road (highway), while for regional roads, one must seek the cooperation of the Communications Department of the Gansu Province government. Actually, the Communications Bureaus of Baiyin City (Jingtai County) and Lanzhou City (Yongdeng County) are in charge of operation and maintenance. Therefore, when seeking data on items at the level of detail in the P/M, it is necessary to request cooperation of the Gansu Province Communications Department in advance to perform a survey of those items. Also one should arrange for direction from the central government to the Gansu Province government (Finance Department and Communications Department) to provide cooperation in the survey. However, further examination is required to decide whether such time-consuming effort is necessary to obtain the detailed data for indicators in the P/M.
--	--	---

Situation in Areas near the Gansu Province Road Construction Project Site
(Comparison of 2002 and 2006)

Year	Per capita GDP (yuan)		Population (unit: 10,000)		Population in poverty (unit: 10,000)		Primary school				Middle school				Percentage receiving water supply (%)		Number of hospitals		Infant mortality rate (%)		Percentage receiving electricity (%)	
	02	06	02	06	02	06	02	06	02	06	02	06	02	06	02	06	02	06	02	06	02	06
Jingtai County	6,700	9,800	23.1	23	1.3	0.96	169	173	92.1	96.8	22	22	93.7	99.5	17	29	2	2	24.2	17.1	90.8	96.8
Yongdeng County	5,625	9,497	49.59	50.12	8.97	8.38	355	315	100	100	48	45	99.2	99.4	16.47	25.8	3	3	24	18.6	98	99.8
Baiyin City	6,600	9,600	172	174.6	19.6	14.79	912	996	96.2	99.7	176	185	93.2	97.2	16	21	25	26	23.91	16.92	91.2	98.6
Jingyuan County	5,200	8,100	45.1	46.60	7.2	5.3	229	231	91.3	95.4	51	52	90.6	96.3	15	18	2	2	22.7	16.8	89.9	97.8
Pingchuan District	7,100	11,326	108	10.67	0.91	0.79	73	75	96.1	99.6	26	26	93.6	98.1	36	48	5	5	19.5	15.1	93.9	99.2

Source: Responses of Gansu Province Communications Department