

JBIC ODA Loan Project Mid-Term Review 2006

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

Project Name: People's Republic of China, Hunan Province Road Construction Project (L/A No.C01-P162)

Outline of Loan Agreement

Loan Amount/Contract Amount/Disbursed Amount	: 23,000 million yen / 17,646 million yen / 11,568 million yen (as of end of February 2007)
Loan Agreement Signed	: March 2002 (5th year after L/A concluded)
Completion Date (Planned)	: October 2007
Final Disbursement Date	: October 2009
Executing Agency	: The People's Government of Hunan Province
Operation & Maintenance Institutions	: Main road (highway): Shao-Huai Expressway Construction & Development Co., Ltd., affiliate of Hunan Provincial Expressway Construction & Development Co., Ltd. Regional road: Communications Department of Hunan Province
Mid-Term Review Selection Criteria	: Poverty reduction

Project Objective

To construct a main road (highway) in Hunan Province between Shaoyang City and Huaihua City with a total length of about 160km, together with improvements to a total of about 100km of regional road between Zhu City (Dongkou county) and Chengbu county, 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: Nippon Koei (Japan)

Contractors: (Contractors with total contracts of 1 billion yen or more. Includes J/Vs.)

YUEYANG ROAD & BRIDGE CONSTRUCTION CO. (China), HUNAN CHANGDE ROAD & BRIDGE CONSTRUCTION CO., LTD. (China)

HUNAN HUANDA ROAD & BRIDGE CORPORATION (China), HUNAN PROVINCIAL ROAD MACHINERY ENGINEERING COMPANY (China)

THE 1ST ENGINEERING CO., LTD. OF CHINA TIESIJU CIVIL ENGINEERING (China)

HUNAN ROAD & BRIDGE CONSTRUCTION GROUP CORPORATION (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. 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>Hunan Province, which was targeted by this project, had a per capita GDP of 5,639 yuan in the year 2000, below the national average of 7,078 yuan. It is a poor province, as this ranks it as 17th 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 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</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 Hunan Province was 10,264 yuan in 2005, below the national average of 13,985 yuan. This makes it 20th 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>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 Shaoyang and Huaihua, which is part of the highway between Shanghai and Ruili (Yunnan Province), one of the "7 Horizontal".</p> <p>Also, Hunan Province created Hunan's 10th Five Year Plan. This maintains consistency with national policy, while aiming at completion of the road network in the province by 2020. Moreover, along the roads targeted by this project lies the national level poverty-stricken county of Longhui County, and the province level poverty-stricken counties of Chengbu County and Zhijiang County, so it contributes to poverty reduction.</p>	<p>(2) Policy measure level</p> <p>Similar to the national plan, the 11th Five Year Plan for Hunan 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 this.</p> <p>Also, Longhui County and Chengbu County which are along the roads targeted by this project are National Development Priority Counties. Thus, this road is regarded as fulfilling an important role in poverty reduction.</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 (Shaoyang to Huaihua) is constructed as a highway, with the section between Zhu City and Chengbu repaired as a secondary regional road. Traffic volume is forecast to grow on the targeted section, and the project is being carried out from the perspectives of improving access to markets etc., promotion of regional development, improving the people's welfare, and poverty reduction.</p>	<p>(3) Planning level</p> <p>Traffic volume has grown remarkably fast, requiring urgent development. On this point, relevance at the planning level was confirmed.</p>																																																																																																							
<p>Effectiveness</p> <p>(1) Operation and Effect Indicators</p>	<p>(1) Operation and Effect Indicators</p> <p>(a) Quantitative effects</p> <table border="1" data-bbox="465 687 1263 1410"> <thead> <tr> <th>Indicator</th> <th>Road name</th> <th>2000 Ex-ante evaluation</th> <th>2010 Target year</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Increase in traffic volume (converted into number of small cars, cars/day)</td> <td>Shaoyang to Huaihua</td> <td>4,520</td> <td>12,516</td> </tr> <tr> <td>Zhu City to Chengbu</td> <td>3,232</td> <td>7,030</td> </tr> <tr> <td rowspan="2">Reduction in travel time (hours)</td> <td>Shaoyang to Huaihua</td> <td>6.1</td> <td>2.1</td> </tr> <tr> <td>Zhu City to Chengbu</td> <td>2.4</td> <td>1.3</td> </tr> <tr> <td rowspan="2">Increase in travel speed (km/hr)</td> <td>Shaoyang to Huaihua</td> <td>35</td> <td>80</td> </tr> <tr> <td>Zhu City to Chengbu</td> <td>45</td> <td>78</td> </tr> <tr> <td rowspan="2">Reduction in time to access market (hours)</td> 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Increase in per capita income of regions along the roads (yuan/year)	Shaoyang to Huaihua	1,831	4,006
	Zhu City to Chengbu	1,544	3,320

(Note) Regarding the traffic volume in the year 2000, the 4,520 cars/day figure for the main road (Shaoyang to Huaihua) is for National Road 320, which is the current road. The 12,516 cars/day in 2010 is traffic volume on the highway.

Internal Rates of Return: Main road FIRR: 3.7%
EIRR: 14.9%
Regional road EIRR: 16.5%

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

(b) Qualitative effects

1) Promotion of regional development

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

of regions along the roads (yuan/year)	Zhu City to Chengbu	n.a.	5,439
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	Zhu City to Chengbu	n.a.	3,320

(Note) There are no changes to the target values or target year.

(Sources) Responses from the Shao-Huai Expressway Construction & Development Co., Ltd., and the Hunan Communications Department

The highway between Shaoyang and Huaihua is under construction, so the traffic volume noted above is for the current road (National Road 320). The target year of 2010 shows the highway’s traffic volume, not including the current road’s traffic volume. Also, travel time and travel speed have not been improved yet because both roads are under construction so only one side of the roads are being used, and the road surfaces are worse.

As seen above, traffic volume has approximately doubled on the main road since the year 2000 (about 11.7% per year on average), while it grew 24% on the regional road (about 3.7% per year on average). Based on growth of the economy and population, one can see there is sufficient possibility to achieve the objectives for traffic volume in the target year. After completion, large reductions are forecast for travel times, time to access markets etc., and it is thought that there are no problems regarding this project’s effectiveness.

(b) Qualitative effects

1) Promotion of regional development

Shaoyang City is comprised of 3 districts, 1 city, and 8 counties, with a total population of 7,440,000 (2005). It is thought that improvements in access after these roads are

	<p>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>completed will bring large economic benefits, not only providing counties along the roads with markets for agricultural produce, but also for the entire region through expanded employment opportunities, contributing to alleviation of poverty. Hunan Province is moving forward with development of the road network adjacent to the roads targeted by this project, and future improvements in access are expected to expand from these routes to cover broad areas. There are various cities and counties with the half million range of population in the region targeted by this project, including the designated poverty-stricken counties of Longhui County (population 1,110,000) and Chengbu County (pop. 260,000), along with Wugang City (pop. 740,000), and Dongkou County (pop. 810,000). Due to the road development, one will be able to make trips between cities within about 1 hour each. This kind of improvement in access expands business opportunities for producers, investors, etc., which should lead to improvements for the lives of the region's residents in general.</p> <p>Also, the region stretching from Guilin in Guangxi Zhuang Autonomous Region to the southwest part of Hunan Province has great potential for tourism, so one can expect growth in tourist numbers through road development.</p> <p>Moreover, regarding regional roads, construction of an industrial development district is progressing in Wugang City, which connects to Provincial Roads 219 and 220, with completion of the district planned at the end of 2007. Some factories have already entered the district, and new investments are expected to increase.</p>
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	<p>2) Poverty alleviation</p> <p>The targeted region is deprived area, with one national level poverty-stricken county (Longhui County), and two provincial level poverty-stricken counties (Chengbu and Zhijiang counties). 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 of cultivation from grains to high value added commercial crops, resulting in income growth. • Employment during the construction period, and increased employment opportunities after completion at service areas and operation management facilities such as toll stations on the main road. • Improved living environment due to improved access to schools and hospitals. 	<p>2) Poverty alleviation</p> <p>Longhui and Chengbu counties are designated as National Development Priority Counties (refer to attachment). Zhijiang County ceased to be designated as a poverty-stricken county.</p> <p>It currently takes over 6 hours to travel from Chengbu County at the end of the regional road to the provincial capital of Changsha City, but this is expected to be reduced to about 4 hours with completion of the road. This kind of improvement in access does not directly alleviate the poverty situation, but making the effects noted on the left a certainty brings income growth. This is also expected to contribute to improvements in the standard of living, as working in regions away from home becomes easier in winter, obtaining products for daily life becomes easier, etc.</p>
<p>(2) Analysis of Factors Influencing Effectiveness and Impact</p>	<p>(2) Analysis of factors influencing effectiveness and impact</p> <p>(a) Poverty alleviation</p> <p>As mentioned above, improvements in access lead to income growth and improved ability to obtain social services.</p> <p>(b) Land acquisition and relocation</p> <p>About 940ha of lands are expected to be acquired by this project for the main road, and about 230ha for the regional</p>	<p>(2) Analysis of factors influencing effectiveness and impact</p> <p>(a) Poverty alleviation</p> <p>The kinds of results mentioned above can be expected. Also, regarding the regional road, the road which connects Chengbu County and Guangxi Zhuang Autonomous Region is planned to be built during the 11th Five Year Plan. When this road extends to Guilin of the autonomous region, this project's effectiveness will increase further.</p> <p>(b) Land acquisition and relocation</p> <p>642ha of lands were acquired for the main road by this project, and 212ha for the regional road. 3,591 residents</p>

<p>road. Also, an estimate was received that about 5,000 residents are subject to being relocated for the highway, and about 2,100 residents for the regional road.</p> <p>(c) Consideration for the environment The effects of air pollution, soil erosion, noise, and wastewater treatment 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 9,600 people from the poverty group will be employed as civil construction workers. After completion, about 250 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</p>	<p>were relocated for the main road, and 3,447 residents for the regional road. There have been no special reports of discontent of residents with land acquisition or after being relocated, but consideration is needed for protecting the livelihoods of residents who were relocated, such as performing monitoring, etc.</p> <p>(c) Consideration for the environment In consideration for the environment related to construction, proper measures were taken for sprinkling, planting trees, drainage, and earth disposal areas, and no special negative impacts can be seen. Construction was generally in rural areas, so the kinds of problems imagined in urban areas did not arise.</p> <p>(d) Consideration for social aspects After the relocation, problems regarding elderly people living alone and disabled people are not arising. Also, there is frequent employment in the targeted areas during construction, paying 30 to 50 yuan wages per day. The response was that over 1,000 people have been employed. There are also plans for employment once the main road’s service areas and toll stations are completed.</p> <p>(e) Construction of facilities similar to “road stations” The locations have been decided for the two service area locations planned to be built on the regional road, but their</p>
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	<p>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 governments will manage operations.</p> <p>(f) Traffic safety measures There is nothing particular to note at the ex-ante evaluation stage.</p>	<p>significance and roles are being further investigated. As they will be located in poor areas, items for sale and targeted customers should be thoroughly studied to make them attractive facilities for users so that sales by producers of agricultural produce and local specialties at the service areas can provide them a reliable livelihood. Providing them with functions as multipurpose assembly places for residents including education and training, as 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 Hunan Provincial Expressway Construction & Development 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 Hunan Provincial People's Government will handle them with a fiscal subsidy. This company is planning to operate it with 93 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 	<p>(3) Factors affecting sustainability</p> <p>(a) Operation and maintenance system Shao-Huai Expressway Construction & Development Co., Ltd. will perform operation and maintenance on the main road, with operation and maintenance on the regional road done by the Hunan Communications Department. There are no particular concerns regarding budgets and sources of funds.</p> <p>(b) Overloading of large trucks As for the main road, problems concerning operation and maintenance are expected following the increase in traffic</p>

	regarding operation and maintenance capabilities.	<p>volume. 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 implementing weight limits, securing sources of funds, and making timely expenditures.</p> <p>(c) Flood countermeasures Chengbu County receives a relatively large amount of rainfall (about 1,500mm per year), so flood damage occurs frequently. Periodic maintenance such as maintenance of cut slopes will be required.</p>
Reference Information		
Efficiency (1) Outputs	<p>(1) Outputs</p> <p>(a) Main road</p> <ul style="list-style-type: none"> • Section: From Shaoyang City (Zhouwang Shop, Longhui County) to Huaihua City (Zhutianxi, Zongfang County) <p>[Section targeted by Japanese ODA loan: From Shaoyang City (Zhouwang Shop, Longhui County) to Shaoyang City (Dashui, Dongkou County)]</p> <ul style="list-style-type: none"> • Total length: About 160km (about 60km targeted by Japanese ODA loan) • Road standard and lanes: Highway, 2 lanes each direction • Width: 24.5m to 28m • Center divider: Fixed type (all sections) • Pavement: Asphalt pavement (partially concrete pavement) • Bridges: 223 locations • Tunnels: 19 locations 	<p>(1) Outputs (No changes in items targeted by this project)</p> <p>(a) Main road:</p> <ul style="list-style-type: none"> • Fundamental construction was already finished at the time of this mid-term review, and construction work has now moved to the paving stage. • No changes except for those shown below <ul style="list-style-type: none"> • Due to higher crude oil prices, pavement was changed from asphalt to concrete. • Regarding the width of the bridge crossing the Zijang

	<p>(includes the approximately 7.3km Xuefeng Mountain Tunnel)</p> <ul style="list-style-type: none"> • Interchanges and toll stations: 9 locations • Service areas: 3 locations • Connecting road: About 13km (Zhutianxi to Hecheng District, Huaihua City) (Access road connecting the main road with central Huaihua City) • Machinery and electrical facilities: toll collection, communications, surveillance control systems, etc. <p>(b) Regional road:</p> <ul style="list-style-type: none"> • Section: Zhu City, (Dongkou County, Shaoyang City) to Chengbu County • Total length: About 100km • Road standard and number of lanes: 2nd class road, 1 lanes each direction • Width: 12 – 15m • Pavement: Asphalt • Bridges: 20 locations • Service areas: 2 locations (facilities similar to “road stations”) <p>(c) Consulting services (Foreign consultants: 36 man months)</p> <ul style="list-style-type: none"> • Environmental measures • Support for road management organization • Report writing assistance, etc. 	<p>River towards Longhui County, a 1.5m pedestrian walkway was added, widening the bridge from 15m to 18m.</p> <p>(b) Regional road</p> <ul style="list-style-type: none"> • The name of the initial Provincial Road 1865 section was changed to Provincial Road 220 (Dongkou to Wugang) and Provincial Road 219 (Wugang to Chengbu). • At the time of the mid-term review, construction work was at the paving stage. • No changes except for the one below. • Due to higher crude oil prices, pavement was changed from asphalt to concrete. <p>(c) Consulting services</p> <ul style="list-style-type: none"> • No changes.
(2) Period	<p>(2) Period From March 2002 to December 2006 (Part of construction has already began using Chinese funding)</p>	<p>(2) Period From March 2002 to October 2007 Construction work began when the loan agreement was</p>

		<p>concluded.</p> <p>Completion date is delayed because of delayed approval by the province (Communications Department) related to a technically very difficult tunnel construction (not part of the Japanese ODA loan), etc.</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 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 suggested in the project ex-ante evaluation report.</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 December 2001 between the JBIC ex-ante evaluation mission and the Hunan Province government, and in the Project Memorandum (P/M) agreed upon in May 2002 which expanded on it, more detailed indicators are shown which are based on the operation and effect indicators in the project ex-ante evaluation report. The 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.

		<ul style="list-style-type: none">• Regarding follow up on the operation and effect indicators based on the project ex-ante evaluation report, the Foreign Affairs Office is the contact point for Hunan Province. However, when seeking data on items at the level of detail in the P/M, it is necessary to request cooperation in advance to perform a survey of those items. Particularly regarding data on areas other than sections targeted by Japanese ODA loan, one should explain the necessity of providing information in advance, and arrange for direction from the central government to the Hunan province government. However, further examination is required to decide whether such time-consuming effort is necessary to obtain the level of detail for indicators in the P/M.• This project has different executing agencies for the main road (Shao-Huai Expressway Construction & Development Co., Ltd.) and the regional road (Hunan Communications Department). At the time of the ex-post evaluation, it will be required to interact with each agency separately. This point was not considered at the time of the ex-ante evaluation.
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Situation in Areas near the Hunan Province Road Construction Project Site

(Comparison of 2002 and 2006)

	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	Number of schools		Net enrolment (%)		Number of schools		Net enrolment (%)		02	06	02	06	02	06	02	06
Year	02	06	02	06	02	06	02	06	02	06	02	06	02	06	02	06	02	06	02	06	02	06
Longhui County	2,674	3,625	109.93	112.28	21.6	13.8	437	310	99	99	100	82	97	98	74.7	77.2	29	32	21	16	100	100
Chengbu County	4,240	5,270	25.3	25.8	8.3	5.4	231	162	98	99.75	16	27	93	97.2	92.5	98	12	12	12.4	4.19	96	96

(Source: Data via the Hunan Province Communications Department)