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The World Bank

Report No: ICR2512

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD 48810-CHA)

ON A
LOAN
IN THE AMOUNT OF USD\$100 MILLION
TO THE
PEOPLE'S REPUBLIC OF CHINA
FOR A
GUIYANG TRANSPORT PROJECT

June 20, 2014

China and Mongolia Sustainable Development Unit
Sustainable Development Department
East Asia and Pacific Region

CURRENCY EQUIVALENTS

Currency = Renminbi (RMB)
Currency Unit = Yuan (Y)

Appraisal
Effective May 14, 2007

Completion
Effective December 31, 2013

RMB 1.00 = US\$ 0.1282
USD 1.00 = RMB 7.76

RMB 1.00 = US\$ 0.1640
USD 1.00 = RMB 6.0969

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AADT	=	annual average daily traffic
CPS	=	Country Partnership Strategy
EIA	=	Environment Impact Assessment
EIRR	=	Economic internal rate of return
EMP	=	Environment Management Plan
GDP	=	gross domestic product
GMCB	=	Guiyang Municipal Communications Bureau
GMDRC	=	Guiyang Municipal Development and Reform Commission
GMFB	=	Guiyang Municipal Financial Bureau
GMG	=	Guiyang Municipal Government
GMRD	=	Guiyang Municipal Road Division
GMUAB	=	Guiyang Municipal Urban Administration Bureau
GPMO	=	Guiyang Project Management Office
IA	=	implementing agency
ICB	=	international competitive bidding
ICR	=	Implementation Completion and Results
IP	=	Implementation Progress
IPDP	=	Indigenous Peoples Development Plan
ISP	=	Implementation Status and Results
km	=	Kilometer
LIBOR	=	London inter-bank offered rate
MOF	=	Ministry of Finance
NCB	=	national competitive bidding
PAD	=	Project Appraisal Document
PCU	=	Passenger car unit
PDO	=	project's development objectives
RAP	=	Resettlement Action Plan
RMB	=	Renminbi (Chinese currency)
SOE	=	state-owned enterprises
STC	=	short term consultant
TA	=	technical assistance

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**People’s Republic of China
Guiyang Transport Project**

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MAP IBRD34472R
IBRD35738R

A. Basic Information			
Country:	China	Project Name:	Guiyang Transport Project
Project ID:	P093963	L/C/TF Number(s):	IBRD48810-CHA
ICR Date:	05/10/2014	ICR Type:	Core ICR
Lending Instrument:	Specific Investment Loan	Borrower:	PEOPLE'S REPUBLIC OF CHINA
Original Total Commitment:	USD 100.00 million	Disbursed Amount:	USD 100.00 million
Revised Amount:	USD 100.00 million		
Environmental Category: A – Full Assessment			
Implementing Agencies: Guiyang Municipality			
Cofinanciers and Other External Partners: N/A			

B. Key Dates				
Process	Date	Process	Original Date	Revised/Actual Date(s)
Concept Review:	02/07/2006	Effectiveness:		06/09/2008
Appraisal:	01/29–03/02/2007	Restructuring(s):		06/21/2010 02/27/2012 12/10/2012
Approval:	01/08/2008	Mid-term Review:		09/13–09/17/2010 03/28–04/01/2011 09/26–09/30/2011
Sign:	03/18/2008	Closing:	12/31/2012	12/31/2013

Note: 1. The Bank had three project restructurings during implementation.
2. The Bank's midterm review was conducted in three supervision missions, which mainly focused on adjustment of the Rural Transport Component.

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Moderately Satisfactory
Risk to Development Outcome:	Moderate
Bank Performance:	Moderately Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Unsatisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance:	Moderately Satisfactory	Overall Borrower Performance:	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	N/A
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	N/A
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Roads and highways	80	89
General Transportation Sector	10	8
Sub-National Government Administration	10	3

Theme Code (as % of total Bank financing)		
Infrastructure services for private sector development	P	P
Access to urban services and housing	P	P
Rural services and infrastructure	P	P
Municipal governance and institution building	S	S

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	Axel van Trotsenburg	James W. Adams
Country Director:	Klaus Rohland	David R. Dollar
Sector Manager:	Abhas Jha	Magdolna Lovei
Project Team Leader:	Holly Krambeck	John C. Scales
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F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

The project's development objective is to assist the Borrower to increase the access and mobility of Guiyang Municipality's transport users through priority infrastructure investments while establishing more sustainable mechanisms for rural road maintenance, as well as enhancing capacity for keeping municipal debt under control.

Revised Project Development Objectives (as approved by original approving authority)

The PDO was not revised

(a) PDO Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	Travel times decreased on Airport expressway (minutes)			
Value (quantitative or Qualitative)	9	Reduced to 84% of baseline (7.56 minutes)		Reduced to 80% of baseline (7.2 minutes)
Date achieved	2007	2009		2011
Comments (inc. % achievement)	<ul style="list-style-type: none"> Achieved (125%): 1.8 minutes savings / 1.44 target savings = 125% The target value was 9 minutes for the airport expressway. The actual travel time on the airport expressway was 7.2 minutes in 2011, 80% of the baseline value. 			
Indicator 2:	Travel times decreased on G321 (minutes)			
Value (quantitative or Qualitative)	7	Reduced to 82% of baseline (5.74 minutes)		No change (7 minutes)
Date achieved	2007	2009		2013
Comments (inc. % achievement)	<ul style="list-style-type: none"> Not achieved During monitoring period in 2013, there were many investment projects in Longdongbao area. The large trucks slowed down the average travel time on G321. 			
Indicator 3:	Traffic volumes increased on the Project corridor (PCU per day)			
Value (quantitative or Qualitative)	N/A	52,350		62,400
Date achieved	2007	2010		2010
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (119%) The target was the total traffic volume for both original airport expressway and G321 in the case of 'without Youxiao Road'. Youxiao Road was completed and opened to traffic in February 5, 2010. The actual corridor traffic (Youxiao Road, airport expressway, G321) was 62,400 PCU in 2010, indicating that Youxiao Road was successful in generating additional traffic than the baseline "without Youxiao Road" scenario. PCU = passenger car unit 			
Indicator 4:	Percent reduction of minutes travel time on a 25% sample of project rural roads			
Value	100%	Reduced by 50%		Reduced by 65%

(quantitative or Qualitative)				
Date achieved	2007	2009		2013
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (130%) 			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	Number of villages connected by Project roads (no.)			
Value (quantitative or Qualitative)	0	241	67	67
Date achieved	2007	2012	2012	2013
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (100%) During implementation, the number of rural roads was reduced from original 46 to 11. In February 2012, the target value was formally revised to 67 villages. 			
Indicator 2:	Number of villages serviced by routes from Project rural bus stations (no.)			
Value (quantitative or Qualitative)	0	348	118	118
Date achieved	2007	2012	2012	2013
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (100%) During implementation, the number of rural bus terminals was reduced from original 44 to 16. In February 2012, the target value was formally revised to 118 villages. 			
Indicator 3:	Implementation of a new rural road maintenance system (%)			
Value (quantitative or Qualitative)	0%		100%	100%
Date achieved	2007		2011	2012
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (100%) A computer-based Rural Road Maintenance Management Information System was developed in 2010–2012. 			
Indicator 4:	Implementation of a new debt management system (%)			
Value (quantitative or Qualitative)	0%		100%	100%
Date achieved	2007		2011	2011
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (100%) The TA on Government Debt Management was implemented in 2009–2011. 			

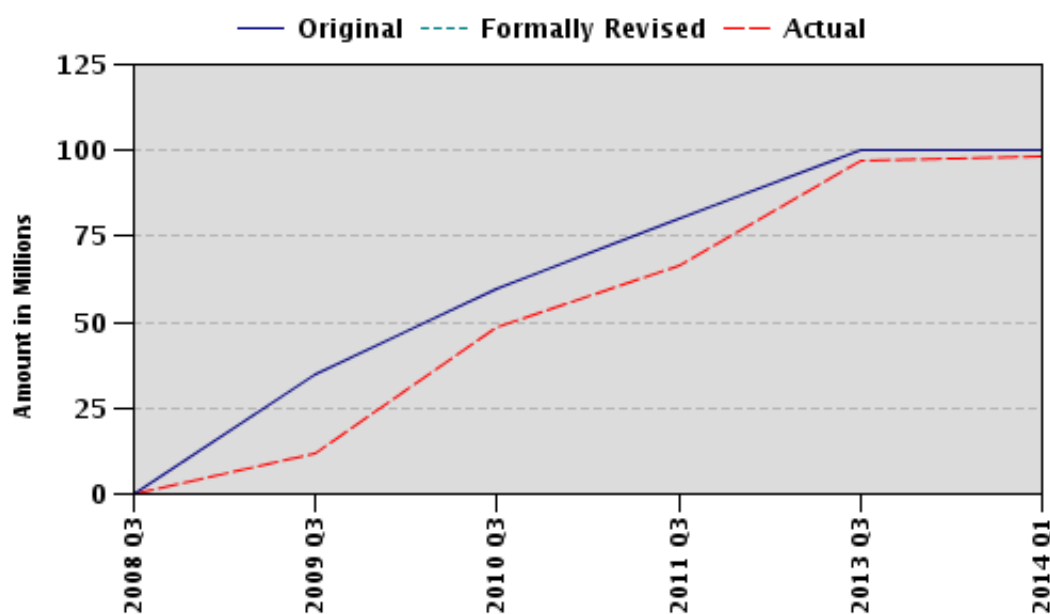
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	08/05/2009	Satisfactory	Satisfactory	12.36
2	12/11/2009	Satisfactory	Satisfactory	40.72
3	09/10/2010	Satisfactory	Satisfactory	67.23
4	11/03/2011	Satisfactory	Moderately Satisfactory	78.58
5	03/20/2012	Satisfactory	Moderately Satisfactory	78.58
6	11/22/2012	Satisfactory	Moderately Satisfactory	85.24
7	03/12/2013	Satisfactory	Moderately Satisfactory	98.59
8	11/02/2013	Satisfactory	Moderately Satisfactory	100.00

H. Restructuring

1. A project restructuring was undertaken in June 2010, which reallocated the loan proceeds to meet the requirements of project financing.
2. A project restructuring was undertaken in February 2012, which included scope changes for the Rural Transport Component; institutional change for implementing Batch-II of the Rural Transport Component; revision of Intermediate Outcome targets; and reallocation of loan proceeds.
3. A Level Two Project Restructuring was approved in December 2012, which included extension of loan closing date by 12 months from December 31, 2012, to December 31, 2013; reallocation of loan proceeds; and addition of a legal covenant in the Project Agreement.

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

Guiyang Municipality is the capital of Guizhou Province, an extremely poor province ranked the lowest in terms of Gross Domestic Product (GDP) per capita in China. The municipality is located within a hilly and sometimes mountainous terrain with elevations ranging from 500 to 1,760 meters above sea level.

At appraisal, Guiyang Municipality encompassed three primarily rural counties (Xiuwen, Xifeng, and Kaiyang); one county-level city (Qingzhen); four generally peri-urban districts (Wudang, Baiyan, Huaxi, and Xiaohe), and the two districts (Nanming and Yunyan), that make up the urban core of Guiyang City. The municipality had a total area of 8,034 square kilometers and a population of approximately 3.4 million persons in 2007. The municipality's regional context was characterized by a poor hinterland, distance from major markets, and dependence on small local markets.¹

Assisting lagging western provinces through, in part, the development of transportation infrastructure, particularly rural areas, was a key priority of the 11th Five-Year Plan of the Government of China (GoC) and, as such, the Government and the World Bank identified the Guiyang Transport Project (the project) as a core project of the Bank's lending program. The project was also aligned with the Bank's assistance strategy agreed with the GoC. The project closely followed the specific strategies considered under the second pillar of the Bank's Country Partnership Strategy (CPS) for 2006-2010.² The second pillar—"reduce poverty, inequality and social exclusion"—sought, among other objectives, to improve the competitiveness of the various regions of China and the overall investment climate, as well as address the needs of disadvantaged groups and underdeveloped regions through the financing of infrastructure in key corridors, particularly those serving poorer regions and communities. These objectives were expected to promote a more balanced urban-rural development, improve sustainable rural livelihoods, and expand access to basic social and infrastructure services.

1.2 Original Project Development Objectives and Key Indicators

The project's development objective (PDO) was to assist the Borrower to increase the access and mobility of Guiyang Municipality's transport users through priority infrastructure investments, while establishing more sustainable mechanisms for rural road maintenance, as well as enhancing capacity for keeping municipal debt under control. Achievement of the PDO was to be assessed through the measurement of outcome indicators, consisting of the reduction in travel times and increased traffic volumes on the Youxiao Road, the number of villages connected to project rural roads, the number of villages served by a rural bus service originating from the project rural bus stations, and the completion of relevant institutional strengthening activities.

¹ The World Bank. November 26, 2007. *Project Appraisal Document on a Proposed Loan in the Amount of US\$100 million to the People's Republic of China for a Guiyang Transport Project*. China and Mongolia Sustainable Development Unit, Sustainable Development Department, East Asia and Pacific Region.

² The World Bank. May 2006: *Country Partnership Strategy for the People's Republic of China for the Period of FY2006-FY2010* - approved by the Board on May 23, 2006.

The details of the PDO indicators and monitoring results can be found in Annex 1, and an assessment of the indicators selected may be found in the Lessons Learnt section.

1.3 Revised PDO and Key Indicators, and reasons/justification

The PDO and the key monitoring indicators were not revised during implementation. However, the target values for intermediate outcome indicators were revised due to the reduction of the number of roads and rural transportation terminals after the project was restructured in February 2012 following lengthy delays caused by design variations and subsequent changes in land acquisition requirements. The original 44 rural roads and 46 rural bus terminals were reduced to 11 rural roads and 16 rural bus terminals under the Rural Transport Component due to a 51 percent increase in component unit cost. Therefore, the target values were revised to be 67 for “number of villages connected by completed project roads” and 118 for “number of villages connected by bus service on completed project roads”.³

1.4 Main Beneficiaries

Based on the project characteristics and the PDO monitoring results, the main beneficiaries of the project were intended to be and have been:⁴

Local People in Longdongbao Area and Airport Traffic- As the main component of the project, the Youxiao Road, was designed as a trunk road to connect Guiyang urban area with the Longdongbao area. After completion, this road began service as the main transport corridor for the passengers commuting to and from the Guiyang airport at Longdongbao. This road diverted most of the traffic originally on the existing airport expressway. The average daily traffic was about 39,200 passenger car unit (PCU) in 2013, which served at least 60,000 people per day. Before the project, the Longdongbao area was separated from the core urban area by mountains and had poor connectivity for the people commuting to and from the Guiyang core area. After completion, the project provided a high speed corridor to the people in the Longdongbao area along a shorter route and completely improved the connectivity for the local people to access various socio-economic activities in the core urban area.⁵

Rural Populations- Upon project completion, 11 rural roads and 16 rural bus terminals were constructed or rehabilitated in the rural areas of Guiyang Municipality. These rural roads have connected 67 administrative villages and the bus terminals served 118 administrative villages in the rural areas of Guiyang, which directly benefit more than 200,000 rural people, including more than 50,000 members of ethnic minorities.

Transport Administration and Maintenance Agencies- The project was the first transport project in Guiyang financed by the World Bank. The implementation of the project brought substantial international experience and exposure to new approaches to the transport administration agencies at both the municipal and district/county levels, including methodologies for addressing road maintenance, traffic survey techniques, and mechanisms for managing transport related debt. These activities have improved the capacity of counterparts to maintain rural roads and manage government debt.

³ The original target values were 241 for “Number of villages connected by completed project roads” and 348 for “Number of villages connected by bus service on completed project roads”.

⁴ The Project Appraisal Document (PAD) did not explicitly specify the main beneficiaries of this project.

⁵ The Youxiao Road is toll-free and has shorter distance from Longdongbao to the core urban area.

1.5 Original Components

Component 1. Youxiao Road [USD143.10 million – 51.2% of the total project cost]

The physical output of the Youxiao Road Component is the construction of an approximately 7 kilometers, four-lane to six-lane, divided urban arterial road that connects the southeast corner of the Guiyang urban core, Youzhajie, to Xiaobi in Longdongbao. This road serves a primary function as a connector from the urban core to the Longdongbao area. Separated by mountains, Longdongbao was in need of a direct connector to serve commercial, commuting, and school traffic to and from the urban core.

Component 2. Rural Transport [USD135.47 million – 48.4% of the total project cost]

The physical output of the Rural Transport Component consisted of the construction or rehabilitation of rural roads and rural bus stations. There were 44 road segments with an aggregated length of 903 kilometers, comprised of approximately 668 kilometers to be constructed or rehabilitated as Class III or Class IV rural roads together and approximately 235 kilometers of access roads (low-volume roads constructed or rehabilitated as less-than-Class IV roads). Also, 44 rural bus stations and one rural freight depot were to be constructed. The proposed bus stations –were to be simple Categories IV and V, which are the lowest according to national standards.

Component 3. Institutional Development [USD1.20 million – 0.4% of the total project cost]

The project supported the development of the institutions of Guiyang Municipality through studies, improvement of systems and training. These specific technical assistance (TA) activities were selected during the preparation process in an effort to address specific areas requiring capacity building and were well suited to the Bank's assistance.

- (a) Rural road maintenance system (approximately USD350,000)
- (b) Traffic Survey (approximately USD250,000)
- (c) Training (approximately USD500,000)
- (d) Debt Management System (approximately USD100,000)

1.6 Revised Components

Rural Transport Component- The original size of the Rural Transport Component included 44 rural roads and 46 rural bus terminals. During implementation, it was found that the actual cost for Batch-I of this component, including 10 rural roads and 10 bus terminals, had increased from the original estimated cost of RMB387 million to about RMB585 million. This was mainly due to increased area and rising compensation rate for the acquired lands, design variations, and price escalation of the construction materials. As a result, the original total budget would not be enough to finance the original size of the Rural Transport Component. It was agreed that the scope of the Rural Transport Component should be reduced from 46 rural roads to 11 roads and 44 bus terminals to 16 bus terminals. A loan amendment was made accordingly in March 2012.⁶

1.7 Other Significant Changes

Project Restructurings- During implementation, the project was restructured three times.

⁶ World Bank. Letter to MOF. March 5, 2012. *China: Guiyang Transport Project (Loan No. 4881-CHA) – Amendment to the Loan Agreement*. World Bank Office, Beijing

- The first time was in June 2010, when the loan proceeds were reallocated to meet the requirements of project financing.⁷ (see section 2.2 for loan proceed reallocations)
- The second restructuring was made in February 2012, which included: (i) reduction of the project scope for the Rural Transport Component; (ii) changes in institutional arrangement for implementing the Batch-II of the Rural Transport Component; (iii) revision of Intermediate Outcome indicator targets; and (iv) reallocation of loan proceeds.⁸
- A Level Two Project Restructuring was approved in December 2012, which included: (i) an extension of loan closing date by 12 months, from the original date of December 31, 2012 to December 31, 2013; (ii) reallocation of loan proceeds and increase of the disbursement percentage; and (iii) addition of a legal covenant to enable the Bank to monitor more efficiently the activities related to resettlement, until completion.⁹

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

Lessons Learned- Further to the Bank's extensive experience in the construction of expressways and roads in China, several lessons learned with regard to technical design were incorporated into the project, mainly including: (i) given that major variations occurred due to insufficient soil testing in a number of Bank-financed projects, supplemental geotechnical investigation were conducted prior to the detailed design stage, especially in the tunnel and bridge portions of the Youxiao Road; (ii) there was a move away from the use of concrete pavements in this project because of the problems caused by poorly prepared sub-base and the resulting premature cracking and degradation of the pavement, thus the project would use more flexible bitumen-based pavements for the Class III and IV roads (concrete would be used only on the access roads); and (iii) finally, experience showed that identifying project development objectives, physical components, and technical assistance that are within the control of the implementing entity to deliver helped to ensure the same were achieved. These lessons guided the project design and implementation.

Project Scope and Formulation- The project that the government proposed to the identification mission consisted of five components, the three described in this document, together with several arterial roads in and around the city as well as various freight transport terminals. During the early preparation missions it was agreed to drop the arterial roads, as an initial assessment found that, based upon existing conditions and traffic volumes, their proposed upgrading would not be needed within the next ten years. The freight terminals component consisted of the substantial upgrading of a container terminal and a freight terminal owned by two major state-owned transport enterprises (SOEs) and the construction of a maintenance material depot owned by Guiyang Municipal Communications Bureau (GMCB). As a condition of lending, the Bank

⁷ World Bank. June 9, 2010. *Restructuring Paper on a Proposed Project Restructuring of Guiyang Transport Project, Loan No. 4881-CHA, (March 18, 2008), to the People's Republic of China.*

⁸ World Bank. February 27, 2012. *Restructuring Paper on a Proposed Project Restructuring of Guiyang Transport Project, Loan No. 4881-CHA, (March 18, 2008), to the People's Republic of China.*

⁹ World Bank. December 10, 2012, *Restructuring Paper on a Proposed Project Restructuring of Guiyang Transport Project, Loan No. 4881-CHA, (March 18, 2008), to the People's Republic of China.*

proposed, and the government initially accepted, a restructuring scheme to be developed under the project that would provide for the separation of public infrastructure ownership from operation, allowing operations to be commercialized. During project preparation it was agreed that such privatization of the operation service provision was premature and could not be practically achieved during the expected life of the project, thus the component was dropped.

Alternatives Analysis for Youxiao Road- A comparative analysis of alternative alignments was carried out during the feasibility study stage. Eight potential alignment combinations for Youxiao Road, including full or partial use of existing roads, and the “no build” option were developed and studied to identify the most cost-effective alignment that met the functional objectives. The selected alignment was chosen after a final round of screening based on consideration of technical, environmental and social aspects (i.e., avoidance of environmentally sensitive areas, less social interference and resettlement, shorter length, less land occupation, and compatibility with local master planning).

Rural Road and Bus Terminal Selection- The Rural Transport Component, upon initial review, appeared that it could be effectively delivered through a programmatic approach. However, after examination, it was apparent that Guiyang’s rural transport agencies were not sufficiently robust to support such an approach. It was therefore decided to identify specific rural transport investments and work to develop the capacity of the agencies during project implementation. The rural road segments were selected from candidate segments identified in Guiyang’s rural road development program as requiring upgrading through a prioritization process using agreed criteria. These included likely impacts on poverty alleviation, social and economic benefits, and network connectivity considerations. The rural bus terminals were selected on similar criteria, but all were located in townships where they could do most to improve service delivery to the rural areas.

Potential Project Risks- At appraisal, the overall project risk was rated as modest. The main risks identified included: (i) lack of coordination capacity of the executing agency; (ii) inadequate government fiscal resources; (iii) project cost overrun and poor implementation management; and (iv) sustainability of the Youxiao Road and the rural transport component. Measures to mitigate these risks were proposed, including mainly: (i) enhancing project leadership and coordination; (ii) improving government debt management capacity; (iii) conducting sustainability reviews, in conjunction with Bank specialists, to ensure appropriate design and construction techniques were utilized (additional technical assistance on longer term maintenance management was not included); and (iv) ensuring compliance with the social and environmental safeguards through regular supervision.

Quality at Entry- The Bank’s Quality Assessment Group did not conduct a Quality at Entry Assessment (QAE) for this project. Based on the review of the project upon completion, project preparation and design can be considered only moderately unsatisfactory. The feasibility study was not sufficiently robust to accurately estimate project resource requirements, and the original capacity assessment of the implementation agency and owner were not sufficient to identify weaknesses that needed to be strengthened early in project implementation..

2.2 Implementation

Institutional Arrangements for Project Implementation- Guiyang Municipal Government (GMG) was the executing agency for the project. A Project Leading Group, led by a Vice Mayor and consisting of other municipal government representatives, was formed to lead and coordinate project implementation. A Guiyang Project Management Office (GPMO) was established to manage the project on a daily basis. For implementation of the Youxiao Road Component, a Youxiao Road General Supervising Engineer’s Office was established under the GMCB. Batch-I

of the Rural Transport Component was implemented by Tongyuan Company. Batch-II was directly implemented by the GPMO (see following paragraph). The GPMO took primary responsibility for implementing the Institutional Development Component, but some technical assistance (TA) was implemented by related government agencies.¹⁰

Change in Implementation Agency- As arranged at appraisal, Tongyuan Road Construction Development Co. Ltd. (Tongyuan Company) was the implementation agency for the Rural Transport Component. While reviewing the causes of the implementation delays of Batch-I of the Rural Transport Component (10 rural roads and 10 rural bus terminals) and institutional changes within the Tongyuan Company,¹¹ it was determined in March 2012 that the GPMO would replace Tongyuan Company to be responsible for implementing Batch-II of the Rural Transport Component (1 rural road and 6 rural bus terminals), while Tongyuan Company continued implementing and completing Batch-I. It was believed that, as a government agency, the GPMO would be more effective in working with local governments to expedite implementation and, as the main project counterpart, have more incentive to meet project deadlines. To reflect this institutional change, the Project Agreement and the Subsidiary Agreement between GMG and Tongyuan Company were amended accordingly. For fulfilling the new implementation responsibility, the GPMO was assigned experienced staff from GMCB.

Actual Project Outputs- During implementation, the project components remained the same as at appraisal, but the outputs for the Rural Road Component were substantially reduced. The following is a summary of the actual outputs. Details are in Annex 2.

- **Youxiao Road-** As anticipated, 7.04 kilometerskilometers of urban road from Youzhajie to Xiaozhai were constructed with a design speed of 60 kilometers per hour. During implementation, adequate quality control was in place to ensure the designed specifications were met. From 2008 on, a local road quality inspection station monitored construction quality.¹² In March 2010, a final inspection was conducted and concluded that the construction quality of the Youxiao Road was satisfactory and met all quality requirements with no serious defaults found. During the defect liability period (2 years), no unexpected or premature deterioration was reported.
- **Rural Roads and Bus Terminals-** Eleven segments of rural roads with a total length of 270 kilometers were constructed or rehabilitated, including 180 kilometers of main roads as Class III or Class IV and 90 kilometers of access roads (less than Class IV). In addition, 15 rural bus terminals and one freight depot were constructed. After completion of each project road, quality inspection was carried out jointly by the GPMO, the implementation agency, the supervision consultant, and the local quality inspection agency. Memorandums were prepared for the quality inspection, which were used as the project acceptance document.
- **Capacity Building Programs-** Three technical assistance programs were implemented

¹⁰ The TA on Government Debt Management System was implemented by Guiyang Municipal Financial Bureau; The TA on Rural Road Maintenance Management Information System was implemented by Guiyang Municipal Road Division.

¹¹ In 2010, Tongyuan Company's holding status was changed from Guiyang State Assets Management Commission to the newly established stated-owned enterprise - Guiyang Transport and Development Investment Group (GTDIG).

¹² Transport Construction Engineering Quality Inspection Station of Guiyang Municipality.

successfully including: (i) a traffic survey, which was overseen by the GPMD;¹³ (ii) a rural roads maintenance management information system; and (iii) government debt management.¹⁴ In addition, four overseas study tours as well as 11 domestic training and study tours were organized. All of the capacity building programs achieved their anticipated objectives. A list of the training programs and study tours can be found in Annex 3.

Project Cost and Financing- According to the Feasibility Study Report prepared by the counterparts prior to Appraisal, the total project cost would be USD314.42 million, including USD100 million from the World Bank loan (31.8 percent) and USD214.42 million from the government (68.2 percent). During implementation, when more detailed engineering designs were prepared, cost estimates for Youxiao Road were revised upwards, due largely to additional land acquisition costs. The project was restructured to accommodate these additional costs, with a larger portion of the loan funding the Youxiao Road component than the rural roads component.

Upon completion, the actual cost was RMB2.199 billion (USD 360.7 million equivalent at the exchange rate of USD1.00 = RMB6.1).¹⁵ The final cost in RMB was about 10 percent lower than was estimated at appraisal, but about 15 percent higher in terms of USD.¹⁶ Among the project costs (in USD), the cost for the Youxiao Road increased by 80 percent; the cost for the Rural Road Component decreased by 26 percent; and the cost for the Institutional Development Component decreased by 11 percent. The financial charges decreased by 98 percent due to lower LIBOR interest rates during implementation. As a result, the project financing was also revised to be 27.7 percent from the World Bank loan and 72.3 percent from the government. Details of the project cost comparison and project financing can be found in Annex 4.

Loan Proceed Reallocations- To meet the actual project financing requirements and requests from the government, the loan proceeds were reallocated three times.

The reallocations are summarized as follows, while the full reallocated amounts and actual disbursements can be found in Annex 3.

- **The first loan reallocation-** In June 2010, it was found that the construction costs of the Youxiao Road exceeded the original estimated costs due to the escalation of market prices, depreciation of the US dollar, and work variations. The GMG approved and processed an increase of counterpart funds to cover the financing gap. Meanwhile, the GMG requested to reallocate the saved loan proceeds, which were originally allocated under the categories of Goods and Consultants' Services and Interest during Construction.. As a result, the loan allocation to the Youxiao Road Component was increased from USD39.4 million to USD50.8 million. A loan amendment was made

¹³ The traffic survey collected traffic data of the core urban area, which was used to develop the traffic demand model funded by the Agence Française de Développement (French Development Agency).

¹⁴ For TA on Government Debt Management, the World Bank also provided a grant of US\$100,000 to support the implementation.

¹⁵ The original project cost was in RMB. While converting the RMB cost to USD, the loan amount in USD was directly used; the government funds in RMB were converted to USD using the exchange rate at loan closing on December 31, 2013 (US\$ 1.00 = RMB6.0969).

¹⁶ During implementation the US\$ depreciated compared to the RMB by about 20%.

accordingly in June 2010.¹⁷

- The second loan reallocation- Due to the changes in scope of the Rural Transport Component, the loan proceeds were reallocated again in early 2012 at the government's request. The loan allocation for the Rural Transport Component was increased by USD1.5 million, which was covered by savings from consulting services and interest. A loan amendment was made accordingly in March 2012.¹⁸
- The third loan reallocation- The last loan reallocation was made in accordance with the third project restructuring in December 2012, which reallocated a small amount of the loan savings from lower interest (USD33,758) to the Institutional Development Component. In the meantime, the disbursement percentage for the Rural Transport Component was increased from 60 percent to 100 percent. The last loan reallocation was reflected in the loan amendment in December 2012.¹⁹

Implementation Schedule- Youxiao Road was implemented ahead of schedule, while implementation of the Rural Transport Component was substantially delayed.

- Youxiao Road- The construction of the Youxiao Road was officially launched on July 18, 2008. The entire Youxiao Road was substantially completed and opened to traffic on February 5, 2010. The total construction period was 18 months, only half of the planned 36 months.
- Rural Transport- On the other hand, implementation of the Rural Transport Component was delayed. As arranged at appraisal, it was carried out in several batches. Batch-I of 10 rural roads and 10 bus terminals were selected during appraisal. Advance contracting was applied to Batch-I. The contract for the 10 bus terminals was awarded in October 2008 and the contracts for the rural roads were awarded in April 2009. However, the Bank's mission in September 2009 found that about half of the rural roads and bus terminals were behind schedule, mainly due to unresolved resettlement issues. The Bank mission asked the GPMO and Tongyuan Company to work jointly and coordinate with the relevant municipal and local county governments to resolve the pending issues. Nevertheless, implementation of the Rural Transport Component remained slow and faced many challenges such as problems with land acquisition, poor project management, ineffective institutional coordination, and increased costs. With joint efforts by the municipal government, the GPMO, the implementation agency and the Bank's task team, the problems were gradually resolved. But only one road was completed before October 2010. To facilitate the project's implementation, the World Bank approved an extension of the loan closing date by one year to December 31, 2013. Eventually, six roads were completed before December 2012, and the remaining roads were completed by October 2013. Most of the rural bus terminals were completed before December 2012 except for two terminals completed in 2013. Starting from November 2011, the project's implementation progress was rated *moderately satisfactory* in the Bank's Implementation Status and Results reports (ISR).

¹⁷ World Bank: Letter to MOF, June 21, 2010. *China: Guiyang Transport Project (Loan No. 4881-CHA) – Reallocation of Loan Proceeds*. World Bank Office, Beijing

¹⁸ World Bank: Letter to MOF, March 5, 2012. *China: Guiyang Transport Project (Loan No. 4881-CHA) – Amendment to Loan Proceeds*. World Bank Office, Beijing

¹⁹ World Bank: Letter to MOF, December 10, 2012. *China: Guiyang Transport Project (Loan No. 4881-CHA) – Amendment to the Loan Agreement*. World Bank Office, Beijing

- **Institutional Development-** The TA and the training under the project were implemented efficiently and effectively. The traffic survey started in December 2007 and was completed in July 2008; the TA on government debt management started in April 2009 and was completed in May 2011; and the TA on rural road maintenance MIS started in November 2010 and was completed in October 2012. The domestic training and study tours were implemented between 2009 and 2012 and the overseas training was conducted from 2012–2013.

2.3 Monitoring and Evaluation Design, Implementation and Utilization

PDO Indicator Monitoring- At appraisal, a results framework was designed and a set of indicators were selected to track the final and intermediate project outcomes. During implementation, the GPMO monitored and analyzed the indicators. Institutional strengthening initiatives related to establishing more sustainable mechanisms for rural road maintenance and enhancing capacity for managing municipal debt included a number of TAs as well as targeted trainings, domestic knowledge exchanges, and overseas study tours. Data on the highway and roads were collected and summaries related to implementation of the institutional capacity building initiatives were reported every quarter. The monitoring results were processed and the analysis results were incorporated in the semi-annual project progress reports. Due to the changes in the scope of the Rural Transport Component, related indicator targets were also revised.

Social Safeguard Monitoring- During implementation, the social safeguards were monitored and evaluated according to the Resettlement Action Plan (RAP) and Indigenous Peoples Development Plan (IPDP) developed at appraisal. Internal monitoring was carried out by the GPMO and the monitoring results were incorporated in the semi-annual project progress reports. In the meantime, external monitoring was conducted by an independent consulting entity engaged under the project. Altogether, six external social monitoring reports were submitted to the World Bank in a timely manner during implementation and the final monitoring report was submitted to the World Bank in April 2014. The monitoring reports recorded all resettlement activities of the Youxiao Road and the Rural Transport Components. The Bank task team reviewed the external monitoring and evaluation reports, which were generally found to be of high quality, and provided comments on social safeguard compliance as well as enhancement of the monitoring. The task team requested the local government staff to read the reports and to improve their resettlement work accordingly.

Environmental Impact Monitoring- According to the Environment Management Plan (EMP), a complete institutional framework was established to monitor the environmental impacts of the project and resolve any environmental problem that occurred. The contracts with the civil works contractors included the items related to environmental protection as well as soil and water conservation. The supervision engineers and local environmental protection agency checked, on a daily basis, the requirements related to environmental protection, including criteria for water protection. The project implementation agencies visited the project site regularly and supervised compliance with the environment plans. If any issue related to non-compliance was identified, actions to resolve or mitigate the problem were determined and implemented. The status of implementing the environment management plan was described in the semi-annual project progress reports. A summary of the environmental monitoring and evaluation report was submitted to the World Bank after the Project was fully completed. The Bank’s task team checked on the environmental compliance by fielding missions and reviewing monitoring reports. No significant environmental damage was observed.

2.4 Safeguard and Fiduciary Compliance

Rating: Satisfactory

Social Safeguards- At appraisal, a social assessment was conducted and an IPDP was developed, which primarily focused on ensuring that the minority communities enjoyed sufficient opportunities to benefit from the project and that the project was designed in a culturally appropriate manner. As adverse impacts of the project primarily were associated with land acquisition, mitigation measures were provided in the resettlement action plan (RAP). During implementation, the GPMO took primary responsibility for implementing the plan. The resettlement agencies established at district/county levels were responsible for the resettlement activities within their boundaries. During the Project Launch mission in July 2008, the Bank mission found that compensation rates for the Youxiao Road resettlement were lower than those specified in the RAP. This issue was quickly remedied, and in October 2008, the Bank found that compensation rates for Youxiao Road were higher than was required in the RAP..

Subsequent Bank missions found that the resettlement progress for both Youxiao Road and the Rural Road Component were behind schedule. All 142 households displaced due to construction of Youxiao Road signed contracts for resettlement and/or compensation only by September 2013, just 3 months prior to project close. Full resettlement will not be completed until December 2014. Also, land acquisition and resettlement activities for the Rural Transport Component, specifically on Xiaohegou–Shuikou Road and Weicheng–Liuji Road, were completed only one month before closing.

Monitoring of remaining safeguards activities will take place in parallel with the Guiyang Rural Roads Project (approved by the Board in March 2014) supervision activities.

Environmental Safeguards- The project was classified as Category A due to its potential environmental and social impacts during construction and operation. An environmental assessment was conducted in accordance with requirement of the Bank’s OP4.01 and with guidance from the Bank’s task team. Accordingly, reports on the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) were prepared. During implementation, measures specified in the EMP were incorporated into the civil works bidding documents; an environmental specialist was engaged in the supervision consulting team; and all county PMOs and contractors were familiarized with the project’s EIA and the EMP through training and distribution of related documents. Environmental compliance focused on air pollution during construction, wastewater discharge, noise generated by construction, waste construction materials, contractors camps, and temporary land recovery. During implementation, it was found that some construction waste materials were displaced and some slopes were damaged by landslides. For such problems, warning was given to the related contractors and quick actions were taken. For mitigating noise of vehicles on the Youxiao Road, 3,400 m of sound protection barriers were installed along the populated sections. Overall, project implementation complied with all the government’s environment laws and the Bank’s requirements.

Financial Management- The financial management assessment at appraisal concluded that the project met minimum World Bank financial management requirements, as stipulated in BP/OP 10.02. The financial management risk was rated modest. During implementation, the GPMO’s financial staff worked closely with the provincial and municipal financial agencies. Commercial accounting software packages were used by the GPMO and the implementation agencies. All the financial records including financial statements, ledgers, contracts, supporting documents and withdrawal applications were systematically maintained by the GPMO and district/county PIUs. During the Bank’s mission in March 2009, its financial specialist reviewed the financial

management of the project and concluded that the project continued to have an adequate project financial management system that could provide, with reasonable assurance, accurate and timely information to attest that the Bank's loan proceeds were being used for the intended purposes. However, the Bank mission in November 2009 found that the significant cost overruns for the Youxiao Road, comprising resettlement cost, pipeline reallocation, change orders, and depreciation of the USD compared to the RMB. The mission requested the GPMO to coordinate with all related implementing agencies to compile adequate documents to justify the cost overrun, and the municipal and provincial Development and Reform Commissions were recommended to conduct their review in an efficient manner. During implementation, the project financial accounts were audited by an external financial audit entity and five financial audit reports (2008–2012) with auditor's opinions were submitted to the World Bank in a timely manner, which were reviewed and found acceptable to the World Bank. The audit reports included qualified opinions – that is, the financial statements, in the opinion of the auditor, presented fairly the financial position of the project, its financial receipts and disbursements, the project implementation, and the requirements of the project loan agreement.

During the Bank's ICR mission in 2014, the last financial audit for 2013 was still ongoing. The Borrower, through the GPMO, also complied with the legal covenant to submit the semi-annual Interim Unaudited Financial Reports to the World Bank in a timely manner.

Procurement and Contract Management- Procurement was carried out in accordance with the World Bank's "*Guidelines: Procurement under IBRD Loans and IDA Credits*" dated May 2004, and "*Guidelines: Selection and Employment of Consultants by World Bank Borrowers*" dated May 2004. At appraisal, the procurement capacity of the implementation agency was assessed and a procurement plan was established. As arranged, the procurement was facilitated separately by the Youxiao Road General Supervising Engineer's Office for the Youxiao Road Component, by Tongyuan Company for the Batch-I of the Rural Transport Component, and by the GPMO for the Institutional Development Component and the Batch-II of the Rural Transport Component. The Bank procurement staff reviewed all procurement documents and provided substantial advice to guide and assist the procurement activities. Due to unforeseen geological conditions and variations in the design, contract change orders were needed. The GPMO established internal approval and processing procedures to handle the variations. The Youxiao Road General Supervising Engineer's Office prepared the "Youxiao Road Variations Management Rules" based on the Order No.5 of 2005, addressing variation management as issued by the Ministry of Transport. The Bank task team reviewed the document and found it to be generally acceptable. During the review of procurement documents for the first rural bus terminal, it was apparent that the method of cost estimation needed improvement, as the final contract price was about 30 percent above the original cost estimate. Although the GPMO provided the World Bank with justification for the price increase and this was accepted by the Bank, the cause for such a low cost estimate was analyzed and avoided in future contracts. Due to changes in the project scope, the procurement plan was updated several times. Upon project completion, 27 contracts were procured and implemented, including 11 for the Youxiao Road Component, 10 for the Rural Transport Component, and six for the Institutional Development Component. A summary of the project contracts may be found in Annex 5.

Monitoring and Reporting- As a project covenant, it was required that the Borrower should monitor and evaluate the progress of the project and prepare project reports in accordance with the Loan Agreement and on the basis of the indicators set forth in the Project Agreement. The Borrower required the project implementing entity to prepare and furnish to the Bank, as part of the Project Report, interim unaudited financial reports for the project covering the semester, in form and substance satisfactory to the Bank. During implementation, the Borrower provided

adequate monitoring and evaluations of the project progress. The GPMO prepared and submitted to the World Bank all the reports required in the project legal documents, including semi-annual project progress reports, semi-annual interim unaudited financial reports, annual financial audit reports, as well as social and environmental monitoring reports (except those mentioned earlier, which are pending post project-close, such as the final financial audit). Upon completion, the GPMO prepared and submitted the Borrower's Project Implementation Completion and Results Report to the World Bank, which was found to be satisfactory.

In terms of lessons learned, in future rural road projects, project teams may consider including indicators that highlight the accessibility benefits more prominently. For example, the key benefit of the Youxiao Road component was the increased accessibility it provided to an underdeveloped part of Guiyang. However, the indicators only show changes in traffic volumes and travel times, which do not reflect this positive outcome.

2.5 Post-Completion Operation/Next Phase

Youxiao Road- The Youxiao Road was substantially completed and opened to public traffic in February 2010. The Youxiao Road was officially handed over to the Guiyang Municipal Urban Administration Bureau (GMUAB) for operation on April 20, 2010.

Within the GMUAB there is a Road and Bridge Administration Division, which is responsible for operating and maintaining all urban roads in core areas of Guiyang, including the Youxiao Road. This division has about 70–80 staff who mainly perform technical administration. The cleaning and greening are the responsibility of other divisions. Large-scale maintenance activities are implemented through outsourcing in accordance with government regulations. All budgets for operation and maintenance are from the municipal fiscal expenditures, including that for routine and periodic maintenance. The average budget is about RMB 6 million per year for routine maintenance (excluding staff cost), though the need is estimated to be more than ten-fold higher. Based on local experience, the cost for periodic maintenance (re-pavement) is expected to be approximately RMB5 million per kilometer if scheduled on a regular basis and executed accordingly. The traffic monitoring and safety management is the responsibility of the traffic police. According to the traffic counts provided by the GPMO, the daily traffic on the Youxiao Road increased from 36,400 PCU in 2010 to 39,200 PCU in 2013. Most of the traffic was small passenger cars going to and from the airport. However, the fire protection equipment within the tunnel along the Youxiao Road was not yet handed over to the GMUAB at project closure due to some damage and loss functionality of certain facilities. The GPCB and GMUAB in close cooperation with the suppliers are working to resolve all deficiencies to achieve full functionality and hand over as quickly as possible.

Rural Roads- Development of rural roads in Guiyang is administrated by the GPCB. Under it, the Guiyang Municipal Road Division (GMRD) is responsible for administration and maintenance of the rural roads network. At district/county level, there are road maintenance sections for daily maintenance of the rural roads in their administrative areas. The budget for rural road maintenance is drawn mainly from provincial and municipal fiscal expenditures at the quota of RMB7,000 per kilometer for county roads, RMB3,500 per kilometer for township roads, and RMB1,000 per kilometer for village roads. The district/county governments also provide some funds for maintaining the rural roads. Large-scale maintenance activities, like rehabilitation and repair of flood damage, are planned by the GMRD and financed by the municipal government. To improve the rural road maintenance, a GIS-based rural road maintenance MIS was developed under the project. A planned World Bank-financed project in Guiyang will also undertake an in-depth analysis of the rural maintenance, including enhancing and utilization of the rural road

maintenance MIS.²⁰ However, the Bank's ICR mission observed that (i) maintenance of some project roads had still not been transferred to the district/county transport bureau, which caused some neglect of maintenance; (ii) some roads were not well managed, with dumped waste materials and damage from other construction activities; and (iii) some roads sections were damaged by overloaded trucks.

Rural Bus and Freight Terminals- In total there are 39 township bus terminals in Guiyang Municipality, including the 16 terminals constructed under the project. The bus terminals are administered by county communication bureaus. The municipal government has a regulation that all the passenger and freight terminals funded by the governments should be operated by government entities. Currently, the operation and maintenance of the bus terminals and freight depots are mostly delegated to the township governments without any budget allocation. Due to the slow implementation of rural bus service plan, poor selection of locations, and over-optimistic passenger forecasts, most of the bus terminals and freight depots are not well operated and maintained. The Bank's ICR mission noticed that some of the bus terminals had been used for other purposes, such as government offices or rented out for restaurants. The GMCB is now working on an operational arrangement plan bringing together relevant government regulations, budget allocations, revenue generation, service, and safety.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

The project's PDO was linked directly to the themes stated in the FY2006-FY2010 CPS for China and continues to be so, including (i) promoting more inclusive development and (ii) advancing mutually beneficial development.²¹ The PDO was also consistent with China's development priorities at the time of appraisal, and remains relevant at the time of project completion. The design and implementation of the project components, including infrastructure and institutional development components, have ensured successful and effective achievement of the PDO. Due to changes in the scope of the Rural Transport Component and the project requirements, the project had three restructurings during implementation, which included adjustments of the PDO targets and institutional re-arrangement of project implementation. At completion, all project components remained essential to meet the overall development objectives of China, the Bank, and the project. The design and implementation of the project also complied with the Bank's prevailing social and environmental safeguard policies and fiduciary requirements.

3.2 Achievement of Project Development Objectives

The project outputs and outcomes as well as the monitoring results show that the PDO anticipated at appraisal was effectively achieved. That said, the outcome indicator targets did have to be revised mid-project, to meet design changes resulting from restructuring, and their achievement were delayed by one year.

²⁰ The World Bank, PAD on a Proposed Loan in the Amount of USD 150 million to the People's Republic of China for a Guiyang Rural Road Transport Project (P129401)

²¹ The World Bank. October 2012. *Country Partnership Strategy for the People's Republic of China for the Period of FY2013-FY2016*. Report No. 67566-CN.

Improved Accessibility and Mobility- Upon completion, 7.04 kilometers of the Youxiao Road was constructed and opened to traffic in 2010, connecting the core area of Guiyang city with the airport and the less developed communities at Longdongbao. Since commencement of service, the Youxiao Road has served as the main road link to the airport due to its shorter distance, reduced travel time, better road condition, and absence of tolls. It has diverted most of the traffic from the original airport expressway and the parallel local road (G321). In 2013, the average daily traffic reached about 39,200 PCU, which served at least 60,000 people per day. In comparison to the airport expressway, the average traveling time was seven minutes on the Youxiao Road or about two minutes less than on the original expressway. Travel time savings do not necessarily reflect the Project's overarching benefit -- the opening of the Youxiao Road has completely changed the traffic flows in the Longdongbao area and substantially improved the accessibility and mobility of Guiyang.

Under the project, 11 segments of rural roads totaling 270 kilometers were constructed or rehabilitated, and 16 rural bus terminals were constructed. In comparison to conditions before the project, these rural roads and bus terminals have radically improved the transport conditions in the project area. Before the project, the rural roads were mainly earthen (which oftentimes turned to mud) or gravel-paved road with poor transport conditions and subject to closure or un-drivable conditions resulting in disconnection with other infrastructure and social services during the rainy season. All of the project rural roads are now asphalt-paved, which provided all-weather access to the rural people. On the project roads, vehicle may travel at an average of 50 kilometers per hour, compared to 20 kilometers per hour before the project. Compared to conditions before the project, the new bus terminals now provide improved transport services in the rural areas and public transport system users. The result is safer, more efficient (in terms of fiscal and technical provisions demands due to improved road quality and maintenance methodologies), improved comfort, and more reliable services to access a variety of social and economic activities and public services for rural people. These roads connect 67 administrative villages and the bus terminals serve 118 administrative villages in the rural areas of Guiyang, which directly benefit more than 200,000 rural people, including more than 50,000 people of ethnic minorities.

Strengthened Institutional Capacity for Rural Road Development and Maintenance- The capacity development programs under the project significantly strengthened government debt management in Guiyang and effectively improved the institutional capacity for rural road development and maintenance. The TA on government debt management system has established a basis for enhancing the government debt planning and management in Guiyang by addressing project implementation capacity development, enhanced coordination with local governments, and application of a new financial management scheme for the counterpart funds from district/county governments.

The Rural Road Maintenance MIS system has provided substantial data, a set of methodologies, and a GIS-based computer system for rural road maintenance planning. The new system uses a weighted approach to measure six indicators, including the road administration level, road condition, traffic, impacted population, social service, and policy considerations. The approach allows the level of maintenance required on each road segment to be quantitatively prioritized and assess the overall impacts of a proposed maintenance plan. While this approach is significantly more holistic and systematic compared to its predecessor there will likely be enhancements identified during the next few years; therefore, the MIS may be improved and expanded during the next World Bank-financed project in the municipality.

During implementation, the GPMO completed all training and study tour activities, which have brought substantial experience and knowledge in urban and rural road development and maintenance.

3.3 Efficiency

For reassessing the project's efficiency, an economic reevaluation was conducted by the World Bank ICR task team. A traffic analysis was carried out by using the actual traffic counts provided by the GPMO and comparing them with appraisal forecasts. The traffic forecast for future years was revised accordingly. The economic reevaluation assumed that the vehicles on the project roads (Youxiao Road and the project rural roads) could drive at faster speeds with lower vehicle operating costs (VOC) and less travel time. Economic benefits were calculated by comparing the "with-project" and "without-project" cases. Consequently, the economic internal rate of return (EIRR) was calculated for the whole project, as well as for Youxiao Road and the rural roads separately. The economic internal rate of return (EIRR) was recalculated at 16 percent for the whole project (16.3 percent for the Youxiao Road and 14.1 percent for the rural roads). The EIRR for Youxiao Road was slightly higher than that at appraisal (15.9 percent), which was due to higher traffic volumes partly offset by the higher capital cost. The EIRR for the rural roads was lower than that at appraisal (18.3 percent), which was mainly caused by higher capital cost and lower traffic volumes. However, the EIRRs for the whole project as well as for each component were higher than the World Bank recommended discount rate. Therefore, the project was still considered to be economically viable.

The EIRRs were subjected to sensitivity analysis to test different scenarios of the costs and benefits. Analysis showed that the project continues to be economically viable for all scenarios within a probable range. If a 20 percent maintenance cost increase were to be combined with a 20 percent benefit reduction, the EIRR would be 12.3 percent for the whole project. The sensitivity analysis also showed that the EIRR is more sensitive to changes in benefits.

Therefore, the governments should maintain the roads in good condition for attracting and facilitating more traffic. Details of the economic reevaluation are presented in Annex 8.

3.4 Justification of Overall Outcome Rating

Rating: Moderately Satisfactory

On the basis of the above discussion on the project's relevance, effectiveness, and efficiency, the overall project rating is moderately satisfactory.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

The rural roads and bus terminals implemented through the project are located in areas serving a large low-income population and minority groups. The road segments were selected from candidate segments identified as requiring upgrading in Guiyang's rural road development program, through a prioritization process using agreed criteria. These included likely impacts on poverty alleviation, social and economic benefits, and network connectivity considerations. The rural bus terminals were selected on similar criteria, but all had to be located in townships to improve service delivery to rural areas. The social assessments were carried out at appraisal,

providing an opportunity for screening the demands of social and economic growth requested by rural communities and also for prioritizing needs identified in the course of rural development planning. In conjunction with this process a Minority Ethnic Development Plan was established.

However, no systemic social impact monitoring programs were designed and implemented under the project, which might have resulted in better information collection on the details of social impacts as anticipated at appraisal, like rural economic development, poverty reduction, minority ethnic development, increased income and rural females' social class, education development, and working opportunities provided by the project implementation.

(b) Institutional Change/Strengthening

Implementation of Rural Transport Projects- The Rural Transport Component under the project was implemented in two batches. The Batch-I was implemented by Tongyuan Company. Considering the implementation delays and the capacity of Tongyuan Company, Batch-II was directly implemented by the GPMO. To mitigate the continuation of potential problems associated with Batch-I, the GPMO strengthened its project implementation capacity, enhanced coordination with local governments, and also applied a new financial management scheme for the counterpart funds from district/county governments. That is, the district and county government were required to transfer all the needed counterpart funds to the GPMO before the civil works started. The practice demonstrated that such an institutional change was effective and efficient to ensure the rural roads were implemented in a timely manner. Considering the measures were successful, this institutional arrangement should be used for subsequent World Bank-supported rural roads project in Guiyang.

Institutional Capacity for Rural Road Maintenance- The Rural Road Maintenance MIS intended not only to develop a computer-based information system, but also tried to strengthen rural road maintenance planning and management. In the MIS, six indicators were selected to measure the level of maintenance required on each road segment, which included the road administration level, road condition, traffic, impacted population, social service, and policy considerations. A weighted average was calculated based on the weight and score for each indicator. Such an indicator can be used to quantitatively prioritize the proposed maintenance projects and assess the overall impacts of the maintenance plan. This approach will change the way of planning maintenance by considering multiple factors while making the plan systematic. The system will require further investment to achieve its full potential – for example, built-in analytical tools for prioritizing maintenance needs.

(c) Other Unintended Outcomes and Impacts

Not applicable

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

At appraisal, public consultations were conducted during both the RAP and IPDP preparation in accordance with the World Bank guidelines. Local government agencies arranged consultations, coordinated survey-related activities, organized village and community meetings, and disseminated project information to the local people. The social assessment report, draft RAP and draft IPDP were placed in local municipal libraries in December 2006, and their public availability was announced in advertisements placed in local newspapers. The public consultations and information disclosure were detailed in the RAP.

For the EIA and EMP, two rounds of public consultation were carried out in accordance with the World Bank's guidelines. The first round of consultation was held in March-April 2006, by means of household visits, public meetings and questionnaire surveys, with total of 193 community members participating. The second round of consultation was conducted in October 2006, during which responses on previous public opinion were presented. About 100 participants were involved, including local people who would be affected directly by the project, forest park management, and local government officials. The main concerns from the public included land acquisition and compensation, ecological restoration, water intake impact, and noise.. These valuable findings were summarized, commented on in the EIA reports, and were incorporated into the EMP.

4. Assessment of Risk to Development Outcome

Rating: **Moderate**

Youxiao Road- Since opening to traffic, the Youxiao Road has served as the main gateway to Guiyang City. The traffic increased steadily and reached about 39,200 PCU per day in 2013, taking about 53 percent of the total corridor traffic. In the period of 2006–2012, the average GDP growth rate of Guiyang Municipality was about 15 percent per year. Such a development trend is likely to be kept for the near future, which will lead to high traffic volumes on the Youxiao Road. The opening of the Youxiao Road has effectively stimulated an expedited development trajectory in the Longdongbao area, where a large number of investment projects are ongoing. For example, the biggest hospital of Guiyang has also moved to this area. Adequate road maintenance is in place to keep the road in good condition. The risk to the development outcome is Negligible.

Rural Roads- The construction and rehabilitation of the rural roads under the project resulted in improvement to transport conditions in the project areas. The Bank's ICR mission noticed that socio-economic development was visibly improving. By taking advantage of the improved transport infrastructure, agriculture, especially fruit production, began expanding rapidly, with an increase of at least 10 percent in 2013 (in Xiuwen County). Also many large trucks were using the project roads for transporting mineral products. The average daily traffic on the project roads increased from 210 PCU in 2012 to 270 PCU in 2013, a growth of about 24 percent. Unfortunately, many overloaded trucks appeared to be using the project roads, which could damage the pavement and lead to accidents. The governments need to strengthen enforcement of traffic laws and implement measures to control overloaded trucks on rural roads. In general, the risk to keeping the rural roads maintained and achieving their development outcome is Moderate, given funding constraints for maintenance and monitoring mentioned earlier.

Rural Bus Terminals- Most of the bus terminals in the rural areas are not well operated and maintained, including those constructed with project financing. The main reasons were low traffic, inappropriate location, weak administration, and incomplete regulations. It is likely that use of the bus terminals and freight depots will improve along with the development of small towns and rural transport in Guiyang. In the meantime, the governments at both municipal and county levels need to develop a proper strategy and policy, apply adequate regulation and management, and provide sufficient support to the operation and maintenance of these bus terminals. In accordance with the current situation, the risk of achieving development outcomes is Moderate.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: **Moderately Unsatisfactory**

This was the first World Bank-financed road project in Guiyang. Experience and lessons from preparing and implementing similar projects were reasonably considered and incorporated in the project design and formulation. A strong task team was formed, together with assembled experts from different fields. During preparation, the Bank's task team provided training on fiduciary arrangements, procurement procedures, environmental and social safeguards, as well as technical considerations.

The team's appraisal activities included: (i) assessing the status of urban and rural transport in Guiyang; (ii) analyzing sub-project alternatives; (iii) identifying safeguard policies and measures for minimizing impacts to local residents and the environment; and (iv) identifying opportunities for institutional strengthening, including debt management and maintenance monitoring.

The team did not, however, successfully conduct a thorough due diligence of the feasibility study report for the Youxiao Road project component, which substantially underestimated the resource requirements and potential exchange rate impacts, leading to a necessary project restructuring during implementation. Further, the team did not identify weaknesses in institutional capacity to manage the proposed construction activities, leading to a need to revise the institutional arrangements during implementation.

(b) Quality of Supervision

Rating: **Satisfactory**

For closely supervising and managing the project, a strong task team was maintained throughout the project's implementation. The task team closely supervised and monitored the progress of implementation and in a timely manner identified the hindrance to implementation or potential departure from the development objectives through the following three mechanisms: (i) conducting supervision missions biannually and many small missions to the field; (ii) reviewing the semi-annual project progress reports, annual audit financial reports, and external monitoring reports on safeguards; and (iii) monitoring the PDO result indicators provided annually. For assisting the Institutional Development Component, two-short term consultants were recruited to guide and coordinate implementation of the TA and training programs. (The Bank's missions and task team members are listed in Annex 5.) To facilitate implementation, the Bank agreed three times to requests from the Government to restructure the project and reallocate the loan proceeds, which were based on in-depth analysis and thorough discussion. The midterm reviews were conducted in three missions. The quality of the Bank's supervision is rated Satisfactory.

(c) Justification of Rating for Overall Bank Performance

Rating: **Moderately Satisfactory**

While the Bank team performance during supervision was satisfactory, failure to identify risks during preparation associated with the feasibility study report resource estimates and institutional arrangements results in only a Moderately Satisfactory rating overall.

5.2 Borrower Performance

(a) Government Performance

Rating: **Satisfactory**

For preparation and implementation of the project, the governments at both the provincial and municipal levels established an adequate organizational arrangement. During implementation, the provincial government provided adequate and timely support, including reviewing and approving design documents, managing the designated account for the Bank loan, assisting overseas study tours, as well as coordinating with the World Bank and the central government. The municipal government provided close guidance and monitoring of the project's progress and ensured the availability and adjustment of the counterpart funds. The related municipal government agencies, including the Municipal Development and Reform Commission, the Municipal Financial Bureaus, and the Municipal Communication Bureau, were deeply involved in project implementation. However, some counterpart funds from the municipal and district/county governments were not provided in a timely manner and some resettlement activities were delayed. Since the counterpart was able to quickly and effectively work with the Bank team to remedy funding and delay issues as they arose, the overall performance of the government was Satisfactory.

(b) Implementing Agency or Agencies Performance

Rating: **Moderately Satisfactory**

The Youxiao Road was implemented by the GMCB and completed within 18 months, only half of the time anticipated. However, there were some delays in payment of the contractors, as well as with completion of the resettlement activities.

Implementation of Batch-I of the Rural Road Component experienced many construction and resettlement delays. After restructuring, the GMPO, rather than the Tongyuan Company, directly implemented Batch-II of the Rural Transport Component, which resulted in more timely implementation.

The Institutional Development component was implemented by the GPMO with technical assistance from related government agencies. All TAs and training programs were completed as anticipated.

As required, the GPMO prepared all the progress reports, which were submitted to the World Bank on time. Project procurement and contract management experienced no major issues during implementation. The financial account for the project was audited by external auditors and the audit reports revealed no serious financial problems. The GPMO facilitated all Banks missions with adequate assistance.

Although the GPMO performed well on the Youxiao Road and Batch II construction activities, because of construction, contractor payment, and resettlement delays, the overall implementing agencies' performance has been rated as Moderately Satisfactory.

(c) Justification of Rating for Overall Borrower Performance

Rating: **Satisfactory**

For preparing and implementing the project, the Borrower and related government agencies established a completed organizational framework and provided adequate administrative and financial support. With the joint efforts of the governments and the implementing agencies, the project was successfully implemented with reasonable quality. Although a few indicators were revised and there were notable challenges with the Rural Road Component, the PDO anticipated at appraisal was effectively achieved by increasing access to and mobility along Youxiao Road as well as through activities aimed at building the capacity of the institutions responsible for road development and a more systematic and strategic approach to road maintenance (though, it may be too soon to pass a final judgment). The experience gained from implementation of this project may be disseminated to other similar projects in Guiyang. The overall performance of the Borrower was Satisfactory.

6. Lessons Learnt

PDO Design and Monitoring- The PDO indicators could have been designed more effectively. Specifically, two outcome indicators (traffic and travel times on the parallel roads) were not directly linked with the project and were affected by many factors not related to the project. Some target values were not consistent (by percentage and by absolute value). In general, the improvement of accessibility and mobility should be measured by corridor traffic and travel time. At appraisal, the PDO monitoring was not well arranged. During implementation, the GPMO monitored the indicators inconsistently with some initial delays: different approaches were used (variability in sampling method) from one report to another and traffic counts were not collected and processed professionally. In addition, there was no monitoring program for the social impacts, which may measure the project influence to the rural population, especially the poor and the vulnerable groups. In the future rural roads, projects teams need to have more systematic poverty impact assessment.

Financial Capacity and Counterpart Fund Management- Approval and provision of additional funding for the project after restructuring took time, which contributed to implementation delays. In future projects, the fiscal capacity of the governments should be well assessed.

To avoid the counterpart funding problems, implementation of Batch-II of the Rural Transport Component applied an adjusted financial management scheme, with the GPMO directly responsible for implementation, which proved to be effective and should be used in subsequent World Bank-financed rural road projects in Guiyang.

Project Preparation- Some of the fiscal challenges previously discussed can be ultimately traced back to project preparation. Issues not identified until the detailed design or construction phases resulted in variations that caused implementation delays and subsequent cost overruns associated with (i) material cost escalations (both raw and manufactured, as well as transport of materials), (ii) changes in land acquisition and resettlement planning, as well as (iii) alterations in implementation periods or input (manpower and equipment) demands. Future engagements

should place greater emphasis on development and review of project feasibility studies, investigation of any relevant government policies, construction industry related market studies, and improved coordination with resettlement document preparation and activities.

Further, future similar projects would benefit from an independent review of all engineering designs and cost estimates before their implementation .

Coordination amongst Government Agencies- for a key factor contributing to the project implementation delays was the slow land acquisition and resettlement activities for Batch-I of the Rural Transport Component. This in turn caused further problems in quantity changes and compensation standards. The experience from implementing Batch-II and the later stage of the Batch-I was that strong coordination with the local government (county and township) was a must for efficient facilitation of the land acquisition and resettlement activities. In future projects, such coordination should be enhanced. In addition, civil works should commence only after the land acquisition and resettlement activities are fully (or at least substantially) completed.

Also, related to the bus terminals, governments at both municipal and county levels need to develop a proper strategy and policy, apply adequate regulation and management, and provide sufficient support to the operation and maintenance.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

Continued Support from the World Bank- Transport related development challenges identified by the Guiyang Municipality remain and continued support from the World Bank, especially for rural road development and maintenance activities, is warranted. In addition to infrastructure investment, any continuation of engagement should include an enhanced institutional development component to address long-term sustainable development needs. Adequate technical support from the World Bank is essential to ensure the success of the institutional development programs. For the TA, ideally the World Bank would provide more grants and international expertise. For the training and study tour program, future engagements should provide more guidance based on and introductions to successful domestic and international examples.

Strengthening of Project Preparation- The project preparation should be enhanced, including improved screening and selection of proposed sub-projects, advancements in surveying and design methodologies, financial capacity assessment, and implementation arrangements. In the meantime, a coordination mechanism should be established amongst the related government agencies at both the municipal and district/county levels.

(b) Cofinanciers

Not applicable

(c) Other partners and stakeholders

Not applicable

Annex 1. Project Development Objectives

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	Travel times decreased on Airport expressway (minute)			
Value (quantitative or Qualitative)	9	Reduced to 84% of baseline (7.56 minutes)		Reduced to 80% of baseline (7.2 minutes)
Date achieved	2007	2009		2011
Comments (inc. % achievement)	<ul style="list-style-type: none"> Achieved (104%) The target value was 9 minutes for the airport expressway. The actual travel time on the airport expressway was 7.2 minutes in 2011, 80% of the baseline value. 			
Indicator 2:	Travel times decreased on G321 (minute)			
Value (quantitative or Qualitative)	7	Reduced to 82% (5.74 minutes)		No change (7 minutes)
Date achieved	2007	2009		2013
Comments (inc. % achievement)	<ul style="list-style-type: none"> Not achieved During monitoring period in 2013, there were many investment projects in Longdongbao area. The large trucks slowed down the average travel time on G321. 			
Indicator 3:	Traffic volumes increased on the Project corridor (PCU per day)			
Value (quantitative or Qualitative)	N/A	52,350		62,400
Date achieved	2007	2010		2010
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (119%) The target was the total traffic volume for both original airport expressway and G321 in the case of 'without Youxiao Road'. In the PAD, this is indicated as the sum of actual traffic volumes on the airport expressway and G321 in 2010, the year after Youxiao Road opened to traffic. Youxiao Road was completed and opened to traffic in February 5, 2010. The actual corridor traffic (Youxiao road, airport expressway, G321) was 62,400 PCU in 2010. PCU = passenger car unit. 			
Indicator 4:	Percent reduction of minutes travel time on a 25% sample of project rural roads			
Value (quantitative or Qualitative)	100%	Reduced by 50%		Reduced by 65%
Date achieved	2007	2009		2013

Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (130%)
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(c) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	Number of villages connected by Project roads (no.)			
Value (quantitative or Qualitative)	0	241	67	67
Date achieved	2007	2012	2012	2013
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (100%) During implementation, the number of rural roads was reduced from original 46 to 11. In February 2012, the target value was formally revised to 67 villages. 			
Indicator 2:	Number of villages serviced by routes from Project rural bus stations (no.)			
Value (quantitative or Qualitative)	0	348	118	118
Date achieved	2007	2012	2012	2013
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (100%) During implementation, the number of rural bus terminals was reduced from original 44 to 16. In February 2012, the target value was formally revised to 118 villages. 			
Indicator 3:	Implementation of a new rural road maintenance system (%)			
Value (quantitative or Qualitative)	0%		100%	100%
Date achieved	2007		2011	2012
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (100%) A computer-based Rural Road Maintenance Management Information System was developed in 2010–2012. 			
Indicator 4:	Implementation of a new debt management system (%)			
Value (quantitative or Qualitative)	0%		100%	100%
Date achieved	2007		2011	2011
Comments (inc. % achievement)	<ul style="list-style-type: none"> Fully achieved (100%) The TA on Government Debt Management was implemented in 2009–2011. 			

Annex 2. Project Outputs

Name	Location	Length (km)	Scope	Implementation		
				Start	End	
<i>Youxiao Road</i>						
	Nanming District	7.04	Urban rapid road with 1 elevated section (1,425 meter), 3 interchanges, 1 tunnel (2 ways of 1,835 meters and 1,755 meters), 1 large bridge (443 meters)	07/18/2008	03/23/2010	
<i>Rural Roads</i>						
1	Majiaqiao-Lufang Road	Xiuwen County	15.60	Class IV (main road 10.807 km, access road 4.796 km)	08/20/2008	07/30/2012
2	Zhuhua-Xiyang Road	Xifeng County	29.10	Class IV (main road 18.537 km, access road 10.559 km)	08/20/2009	11/14/2013
3	Liutong-Baimao Road	Xiuwen County	31.91	Class IV (main road 11.27 km, access road 20.641 km)	08/20/2009	11/14/2013
4	Liming-Chashan	Qingzhen City	22.49	Class IV (main road 13.847 km, access road 8.641 km)	12/28/2009	12/30/2012
5	Weicheng-Liujidianzhan Road	Qingzhen City	33.17	Class IV (main road 20.478 km, access road 12.695 km)	12/28/2009	12/30/2012
6	Baiyan-Longjing Road	Qingzhen City	25.38	Class IV (main road 15.116 km, access road 10.262 km)	12/28/2009	10/30/2012
7	Longgang-Guajiu Road	Kaiyang County, Wudang District	20.02	Class IV (main road 16.820 km, access road 3.200 km)	08/30/2009	10/30/2010
8	Wudang Daqiao-Hefeng Road	Kaiyang County, Wudang District	22.93	Class IV (main road 22.927 km)	08/30/2009	10/28/2013
9	Guyang-Jiangshan Road	Kaiyang County, Wudang District	21.00	Class IV (main road 11.410 km, access road 9.590 km)	08/30/2009	10/24/2013
10	Xiaohegou-Shuikou	Xiuwen County	36.70	Class III (main road 27.096 km, access road 9.601 km)	12/28/2009	11/14/2013
11	Tianhetan-Gaiwu	Huaxi District	11.75	Class IV (main road 11.754 km)	06/08/2012	12/26/2012
		sub-total	270.05			
<i>Bus Terminals</i>						
1	Anliu Terminal	Qingzhen City		Class IV (609 sm, parking 1,000 sm, inspection)	10/28/2012	10/10/2011
2	Maige Terminal	Qingzhen City		Class IV (609 sm, parking 1,000 sm, inspection)	10/28/2012	07/20/2012
3	Xinchang Passenger Terminal	Wudang District		Class IV (648 sm, parking 1,000 sm, inspection)	10/28/2012	05/20/2013
4	Shaping Passenger Terminal	Xiuwen County		Class IV (609 sm, parking 1,000 sm, inspection)	10/28/2012	03/25/2012
5	Gupu Passenger Terminal	Xiuwen County		Class IV (648 sm, parking 1,000 sm, inspection)	10/28/2012	04/28/2012
6	Jiuchang Freight Terminal	Xiuwen County		Class IV (2,591 sm, parking 1,000 sm, inspection)	10/28/2012	05/18/2013
7	Fengshan Passenger Terminal	Kaiyang County		Class IV (658 sm, parking 1,000 sm, inspection)	10/28/2012	05/20/2012
8	Yongwen Passenger Terminal	Kaiyang County		Class IV (585 sm, parking 1,000 sm, inspection)	10/28/2012	07/20/2012
9	Huali Passenger Terminal	Kaiyang County		Class IV (658 sm, parking 1,000 sm, inspection)	10/28/2012	08/10/2013
10	Luwo Passenger Terminal	Xifeng County		Class IV (459 sm, parking 1,000 sm, inspection)	10/28/2012	10/15/2013
11	Zhongba Passenger Terminal	Qingzhen City		Class IV (522 sm)	08/08/2012	12/26/2012
12	Wangzhuang Passenger Terminal	Qingzhen City		Class IV (492 sm)	08/08/2012	12/26/2012
13	Yanglongsi Passenger Terminal	Xifeng County		Class IV (366.66 sm)	08/08/2012	12/26/2012
14	Xinpu Passenger Terminal	Wudang District		Class IV (477.12 sm)	08/08/2012	12/26/2012
15	Xiaba Passenger Terminal	Wudang District		Class IV (394.25 sm)	08/08/2012	12/26/2012
16	Pianpo Passenger Terminal	Wudang District		Class IV (1,069.86 sm)	08/08/2012	12/26/2012
<i>Capacity Development</i>						
1	Rural Road Maintenance MIS System			A MIS system with hardware, GIS platform, and data	11/11/2010	10/11/2012
2	Traffic Survey			Traffic survey in core urban areas	12/12/2007	07/19/2008
3	Government Debt Management TA			A set of TA reports and a computer system	04/14/2009	05/06/2011
4	Training and Study Tour			11 domestic training and 4 oversea study tours	12/10/2007	04/30/2013

Source: The GPMO

Annex 3. Training Programs and Study Tours

(a) Domestic Study Tours

No.	Subject	Location	Participate Unit	No. Trainee	Duration	Schedule
1	Management experiences on road program financed by World Bank loan	Fujian	Kaiyang Transportation Bureau, Kaiyang County Government, GPMO	6	7 days	October, 2009
2	Management experiences on road program financed by World Bank	Guangzhou	GMDRC, GMFB, GPMO, Headquarter of Youxiao road	6	7 days	June, 2010
3	Management experiences on road program financed by World Bank	Wulumuqi	Municipal Planning Bureau, GMFB, GPMO	5	9 days	September, 2010
4	SWAPs	Fujian	GPMO, GMCB	6	7 days	October, 2010
5	Policies on resettlement of affected residents, supervision management, implementing experiences.	Wuhan	GMDRC, GMFB, GPMO, Tongyuang Company	6	7 days	April, 2011
6	Management experiences on road program financed by World Bank	Xi'an	GMDRC, GMFB, GPMO, GMVB	6	7 days	October, 2011
7	Environment supervision and environmental protection measures	Nanning	GMFB, GPMO	4	7 days	May, 2012
8	Management experiences on road program financed by World Bank loan	Anhui	GMDRC, GMFB, GPMO, Xiuwen Transportation Bureau	7	7 days	July, 2012
9	Management experiences on road program financed by World Bank loan	Xinjiang	GPMO, GMFB	7	9 days	September, 2012
10	Management experiences on road program financed by World Bank	Liaoning	GPMO, GMFB, Wudang Transportation Bureau, Huanxi Transportation Bureau, Xifeng Transportation Bureau	7	9 days	November, 2012
11	English speaking and basic English grammars	Guiyang	GPFD, GMDRC, GMFB, GMCB, GPMO	20	9 months	October, 2009--July, 2010

Source: The GPMO

(b) Overseas Trainings

No.	Subject	Location	Participant	No. Trainee	Duration	Schedule
1	Construction management and maintenance of transportation infrastructure, the government's financing plan for infrastructure and the debt management	Australia & New Zealand	GPDR, GMFB, GPMO	6	6 days	September, 2012
2	Construction management and maintenance of transportation infrastructure	Finland	Guizhou Municipal Auditing Department, GMCB, GMDRC, GPMO	6	6 days	October, 2012
3	Construction management, maintenance of inter-city highway, and expressway and the public transportation management	America	GMDRC, GMCB, GMFB, GPMO	6	6 days	November, 2012
4	Local public transportation, the combination of road construction and road network, and the road maintenance	Switzerland	GPDR, GPFD, GMCB, GMFB	6	6 days	April, 2013

Source: The GPMO

Annex 4. Project Costs, Financing, and Loan Disbursement

(a) Cost Comparison (USD million)

Item	At Appraisal			At Actual		
	Government	World Bank	Total	Government	World Bank	Total
A. Base Cost						
I. Youxiao road	90.37	52.73	143.10	199.07	58.76	257.83
Civil Works	54.00	39.38	93.38	104.40	50.79	155.20
Traffic Facilities and Tunnel M&E	-	11.53	11.53	3.44	7.97	11.41
Construction Supervision	-	1.82	1.82	2.44	-	2.44
Land Acquisition and Resettlement	22.07	-	22.07	72.95	-	72.95
Other	14.30	-	14.30	15.83	-	15.83
II. Rural Transport	98.65	36.82	135.47	61.63	38.32	99.95
Civil Works	63.39	36.82	100.21	27.71	38.32	66.03
Construction Supervision	2.99	-	2.99	0.90	-	0.90
Land Acquisition and Resettlement	27.62	-	27.62	33.03	-	33.03
Other	4.65	-	4.65	-	-	-
III. Institutional Development	-	1.20	1.20	-	1.07	1.07
Rural Road Maintenance System	-	0.35	0.35	-	0.30	0.30
Traffic Survey	-	0.25	0.25	-	0.30	0.30
Debt Management System	-	0.10	0.10	-	0.22	0.22
Training	-	0.50	0.50	-	0.24	0.24
Sub-total (A)	189.02	90.75	279.77	260.70	98.15	358.85
B. Contingencies	17.48	-	17.48	-	-	-
C. Financial Charges	7.92	9.25	17.17	-	1.85	1.85
Interest During Construction	7.92	9.00	16.92	-	1.60	1.60
Front-end Fee	-	0.25	0.25	-	0.25	0.25
Total (A+B+C)	214.42	100.00	314.42	260.70	100.00	360.70
Project Financing	68. 2%	31. 8%	100. 0%	72. 3%	27. 7%	100. 0%

Source: The World Bank PAD and the GPMO

(b) Loan Proceeds Allocation and Disbursement (USD)

Category	In Original Loan Agreement		Last Revision**		Increased / Decreased	Disbursed
	Allocation	Percentage to be financed	Allocation	Percentage to be financed		
(1) Civil works:						
(a) under Part A of the Project	39,380,000	60%	50,797,653	60%	11,417,653	50,797,653
(b) under Part B of the Project	36,820,000	60%	34,420,000	100%	(2,400,000)	34,420,000
(c) under Part B, for Part B-2*			3,900,000	100%	3,900,000	3,900,000
(2) Goods and Consultants' services under Part A of the Project	13,350,000	100%	7,970,000	100%	(5,380,000)	7,970,000
(3) Goods, consultants' services and training under Part C of the Project	1,200,000	100%	1,065,458	100%	(134,542)	1,065,458
(4) Interest	9,000,000		1,596,890		(7,403,110)	1,596,890
(5) Front-end Fee	250,000		250,000		-	250,000
Total	100,000,000		100,000,000		-	100,000,000

* For Batch-II of the Rural Transport Component

** The last loan reallocation was made on December 10, 2012

Source: the World Bank Loan Agreement and the GPMO

Annex 5. Summary of Project Contracts

Contract No.	Contract Description	Contractor/Supplier/ Consultant	Procure Method	Review by Bank	Contract Date	Contract Cost (RMB)	Implementation		Actual Cost (RMB)
							Start	End	
Part A: Youxiao Road									
<i>Sub-grade Works</i>									
YXE-01	Section 1 - front road segment(K0+000-K1+580)	China Railway No. 10th Group Co. Ltd.	ICB/Works	Prior	08/01/2008	179,734,067	07/01/2008	03/01/2010	184,881,677
YXE-02	Section 2 - tunnel segment(k1+580-K4+740)	China Railway ERJU Corporation	ICB/Works	Prior	08/01/2008	391,039,447	07/01/2008	03/01/2010	474,828,525
YXE-03	Section 3 - latter road segment(K4+740-K7+040)	China Railway No. 8th Group Co. Ltd.	ICB/Works	Prior	08/01/2008	108,793,247	07/01/2008	03/01/2010	150,186,283
<i>Pavement Works</i>									
YXE-04	Pavement and Landscaping greening	JV of Shandong Taincheng Municipal Road Engineering Co. Ltd.	NCB/Works	Prior	06/01/2009	108,013,661	06/01/2009	12/31/2009	112,025,006
<i>Ancillary Works</i>									
YXE-05	Tunnel M&E and Fire Protection Facilities	Jiangsu Zhiyun Science & Tech Development Co. Ltd.	NCB/S&I	Prior	07/01/2009	54,205,476	07/01/2009	12/31/2009	69,560,926
YXE-06	Traffic Facilities	Sichuan Neijiang Road Traffic Facility Co. Ltd.	NCB/Works	Prior	07/01/2009	5,004,005	07/01/2009	12/31/2009	8,618,155
YXE-07	Greening and Drainage	Guiyang Longdongbao Development Office	NCB/Works	Prior	07/01/2010	5,004,006	07/01/2010	12/31/2010	13,857,875
<i>Construction Supervision</i>									
YXE-09	Construction Supervision and Management for YXE	Guiyang Transport Inspection Station	NBF	Prior	08/01/2008	12,000,000	08/01/2008	12/31/2009	13,640,378
YXE-10	Tunnel M&E and fire protection supervision	Xián Golden Road Communication Eng.&Tech Development Co. Ltd.	CQS	Prior	07/01/2009	1,263,735	07/01/2009	12/31/2009	1,263,735
Part B: Rural Transport									
<i>Civil Works</i>									
PR11	Rural Roads	China Kairui International Economic Cooperation Co. Ltd.	NCB/Works	Prior	04/15/2009	85,791,557	08/20/2009	11/15/2013	88,578,108
PR12	Rural Roads	Northeast Junhui Road&Bridge Group Co.	NCB/Works	Prior	04/15/2009	75,598,244	12/28/2009	11/15/2013	99,461,694
PR13	Rural Roads	Henan Zhongyuan Water Conservancy and Engineering Group Co. Ltd.	NCB/Works	Prior	04/22/2009	59,825,226	08/30/2009	11/15/2013	70,505,716
PR14	Rural Roads	Sichuan Guanjiao Road&Bridge Co. Ltd.	NCB/Works	Prior	04/15/2009	70,459,161	12/28/2009	11/15/2013	92,091,098
PR21	Rural Roads	Sichuan Xinxing Construction Group Co. Ltd.	NCB/Works	Prior	05/28/2012	17,494,162	06/08/2012	12/26/2012	17,253,634
PB1	Batch-I (10 bus terminals)	No.1 Construction Engineering Co. of Guizhou Jiangong Group	NCB/Works	Prior	06/01/2012	14,245,732	06/01/2012	10/01/2012	20,151,237
PB2	Batch-II (6 bus terminals)	No.6 Construction Engineering Co. of Guizhou Jiangong Group	NCB/Works	Post	07/26/2012	11,527,498	08/08/2012	12/31/2012	14,534,580
<i>Construction Supervision</i>									
B8	Road Construction Supervision (SHJL1)	Guizhou Lutong Road Engineering Supervision Co. Ltd.	Public bidding	Prior	06/01/2009	1,283,282	06/01/2009	11/15/2013	2,232,908
	Road Construction Supervision (SHJL2)	Guizhou Transport Supervision Station	Public bidding	Prior	08/01/2009	1,254,088	08/01/2009	11/15/2013	1,974,330
	Road Construction Supervision (10 terminals)	Guizhou Zhongyi Supervision Consulting Co. Ltd.	Public bidding	Prior	11/14/2008	300,000	11/14/2008	11/16/2013	263,076
		Guizhou Yujian Engineering Consulting Co. Ltd.	Public bidding	Prior	08/20/2012	299,666	08/08/2012	12/31/2012	281,446
		Guizhou Transport Supervision Station	Public bidding	Prior	05/07/2012	420,000	06/08/2012	12/26/2012	401,126
Part C: Institutional Development									
C1	Traffic Survey	JV: Dalian Maritime University & Guizhou University	QBS	Prior		800,000	12/11/2007	12/15/2008	1,842,115
C2-1	Rural Road Maintenance System - Consulting	Beijing SuperMap Company	CQS	Prior	08/01/11	384,300	08/01/2011	09/01/2012	696,495
C2-2	Rural Road Maintenance System - Equipment	Guiyang Jinyueda Office Equipment Co.	CQS	Prior	07/01/12	696,500	07/01/2012	08/01/2012	800,000
C2-4	Rural Road Maintenance System - Data Collection	Guiyang Road & Bridge Design Institute	CQS	Prior	08/01/11	147,600	08/01/2011	12/01/2011	384,300
C2-5	Rural Road Maintenance System - Method Study	Fang Qin (individual)	CQS	Prior	10/01/11	250,000	09/01/2011	03/01/2012	147,572
C3-1	Government Debt Management System - Consulting	Guiyang Economic Research Association	NBF	Prior	03/01/11	798,900	10/01/2009	05/06/2011	465,100
C3-2	Government Debt Management System - Equipment	Guizhou Tiandi Sci&Tech Industrial Co.	Shopping	Prior		-	11/01/2011	08/01/2011	798,930
C4-2	Training and Study Tour - Oversea	Sinofinland Huineng Sci&Tech (BJ) Co.	CQS	Prior	04/01/12	-	04/01/12	04/30/2013	1,122,440

ICB = international competitive bidding, NCB = national competitive bidding, QBS = quality-based selection, CQS = consultant's qualification selection

Source: The GPMO

Annex 6. Status of Loan Covenants

Loan/Project Agreement Reference	Description of Covenant	Date Due (dd/mm/yy)	Status	Date Complied (dd/mm/yy)
Loan Agreement, Schedule 2, Section II. A.1 & A.2 and Project Agreement Schedule 1, Section II, A.1	The Borrower shall monitor and evaluate the progress of the Project and prepare Project Reports in accordance with the provisions of Section 5.08 of the General Conditions and on the basis of the indicators set forth in the annex to Schedule 1 to the Project Agreement. Each Project Report shall cover a six month calendar period in each year that is from January through June and from July through December, and shall be furnished to the Bank not later than 45 days after the end of the period covered by such report. Without limitation on the provisions of Part A.1 of this Section, the Borrower shall cause the Project Implementing Entity to prepare and furnish to the Bank, as part of the Project Report, not later than forty-five (45) days after the end of each calendar semester, interim unaudited financial reports for the Project covering the semester, in form and substance satisfactory to the Bank.	15 FEB 09	CD	04 MAR 09
		15 AUG 09	C	13 AUG 09
		15 FEB 10	C	10 FEB 10
		15 AGU 10	C	9 AUG 10
		15 FEB 11	C	15 FEB 11
		15 AGU 11	C	11 AUG 11
		15 FEB 12	C	9 FEB 12
		15 AUG 12	C	10 AUG 12
		15 FEB 13	C	7 FEB 13
		15 AUG 13	C	6 AUG 13
Loan Agreement, Schedule 2, Section II. A.3 and Project Agreement Schedule 2, Section II. A.2	For purposes of Section 5.08 (c) of the General Conditions, the report on the execution of the Project and related plan required pursuant to that Section shall be furnished to the Bank not later than six months after the Closing Date.	30 JUN 14	NYD	NYD
Loan Agreement, Schedule 2, Section II. B.2 and Project Agreement Schedule 2, Section II. B.4	The Borrower shall have its Financial Statements audited in accordance with the provisions of Section 5.09 (b) of the General Conditions. Each audit of the Financial Statements shall cover the period of one fiscal year of the Borrower. The audited Financial Statements for each such period shall be furnished to the Bank not later than six months after the end of such period.	30 JUN 09	C	30 JUN 09
		30 JUN 10	C	30 JUN 10
		30 JUN 11	C	30 JUN 11
		30 JUN 12	C	30 JUN 12
		30 JUN 13	C	30 JUN 13
		30 JUN 14	NYD	NYD

C=Complied with, CP=Partially complied with, NYD=Not yet due, OG=On-going, CD=Complied with after delay, NC=Not complied with
Source: The World Bank ICR task team

Annex 7. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
John Scales	Task Team Leader / Sr.Transport Specialist	EASTE	
Syed Ahmed	Lead Counsel	LEGEA	
Carlos Richardo Escudero	Lean Counsel	LEGEA	
Edward Dotson (Id.)	Lead Transport Specialist	EASTE	
Graham Smith (Id.)	Lead Transport Specialist	EASTE	
Wenlai Zhang	Transport Specialist	EASTE	
Chunlin Zhang (Prep)	Lead Private Sector Development Specialist	EASPR	
Kek Choo chung (Id.)	Transport Specialist	Consultant	
Jiangyan Wang	Transport Planning Specialist	Consultant	
Jian Xie	Urban Planning Specialist	EASRE	
Setty Pendakur (Id./Prep.)	Rural Transport Policy Specialist	Consultant	
Wen Pan (Id./Prep)	Rural Road Design Specialist	Consultant	
Greg Wood	Rural Transport Policy Specialist	Consultant	
Mei Wang	Sr. Economist	EASPR	
Ning Wu	Financial Analyst	Consultant	
Min Zhao	Economist	EASRE	
Peishen Wang	Environment Specialist	EASSO	
Zhefu Liu	Sr. Social Development Specialist	EAPCO/Cons ultant	
Hongkun Yang (Id./Prep.)	Procurement Specialist	EAPCO	
Xiaoping Li	Sr. Procurement Specialist	EAPCO	
Yi Geng	Financial Management Specialist	LOAG1	
Haiyan Wang	Disbursement Specialist	EACCF	
Xin Chen (Id./Prep.)	Program Assistant	EACCF	
Xuan Peng	Team Assistant	EACCF	
Mara Warwick (PCN/PAD)	Peer Reviewer	EASUR	
John Hine (PCN)	Peer Reviewer	ETWTR	
Paul Amos (PCN/PAD)	Peer Reviewer	ETWTR	
Alan Piazza (PCN)	Peer Reviewer	EASRE	

Id. = identification phase, Prep = Preparation phase, PCN = Project concept note phase, PAD = Project appraisal document phase

Supervision/ICR

Bank Staff

Kishor Uprety	Sr. Counsel	LEGAM
Limei Sun	Program Assistant	EACCF
Jingrong He	Procurement Specialist	EASR2
Yi Geng	Sr. Financial Management Specialist	EASFM
Holly Krambeck	Transport Economist	EASIN
Jun Zeng	Social Development Specialist	EASCS
Ning Yang	Environmental Specialist	EASCS
Xiaoke Zhai	Sr. Transport. Spec.	EASCS
Wenlai Zhang	Transport Specialist	EASCS
Yunlong Liu	Procurement Specialist	
Yu Shang	Team Assistant	EACCF

Non-Bank Staff

Baoru Song	Project Management Specialist	Consultant
Chuntai Zhang	Economist Specialist	Consultant
Serge Cartier van Dissel	Rural Road Maintenance Specialist	Consultant

(b) Bank Missions

	Mission	Date	Mission Leader
1	Fact-finding Mission	Jan. 27-29, 2005	Edward Dotson
2	Pre-identification Mission	June 20-22, 2005	John Scales
3	Identification Mission	July 17-23, 2005	John Scales
4	Supplementary Identification Mission	Dec. 19-21, 2005	John Scales
5	Supplementary Identification Mission	Feb. 8-10,2006	John Scales
6	Preparation Mission	April 23-28, 2006	John Scales
7	Pre-appraisal Mission	Aug. 21-30, 2006	John Scales
8	Appraisal Mission	Jan. 29-Feb.2, 2007 Mar. 1 & 2, 2007	John Scales
9	Appraisal Follow-up Mission	Apr. 10, 2007	John Scales
10	Supplementary appraisal Follow-up Mission	July 2-4, 2007	John Scales
11	Project Launch Mission	July 16-18, 2008	John Scales
12	Implementation Mission	March 4-6, 2009	John Scales
13	Implementation Mission	Sept. 8-11, 2009	John Scales
14	Implementation Mission	Mar.22-25, 2010	Wenlai Zhang
15	Implementation Mission	September 13-17, 2010	Wenlai Zhang
16	Implementation Mission	March28 –Apr 1 2011	Wenlai Zhang
17	Implementation Mission	September 26-30, 2011	Wenlai Zhang
18	Implementation Mission	March 26-30,2012	Wenlai Zhang
19	Implementation Mission (combined with New project Identification Mission)	June 11-15,2012	Wenlai Zhang
20	Implementation Mission (combined with New project Preparation Mission)	October 8-12,2012	Wenlai Zhang
21	Implementation Mission	February 19-22,2013	Holly Krambeck
22	Implementation Mission	September 9-13, 2013	Holly Krambeck
23	ICR Mission	February 17-21,2014	Holly Krambeck

Source: The World Bank ICR task team

Annex 8. Economic Analysis

Introduction

For reassessing the project efficiency, economic reevaluation of the project was conducted by the World Bank ICR task team. A traffic analysis was fulfilled by using the actual traffic counts provided by the GPMO and by comparing them with appraisal stage estimates. The traffic forecast for future years was revised accordingly. The economic reevaluation assumed that the vehicles on the project roads (Youxiao Road and the project rural roads) could drive at higher speeds with lower vehicle operating costs (VOC) and less travel time. Economic benefits were calculated by comparing the “with-project” and “without-project” cases. Consequently, the economic internal rate of return (EIRR) was calculated for the whole project, as well as for Youxiao Road and the rural roads separately.

Traffic Analysis and Forecast

Since commencement of service in 2010, the traffic on Youxiao Road increased significantly. Due to a shorter distance, better road condition, higher speeds, and no toll, most of the traffic on the existing airport expressway was diverted to the Youxiao Road. In addition, the opening of Youxiao Road also stimulated and facilitated the fast socioeconomic development in Longdongbao area. According to the traffic counts provided by the GPMO, the daily traffic on Youxiao Road reached 36,850 PCU in 2011, which was much higher than what was forecasted at appraisal (17,457 PCU). Amongst the traffic, about 94 percent were passenger cars, which were primarily users traveling to/from the airport. However, the actual daily traffic on the project rural roads averaged 270 PCU in 2013, which was less than what forecasted at appraisal.¹ According to the existing traffic and the traffic demand development in the project areas, the future traffic increase rates were adjusted and the traffic forecast was revised accordingly. It was assumed that the traffic increase rates would be 5.8 percent per year in 2014–2015, 3.9 percent per year in 2016–2020, and 2.0 percent in 2021 and onwards for Youxiao Road; and 8.8 percent per year in 2014–2015, 5.3 percent per year in 2016–2020, and 3.6 percent in 2021 and onwards for the rural roads. The following table is the traffic forecast results.

Table 8.1: Revised Traffic Forecast for the Youxiao Road (AADT, PCU)

Year	Car	Bus	Small Truck	Medium Truck	Large Truck	Total
2013	37,000	1,087	524	357	232	39,200
2015	41,573	1,153	545	371	241	43,884
2020	50,580	1,273	602	410	266	53,132
2030	61,657	1,552	734	500	325	64,767

AADT = annual average daily traffic, PCU = passenger car unit
Source: the World Bank ICR task team

¹ The PAD did not provide the traffic forecast for the rural roads, but mentioned that the current traffic level for the project rural roads was in the range of 86–656 ADT.

Table 8.2: Revised Traffic Forecast for the Road Roads (AADT, PCU)

Year	Car	Bus	Small Truck	Medium Truck	Large Truck	Total
2013	60	10	30	70	100	270
2015	79	12	33	85	110	319
2020	128	18	38	108	122	414
2030	229	32	47	132	148	588

AADT = annual average daily traffic, PCU = passenger car unit

Source: World Bank ICR task team

Project Costs and Benefits

The actual project capital costs were used in the economic reevaluation. In terms of RMB, the actual project capital costs were much higher than what was estimated at appraisal, about 42 percent higher for Youxiao Road and 91 percent higher for the Rural Transport Component (unit cost). The maintenance costs for the project roads were estimated based on the information provided by Guiyang Municipal Urban Administration Bureau and Guiyang Municipal Road Division. It was estimated that the routine maintenance costs would be RMB3.9 million per year for Youxiao Road (entire road of 7.04 kilometers) and RMB50,000 per year per kilometer for the rural roads. The periodic maintenance was assumed to occur every five years at the costs of RMB35.0 million for Youxiao Road and RMB0.4 million per kilometer for the rural roads. In the economic reevaluation, all aforementioned capital costs and maintenance costs were converted into economic costs by using the conversion factor (0.908) adopted from the PAD.

The main sources of the economic benefits were estimated by comparing the “with-project” and “without-project” cases, including: (i) savings in VOC due to better road condition and shorter distance; (ii) savings in passenger travel time costs due to faster driving speed on the project roads; and (iii) other non-quantified benefits. The VOC savings were calculated using the latest unit VOC data adopted from other similar projects in China. For Youxiao Road, the VOC savings in RMB for a whole journey were estimated at 1.46 for car, 8.02 for bus, 2.16 for small truck, 4.65 for medium truck, and 6.57 for heavy truck. For the rural roads, the VOC savings in RMB per vehicle-kilometer were estimated at 0.39 for car, 1.59 for bus, 0.48 for small truck, 1.01 for medium truck, and 1.86 for large truck. Average passenger vehicle speeds were assumed to be 60 kilometers per hour on Youxiao Road and 40–50 kilometers per hour on the rural roads. The passengers’ travel time cost savings were calculated by different types of passenger vehicles (car and bus). The passenger time cost was derived from the GDP per capita of Guiyang Municipality in 2013. Other factors taken into account in the calculation for passenger time cost savings included average vehicle loads, percentage of work-related trips, time costs by different road users, and travel speeds for different types of passenger vehicles. Due to data unavailability, 10 percent was added to the VOC and time cost savings to reflect other benefits such as economic development in the project area, poverty reduction, less accident loss, road maintenance cost savings, etc.

Economic Reevaluation

Based on the aforementioned assumptions and estimations of the economic costs and benefits, the economic internal rate of return (EIRR) was recalculated at 15.8 percent for the whole project (16.3 percent for Youxiao Road and 14.1 percent for the rural roads). By comparing with that at appraisal, the EIRR for Youxiao Road was slightly higher than that at appraisal (15.9 percent),

which was due to a combination of higher capital cost and higher traffic volumes. The EIRR for the rural roads was lower than that at appraisal (18.3 percent), which was mainly caused by higher capital cost and lower traffic volume. However, the EIRRs for the whole project as well as for each component were higher than the World Bank recommended discount rate. Therefore, the project was still considered economically viable.

The cash flows of the EIRR calculations are presented in Table 8.4–8.6.

The EIRRs were subjected to sensitivity analysis to test different scenarios of the costs and benefits. The sensitivity analysis results in Table 8.3 showed that the project continues to be economically viable for all tested scenarios. If a 20 percent maintenance cost increase were to be combined with a 20 percent benefit reduction, the EIRR would be 12.3 percent for the whole project. The sensitivity analysis also showed that changes in benefits would have a greater impact on the EIRR compared to changes in costs. Therefore, the governments should keep the roads in good condition to continue attracting more traffic.

Table 8.3: Sensitivity Test for the Whole Project
(RMB million)

Scenarios	EIRR (%)	ENPV
Base Case	15.8%	1,018.1
Sensitivity Tests		
1 Maintenance Cost 10% Higher	15.7	1,001.9
2 Maintenance Cost 20% Higher	15.6	985.6
3 Benefits 10% Lower	14.1	579.6
4 Benefits 20% Lower	12.5	141.1
5 Benefits 10% Higher	17.3	1,456.7
6 Benefits 20% Higher	18.9	1,895.2
7 O&M 10% Higher & Benefits 10% Lower	14.1	563.3
8 O&M Cost 20% Higher & Benefits 20% Lower	12.3	108.5

Note: EIRR = economic internal rate of return, ENPV = economic net present value,

O&M = operation and maintenance

Source: the World Bank ICR task team

Table 8.4: Economic Reevaluation of the Whole Project
(RMB million)

year	Costs			Benefits				Net Benefit	ENPV
	Capital	Maintain	Total	VOC	Time Cost	Others	Total		
2008	160.6		160.6					-160.6	-316.9
2009	528.1		528.1					-528.1	-930.7
2010	769.0	1.8	770.8	16.1	107.3	12.3	135.7	-635.1	-999.3
2011	246.3	3.6	249.9	29.6	159.2	20.1	208.8	-41.1	-57.7
2012	166.0	3.7	169.7	39.9	174.6	24.6	239.0	69.3	86.9
2013	110.7	9.9	120.6	50.7	192.0	29.2	271.9	151.3	169.4
2014		16.2	16.2	58.6	207.3	32.8	298.7	282.5	282.5
2015		16.2	16.2	62.3	221.4	35.2	319.0	302.7	270.3
2016	31.8	16.7	48.5	64.7	231.7	36.9	333.3	284.8	227.0
2017	98.1	16.1	114.1	67.1	242.5	38.8	348.3	234.2	166.7
2018		16.5	16.5	69.6	254.0	40.7	364.3	347.7	221.0
2019		17.0	17.0	72.3	266.1	42.8	381.1	364.1	206.6
2020		17.0	17.0	75.1	278.9	44.9	399.0	382.0	193.5
2021	31.8	17.5	49.3	76.9	286.6	46.3	409.9	360.6	163.1
2022	98.1	16.1	114.1	78.8	294.6	47.8	421.2	307.0	124.0
2023		16.5	16.5	80.7	302.9	49.3	432.8	416.3	150.1
2024		17.0	17.0	82.7	311.4	50.8	445.0	427.9	137.8
2025		17.0	17.0	84.7	320.3	52.5	457.5	440.5	126.6
2026	31.8	17.5	49.3	86.9	329.6	54.2	470.6	421.3	108.1
2027	98.1	16.1	114.1	89.0	339.1	55.9	484.1	370.0	84.8
2028		16.5	16.5	91.3	349.1	57.8	498.2	481.6	98.5
2029		17.0	17.0	93.6	359.5	59.7	512.8	495.7	90.6
2030		17.0	17.0	96.0	370.2	61.7	527.9	511.0	83.3
2031	31.8	17.5	49.3	98.5	381.4	63.8	543.7	494.4	72.0
2032	98.1	16.1	114.1	101.0	393.1	66.0	560.1	446.0	58.0
2032	-990.3	16.5	-973.8	103.7	405.2	68.3	577.2	1,551.0	201.7
								Economic Net Present Value (ENPV):	1,018.1
								Economic Internal Rate of Return (EIRR):	15.8%
								Discount Rate:	12%

Source: The World Bank ICR task team

Table 8.5: Economic Reevaluation of the Youxiao Road
(RMB million)

year	Costs			Benefits				Net Benefit	ENPV
	Capital	Maintain	Total	VOC	Time Cost	Others	Total		
2008	160.6		160.6					-160.6	-316.9
2009	528.1		528.1					-528.1	-930.7
2010	713.7	1.8	715.5	16.1	107.3	12.3	135.7	-579.7	-912.2
2011	25.0	3.6	28.6	23.0	153.3	17.6	193.9	165.3	232.3
2012		3.7	3.7	23.5	159.8	18.3	201.7	198.0	248.3
2013		3.8	3.8	24.5	168.4	19.3	212.2	208.4	233.4
2014		3.9	3.9	25.8	177.9	20.4	224.0	220.1	220.1
2015		3.6	3.6	27.2	187.9	21.5	236.6	233.0	208.0
2016	31.8	3.7	35.5	28.2	195.0	22.3	245.4	210.0	167.4
2017		3.8	3.8	29.2	202.3	23.1	254.6	250.8	178.5
2018		3.9	3.9	30.3	209.9	24.0	264.2	260.3	165.4
2019		4.0	4.0	31.4	217.9	24.9	274.1	270.1	153.3
2020		3.6	3.6	32.5	226.1	25.9	284.4	280.9	142.3
2021	31.8	3.7	35.5	33.2	230.6	26.4	290.1	254.7	115.2
2022		3.8	3.8	33.8	235.2	26.9	295.9	292.1	118.0
2023		3.9	3.9	34.5	239.9	27.4	301.9	297.9	107.4
2024		4.0	4.0	35.2	244.7	28.0	307.9	303.9	97.8
2025		3.6	3.6	35.9	249.6	28.6	314.1	310.5	89.3
2026	31.8	3.7	35.5	36.6	254.6	29.1	320.3	284.9	73.1
2027		3.8	3.8	37.3	259.7	29.7	326.7	322.9	74.0
2028		3.9	3.9	38.1	264.9	30.3	333.3	329.4	67.4
2029		4.0	4.0	38.8	270.2	30.9	339.9	335.9	61.4
2030		3.6	3.6	39.6	275.6	31.5	346.7	343.1	56.0
2031	31.8	3.7	35.5	40.4	281.1	32.2	353.7	318.2	46.3
2032		3.8	3.8	41.2	286.7	32.8	360.7	356.9	46.4
2032	-713.7	3.9	-709.7	42.0	292.5	33.5	368.0	1,077.7	140.1
								Economic Net Present Value (ENPV):	881.6
								Economic Internal Rate of Return (EIRR):	16.3%
								Discount Rate:	12%

Source: The World Bank ICR task team

Table 8.6: Economic Reevaluation of the Rural Roads
(RMB million)

year	Costs			Benefits				Net Benefit	ENPV
	Capital	Maintain	Total	VOC	Time Cost	Others	Total		
2008			-					-	-
2009			-					-	-
2010	55.3		55.3					-55.3	-87.1
2011	221.3		221.3	6.6	5.9	2.5	14.9	-206.4	-290.0
2012	166.0		166.0	16.4	14.7	6.2	37.3	-128.7	-161.4
2013	110.7	6.1	116.8	26.2	23.6	10.0	59.7	-57.1	-63.9
2014		12.3	12.3	32.8	29.4	12.4	74.7	62.4	62.4
2015		12.6	12.6	35.2	33.5	13.7	82.4	69.8	62.3
2016		13.0	13.0	36.5	36.7	14.6	87.8	74.8	59.6
2017	98.1	12.3	110.3	37.9	40.2	15.6	93.7	-16.6	-11.8
2018		12.6	12.6	39.4	44.0	16.7	100.1	87.5	55.6
2019		13.0	13.0	40.9	48.2	17.8	107.0	94.0	53.3
2020		13.4	13.4	42.6	52.8	19.1	114.5	101.1	51.2
2021		13.8	13.8	43.8	56.0	20.0	119.7	105.9	47.9
2022	98.1	12.3	110.3	45.0	59.4	20.9	125.2	14.9	6.0
2023		12.6	12.6	46.2	62.9	21.8	131.0	118.4	42.7
2024		13.0	13.0	47.5	66.7	22.8	137.1	124.1	39.9
2025		13.4	13.4	48.9	70.7	23.9	143.5	130.1	37.4
2026		13.8	13.8	50.2	75.0	25.0	150.2	136.4	35.0
2027	98.1	12.3	110.3	51.7	79.5	26.2	157.4	47.1	10.8
2028		12.6	12.6	53.2	84.2	27.5	164.9	152.3	31.2
2029		13.0	13.0	54.8	89.3	28.8	172.8	159.8	29.2
2030		13.4	13.4	56.4	94.6	30.2	181.2	167.8	27.4
2031		13.8	13.8	58.1	100.3	31.7	190.0	176.2	25.7
2032	98.1	12.3	110.3	59.8	106.3	33.2	199.4	89.0	11.6
2032	-276.7	12.6	-264.0	61.6	112.7	34.9	209.2	473.2	61.5
								Economic Net Present Value (ENPV):	136.6
								Economic Internal Rate of Return (EIRR):	14.1%
								Discount Rate:	12%

Source: the World Bank ICR task team

Annex 9. Summary of Borrower's ICR and/or Comments on Draft ICR

Introduction

On December 2, 2013, the World Bank received the Borrower's Implementation Completion and Results (ICR) Report for the Guiyang Transport Project (the project) from the Guiyang Project Management Office (GPMO).¹ The Borrower's ICR report was prepared in Chinese and generally in good quality. The Borrower's ICR report covered many aspects of the project preparation, implementation, and sustainability, which is in the format suggested by the Bank's task team. However, some key data were not attached, like the project cost table and summary of procurement packages, and the quantitative analysis was rather cursory. Some useful information in the Borrower's ICR report was adopted in the Bank's ICR. Following are the summaries of the lessons learnt and recommendations from the Borrower's ICR.

Lesson Learnt

- The Borrower's ICR provided lesson learnt from the project implementation and operation:
- Project preparation and design- The governments at both municipal and district/county levels paid close attention to the project, ensured timely availability of the counterpart funds, and provided significant support to the land acquisition and resettlement needs. The project design used new design concepts and the consulting service was of good quality. The project design also incorporated the comments from all stakeholders and the alternative analysis was thorough.
- Financial and contract management- The project applied the "Project Management Manual" throughout the project implementation, which was prepared under the Bank's guidelines. It well regulated the project implementation and ensured efficient implementation of the project. Due to its success, this manual was adopted by other similar projects in Guiyang. The counterpart fund management for Batch-II of the Rural Transport Component also ensured the timely implementation of the bus terminals and rural roads, which should adopt by other similar projects.
- Loan proceed utilization- A clear procedure for the loan proceeds utilization and reimbursement was used by the project implementation team, which effectively reduced the financial management cost. For using the loan proceeds, the government, through the Ministry of Finance, applied for loan reallocations three times, which were approved by the World Bank.
- Environmental compliance- Project implementation paid adequate attention to the environmental compliance, especially to the forest at the tunnel construction site of Youxiao Road. For the rural roads, special attention was paid to the laborer camps, quarries, waste materials deposit sites, etc. The contractors also tried to

¹ The GPMO. November 2013. *The Borrower's Implementation Completion and Results Report for the World Bank financed Guiyang Transport Project (Loan 4881-CHA)*.

- rent houses from local residents for minimizing negative impacts to the environment.
- Rural road maintenance- The TA on the rural road maintenance MIS provided a GIS-based computer tool to assist the decision making for the rural road maintenance in Guiyang. This system introduced a new concept and approach for rural road maintenance planning to consider multiple socioeconomic factors while developing a rural maintenance plan. Upon completion, more than 30 staff members at the district/county level were trained to use the system. However, this system needs to be enhanced and further promulgated.
 - Bus terminal operations- Under the project, 16 rural bus terminals were constructed, which were well designed by considering the local culture and equipped with facilities for disabled people and children. However, these bus terminals are currently not well operated and maintained due mainly to minimal traffic and improper operational arrangements. This issue must still be resolved.
 - Overloaded truck control and accident management- Some rural roads constructed under the project near mines and/or industrial zones have contributed to facilitating local economic development. However, some roads have been damaged by the large, especially overloaded, trucks. The government must enhance the truck load controls. In the meantime, the traffic management also needs to be enforced, especially in regards to speeding vehicles. In future similar projects, adequate traffic management facilities should be designed and installed.
- Recommendations
 - Based on the experiences of implementing the project, it was recommended that the governments and the World Bank may place greater attention on the following aspects of future urban and rural transport projects:
 - Construction of more connection roads between city centers and satellite towns- The experience of constructing and operating Youxiao Road proved that such connecting roads may effectively and efficiently improve the regional transport condition, stimulate the socioeconomic development along the roads, and bring substantial employment opportunities to the local people.
 - Adopting or developing a computer-based information system for project planning, monitoring and management- Such computer-based information system may efficiently monitor and manage the project progress, financial control, land acquisition and resettlement, construction safety, environmental protection. It also may timely disclose the project information through the Internet.
 - Designing and implementing more technical assistance programs- Such technical assistance programs may assist with innovative development in Guiyang Municipality and provide supporting theories to advance innovative development.
 - Increasing number of trainees in future domestic and oversea trainings and study tours- Through such programs, the road administration and operational staff of road development in Guiyang may learn advanced concepts and technology from other experienced cities and countries.

Annex 10. Comments of Cofinanciers and Other Partners/Stakeholders

Not applicable


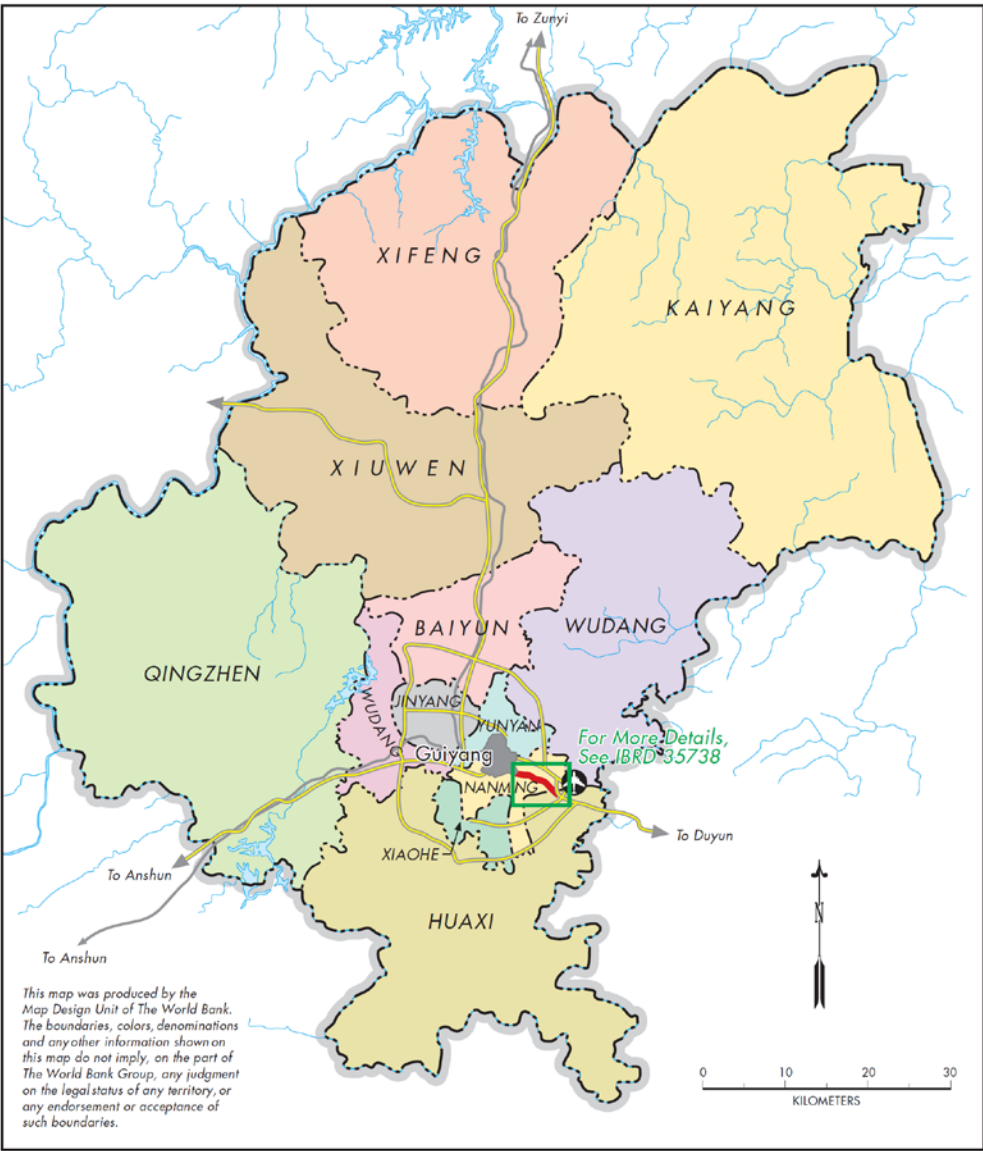
Annex 11. List of Supporting Documents

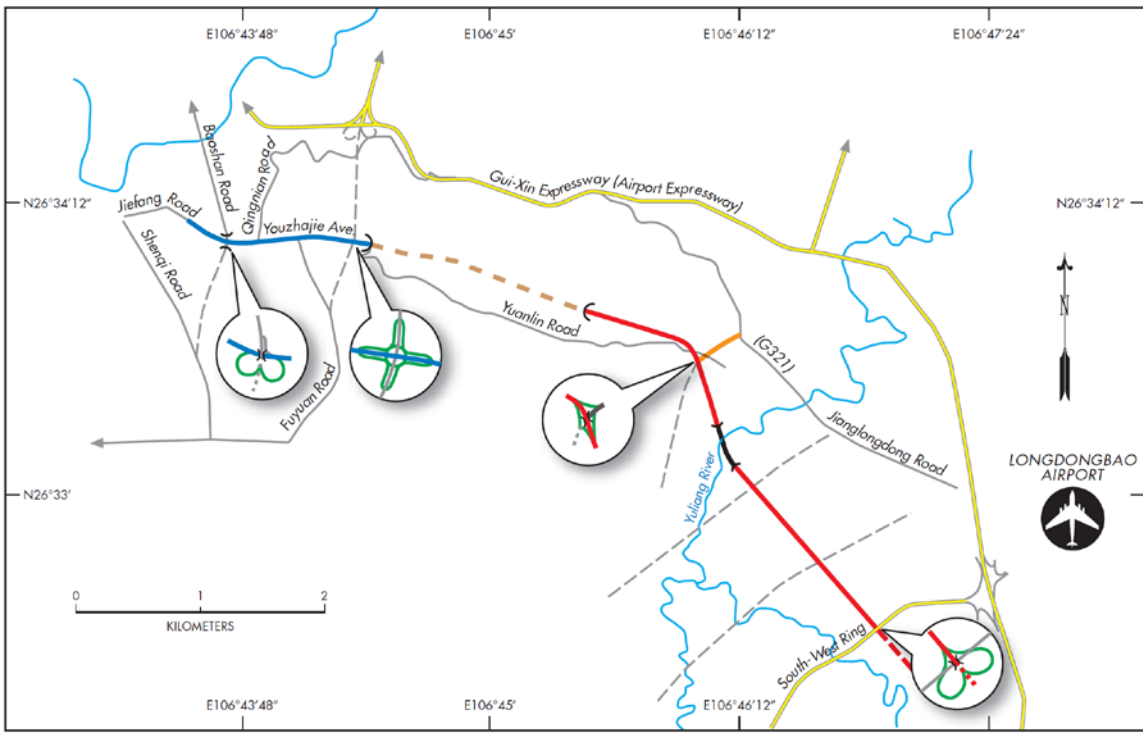
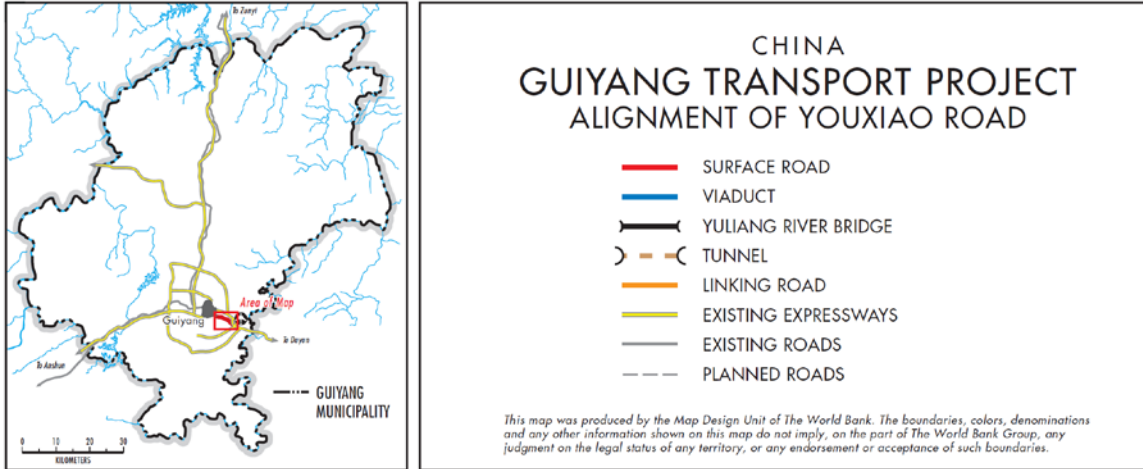
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CHINA GUIYANG TRANSPORT PROJECT GUIYANG MUNICIPALITY

- PROPOSED YOUXIAO ROAD
- EXISTING EXPRESSWAYS
- EXISTING NATIONAL HIGHWAYS
- DISTRICT/COUNTY BOUNDARIES
- MUNICIPAL BOUNDARY
- LONGDONGBAO AIRPORT



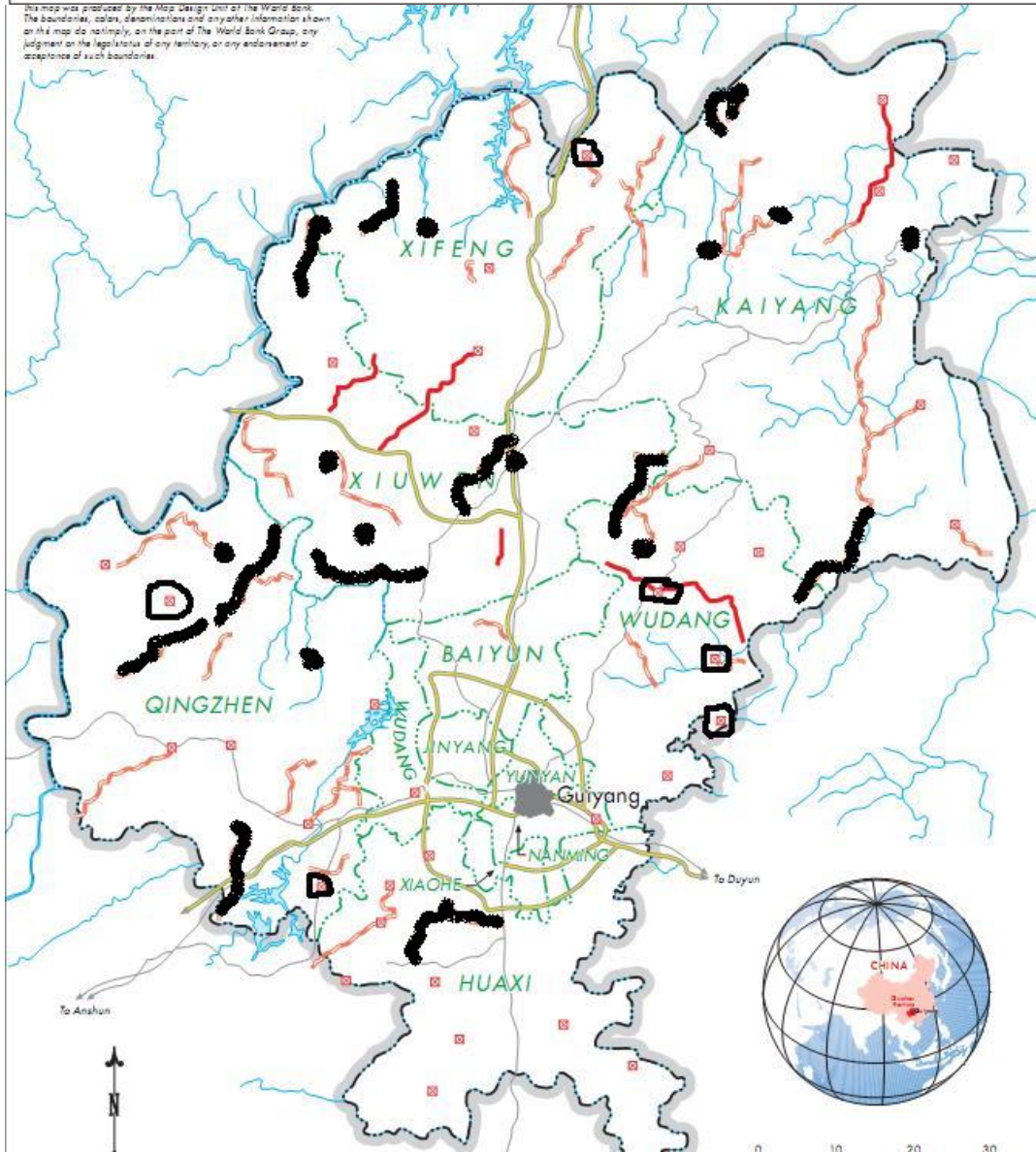
CHINA

GUIYANG TRANSPORT PROJECT

RURAL TRANSPORT COMPONENT

- | | |
|---|---|
| <p>PROJECT COMPONENTS:</p> <ul style="list-style-type: none"> — CLASS THREE ROADS — CLASS FOUR ROADS ■ RURAL BUS STATIONS ⊗ RURAL FREIGHT DEPOT | <ul style="list-style-type: none"> — EXISTING EXPRESSWAYS — EXISTING NATIONAL AND PROVINCIAL HIGHWAYS - - - DISTRICT/COUNTY BOUNDARIES - - - MUNICIPAL BOUNDARY |
|---|---|

This map was prepared by the Map Design Unit of the World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.



- ===== Rural Road,
- Rural Bus Terminals (Batch-I)
- Rural Bus Terminals (Batch-II)