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Report No: ICR00005530

# IMPLEMENTATION COMPLETION AND RESULTS REPORT

Loan Number 8534-CN

ON THE LOAN

IN THE AMOUNT OF US$150 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR THE

Guizhou Tongren Rural Transport Project

December 21, 2021

Transport Global Practice
East Asia And Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective on June 30, 2021)

| | |
|---|---|
| Currency Unit = | Renminbi (RMB) |
| RMB 1.00 = | US$0.1548 |
| US$1.00 = | RMB6.4601 |

FISCAL YEAR

January 1 - December 31

| | |
|---|---|
| Regional Vice President: | Manuela V. Ferro |
| Country Director: | Martin Raiser |
| Regional Director: | Ranjit J. Lamech |
| Practice Manager: | Benedict Eijbergen |
| Task Team Leader(s): | Jung Eun Oh |
| ICR Main Contributor: | Yoomin Lee, Chuntai Zhang |

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| CPF | Country Partnership Framework |
| CPS | Country Partnership Strategy |
| DPMO | Dejiang Project Management Office |
| DRC | Development and Reform Commission |
| EIA | Environment impact assessment |
| EIRR | Economic internal rate of return |
| EMP | Environmental management plan |
| ENPV | Economic net present value |
| FM | Financial management |
| FYP | Five-Year Plan |
| GDP | Gross domestic product |
| IA | Implementing agency |
| IBRD | International Bank for Reconstruction and Development |
| ICB | International competitive bidding |
| M&E | Monitoring and evaluation |
| MOF | Ministry of Finance |
| PDO | Project Development Objective |
| PLG | Project Leading Group |
| PP | Procurement plan |
| PRC | People's Republic of China |
| RAP | Resettlement action plan |
| RMB | Renminbi |
| RPF | Resettlement policy framework |
| SPMO | Sinan Project Management Office |
| TA | Technical assistance |
| TMG | Tongren Municipal Government |
| TMTB | Tongren Municipal Transport Bureau |
| TPMO | Tongren Project Management Office |

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## DATA SHEET

## BASIC INFORMATION

### Product Information

| Project ID | Project Name |
|---|---|
| P148071 | Guizhou Tongren Rural Transport Project |
| **Country** | **Financing Instrument** |
| China | Investment Project Financing |
| **Original EA Category** | **Revised EA Category** |
| Partial Assessment (B) | |

### Organizations

| Borrower | Implementing Agency |
|---|---|
| People's Republic of China | Tongren World Bank Project Management Office, Tongren Transport Bureau |

### Project Development Objective (PDO)

Original PDO

The project development objective is to improve rural transport connectivity in Dejiang and Sinan counties.

## FINANCING

| | Original Amount (US$) | Revised Amount (US$) | Actual Disbursed (US$) |
|---|---|---|---|
| **World Bank Financing** | | | |
| IBRD-85340 | 150,000,000 | 149,872,602 | 149,872,602 |
| **Total** | **150,000,000** | **149,872,602** | **149,872,602** |
| **Non-World Bank Financing** | | | |
| Borrower/Recipient | 81,790,000 | 23,260,000 | 23,260,000 |
| **Total** | **81,790,000** | **23,260,000** | **23,260,000** |
| **Total Project Cost** | **231,790,000** | **173,132,602** | **173,132,602** |

## KEY DATES

| Approval | Effectiveness | MTR Review | Original Closing | Actual Closing |
|---|---|---|---|---|
| 25-Sep-2015 | 27-Jan-2016 | 25-Oct-2018 | 30-Jun-2021 | 30-Jun-2021 |

## RESTRUCTURING AND/OR ADDITIONAL FINANCING

| Date(s) | Amount Disbursed (US$M) | Key Revisions |
|---|---|---|

## KEY RATINGS

| Outcome | Bank Performance | M&E Quality |
|---|---|---|
| Highly Satisfactory | Satisfactory | Substantial |

## RATINGS OF PROJECT PERFORMANCE IN ISRs

| No. | Date ISR Archived | DO Rating | IP Rating | Actual Disbursements (US$M) |
|---|---|---|---|---|
| 01 | 07-Dec-2015 | Satisfactory | Satisfactory | 0 |
| 02 | 15-Jun-2016 | Satisfactory | Satisfactory | 0 |
| 03 | 01-Dec-2016 | Moderately Satisfactory | Moderately Satisfactory | 0 |
| 04 | 01-Jun-2017 | Moderately Satisfactory | Moderately Satisfactory | 10.00 |

| | | | | |
|---|---|---|---|---|
| 05 | 17-Nov-2017 | Satisfactory | Moderately Satisfactory | 26.78 |
| 06 | 22-May-2018 | Satisfactory | Moderately Satisfactory | 67.36 |
| 07 | 07-Dec-2018 | Satisfactory | Satisfactory | 89.10 |
| 08 | 02-May-2019 | Satisfactory | Satisfactory | 100.66 |
| 09 | 26-Nov-2019 | Satisfactory | Highly Satisfactory | 112.77 |
| 10 | 12-Jun-2020 | Satisfactory | Satisfactory | 113.71 |
| 11 | 19-Dec-2020 | Satisfactory | Satisfactory | 119.56 |

## SECTORS AND THEMES

### Sectors

| Major Sector/Sector | (%) |
|---|---|
| **Transportation** | **100** |
| Rural and Inter-Urban Roads | 100 |

### Themes

| Major Theme/ Theme (Level 2)/ Theme (Level 3) | (%) |
|---|---|
| **Urban and Rural Development** | **100** |
| Rural Development | 100 |
| Rural Infrastructure and service delivery | 100 |
| **Environment and Natural Resource Management** | **1** |
| Climate change | 1 |
| Adaptation | 1 |

## ADM STAFF

| Role | At Approval | At ICR |
|---|---|---|
| Regional Vice President: | Axel van Trotsenburg | Manuela V. Ferro |
| Country Director: | Bert Hofman | Martin Raiser |
| Director: | Pierre A. Guislain | Ranjit J. Lamech |
| Practice Manager: | Michel Kerf | Benedictus Eijbergen |
| Task Team Leader(s): | Holly Krambeck | Jung Eun Oh |

| | |
|---|---|
| ICR Contributing Author: | Yoomin Lee |

# I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

## A. CONTEXT AT APPRAISAL

1. At appraisal, the economy in the People's Republic of China (China) had grown at a remarkable pace of an average rate of more than 9 percent per year over the past 20 years. This economic growth was not spread evenly throughout the country, however, with growing wealth disparities between the coastal and inland regions, and between the urban and rural areas. In support of shared prosperity for all Chinese people, the government of China had given priority to economic development in the lagging western and central regions, including providing financial support to transport infrastructure development in rural areas. During the period of 11th Five-Year-Plan (2006–2010), the government invested approximately RMB954 billion (US$157 billion equivalent) in construction and improvement of about 1.87 million kilometers (km) rural roads.

2. Tongren Municipality, located in Guizhou Province of China, had the Gross Domestic Product (GDP) per capita of less than US$2,000 in 2012, and 25 percent of its population had incomes below the national poverty line.[1] Tongren's geography – with more than 96 percent of its 18,000 square-km area comprises hilly and mountainous terrains – had resulted in a highly dispersed and isolated population, with little connectivity between rural and urban areas. The lack of connectivity was reflected in Tongren's income disparity, where the rural net income per capita was only 24 percent of the urban disposable incomes. To overcome these topographical and socioeconomic barriers, Guizhou Provincial Government and Tongren Municipal Government had prioritized improvement of the rural roads network, targeting areas with the most need, and most economic development potentials. These included Dejiang and Sinan counties, where only 21 percent of villages had access to classified or all-weather roads, and the urbanization rate was less than 35 percent.

3. In Tongren, the township and village-level roads were mostly unpaved with limited access to the main transport network.[2] Tongren's 12th Five-Year-Plan (2011–2015) set the targets of: (a) connecting 70 percent of villages with paved roads; (b) enhancing rural roads maintenance management, improving supporting facilities, optimizing the road network, and increasing the level of service and disaster risk management capabilities; and (c) extending the road network for public transport services between the urban and rural areas. Tongren Municipal Transport Bureau (TMTB) was responsible for coordinating with the county-level transport bureaus to implement this plan. The Tongren 13th Five-Year-Plan (2016–2020), which was being developed at the time of project approval, would continue to (a) connect 100 percent of inhabited villages with paved roads; (b) establish a basic rural logistics system and improve the efficiency of passenger and freight transport; and (c) enhance technical capacity for disaster risk management, road safety, and emergency response.

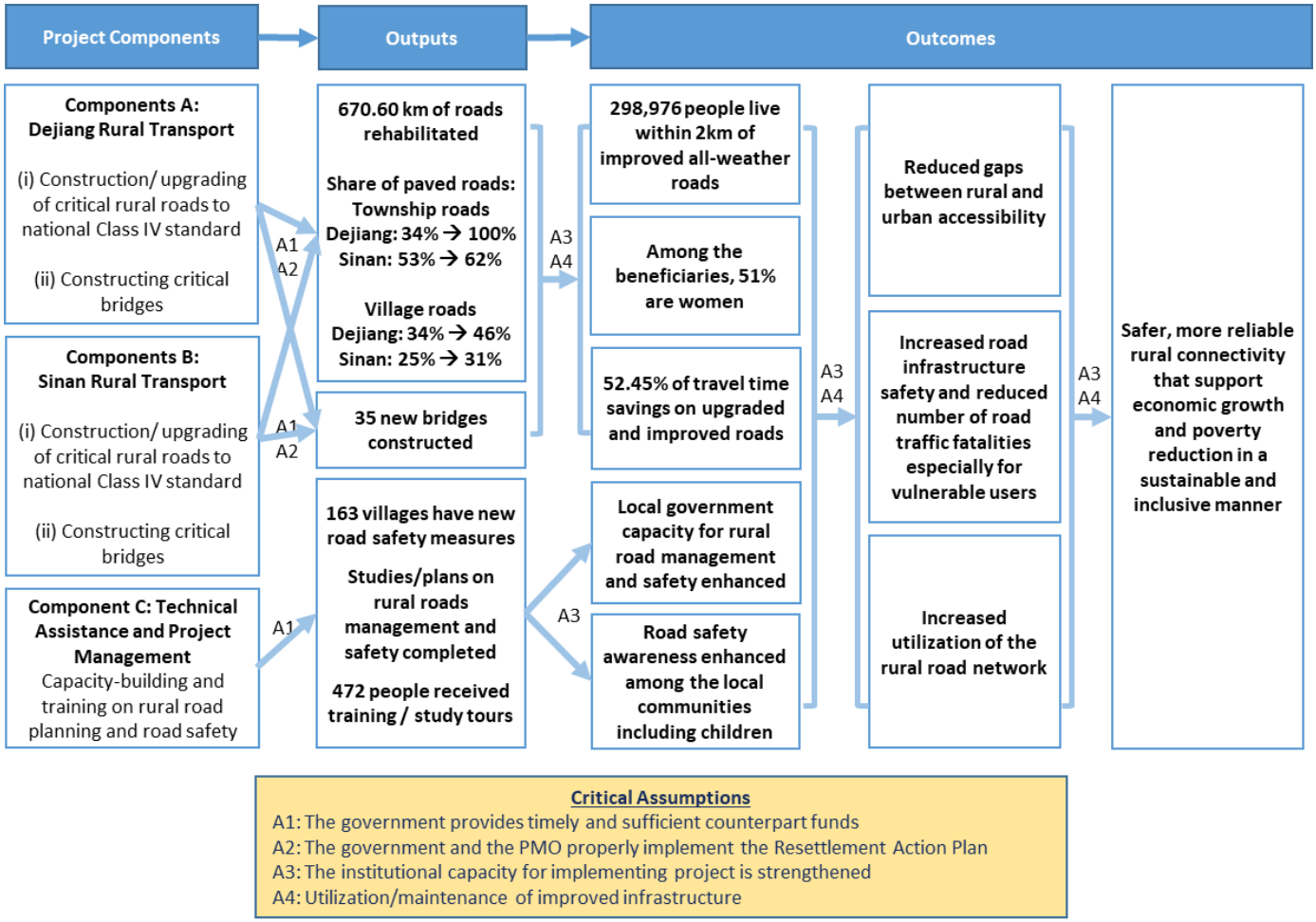
4. The Guizhou Tongren Rural Transport Project (the project) supported the implementation of the Tongren's Five-Year-Plans for Rural Roads Development in Dejiang and Sinan counties by upgrading selected rural roads to Class IV and building rural bridges.[3]. The project was in line with Strategic Theme #2 of the World Bank's China Country Partnership Strategy (CPS) FY 2013–2016 (Report 67566-CN), "Promoting More Inclusive Development", by increasing rural people's access to education, healthcare, and markets. In particular, the project contributed to two CPS outcomes: (a) Outcome 2.3: Enhancing Opportunities in Rural Areas and Small Towns; and (b) Outcome 2.4: Improving Transport Connectivity for More Balanced Regional Development.

[1] Guizhou was one of the poorest provinces in China with the GDP per capita of US$3,700 in 2012, about 50 percent of the national average.

[2] As of 2013, only about half of township-level roads and only 14 percent of village roads were paved.

[3] The World Bank. September 3, 2015. *Project Appraisal Document on a Proposed Loan in the Amount of US$150 Million to the People's Republic of China for a Guizhou Tongren Rural Transport Project (P148071)*. EASCS

### Theory of Change (Results Chain)




### Project Development Objectives (PDOs)

5. The project development objective is to improve rural transport connectivity in Dejiang and Sinan counties.

### Key Expected Outcomes and Outcome Indicators

- Number of beneficiaries, defined as persons who live within 2 km of a project road (#, core).
- Percent of beneficiaries who are women (%, core).
- Travel time savings on upgraded/improved roads (%).

### Components

6. At appraisal, the project was comprised of three components as summarized below.

**Component A: Dejiang Rural Transport** (Cost, inclusive of base cost and share of financing costs: US$150.02 million, IBRD Loan: US$104.5 million). Upgrading selected unclassified rural roads to Class IV standard, as well as construction of selected rural bridges in Dejiang County.

**Component B: Sinan Rural Transport** (Cost, inclusive of base cost and share of financing costs: US$80.77 million, IBRD Loan: US$44.5 million). Upgrading of selected rural roads to Class IV Standard, as well as construction of selected rural bridges in Sinan County.

**Component C: Technical Assistance (TA) and Project Management** (Cost: US$1.00 million, IBRD Loan: US$1.00 million). Provision of: (a) technical assistance support and training activities, including the carrying out of project related studies in areas related to rural road network planning, road safety and road maintenance; and (b) project implementation support, carrying out of monitoring and evaluation activities, as well as project management-related training, capacity building, and study tours.

## B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)

### Project Restructuring

The project was not restructured.

### Revised PDOs and Outcome Targets

7. The PDOs and the outcome targets remained unchanged during project implementation. Targets of some indicators were upward adjusted, at the finding during the Bank's mission in 2020 that some roads and bridges in Sinan county were omitted in the Results Framework.[4] The mission discussed and confirmed the methodology and data used to calculate the new numbers (see Annex 1).

### Revised PDO Indicators

There was no revision to the PDO.

### Revised Components

8. The project components remained unchanged, but their scope was adjusted as follows:

a. **Addition of Batch 4 to the project (under Components A and B)**. In addition to the original three batches of roads/bridges, Batch 4 roads and bridges were added to utilize cost savings incurred during implementation (see Section III.B.). As per the government request, the World Bank approved the addition of 11 roads (42.9 km in total), 8 bridges (204 meters in total) and road safety enhancement (282.12 km) in Dejiang, and road safety enhancement (73.8 km in total) in Sinan, under Batch 4, which were successfully implemented.

b. **Combining of two technical assistance activities**. The original design included three TAs (see Counterpart Funding Arrangement Section, para. 29); during implementation, it was found that a study similar to one of the planned TAs, on rural road network planning, had already been carried out with the government funding albeit not in full scope envisaged under the project. Hence, the TA adjusted to supplement the government funded study with topics including rural road maintenance. The revised TA was renamed as "Establishing a framework for rural road construction, management, maintenance, and operation" (Technical Assistance and Capacity Development Programs Section).

c. **Changes in financing sources and removing some bridges from the project scope**. A total of 15 road sections (102.5 km in total) were removed from the World Bank financing due to their urgency and financed by the government's own budget. Meanwhile, 4 bridges (85.0 meters in total) were removed from the project and implemented under a different project by the government. Despite this scope change, with the addition of Batch 4 later, the total road lengths and number of bridges financed under the project exceeded the targets.

[4] For example, Wengxizhen to Changzhen road with 13.5 km in length, which was completed in 2018.

d. **Changes in design standards**. At appraisal, the project roads and bridges were designed according to the national technical codes (4.5–6.5-meter width). According to the provincial guidance of the 13th Five-Year-Plan, issued on October 25, 2015, the design standard for all rural roads was upgraded to 5.5-meter subgrade width. As per the agreement between TMTB and the Bank, some project roads with existing subgrades of 4.5 meters were widened with vehicle passing bays and road shoulders only, to minimize additional land acquisition and resettlement (LAR).

### Other Changes

There are no other significant changes.

### Rationale for Changes and Their Implication on the Original Theory of Change

The project did not have significant changes.

## II. OUTCOME

### A. RELEVANCE OF PDOs

### Assessment of Relevance of PDOs and Rating

9. At closing in June 2021, the project's PDO remains relevant to the World Bank Group's China Country Partnership Framework (CPF) 2020–2025,[5] which aims at (i) advancing market and fiscal reforms, (ii) promoting greener growth, and (iii) sharing benefits of growth. In particular, the project enabled sharing of benefits of growth with the rural and previously isolated communities, by increasing access both to economic opportunities and key services such as health, education, and social services. The project's PDO was to provide improved transport accessibility in selected counties of Tongren, in a sustainable manner. Upon completion, a total 670.6 km of the rural roads was upgraded, and 35 bridges were constructed in Dejiang and Sinan counties. Meanwhile, effective capacity building programs were carried out. As results, the connectivity and accessibility of rural population in the project areas were substantially improved, and the capacity for rural road development was significantly strengthened. Such achievements are fully aligned with the Bank's CPF.

10. The project remains highly relevant to the government's continued focus on addressing the inequality between urban and rural areas and between eastern and western parts of the country. Such a vision and policy priorities are manifest in: (1) China's Rural Revitalization Program, of which package of policies were announced in 2018 to support rural population to have equal access to basic public services by 2035, and (2) the more recent Chinese central government "Common Prosperity" campaign, launched in 2021 aiming to address the significant and widening income and wealth gaps between urban and rural populations, which are deemed to undermine social cohesion and sustainability and resilience of post-COVID recovery.

11. The project is also in line with the global strategy pursued by the World Bank in the transport sector, under the framework of Sustainable Mobility for All (SuM4All). Among the four pillars of SuM4All's Mission: Universal Access, Efficiency, Safety and Green, the PDO is aligned with the pillar of Universal Access which focuses on connecting all people, especially including women, and communities to economic and social opportunities.

12. **The relevance of the PDO is rated as *High***.

[5] The World Bank. November 11, 2019. *Country Partnership Framework for the People's Republic of China for the Period of FY2020-FY2025*. Report No. 117875-CN.

## B. ACHIEVEMENT OF PDOs (EFFICACY)

### Assessment of Achievement of Each Objective/Outcome

13. The project was completed on time, disbursed in full including additional Batch 4 activities funded by cost savings. The achievement of the PDO, improving rural transport connectivity in Dejiang and Sinan Counties, is attributed to (1) access to improved roads (surface quality and safety), (2) reduction in travel time and economic distance, and (3) enhanced institutional capacity to utilize the results of the project. Based on the PDO indicators and intermediate results (IR) indicators, the PDO is fully achieved, as presented below in terms of the attainment of each PDO indicator.

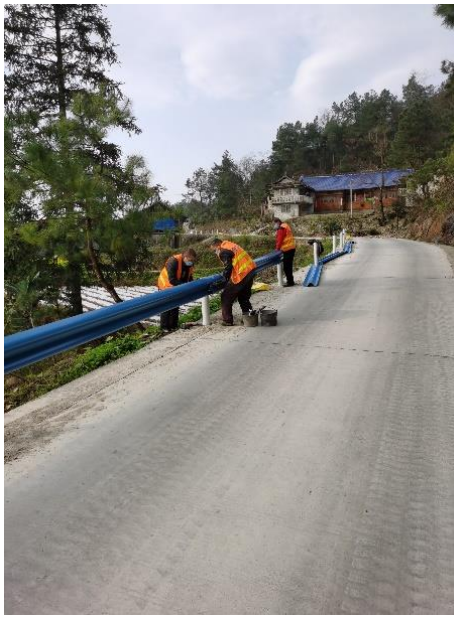
| Factors that contribute to PDO | Indicator | Target at appraisal | Actual achieved at completion | Completion percentage |
|---|---|---|---|---|
| (i) access to improved rural roads<br><br>(ii) reduction in travel time and economic distance | IR indicator: Roads rehabilitated | 646 kilometers | 670.6 kilometers | 103%* |
| | IR indicator: Number of bridges improved/ constructed | 30 | 35 | 116%* |
| | IR indicator: Number of Villages with New Road Safety Measures | 147 | 163 | 110%* |
| | Indicator 1: Direct project beneficiaries | 262,000 people | 298,976 people | 114%* |
| | Indicator 2: Female beneficiaries | 48% | 51% | +3%p |
| | Indicator 3: Travel time savings on upgraded/ Improved roads | 30% | 52.45% | +22.45%p |
| (iii) enhanced institutional capacity | IR indicator: Direct Project Consultations with Beneficiaries Undertaken | Yes | Yes | 100% |
| | IR indicator: Technical Assistance: Studies and Plans Completed | Yes | Yes | 100% |
| | IR indicator: Number of Trainees who Attended Training and Study Tours | 300 people | 472 people | 157%** |

* The cost savings from competitive procurement, as well as conservative estimates of project costs during preparation, led to more roads and bridges financed under the project through the addition of Batch 4, and eventually, to more beneficiaries upon completion of the project.
** International travel restrictions due to COVID19 led to a virtual training mode which allowed to accommodate more people in the training program.

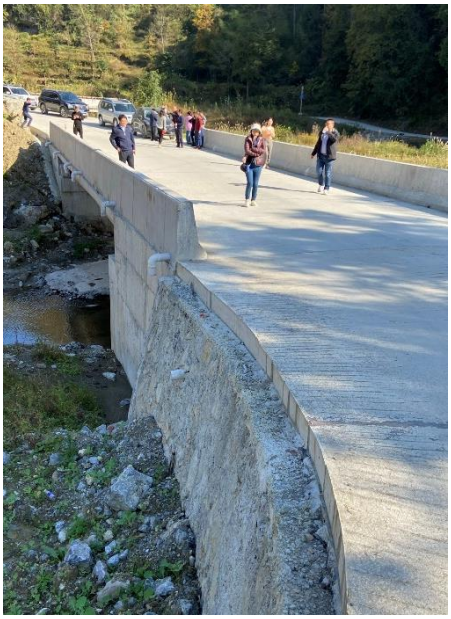
**Rural population's access to improved roads**

14. Upon completion, 670.6 km of rural roads were upgraded and 35 bridges constructed (exceeding the IR targets of 646 km and 30 bridges, respectively), resulted in enhanced road conditions, connectivity and safety in the Dejiang and Sinan counties of Tongren Municipality. The project roads/bridges are located in all 22 townships in Dejiang and 12 out of 28 townships in Sinan. According to the annual surveys by TPMO, 298,976 people in 124 villages, living within 2 km from the project roads and bridges, benefited from the project,[6] exceeding the target of 262,000 people anticipated at appraisal by about 14 percent. Before the project, some villages in the project townships were isolated due to poor connectivity to the main transport network and travelers had to traverse small rivers through shallow riverbeds or on simple bridges or take longer routes to avoid unsafe travel paths during rainy seasons. After the project, due to shorter travel distances (via the new bridges) and greater speed, it is estimated that the vehicle operating cost savings would be about RMB1,151.9 million over the 25-year period (2016–2040).

[6] According to the social impact survey, total 362,855 local people are benefited by the project roads and bridges.



Workers installing safety guardrail during visit in November 2020



A newly completed concrete bridge during visit in November 2020

Upgraded section with freshly completed greening works

**Female beneficiaries of improved access**

15. The project significantly contributed to the vulnerable users through establishment of new road safety measures and direct project consultations with beneficiaries. Large number of the beneficiaries in the project areas were women. According to the census in 2020, the women accounted for 49.2 percent of total population in Tongren Municipality, 49.4 percent in Dejiang, and 49.8 percent in Sinan, respectively. In comparison with the census in 2010, the women population increased by 0.19 percentage point, from 49.00 percent to 49.19 percent in Tongren. The social survey under the project revealed that about 51–53 percent of the benefited population in the project direct impact areas were women. At appraisal, the social survey showed that in the project areas the rural males intended to work outside of the villages, while the rural women intended to work locally, which can be seen along the roads. Benefited by the project roads/bridges with new road safety measures, now the women started to travel further with more frequent to market, school, health care, and attending more social activities. In the project areas, tourism and roadside businesses have developed rapidly (see below some anecdotal evidence). Most of rural hotels, restaurants and shops are operated by women.

**Reduction in travel time and economic distance**

16. Before the project, most of the project roads were unclassified or foot paths in very poor conditions. All the upgraded roads are now in Class IV standard. This means that project roads are with asphalt or cement concrete pavements in Dejiang, and all cement concrete pavement in Sinan. According to the survey carried out by TPMO upon completion of construction, vehicle speed after the project doubled to 30.9 km/hour on average, leading to a travel time reduction by at least 50 percent, exceeding the target of 30 percent. The updated roads also provide all-weather access for local population including via the bridges, which reduces the travel time significantly. It is estimated that the total passenger time cost savings would be about RMB3,802.5 million over the 25-year period during 2016–2040.

17. The project has benefited the communities beyond what was captured in the indicators, as the improved connectivity enhanced access to markets, job opportunities, education, and health and other services. For example,

farmers in Shangping village, where the road was upgraded by the project, benefited from the reduced transportation cost of their agriculture products such as grapefruit, orange, and pepper by around RMB 0.2 per kg. Farmers were able to expand their cultivation areas and earn profits from their additional planting area. Shangping village's annual sales of grapefruits doubled to about 30,000 kg after the project. Corresponding to these examples, the rural net income in Tongren Municipality increased from RMB 6,931 per person in 2015 to RMB 11,100 in 2020.[7]


Grapefruit farm by the project road in Shangping village

18. The project has attracted new investments, enabled by the improved connectivity and lower transport costs. Village governments and villages have embarked on a new business model, whereby the village governments invest in farming of high-profit cash crops such as peppers and mushrooms on the land provided by willing villagers, who receive dividends at the end of year. Picture below (left) shows newly setup greenhouse for mushrooms financed by Changxian village government, on a 500-hectar land along the project road in the village, which hires 40-to-50 people during planting and harvesting seasons (5 months per year). These new jobs bring additional annual income of RMB 12,000 (equivalent to about US$1,800) to those hired, and majority of those are female workers.

19. Investments came also from outside the communities. In 2019, an outside investor has developed a 6,500-hectare tree nursery in eight villages[8], contracted for 28 years and with leasing from 3,450 villagers (picture below in the middle). A tea factory, initially built in 2010, expanded its area to 2,200 hectares, started hiring far more people including from several nearby villages[9], and increase the output to 30 tons of tea leaf per year.

Greenhouse for mushroom planting

Tree nursery

Expanded tea factory

[7] Tongren Statistics Yearbook - 2020
[8] Qingming, Baiguo, Hepeng, Changxian, Qinglonggang, Chuanshangou, Banping, and Chayuan villages
[9] Chaoyang, Longxi, Fenglin, and Zhongzhai villages, and Daxing community

**Enhanced institutional capacity for rural road maintenance and traffic safety**

20. Besides of the PDO targets, the project also strengthened the overall institutional capacity of the rural road development in Tongren Municipality through trainings and TAs, especially in rural road maintenance and traffic accident management. Under the project, 472 persons received training and participated in various study tours, exceeding the target of 300 persons. Key studies and plans were developed in good quality, which are put to use by relevant local authorities (Technical Assistance and Capacity Development Programs Section, para. 46).

### Justification of Overall Efficacy Rating

21. All PDO indicators exceeded or achieved their targets; the targets for all intermediate results indicators were also achieved (Annex 1 for more information). Hence, the overall PDO of providing improved transport accessibility in selected rural areas was achieved in a substantial and sustainable manner. **The overall efficacy of the project is rated as *High***.

## C. EFFICIENCY

### Assessment of Efficiency and Rating

22. The economic analysis of the project was updated by the Bank's ICR team, using the actual project costs and traffic volumes and speeds from the survey on the sample project roads carried out by TMTB. The future traffic volumes were forecast based on the actual traffic after the completion. The economic benefits of the project come from (1) the travel time savings, thanks to higher speed and more direct connection via new bridges, and (2) lower vehicle operating costs, thanks to better road conditions. Consequently, the updated economic internal rate of return (EIRR) is 14.4 percent for the whole project, or 13.0 percent and 17.9 percent for the Dejiang and Sinan components respectively. This slightly lower value than the estimation at appraisal, 16.5 percent for the whole project, is mainly due to the lower traffic level caused by the COVID-19 related travel restrictions. Nevertheless, the EIRR is sufficiently high, and thus, the project remains to be economically viable.

23. The sensitivity analysis was carried out with respect to changes in the project costs and benefits. The project remains to be economically viable under all sensitivity scenarios: Under the most pessimistic scenario, where the future maintenance costs increase by 20 percent and benefits decrease by 20 percent, the EIRR would be 10.7 percent for the whole project. The sensitivity analysis also showed that the EIRR is more sensitive to the changes in the future benefits. The details of the economic analysis are presented in Annex 4.

24. The project implementation slowed during the first year due to the capacity constraint of some staff in PMOs and during the last year primarily due to the addition of Batch 4 and the COVID-related travel restrictions, which constrained mobilization of consultants. Nevertheless, the project was completed by the original closing date without requiring an extension, thanks to close monitoring and communication between the Bank task team and the PMOs and timely action to remedy delays.

### Justification of Overall Efficiency Rating

25. **The overall efficiency is rated as *Substantial*** considering the robust economic viability of the project and timely implementation.

## D. JUSTIFICATION OF OVERALL OUTCOME RATING

26. **The overall project outcome is rated as *Highly Satisfactory***, considering (i) the high relevance; (ii) the high efficacy; and (iii) the substantial efficiency.

## E. OTHER OUTCOMES AND IMPACTS

### Gender

27. At appraisal, a social assessment was carried out with special attention to the views and needs of women, to address gender concerns in the project design and implementation. It was estimated that the total female population was 161,800 people in the project areas, accounting for about 48.5 percent of the total population. The assessment concluded that the project would increase accessibility of women to local and regional goods and services. Since women regularly cross and use the roads as pedestrians, they would be exposed to, and were vulnerable to, accidents. Hence, safety measures recommended in the Feasibility Study and Social Assessment reports were included in the project designs. Meanwhile, a results indicator was added to the Results Framework for monitoring the number of women beneficiaries. An indicator would also measure the number of project villages adjacent to project roads with new road safety features.

28. During implementation, the Bank's task team and the PMOs ensured that gender considerations were incorporated in the engineering design and bidding documents, and no differentiate wages were paid between men and women, for the work of equal value. Under the project, new road safety measures were implemented in 163 villages, particularly benefiting pedestrians. Construction of the project has brought about significant time savings from trips that are frequently made by women, such as those to health services and pickup/drop-off of children at school. Women's economic participation has increased both in agriculture, as male workers have increased access to non-farm jobs, as well as in tourism and small businesses such as hotels, restaurants, and shops, which are set up by roadsides and mostly operated by women. The project has greatly improved the condition for local agricultural production and transportation, which benefited women who participated more in the agriculture activities after the project.

### Mobilizing Private Sector Financing

N/A

### Poverty Reduction and Shared Prosperity

29. Guizhou is one of the poorest provinces in China, at the 50 percent of the national average GDP[10]; Dejiang and Sinan counties are relatively poorer compared to the rest of the province. Poverty in the two counties was partially attributed to lack of connectivity between rural and urban areas, owing to Tongren's hilly and mountainous terrain. By upgrading rural roads and building new bridges, the project has provided the rural population in both counties with improved connectivity and access to market, education, and healthcare services. The project focused its support on roads that benefited the most vulnerable households. Under the overall government's poverty alleviation programs, in which rural road development was an integral element, all 10 poverty counties with total 1,153 villages or 942,900 people in Tongren Municipality were lifted above the national poverty line in 2020.

### Other Unintended Outcomes and Impacts

N/A

[10] According to the census, the GDP per capita of Guizhou ranked 28th position in 2020 among all provinces in China.

## III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

### A. KEY FACTORS DURING PREPARATION

#### Lesson Learnt from Similar Road Projects in China

30. The project design incorporated key lessons from the previous World Bank financed rural road projects in Guizhou and Shaanxi Provinces. Specific design features include: (i) establishing and empowering county PMOs as the leading implementation agencies, as they are best positioned to coordinate with village-level administrations and communities; (ii) ensuring that counterpart funding requirements do not exceed 1 to 2 percent of the expected local fiscal revenue in a given construction year; and (iii) including a higher proportion of domestic training and study tours in the capacity-building program, considering the strict local regulations regarding international travel for government officials.

#### Project Roads Selection

31. The project roads and bridges were selected following a three-step process: (i) all planned rural road and bridge projects in the 12$^{th}$ Five-Year-Plans of Dejiang and Sinan counties were listed; (ii) these roads and bridges were evaluated based on pre-determined criteria (described below) and ranked; and (iii) top ranked roads and bridges were selected to be included in the project.

32. The main criteria applied to project road selection were: (i) surface and subgrade conditions; (ii) number of beneficiaries; (iii) land acquisition requirements and potential environmental impacts; (iv) current and projected traffic volume; and (i) strategic importance in improving overall network connectivity and local economic development. The main criteria for selection of bridges were: (i) existing conditions; (ii) number of beneficiaries; and (iii) strategic importance in improving overall network connectivity.

#### Counterpart Funding Arrangements

33. During preparation, it was agreed that the World Bank loan would cover the major portion of the civil works costs (95.2% for Dejiang and 75.9% for Sinan components) and the financial charges for the loan. The remaining costs would be covered by the counterpart funds and the country governments of Dejiang and Sinan would take full responsibility for the counterpart funding and debt services for the loan. Accordingly, a fiscal analysis was carried out, which identified that the government debt levels for both project counties were very high, at 73 percent and 11 percent of the 2012 annual local government fiscal revenues for Dejiang and Sinan counties. For avoiding shortage of the counterpart funds, the project implementation schedule was adjusted to ensure that the counterpart funding requirements would not exceed 1 to 2 percent of the projected local government's fiscal revenue. To support their share of counterpart funding, the two counties would also leverage a dedicated national rural road subsidy of RMB 500,000 per km for upgrading rural roads to paved surfaces. With this subsidy, the average annual counterpart funding requirement in Dejiang and Sinan counties would amount to 0.85 percent and 1.07 percent of the local fiscal revenues, respectively. These percentages were considered a reasonable burden for the two project counties.

#### Technical Assistance and Capacity Development

34. **Technical assistance programs**: To enhance the overall institutional capacity of the rural road development, three TAs were designed at appraisal.

- **Rural Road Network Planning**. This TA would support updating of the counties' rural road network and transit plans to accommodate the upgraded project roads. The Bank loan would be used to support data collection activities and technical expertise required to prepare the plan.

- **Rural Road Maintenance Capacity Building**. This TA would (i) prepare a report on funding needs for consideration by the province; (ii) introduce information technology systems to improve the efficiency of road maintenance; (iii) improve the quality of supervision; and (iv) develop an incentive system that supports best maintenance practices.
- **Capacity Building for Rural Road Safety**. This TA would support designing of a rural road safety campaign to increase road safety awareness, to be integrated into the social safeguards monitoring and public consultation process.

## B. KEY FACTORS DURING IMPLEMENTATION

### Organizational Arrangement and Capacity Development

35. The implementation arrangement was set up to ensure close cooperation between the provincial, municipal and county level governments and to provide adequate support to the relatively low capacity of the two counties, who were first-time clients. A Project Leading Group (PLG) was established in Tongren Municipality Government (TMG), which was headed by a Vice Mayor and comprised of senior officials from relevant municipal departments (the Development and Reform Commission, Finance Bureau, Environment Protection Bureau, etc.) as well as representatives of Dejiang County Government and Sinan County Government, to provide overall guidance on the project design and implementation. Similar leading groups were also established in Dejiang and Sinan counties, which were led by the county leaders.

36. A Tongren project management office (TPMO) was established under TMTB to lead and coordinate the overall project implementation, including coordinating with the PLGs and county PMOs, preparing project reports, consolidating project financial statements, organizing consultant recruitments (including external monitoring of safeguards compliance and capacity development programs), and managing technical assistance programs (including the TAs and trainings). Meanwhile, two sub-PMOs (DPMO and SPMO) were established respectively in Dejiang and Sinan counties under the county transport bureaus with the responsibilities of project management and implementation of their respective project components, including procurement, contract management, financial reporting, and internal safeguards monitoring.

37. Shortly after project effectiveness in 2016, the directors of both DPMO and SPMO were replaced; moreover, during the earlier period of implementation, the TPMO had high turnover of its leadership and staff,[11] which had adverse impacts on the project implementation progress. Meanwhile, some staff in the PMOs, particularly those assigned for financial management and safeguards tasks, were not fully aware of their responsibilities and were engaged in other duties that limited their availability. The Bank's missions during the earlier implementation period thus focused on addressing these capacity issues, through substantial staff training and extensive discussions at the city and provincial leadership. The PLGs and PMOs also since made significant efforts to resolve the staffing issues and improve project management capacity, through (i) recruiting more staff; (ii) providing more trainings to their staff, especially in environmental, social, financial, and procurement aspects; (iii) designing and implementing internal procedures for safeguards management; (iv) improving internal financial management accounting and procedures; and (v) developing and implementing a plan for improving construction supervision. Such improved institutional arrangement and capacity ensured successful implementation of the project.

### Implementation Schedule

38. At appraisal, the project was expected to be implemented during September 2015 and December 2020. After effectiveness of the loan on January 26, 2016, the Bank's task team carried out a Project Launch Mission to Tongren

[11] e.g., the deputy director of the TPMO was replaced three times in 1.5-year time.

in April 2016, to (a) receive updates on any project design, scheduling, or institutional changes that may have occurred since appraisal; (b) provide training on fiduciary and safeguards aspects; and (c) reconfirm role of the Bank during the supervision process, project reporting requirements, and supervision schedule. The Bank's mission found that the project implementation had some initial delays, due mainly to changes in leadership and PMO staff (para. 37). Although bidding for the first batch of contracts was scheduled to begin in May 2016, the work on LAR had not commenced, and the application process for the designated account had not been initiated. The Bank's mission also found that some project roads/bridges had already completed using the counterpart funds,[12] due to their urgency.

39. Procurement of Batches 1 and 2 progressed relatively smoothly. The procurement for the Batch 1 contracts started in May 2016 and the contracts were awarded in August 2016, with target completion dates in 2017. In parallel, the detailed designs for the Batch 2 roads/bridges were completed, procurement for the Batch 2 contracts started in January 2017 and the contracts were awarded in March–April 2017. In early 2017, key implementation issues were identified, partly due to further changes in the PMO's directors and staff, including delayed payment to the contractors, delayed submission of financial statements, and slow compensation for LAR. The Bank's mission informed that the procurement for Batch 3 roads and bridges cannot commence without substantial remedial actions to these pending issues. With joint efforts, these issues were resolved, and the construction of Batch 1 started in September 2016 and Batch 2 in April 2017. The procurement for Batch 3 contracts started in July 2017 and the contracts were awarded in September–October 2017, with target completion dates in June 2019.

40. At the time of the midterm review in October 2018, (i) Batch 1 was substantially completed for both Dejiang and Sinan; (ii) Batch 2 was 95 percent completed in both Dejiang and Sinan; (iii) construction of Batch 3, started in October 2017, was 67.5 percent completed in Dejiang and 80.0 percent in Sinan, with some contracts experiencing delays. Procurement of Batch 4 roads/bridges and road safety engineering, added to the project through restructuring and using the loan savings, started in August 2019 and the contracts were awarded in October 2019–September 2020 for Dejiang and in October 2019 for Sinan. All Batch 2 and 3 roads/bridges were completed by October 2020 in Dejiang and by October 2019 in Sinan. All Batch 4 roads and bridges were completed by June 2021.

41. Implementation of the TAs were delayed primarily due to slow progress in preparing, and several changes to, the TORs, which resulted in delays in the recruitment of consultants. While two qualified and experienced consulting firms were contracted in May 2019, the Beijing- and Dalian-based consultants could not travel to Tongren to carry out their work due to COVID-related travel restrictions during much of 2020. The TA completion dates were extended by 3 months to make up the time lost. Both TAs were successfully completed by June 2020, with all their deliverables endorsed and adopted by relevant technical departments.

### Project Cost and Financing

42. At appraisal, the project cost was estimated at US$231.8 million, to be financed by the IBRD loan of US$150.0 million and counterpart funds of US$81.8 million equivalents. The IBRD loan would cover the costs of (i) civil works, respectively 95.2 percent for Dejiang and 53.7 percent for Sinan, (ii) construction company management, 50 percent of the total, (iii) technical assistance, 100 percent; and (iv) financial charges for the loan, 100 percent.

43. During implementation, 15 road sections were removed from the Bank's financing due to urgency, which were fully financed by counterpart funds. Through the competitive tendering of the civil works, the contracted prices were significantly lower than estimated (about 50 percent lower for some cases). The above led to significant savings in the project funds. In 2018, it was found that loan savings amounted to US$18.2 million, including US$16.0 million for Dejiang and 2.2 million for Sinan, due to (i) some roads were fully financed by the counterpart funds, (ii)

[12] For example, Liangshujing Road (11.997 km) and Yuanjia Hao Bridge (26 meters).

lower contract prices, and (iii) lower interest rates applied before 2018. Proposed by the TPMO and agreed by the Bank, Batch 4 was included in the project scope. In 2020, an additional loan saving of US$2.3 million incurred; approved by the Bank, some office equipment was procured by using the savings.

44. Upon completion, the total project cost was US$ 173.25 million equivalents, about 25 percent lower than that at appraisal. Compared to the costs at appraisal, the costs for the civil works were about 4.5 percent lower, mainly due to lower contract prices; the financial charges were about 8.8 percent higher due to mainly longer project implementation period and higher interest applied after 2018. At the same time, all other cost items had substantial reductions than that estimated at appraisal, especially in the costs for the LAR and project implementation management. Upon loan closing on June 30, 2021, the World Bank loan of US$150.0 million was fully utilized and disbursed. The details of the cost comparison at appraisal and completion are shown in Annex 3.

### Technical Assistance and Capacity Development Programs

45. The Bank's task team provided substantial technical support to the TA implementation. For the TA on rural road network planning, the Bank task team introduced an open-source rural accessibility mapping tool, which can support efficient rural road project prioritization. For the TA on road maintenance, the Bank task team provided sample maintenance TOR that was used from a similar activity under the Guiyang Rural Roads Project. For the TA on road safety, the Bank task team organized a stakeholder workshop to receive inputs for the activity design that meets the local context and needs.

46. Two consulting firms were contracted for (1) Developing a Framework for Rural Road Construction, Management, Maintenance and Operation in Tongren; and (2) Improving Rural Road Safety Capacity, respectively. For the (1) TA of road construction and maintenance, the consultants carried out five tasks: (i) conducting two surveys of road conditions and traffic, (ii) developing a 5-year construction plan (2021–2025), (iii) optimizing construction management and maintenance, (iv) developing a passenger transport service improvement plan, and (v) improving sustainability of rural road construction management. For the (2) TA on the road safety, the consultants carried out: (i) rural road safety risk assessment before the project, (ii) rural road safety risk assessment after the project, on demonstration sections, (iii) implementation of Tongren rural road school zone safety measures and road safety education program for pupils, and (iv) development of a safety facility design manual. The consultants worked closely with relevant government agencies that are responsible for adopting and using various plans, guidelines/manuals, and recommendations developed under the TAs, and obtained their approval before receiving payments. Both TAs were successfully completed in May 2021.

47. The study tours and training programs were successfully implemented according to annual plans. Upon project completion, total 22 training programs were implemented, including an oversea study tour in 2016 to Vietnam (organized by the World Bank), 17 study domestic tours, and 4 training programs within Guizhou Province. Total 472 person-times participated in the study tours and trainings, which far exceeded the target of 300 person-times. The study tour and training programs focused on safeguards compliance, procurement, financial and project management, and rural road maintenance and management. Summary reports of the training programs implementation were submitted to the Bank's task team. The implementation of these study tours and training programs have substantially increased the capacity of the TMTB staffs, especially in rural road project management and maintenance. The implemented training programs are in Annex 5.

## IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

### A. QUALITY OF MONITORING AND EVALUATION (M&E)

#### M&E Design

48. The design of the M&E system was sound. The Results Framework, remained unchanged throughout the life of the project, is well aligned with the PDO, and both the PDO and intermediate results indicators are measurable and attributable. Overall, the definitions and methodologies for the indicators were straightforward and easy to understand with clearly defined methodologies and units of measure. Despite having identified rural road maintenance as among the weaknesses of the sector at the time of appraisal, the PDO and the Results Framework did not include the sustainability dimension; nonetheless, the government priorities have changed over time and maintenance is of less concern at the time of project closing. The Results Framework would have benefited from additional clarity on the scope of data collection for women beneficiary and travel time savings, which indicates a minor shortcoming. The time and resources required for data collection was easily accommodated within the reasonable responsibilities of PMO and local governments. The PMOs were responsible for collecting the required data and the monitoring/reporting results, while the TMG was responsible for ensuring that TPMO prepare and furnish to the Bank the interim unaudited financial reports for the project. A mechanism for regular and independent monitoring of the safeguard compliance was also put in place.

#### M&E Implementation

49. The TPMO oversaw the implementation of the M&E programs. The PDO result indicators were monitored annually. A commercial computer software (Mapillary) was used to monitor the road condition and project progress with the data collected every quarter, which were processed and incorporated in the project progress reports. Throughout the life of the project, The TPMO 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, and social and environmental monitoring reports. The Borrower's ICR prepared by TPMO was of acceptable quality and fulfilled their domestic requirements and standards.

50. The social safeguards were monitored and evaluated according to the Resettlement Action Plan (RAP). Internal monitoring was carried out by the county PMOs 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. External social monitoring reports were submitted to the Bank on time during implementation. 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 occurred. The civil works contracts included the provisions relating to environmental protection and soil/water conservation. The supervision consultants and local environmental protection agency checked the work sites daily. The PMO staff visited the project site regularly and supervised the EMP implementation. An external environmental monitoring consultant was engaged to conduct regular site monitoring on the environmental performance of the contractors and prepare independent monitoring reports on a semi-annual basis. The Bank's task team inspected the environmental compliance through regular site visits and review of monitoring reports.

#### M&E Utilization

51. The monitoring reports were well used by TMG and the Bank's task team to understand the project progress and any issues occurred, to provide support and guidance, and to take actions as needed. The Bank's task team reviewed the external monitoring and evaluation reports to ensure the social and environment safeguard compliance and to maintain satisfactory monitoring. The Bank's task team deemed these reports to be of

satisfactory quality and requested the local government staff to fully utilize them in improving their work concerning resettlement and environment management accordingly. At project completion, all of the M&E reports were reviewed and utilized in the ICR preparation.

### Justification of Overall Rating of Quality of M&E

52. The project M&E system was well designed and implemented. The monitoring results were well used by TMG and the Bank's task team to supervise and guide the project implementation, as well as to prepare the ICR report. **The quality of the M&E system is rated as *Substantial***.

## B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

### Environment Safeguards

53. At appraisal, the project was classified as an environmental *Category B* due to its moderate environmental and social impacts. The project included upgrading and improvement of existing rural roads and constructing small and medium bridges. Construction activities would have potential environmental and social impacts during construction, including soil erosion, material borrow and waste spoil management, nuisance from dust and noise, wastewater management, community impacts, traffic disturbance, and safety issues. An environmental impact assessment (EIA) and a stand-alone environmental management plan (EMP) were prepared. The draft EIA was locally disclosed on December 11, 2014 on the government's websites, and the final EIA and EMP were re-disclosed on March 27, 2015. The EIA and EMP were also disclosed on the Bank's Info Shop on April 14, 2015. While preparing the Batch 4 roads/bridges, a supplementary environment assessment was carried out and the EMP was updated with the latest project changes and additional mitigation measures.

54. During implementation, the EMP was included into the bidding documents for the civil works contracts. The implementation of the EMP was monitored by the construction supervision consultants, recruited by the county PMOs. Meanwhile, an external environmental consultant was recruited to conduct periodic field supervision, environmental training, and assist the TPMO with preparation of the semi-annual environmental report. The external monitor reported multiple instances of non-compliance with the EMP,[13] and remedial action plan was prepared to address these issues, which was implemented by the PMOs in a timely manner. The Bank's missions reviewed the monitoring reports and visited some project sites. A summary of the EMP implementation is provided in Annex 5.

### Social Safeguards

55. The World Bank safeguards policy OP/BP4.12: Involuntary Resettlement applied to the Project. At Appraisal, it was expected that land acquisition and resettlement would be minor, since: (i) minimizing resettlement was a criterion in the road selection; and (ii) the project roads would be upgraded on existing rights-of-way. A resettlement action plan (RAP) was prepared, which included the compensation policy and detailed land acquisition requirements. The RAP was disclosed in Dejiang on March 9, 2015 and in Sinan on March 4, 2015.

56. During implementation, the land acquisition and resettlement (LAR) activities were carried out according to the RAP, but with some delays at beginning. Uniform compensation policy was applied to all project roads, which was published in all project affected villages. Trainings were provided to all relevant stakeholders on the RAP implementation. Compensations for land were paid to the effected villages, instead of individuals. With the consent of displaced persons, the compensation was largely pooled with government subsidies for construction of village infrastructures (e.g., connecting roads among village groups). For the Batch 4 roads, an abbreviated resettlement

[13] Like improper garbage and spoil materials management, drainage arrangements nearby households, lack of safety signs near schools, etc.

plan was prepared, which was reviewed by the Bank's task team. The four batches of contracts collectively acquired 53 ha of land, which physically displaced three households and 3,741 economically displaced in total. All compensation was made before July 2020. An external monitor monitored the RAP implementation and prepared the monitoring reports. The monitoring reports concluded that the project legally completed the land acquisition and resettlement, and substantially achieved the objectives as set out in the RAP. Ethnic minorities in the project area benefitted from the improved roads. The social performance and resettlement implementation were deemed satisfactory. Upon project completion, a resettlement ICR was prepared and submitted to the Bank. A summary of the Borrower's resettlement ICR is in Annex 7.

### Financial Management

57. The financial management assessment at appraisal concluded that the project met the World Bank financial management requirements. According to the legal agreements, Guizhou Provincial Finance Bureau (GPFB) managed the loan proceeds and oversaw the designated account (DA), and the TPMO managed and supervised overall project implementation and prepared consolidated project financial statements.

58. The Bank's mission in 2016 found that, although the civil works had commenced, but no withdrawal request was made. The oversight was largely due to the changes in the PMO staff, where new staff had not received training on Bank's financial management procedures. Other noted oversights included: no financial record of land acquisition activities, no advance payments to contractors, and delayed establishment of project's bank accounts. It was agreed that GPFB would provide targeted support to the TPMO in short run, and the Bank would keep the PMO apprised of upcoming financial management training activities. During implementation, the key weaknesses were resolved through (i) preparation and distribution of a Financial Management Manual to standardize project financial management procedure, (ii) provision of financial management trainings; and (iii) all disbursement applications were reviewed by GPFB to ensure proper usage of the loan proceeds. Through these efforts, the financial management of the project improved and accurate and timely information was provided on the correct use of the loan proceeds throughout the project, as confirmed by the Bank team's review. The project accounting and financial reports were prepared in line with the regulations issued by the Ministry of Finance, which were consistent with the requirements specified in the Loan and Project Agreements. The project financial audit reports were prepared by the auditor with unqualified audit opinions. It concluded that the withdrawals from the loan account and the funds flow arrangement were appropriate.

### Procurement and Contract Management

59. The procurement of the project was carried out in accordance with the World Bank's "*Guidelines: Procurement under IBRD Loans and IDA Credits*". During appraisal, the procurement capacity of the implementation agency was assessed, and a procurement plan for the first 18 months was prepared. As stipulated in the legal agreements, the TPMO was responsible for overall project procurement management and supervision, as well as procurement of activities under Component C. The DPMO and SPMO was responsible for procurement of their respective project components, under the guidance and coordination of the TPMO. To mitigate risks, a Procurement Management Manual was prepared for the project, a qualified procurement agent with Bank-financed project experience was hired, and training was provided on Bank procurement policies and requirements to the PMO staff.

60. Upon completion of four batches, including the original three and Batch 4 added later to utilize cost savings, a total of 31 civil works contracts—22 for Dejiang and 9 for Sinan—and 3 consulting service contracts. Procurement post reviews were carried out regularly and identified cost variations across most of the contracts, due to changes in design, contractors' slow progress, and price-escalation of construction materials. All variations were handled and processed appropriately in accordance with the conditions of the contract. No major quality issues were reported. The procurement assessment carried out throughout the project was moderately satisfactory in earlier

Implementation Status and Results Reports (ISRs) and upgraded to satisfactory since the improvement at the mid-point implementation.

## C. BANK PERFORMANCE

### Quality at Entry

61. The project was the third World Bank financed road projects in Guizhou Province. The Bank's task team worked closely with the counterparts in designing the project that was fully aligned with China's 12th Five-Year-Plan and the local government's priorities, as well as the Bank Group's CPS for FY2013-2016. Experiences and lessons of preparing and implementing previous projects were appropriately assessed and incorporated in the project design and formulation. The Bank's appraisal to the project was thoroughly conducted. During preparation, the Bank's task team provided substantial trainings to related government staff on financial management, procurement, environmental and social safeguards, and technical topics. Meanwhile, project risks were adequately identified, and appropriate mitigation measures were incorporated into the project.

### Quality of Supervision

62. Throughout the implementation, the Bank's task team maintained close supervision and monitoring of the project implementation progress and identified issues through the following three mechanisms: (i) regular, biannual implementation support missions and routine/ad hoc visits to the project sites whenever necessary; (ii) review of the semi-annual project progress reports, annual audit financial reports, and safeguards external monitoring reports; and (iii) monitoring of the results framework biannually. To enhance the project implementation capacity, the Bank's task team provided several rounds of trainings on various topics as well as ad hoc technical support to the PMO staff and related government officials whenever issues arose. During the missions, the Bank's team members conducted visual inspection of the project sites together with PMO, contractors and supervision engineers, to ensure timely and high-quality construction and compliance with the Bank's safeguards policies. The Mid-Term Review, conducted in October 2018 as planned, provided comprehensive assessment of the implementation progress, areas where improvements were needed, and the progress towards meeting the PDO. The Bank's task team carried out a virtual supervision mission using video conferencing tools in May 2020, on an exceptional basis, due to COVID-induced travel restrictions, but resumed a physical mission and site visits since November 2020 when the restrictions were relaxed. The final implementation support and ICR mission to Tongren was carried out in June 2021, to confirm timely and successfully completion of the project.

### Justification of Overall Rating of Bank Performance

63. During project preparation and implementation, the World Bank maintained a strong task team and adequately performed preparation and implementation support activities to ensure high quality of the project design and implementation. The Bank's task team closely monitored the implementation progress, and identified, and helped to resolve, issues and constraints to implementation in a proactive manner, and ensured the compliance of the Bank's policies throughout the project implementation. The supports of the Bank's task team were well recognized by the Borrower and the project executing agency. **The overall Bank's performance is rated as *Satisfactory***.

## D. RISK TO DEVELOPMENT OUTCOME

### Long-term Sustainability of Rural Road Development

64. **The risk to development outcome is rated *Low***, considering that the improvement in government budget allocation for rural roads maintenance over the recent years. After completion, the project roads/bridges are maintained by the county transport bureaus and related township governments, relying on budget allocations from

the provincial government. At the time of appraisal, it had been assessed that the local governments in Guizhou Province are often in shortage of funds and tend to prioritize new road construction and other capital-intensive investments, which lead to inadequate funding for routine and periodic maintenance. This has changed in the latest 14th Five-Year Plan, covering the period of 2021-2025: as the local governments upgraded/rehabilitated much of their rural road network, including the World Bank financed roads under the project, their priorities are gradually shifting from building to keeping up the infrastructure. During this period, in addition to the maintenance budget of the local governments, Tongren municipality and its rural counties received RMB 10 million (equivalent to US$1.6 million) of subsidies from the national and provincial governments for rural road maintenance. The policy recently issued by the provincial government, "Notice on implementation plan for deepening the reform of rural highway management and maintenance system in Guizhou Province (September 18, 2021)", ensures priorities and adequate budget allocation for on rural road maintenance.

65. In support of adequate technical standards and budget allocation, the TAs carried out under the project provided concrete and evidence-based recommendations that can help increase the sustainability of rural road development in Tongren, including through a framework for rural road construction, management, maintenance, and operation. While the TA results have been reviewed and endorsed by relevant technical departments, these need to be fully adopted and institutionalized to be effective. The Tongren municipal government is keen to utilize these findings. For road safety, (i) the training needs to continue, targeting broader communities beyond the project locations, (ii) the road safety assessment needs to be institutionalized and expanded to more road sections, and (iii) the proposed road safety measures need to be adequately incorporated into the road design and construction.

66. During implementation, COVID-related travel restrictions meant delays in implementation of some activities, especially for TAs where the consultants based outside the province could not travel to sites to carry out their tasks. However, Tongren and project area remained low risk during the life of the project, and it is expected that the long-term impacts of COVID particularly on the project outputs would be minimal beyond its broader impacts on the economy, movement of people (due to control measures), and public health.

## V. LESSONS AND RECOMMENDATIONS

### Project management and implementation

67. **Provide early, focused, and well-resourced support to build implementation capacity, especially for the first-time client**. It was the first time for the municipal and county governments in Tongren to use international loan in rural road development. Although some trainings were provided to the government staff during project preparation, they needed continued and extensive support for learning the Bank's policies and procedures, especially in procurement, financial management, and safeguards compliance, during the early years of implementation. For future similar projects, adequate and targeted trainings and assistance are needed, including through providing systematic training, recruiting experienced consultants to assist the PMOs especially during the early stage, and organizing peer learning with other World Bank financed projects. The hands-on learning and support provided during the early phase of project implementation, as well as the high-level political support for the project, allowed the project to be completed on time, and overall, in compliance with fiduciary and environmental and social policies of the Bank, despite some staff turnover on the client side.

68. **Set the realistic level of project co-financing, based on a sound fiscal analysis, especially for local governments with relatively narrow fiscal space.** The project benefited from a detailed fiscal analysis during preparation, through which adequate levels of co-financing were identified as shares of total annual budgets of Dejiang and Sinan counties. Given that the lack of timely allocation of counterpart funding is a frequent cause for

project delays, setting a realistic expectation of what the local governments can provide is critical to smooth implementation.

69. **Monitor loan proceed utilization closely and frequently, to identify reallocation opportunities early on.** Through close monitoring of loan savings from procurement activities, Batch 4 was identified and implemented in a timely manner, with reallocation of the loan proceeds. This helped maximizing the project benefits and enabled full utilization of the loan. In future projects, close monitoring of the loan disbursement is needed. In case of large savings, adjustment of the project scope and reallocation of the loan proceeds need to be decided in a timely manner. During cost estimation at appraisal, the loan allocations need to be well planned to avoid unexpected large amount of loan savings/shortage during implementation.

**Technical design and solutions**

70. **A straightforward yet sound project design is critical for successful implementation, especially for a first-time client and in a relatively low-capacity environment**. The project, under a straightforward, unambiguous objective and relatively simple results framework, set the right level of ambition that met the priorities of the local governments and communities, achievable with the available funding sources. Moreover, the project design allowed for flexibility and agility, enabling timely adjustments to the evolving demands during implementation, with respect to selection of specific road sections based on the pre-determined criteria. The batch-based system was effective in enabling timely implementation and disbursement of activities on first batches, while supporting timely identification and implementation of the next priorities of the client.

71. **It is critical to implement technical assistance activities as early as possible to minimize risks to development outcomes**. The TA activities under the project were completed very close to the project closing date, leaving little time for the findings and outputs to be fully institutionalized and utilized before closing with the Bank's support.[14] It is thus critical to advance preparation of the TA activities, including the preparation of the terms of reference, as early as possible, so they can be implemented early on. On the other hand, the training activities under the project heavily featured programs on general project management skills, which are much needed for smooth implementation and demanded by the staff of PMOs. Nevertheless, the project could have included more technical contents in the areas of engineering, financial management and road asset management system development, which could provide opportunities to the PMO staff to be trained on the job during implementation.

[14] The local governments in Tongren, Dejiang and Sinan confirm the relevance and usefulness of the TA outputs and are fully committed to utilize the TA findings, as discussed and agreed during the last implementation support missions and ICR missions. Nevertheless, they would need to do without the Bank's formal support as the project is now closed.

## ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

### A. RESULTS INDICATORS

#### A.1 PDO Indicators

**Objective/Outcome:** Improve rural transport connectivity in Dejiang and Sinan Counties.

| Indicator Name | Unit of Measure | Baseline | Original Target | Formally Revised Target | Actual Achieved at Completion |
|---|---|---|---|---|---|
| Direct project beneficiaries | Number | 0.00<br>01-Apr-2015 | 262000.00<br>30-Jun-2021 | | 298,976.00<br>30-Jun-2021 |
| Female beneficiaries | Percentage | 0.00 | 48.00 | | 51.00 |

**Comments (achievements against targets):**
103% achieved. The cost savings from competitive procurement, led to more road and bridges financed under the project (under Batch 4), and eventually, to more beneficiaries upon completion of the project.

| Indicator Name | Unit of Measure | Baseline | Original Target | Formally Revised Target | Actual Achieved at Completion |
|---|---|---|---|---|---|
| Travel Time Savings on Upgraded / Improved Roads | Percentage | 0.00<br>01-Apr-2015 | 30.00<br>30-Jun-2021 | | 52.45<br>30-Jun-2021 |

Comments (achievements against targets):
+22%p achieved. Conservative estimates of travel speed that could be achieved after the road improvement and bridge construction led to a higher percentage of time savings upon completion.

### A.2 Intermediate Results Indicators

**Component:** A and B. Dejiang and Sinan Rural Transport

| Indicator Name | Unit of Measure | Baseline | Original Target | Formally Revised Target | Actual Achieved at Completion |
|---|---|---|---|---|---|
| Roads rehabilitated, Rural | Kilometers | 0.00<br>01-Apr-2015 | 646.00<br>30-Jun-2021 | | 670.60<br>30-Jun-2021 |

Comments (achievements against targets):
103% achieved. The cost savings from competitive procurement led to more roads rehabilitated under the project (under Batch 4).

| Indicator Name | Unit of Measure | Baseline | Original Target | Formally Revised Target | Actual Achieved at Completion |
|---|---|---|---|---|---|
| Number of Bridges Improved / Constructed | Number | 0.00<br>01-Apr-2015 | 30.00<br>30-Jun-2021 | | 35.00<br>30-Jun-2021 |

Comments (achievements against targets):

116% achieved. The cost savings from competitive procurement led to more bridges constructed under the project (under Batch 4).

| Indicator Name | Unit of Measure | Baseline | Original Target | Formally Revised Target | Actual Achieved at Completion |
|---|---|---|---|---|---|
| Number of Villages with New Road Safety Measures | Number | 0.00<br>01-Apr-2015 | 147.00<br>30-Jun-2021 | | 163.00<br>30-Jun-2021 |

**Comments (achievements against targets):**
110% achieved. The cost savings from competitive procurement led to more roads with improved safety measures financed under the project.

| Indicator Name | Unit of Measure | Baseline | Original Target | Formally Revised Target | Actual Achieved at Completion |
|---|---|---|---|---|---|
| Direct Project Consultations with Beneficiaries Undertaken | Text | Yes<br>01-Apr-2015 | Yes<br>30-Jun-2021 | | Yes<br>30-Jun-2021 |

**Comments (achievements against targets):**
100% achieved. Project communities have been adequately consulted during preparation, and the results of consultations were incorporated in the project design.

**Component:** C. Technical Assistance

| Indicator Name | Unit of Measure | Baseline | Original Target | Formally Revised Target | Actual Achieved at Completion |
|---|---|---|---|---|---|
| Technical Assistance: Studies and Plans Completed | Text | No<br>01-Apr-2015 | Yes<br>30-Jun-2021 | | yes<br>30-Jun-2021 |

**Comments (achievements against targets):**
100% achieved according to the plan.

| Indicator Name | Unit of Measure | Baseline | Original Target | Formally Revised Target | Actual Achieved at Completion |
|---|---|---|---|---|---|
| Number of Trainees who Attended Training and Study Tours | Number | 0.00<br>01-Apr-2015 | 300.00<br>30-Jun-2021 | | 472.00<br>30-Jun-2021 |

**Comments (achievements against targets):**
157% achieved. International travel restrictions due to COVID19 led to more domestic training which allowed to accommodate more people in the training program.

## B. KEY OUTPUTS BY COMPONENT

| Objective/Outcome 1 | |
|---|---|
| Outcome Indicators | **Indicator 1: Number of beneficiaries, defined as persons who live within 2 km of a project road**<br><br>The project roads/bridges are located in all 22 townships in Dejiang and 12 out of 28 townships in Sinan. According to the annual surveys by TPMO, total 298,976 people in 124 villages were benefited by the project roads/bridges, who live about 2 km away from a project road or bridge.[15] The actual benefited people has exceeded the target of 262,000 people (about 14 percent more) anticipated at appraisal. Before the project, the villages in the project townships were isolated with very bad connectivity to the main transport network. Now, by using the upgraded roads the villagers may travel to much further distance and with much less travel time (see indicator 3) for accessing the market, working opportunity, education, health, and variety social services and activities. Before the project bridges, the vehicles and people traversed small rivers through shallow riverbeds or on simple bridges, and sometimes need to take a longer route during raining season.<br><br>**Indicator 2: Percent of beneficiaries who are women**<br><br>Large number of the beneficiaries in the project areas is women. According to the census in 2020, the women population took 49.2 percent in Tongren Municipality, respectively 49.4 percent in Dejiang and 49.8 percent in Sinan. In comparing with the census in 2010, the women population increased by 0.19 percentage point, from 49.00 percent to 49.19 percent in Tongren. The social survey under the project revealed that about 51–53 percent of the benefited population in the direct impact areas were women. At appraisal, the social survey showed that in the project areas the rural males intended to work outside of the villages, while rural women intended to work locally, which can be seen on and alongside roads. Benefited by the project roads/bridges, now the women started to travel further with more frequent to market, school, health care, and attending more social activities (like wedding). In the project areas, the tourism and roadside businesses have developed fast. Most of rural hotels, restaurants and shops are operated by women. |

[15] According to the social impact survey, total 362,855 local people are benefited by the project roads and bridges.

| | |
|---|---|
| | **Indicator 3 3: Travel time savings on the upgraded/improved roads**<br>Before the project, most of the project roads were out-class roads or only foot passes in very poor conditions. All the upgraded roads under the project are in Class IV standard, with asphalt or cement concrete pavements. Upon completion, TPMO, with the assistance from the consultants, carried out a vehicle speed survey on sample project roads. The survey results demonstrated that the average vehicle speeds on the project roads was 30.9 km/hour. In comparing with that before the project, the travel time reduced by at least 50 percent, which exceeded the target of 30 percent. The updated roads also provide all-weather access for local population. Before the project bridges, the vehicles and people had to take long routes to cross river during raining season, taking at least 15–30 minutes. Now with the new bridges, the vehicles and people need almost no time to cross the rivers. |
| Intermediate Results Indicators | **1. Roads rehabilitated, rural**<br>Upon completion, total 670.0 km rural roads were upgraded, which exceed the target of 646.0 km.<br>**2. Number of bridges improved/constructed**<br>Upon completion, 34 bridges with total 978.5 meters were constructed, which exceeded the target of 30 bridges.<br>**3. Number of villages with new road safety measures**<br>Total 163 villages were provided new road safety measures, which exceeded the target of 147 villages.<br>**4. Number of trainees who attended training and study tours**<br>Upon project completion, 22 training programs were implemented with 472 person-times participated in the study tours and trainings, which far exceeded the target of 300 person-times.<br>**5. Technical assistance: studies and plans completed**<br>Two technical assistances were implemented, including (a) Developing a Framework for Rural Road Construction, Management, Maintenance and Operation in Tongren; and (b) Improving Rural Road Safety Capacity. |

| | |
|---|---|
| | **6. Direct project consultations with beneficiaries undertaken**<br><br>Direct project consultations were undertaken during project preparation and implementation. |
| Key Outputs by Component (linked to the achievement of the Objective/Outcome 1) | **Component A: Dejiang Rural Transport**<br><br>Under Dejiang component, 75 rural roads with total 452.8 km were upgraded to Class IV standard (4.5–6.5-meter width). The upgraded project roads are with asphalt or cement concrete pavements as well as drainage and safety facilities; 23 bridges were constructed with total length of 699.5 meters. Such updated roads and new bridges have well improved the connectivity and facilitated the fast socioeconomic development in the Dejiang County. Meanwhile, construction supports were provided, like engineering design, construction supervision, social and environment monitoring, etc. to ensure high quality and smooth implementation of the project.<br><br>**Component B: Sinan Rural Transport**<br><br>Under Sinan component, 26 rural roads with total 217.8 km were upgraded to Class IV standard (4.5–6.5-meter width). The upgraded project roads are all with cement concrete pavements as well as drainage and safety facilities; 11 bridges were constructed with total length of 279.0 meters. Such updated roads and new bridges have well improved the connectivity and facilitated the fast socioeconomic development in the Sinan County. Meanwhile, construction supports were provided, like engineering design, construction supervision, social and environment monitoring, etc. to ensure high quality and smooth implementation of the project.<br><br>**Component C: Technical Assistance (TA) and Project Management**<br><br>Two TAs were implemented, including (a) Developing a Framework for Rural Road Construction, Management, Maintenance and Operation in Tongren; and (b) Improving Rural Road Safety Capacity. The TAs were mobilized in June 2019 and completed in May 2021. Upon completion, the consultants submitted a number of study reports. Total 22 training programs were implemented, including an oversea study tour in 2016 to Viet Nam (organized by the World Bank), 17 study domestic tours, and 4 training programs within Guizhou Province. Total 472 person-times participated in the study tours and trainings. The study tour and training programs focused on safeguards compliance, procurement, and financial and project implementation management. |

## ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

### A. TASK TEAM MEMBERS

| Name | Role |
|---|---|
| **Preparation** | |
| **Supervision/ICR** | |
| Holly Krambeck | Task Team Leader(s) |
| Jingrong He | Procurement Specialist(s) |
| Yi Geng | Financial Management Specialist |
| Maria Luisa G. Juico | Team Member |
| Limei Sun | Team Member |
| Haiyan Wang | Team Member |
| Alejandro Alcala Gerez | Team Member |
| Ning Yang | Environmental Safeguards Specialist |
| Xiaoke Zhai | Team Member |
| Li Qu | Team Member |
| Shuang Zhou | Social Safeguards Specialist |

### B. STAFF TIME AND COST

| Stage of Project Cycle | Staff Time and Cost | |
|---|---|---|
| | No. of staff weeks | US$ (including travel and consultant costs) |
| **Preparation** | | |
| FY14 | 8.660 | 67,638.87 |
| FY15 | 25.998 | 129,022.60 |
| FY16 | 4.513 | 32,204.14 |
| **Total** | **39.17** | **228,865.61** |
| **Supervision/ICR** | | |
| FY14 | 0 | 414.69 |

| | | |
|---|---|---|
| FY16 | 8.488 | 52,030.69 |
| FY17 | 11.132 | 66,490.83 |
| FY18 | 8.040 | 94,612.70 |
| FY19 | 9.975 | 103,030.48 |
| FY20 | 11.850 | 96,378.17 |
| **Total** | **49.49** | **412,957.56** |

## ANNEX 3. PROJECT COST BY COMPONENT

### Table 3.1: Project Costs and Financing at Appraisal

(US$ million)

| Cost Items | Total Cost | | Financing Plan (USD million) | | |
|---|---|---|---|---|---|
| | RMB million | USD million | IBRD | Counterpart | % IBRD |
| **I. Base Costs** | **1,385.95** | **223.54** | **141.75** | **81.79** | **63.41%** |
| **Comp A: Dejiang Rural Roads and Bridges** | **894.32** | **144.25** | **98.73** | **45.52** | **68.44%** |
| (1) Rural roads civil works | 633.55 | 102.19 | 97.25 | 4.94 | 95.17% |
| (2) Temporary engineering | 4.61 | 0.74 | - | 0.74 | 0.00% |
| (3) Equipment procurement | 0.96 | 0.16 | - | 0.16 | 0.00% |
| (4) Land acquisition and resettlement | 89.30 | 14.40 | - | 14.4 | 0.00% |
| (5) Construction company management | 18.33 | 2.96 | 1.48 | 1.48 | 50.00% |
| (6) Construction monitoring and supervision | 19.11 | 3.08 | - | 3.08 | 0.00% |
| (7) Project design and preparation | 48.65 | 7.85 | - | 7.85 | 0.00% |
| (8) Social and environmental external monitoring | 1.00 | 0.16 | - | 0.16 | 0.00% |
| (9) Other costs regarding construction | 5.17 | 0.83 | - | 0.83 | 0.00% |
| (10) Contingencies | 73.65 | 11.88 | - | 11.88 | 0.00% |
| **Comp B: Sinan Rural Roads and Bridges** | **485.43** | **78.29** | **42.03** | **36.27** | **53.68%** |
| (1) Rural roads civil works | 336.82 | 54.33 | 41.24 | 13.09 | 75.91% |
| (2) Temporary engineering | 2.50 | 0.40 | - | 0.4 | 0.00% |
| (3) Equipment procurement | 0.54 | 0.09 | - | 0.09 | 0.00% |
| (4) Land acquisition and resettlement | 55.64 | 8.97 | - | 8.97 | 0.00% |
| (5) Construction company management | 9.77 | 1.58 | 0.79 | 0.79 | 50.00% |
| (6) Construction monitoring and supervision | 10.16 | 1.64 | - | 1.64 | 0.00% |
| (7) Project design and preparation | 26.23 | 4.23 | - | 4.23 | 0.00% |
| (8) Social and environmental external monitoring | 1.00 | 0.16 | - | 0.16 | 0.00% |
| (9) Other costs regarding construction | 2.85 | 0.46 | - | 0.46 | 0.00% |
| (10) Contingencies | 39.93 | 6.44 | - | 6.44 | 0.00% |
| **Comp. C: Technical Assistance and Project Management** | **6.20** | **1.00** | **1.00** | **0** | 100.00% |
| (1) Rural road network planning | 1.80 | 0.29 | 0.29 | 0 | 100.00% |
| (2) Rural road maintenance Strategy | 1.00 | 0.16 | 0.16 | 0 | 100.00% |
| (3) Road safety study | 0.80 | 0.13 | 0.13 | 0 | 100.00% |
| (4) Rural road management training (international) | 0.60 | 0.10 | 0.10 | 0 | 100.00% |
| (5) Domestic training | 2.00 | 0.32 | 0.32 | 0 | 100.00% |
| *Subtotal (I)* | *1,385.95* | *223.54* | *141.75* | *81.79* | *63.41%* |
| **II. Financial Charges** | **51.15** | **8.25** | **8.25** | **0** | 100.00% |
| **Dejiang Financial Charges** | **35.81** | **5.78** | **5.78** | **0** | 100.00% |
| 1. Commitment fee | 4.88 | 0.79 | 0.79 | 0 | 100.00% |
| 2. Front-end fee | 1.63 | 0.26 | 0.26 | 0 | 100.00% |
| 3. Interest during construction | 29.30 | 4.73 | 4.73 | 0 | 100.00% |
| **Sinan Financial Charges** | **15.35** | **2.48** | **2.48** | **0** | 100.00% |
| 1. Commitment fee | 2.09 | 0.34 | 0.34 | 0 | 100.00% |
| 2. Front-end fee | 0.70 | 0.11 | 0.11 | 0 | 100.00% |
| 3. Interest during construction | 12.56 | 2.03 | 2.03 | 0 | 100.00% |
| *Subtotal (II)* | *51.15* | *8.25* | *8.25* | *0* | *100.00%* |
| **Total (I+II)** | **1,437.10** | **231.79** | **150.00** | **81.79** | **64.71%** |

Source: The Project Appraisal Document

## Table 3.2: Actual Project Costs and Financing

(US$ million)

| Cost Items | Total Cost | | Financing Plan (USD million) | | |
|---|---|---|---|---|---|
| | RMB million | USD million | IBRD | Counterpart | % IBRD |
| **I. Base Costs** | | | | | |
| **Comp A: Dejiang Rural Roads and Bridges** | | | | | |
| (1) Rural roads civil works | 726.05 | 108.14 | 101.61 | 6.53 | 93.96% |
| (2) Temporary engineering | | | | | |
| (3) Equipment procurement | 0.04 | 0.01 | 0.01 | | 100.00% |
| (4) Land acquisition and resettlement | 13.56 | 2.10 | | 2.10 | 0.00% |
| (5) Construction company management | - | - | | | |
| (6) Construction monitoring and supervision | 10.38 | 1.60 | | 1.60 | 0.00% |
| (7) Project design and preparation | 28.80 | 4.44 | | 4.44 | 0.00% |
| (8) Social and environmental external monitoring | 2.22 | 0.34 | | 0.34 | 0.00% |
| (9) Other costs regarding construction | | | | | |
| (10) Contingencies | 8.54 | 1.32 | | 1.32 | 0.00% |
| **Comp B: Sinan Rural Roads and Bridges** | | | | | |
| (1) Rural roads civil works | 287.89 | 42.80 | 39.28 | 3.52 | 91.78% |
| (2) Temporary engineering | | | | | |
| (3) Equipment procurement | 0.51 | 0.08 | 0.08 | | 100.00% |
| (4) Land acquisition and resettlement | 7.55 | 1.17 | | 1.17 | 0.00% |
| (5) Construction company management | 2.27 | 0.34 | | 0.34 | 0.00% |
| (6) Construction monitoring and supervision | 2.48 | 0.37 | | 0.37 | 0.00% |
| (7) Project design and preparation | 7.20 | 1.07 | | 1.07 | 0.00% |
| (8) Social and environmental external monitoring | 0.75 | 0.11 | | 0.11 | 0.00% |
| (9) Other costs regarding construction | 2.41 | 0.35 | | 0.35 | 0.00% |
| (10) Contingencies | | | | | |
| **Comp. C: Technical Assistance and Project Management** | | | | | |
| (1) Rural road network planning | | | | | |
| (2) Rural road maintenance Strategy | 1.20 | 0.18 | 0.18 | | 100.00% |
| (3) Road safety study | 1.20 | 0.18 | 0.18 | | 100.00% |
| (4) Rural road management training (international) | | | | | |
| (5) Domestic training | 0.95 | 0.14 | 0.14 | | 100.00% |
| (6) Inremental operation cost | 1.80 | 0.29 | 0.29 | | 100.00% |
| ***Subtotal (I)*** | **1,105.80** | **165.01** | **141.75** | **23.26** | **85.91%** |
| **II. Financial Charges** | | | | | |
| **Dejiang Financial Charges** | | | | | |
| 1. Commitment fee | | | | | |
| 2. Front-end fee | 1.82 | 0.27 | 0.27 | | 100.00% |
| 3. Interest during construction | 38.29 | 5.68 | 5.68 | | 100.00% |
| **Sinan Financial Charges** | | | | | |
| 1. Commitment fee | | | | | |
| 2. Front-end fee | 0.71 | 0.10 | 0.10 | | 100.00% |
| 3. Interest during construction | 14.80 | 2.19 | 2.19 | | 100.00% |
| ***Subtotal (II)*** | ***55.63*** | ***8.25*** | ***8.25*** | | **100.00%** |
| **Total (I+II)** | **1,161.43** | **173.25** | **150.00** | **23.26** | **86.58%** |

Source: The World Bank, Tongren Project Management Office.

## ANNEX 4. ECONOMIC REEVALUATION

### A. Introduction

1. The economic analysis of the project was updated by the Bank's ICR team, using the actual project costs and traffic volumes and speeds from the survey on the sample project roads carried out by TMTB. A traffic analysis was carried out based on the traffic survey on the sample project roads after completion. The traffic forecast for future years was updated accordingly. The economic analysis assumed that the vehicles on the project roads could drive at faster speeds with lower vehicle operating costs (VOC) and less travel time due to better road conditions. Economic benefits were calculated by comparing the "with-project" and "without-project" cases. Consequently, the economic internal rate of return (EIRR) was calculated and assessed.

### B. Tongren Municipality and Rural Road Development

2. Tongren Municipality is located in southeast of Guizhou Province in China with 35 million population.[1] The Gross Domestic Product (GDP) per capita of Tongren was less than US$2,000 in 2012, and 25 percent of the people had the incomes below the national poverty line. Tongren's geography - where more than 96 percent of its 18,000 square-km area comprises hilly and mountainous terrain - had resulted in a highly dispersed and isolated population, with little connectivity between rural and urban areas. The lack of connectivity was reflected in Tongren's income disparity, where the rural net income per capita was only 24 percent of the urban disposable incomes. To overcome these topographical barriers to development and lift the rural population above the national poverty line, the Guizhou Provincial Government and Tongren Municipal Government had prioritized improvement of the rural roads network, targeting areas with the most need, as well as the most economic development potential. These included Dejiang and Sinan Counties of Tongren Municipality, where only 21 percent of the villages had access to classified and all-weather roads, and the urbanization rate was less than 35 percent.

3. In Tongren, the county-level road network was mostly complete; however, the township- and village-level roads were mostly unpaved with limited access to the main transport network. As of 2013, only about half of township-level roads were paved, and only 14 percent of village roads were paved. Tongren's 12$^{th}$ Five-Year-Plan (2011–2015) set the targets of: (a) connecting 70 percent of villages with paved roads; (b) enhancing rural roads maintenance management, improving supporting facilities, optimizing the road network, and increasing the level of service and disaster risk management capabilities; and (c) extending the road network for public transport services between urban and rural areas. Tongren Municipal Transport Bureau (TMTB) was responsible for coordinating with the county-level transport bureaus to implement this plan. The Tongren 13$^{th}$ Five-Year-Plan (2016–2020) continued to (a) connect 100 percent of inhabited villages with paved roads; (b) establish a basic rural logistics system and improve the efficiency of passenger and freight transport; and (c) enhance technical capacity for disaster risk management, road safety, and emergency response.

### C. The Project and Its Impacts

4. The World Bank financed Guizhou Tongren Rural Transport Project (the project) would support the implementation of the Tongren's Five-Year-Plans for Rural Roads Development in Dejiang and Sinan Counties of

[1] Guizhou was one of the poorest provinces in China with the GDP per capita of US$3,700 in 2012, about 50 percent of the national average.

Tongren Municipality by upgrading selected rural roads to Class IV and building rural bridges.[2] It was anticipated that this project would increase connectivity by reducing the travel time between the rural and urbanized areas and by increasing the reliability of access, and improve accessibility to markets, education, healthcare, work opportunities and other resources.

5. It was originally planned to implement 3 Batches of the project roads/bridges. During implementation, there was some savings in the loan proceeds. Upon request from the governments and approved by the World Bank, a Batch 4 was implemented, including 11 roads (total 42.9 km) and 8 bridges (total 204 meters) in Dejiang, and road safety enhancement (73.8 km) in Sinan. Upon completion, total 670.6 km of the rural roads were upgraded, and 34 bridges were constructed in Dejiang and Sinan Counties. The construction for the Batch 1 roads/bridges started in September 2016 and completed in May 2017 for Sinan and in November 2019 for Dejiang; the construction for the Batch 2 roads/bridges started in February 2017 and completed in February 2018 for Sinan and in May 2019 for Dejiang; The construction for the Batch 3 roads/bridges started in August 2017 and completed in August 2018 for Sinan and in May 2019 for Dejiang; and the construction of the Batch 4 roads/bridges and safety facilities started in October 2019 and fully completed in June 2021. Meanwhile, effective capacity building programs were carried out. As results, the connectivity and accessibility of rural population in the project areas were substantially improved, and the capacity for rural road development was significantly strengthened.

6. The project roads and bridges are located in all 22 townships in Dejiang and 12 out of 28 townships in Sinan. According to the annual surveys by the Tongren PMO, total 298,976 people in 124 villages are directly benefited by the project roads and bridges, who live about 2 km away from a project road or bridge.[3] The actual benefited people has exceeded the target of 262,000 people (about 14 percent more) anticipated at appraisal. Before the project, the villages in the project townships were isolated with very bad connectivity to the main transport network. Most of the project roads were out-class roads or only foot passes in very poor conditions. Before the project bridges, the vehicles and people traversed small rivers through shallow riverbeds or on simple bridges, and sometimes need to take a longer route during raining seasons, about 5–10 km longer. Under the project, all of the project roads were constructed or upgraded to Class IV standard (4.5–6.5-meter subgrade width, with asphalt or cement concrete pavements in Dejiang and all cement concrete pavement in Sinan). In comparing with the original roads before the project, the vehicle speed has increased more than 50 percent, which led to substantial reductions in vehicle operation costs and traveling time. Now, by using the upgraded roads the villagers may travel to much further distance and with much less vehicle operation cost and travel time for accessing the market, working opportunity, education, health, and variety social services and activities. The updated roads and bridges also provide all-weather access for local population. Before the project bridges, the vehicle and people had to take long routes to cross river during raining seasons, taking at least 15–30 minutes. Now with the new bridges, the vehicles and people need almost no time to cross the rivers.

### D. Traffic Analysis and Forecast

7. At project completion, the Tongren PMO with the assistance from the consultants carried out a traffic survey on sample project roads, including a traffic count survey and a vehicle speed survey. The traffic count survey was carried out in July 20 and 21, 2021 on selected 10 project roads (5 roads each for Dejiang and Sinan), which collected 4-hour traffic (2 hours in morning and 2 hours in afternoon) by four vehicle types (2/3-wheeler, can/van, bus, and truck). The collected actual traffic counts were processed and converted into annual average daily traffic (AADT). The

[2] The World Bank. September 3, 2015. *Project Appraisal Document on a Proposed Loan in the Amount of US$150 Million to the People's Republic of China for a Guizhou Tongren Rural Transport Project (P148071)*. EASCS

[3] According to the social impact survey, total 362,855 local people are benefited by the project roads and bridges.

average traffic on the project roads was about 420 to 460 vehicles per day in 2021, including 38% for motorcycle/three-wheeler, 45% for small passenger car/van, 2% for passenger bus, and 15% for trucks. The vehicle speed survey carried out on 26 sample projects. The survey results shown that the average vehicle speed was about 30.9 km per hour. The vehicle travel time reduced by at least 52.5 percent in comparing with that at baseline (2014, 14.1 km per hour). According to the actual traffic status and fast socioeconomic development in the project areas, the traffic forecast for future years was updated to the average annual increase rates of 7.6% in 2021–2015, 5.0% in 2026–2030, and 3.3% in 2031 and onward.

**E. Project costs**

8. Upon completion, the overall project cost was RMB 1,161.4 million (US$173.3 million equivalent), about 19.2 percent lower than that at appraisal due to mainly lower contract costs, roads/bridge removal from the project scope, and much less actual costs for the land acquisition and resettlement. The actual annual investment costs of the project (by Dejiang and Sinan components) were used in the economic reevaluation (excluding the cost for capacity development program and financial charges). The standard maintenance costs for the rural roads were provided by the Tongren PMO at average RMB7,000–15,000 per year per km for routine maintenance. The periodical maintenance was assumed to be taken place in every 5 years at the costs of RMB 0.5–1.0 million per km for the project roads. In the economic reevaluation, all above capital costs and maintenance costs were in 2021 prices, which were converted into economic costs by using the conversion factor (0.908) adopted from a similar rural road project in Guizhou. [4]

**F. Economic benefits**

9. The main sources of the economic benefits were estimated by comparing the “with-project” and “without-project” cases, including (i) savings in vehicle operation cost (VOC) due to better road condition and new bridges, and (ii) savings in passenger travel time costs due to faster traveling speed on the project roads and less travel time by using the new bridges. The VOC savings were calculated using the unit VOC adopted from a similar project in Guizhou Province. For the upgraded rural roads, the VOC savings in RMB per vehicle-kilometer were estimated at 0.15 for 2/3 wheelers, 0.30 for car/vans, 1.21 for buses, and 1.76 for trucks. Average passenger vehicle speeds were assumed at average 25–30 km per hour for the project roads, in comparing with 15–20 km per hour for the “without-project” case. It was assumed that about 5% of the vehicles used the project bridges with about 5 km less traveling distance and about 20 minutes passenger time savings. The passenger time cost was derived from the rural net income per capita of Tongren Municipality in 2020. 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, travel speeds for different types of passenger vehicles, and potential income increase in future years. The benefit distribution analysis showed that the VOC savings took about 30 percent of the total benefits in 2021, and passenger time cost saving increased fast along with the income increase, taking about 80 percent in 2040.

**G. EIRR recalculation**

10. Based on the assumptions and parameters above, the EIRR was recalculated for a period of 25 years (2016–2040), including 6 years for project implementation and 23 years for operation (with some overlaps of construction and operation periods). No capital cost was considered as the residual value of the project roads. The EIRR was recalculated at 14.4 percent for the whole project, respectively 13.0 percent for the Dejiang component and 17.9 percent for the Sinan component. By comparing with that at appraisal (16.5 percent for the whole project), the

[4] The project appraisal document didn’t provide details of the major assumptions and parameters used in the economic evaluation.

recalculated EIRR is lower due to mainly longer implementation period and lower traffic level (influenced by the COVID-19). However, the EIRR is higher than the World Bank recommended discount rate of 12% at appraisal. Therefore, the project is still considered economic viable. The cash flows of the EIRR recalculation is in Table 4.1.

**Table 4.1: Economic Reevaluation of the Whole Project**
(RMB million)

| year | Costs | | | Benefits | | | Net | ENPV |
|---|---|---|---|---|---|---|---|---|
| | Capital | Maintain | Total | VOC | Time Cost | Total | Benefit | |
| 2016 | 149.97 | | 149.97 | | | | -149.97 | -264.30 |
| 2017 | 298.24 | | 298.24 | - | - | - | -298.24 | -469.29 |
| 2018 | 147.34 | | 147.34 | 10.66 | 25.36 | 36.02 | -111.32 | -156.39 |
| 2019 | 96.12 | | 96.12 | 21.42 | 51.00 | 72.42 | -23.71 | -29.74 |
| 2020 | 101.32 | 4.41 | 105.72 | 30.86 | 73.45 | 104.31 | -1.41 | -1.58 |
| 2021 | 206.40 | 7.05 | 213.45 | 35.53 | 84.54 | 120.07 | -93.38 | -93.38 |
| 2022 | | 8.81 | 8.81 | 37.88 | 93.64 | 131.52 | 122.71 | 109.56 |
| 2023 | | 9.08 | 9.08 | 40.39 | 103.75 | 144.13 | 135.06 | 107.67 |
| 2024 | | 9.35 | 9.35 | 43.08 | 114.96 | 158.04 | 148.69 | 105.83 |
| 2025 | 146.86 | 9.63 | 156.49 | 45.96 | 127.41 | 173.36 | 16.87 | 10.72 |
| 2026 | | 9.92 | 9.92 | 48.19 | 137.59 | 185.78 | 175.86 | 99.79 |
| 2027 | | 10.22 | 10.22 | 50.53 | 148.59 | 199.12 | 188.91 | 95.71 |
| 2028 | | 10.52 | 10.52 | 52.99 | 160.48 | 213.47 | 202.94 | 91.80 |
| 2029 | | 10.84 | 10.84 | 55.57 | 173.31 | 228.88 | 218.05 | 88.06 |
| 2030 | 146.86 | 11.16 | 158.03 | 58.27 | 187.18 | 245.46 | 87.43 | 31.53 |
| 2031 | | 11.50 | 11.50 | 60.39 | 198.58 | 258.97 | 247.47 | 79.68 |
| 2032 | | 11.84 | 11.84 | 62.58 | 210.68 | 273.26 | 261.42 | 75.15 |
| 2033 | | 12.20 | 12.20 | 64.86 | 223.51 | 288.37 | 276.18 | 70.89 |
| 2034 | | 12.56 | 12.56 | 67.23 | 237.12 | 304.35 | 291.79 | 66.87 |
| 2035 | 146.86 | 12.94 | 159.80 | 69.70 | 251.56 | 321.26 | 161.45 | 33.04 |
| 2036 | | 13.33 | 13.33 | 72.25 | 266.88 | 339.13 | 325.81 | 59.52 |
| 2037 | | 13.73 | 13.73 | 74.91 | 283.13 | 358.05 | 344.32 | 56.17 |
| 2038 | | 14.14 | 14.14 | 77.67 | 300.38 | 378.05 | 363.91 | 53.00 |
| 2039 | | 14.56 | 14.56 | 80.54 | 318.67 | 399.21 | 384.65 | 50.02 |
| 2040 | 146.86 | 15.00 | 161.87 | 83.53 | 338.08 | 421.60 | 259.74 | 30.16 |
| | | | | | | Economic Net Present Value (ENPV): | | 300.49 |
| | | | | | | Economic Internal Rate of Return (EIRR): | | **14.4%** |
| | | | | | | | Discount Rate: | 12% |

EIRR = economic internal rate of return, ENPV = economic net present value, VOC = vehicle operation cost
Source: The World Bank ICR task team

11. The EIRR was subjected to sensitivity analysis to test different scenarios of the costs and benefits. The sensitivity analysis results showed that the project continues to be economically viable for most tested scenarios. If a 20 percent maintenance cost increase were to be combined with a 20 percent benefit reduction, the EIRR would be 10.7 percent. The sensitivity analysis also showed that the EIRR is more sensitive to changes in benefits. Therefore, the governments should keep the roads in good condition for attracting and facilitating the fast-increasing traffic. The results of sensitivity test are in Table 4.2.

**Table 4.2: Sensitivity Test of the EIRR for the Whole Project**

| Case | Tests | | EIRR (%) | ENPV@12% (RMB million) |
|---|---|---|---|---|
| | O&M Cost | Benefits | | |
| **Base Case** | | | **14.4%** | **300.49** |
| | +10% | | 14.2% | 272.16 |
| | +20% | | 14.0% | 243.82 |
| | +50% | | 13.3% | 158.81 |
| | | +10% | 15.9% | 496.98 |
| | | +20% | 17.3% | 693.47 |
| | | -10% | 12.9% | 104.00 |
| | | -20% | 11.2% | -92.49 |
| | +10% | -10% | 12.6% | 75.67 |
| | +20% | -20% | 10.7% | -149.16 |

EIRR = economic internal rate of return, ENPV = economic net present value,
O&M = operation and maintenance
Source: The World Bank ICR team

## ANNEX 5. TRAINING PROGRAMS

| No. | Topic | Time | Training Contents | Location | Number of participants |
|---|---|---|---|---|---|
| 1 | Gender | March 2, 2016 - March 4, 2016 | To strengthen capacity for addressing gender in World Bank rural transport projects through lessons and good practices from within and outside the EAP region. | Vietnam Hanoi | 2 |
| 2 | Procurement | March 28, 2016 - April 1, 2016 | To help staff who newly joined World Bank-financed project understand and implement Bank financed project procurement principles, procedures, planning, notices, and tender qualifications. | China Beijing | 3 |
| 3 | Gender / Maintenance | April 4, 2016 - April 6, 2016 | To learn from the ADB-financed Yunan rural road program experience in community-based maintenance contracting. | Yunnan Dehong | 3 |
| 4 | Project Management | October 24, 2016 | To learn project management best practices, based upon Bank-financed China project case studies. | Guizhou Dejiang | 21 |
| 5 | Environment Safeguards | October 24, 2016 | To learn environmental safeguards best practices in the transport sector, based upon domestic case studies. | Guizhou Dejiang | 20 |
| 6 | Road Safety | 10/25/2016 | To learn about the iRAP system for evaluating road safety, as well as domestic implementation through the China RAP team. | Guizhou Dejiang | 10 |
| 7 | Technical Assistance | 2/22/2017 | To improve the understanding of minorities in project management; RAP analysis. | Guizhou Guiyang | 40 |
| 8 | Road Safety | February 21, 2017 - February 23, 2017 | Study on road traffic safety assessment survey | China Tianjin | 2 |
| 9 | Technical Assistance | 4/21/2017 | To learn about using Mapillary (street-level images App) in construction management, monitoring and supervision. | Guizhou Dejiang | 30 |
| 10 | Project Management | 5/10/2017 | To learn from the experience of Guiyang World Bank Rural Transport Project. | Guizhou Guiyang | 40 |
| 11 | Environment Safeguards | 5/10/2017 | To learn environmental safeguards and best-practice protection measures. | Guizhou Guiyang | 15 |
| 12 | Procurement | 6/14/2017 | To deepen PMO procurement staff understanding of Bank financed project procurement principles, procedures, planning, notices, and tender qualifications. | China Shanghai | 3 |
| 13 | Finance, Payments | June 14, 2017 - June 16, 2017 | Improvement financial management and reimbursement. | China Shanghai | 3 |
| 14 | Environment Safeguards | Morning on October 21, 2017 | Improve the awareness of environmental protection, prevention, and control measures. | Guizhou Sinan | 30 |
| 15 | Procurement | December 14, 2017 - December 16, 2017 | To deepen PMO procurement staff understanding of Bank financed project procurement principles, procedures, planning, notices, and tender qualifications. | China Fuzhou | 4 |
| 16 | Finance, Payments | December 14, 2017 - December 16, 2017 | Improvement financial management and reimbursement. | China Fuzhou | 3 |
| 17 | Project Management | 3/12/2018 | PMO staff visit Fujian World Bank PMO | China Fujian | 27 |

| | | | | | |
|---|---|---|---|---|---|
| 18 | Project Management | May 4, 2018 - May 8, 2018 | Improve project management capacity through study tour at Guangxi World Bank PMO | China Guangxi | 33 |
| 19 | Project Management | July 30, 2018 - August 5, 2018 | Improve project management capacity through study tour at Xinjiang World Bank PMO | China Xinjiang | 33 |
| 20 | Project Management | August 26, 2018 - September 2, 2018 | TPMO training at Shanghai Jiaotong University | China Shanghai | 50 |
| 21 | Project Management | October 25, 2018 - October 31, 2018 | TPMO training at Xi'an Jiaotong University | China Xi'an | 50 |
| 22 | Project Management | November 12, 2018 - November 18, 2018 | TPMO training at Xi'an Jiaotong University | China Xi'an | 50 |
| | | | **Total number of person-times** | | **472** |

## ANNEX 6. ENVIRONMENT SAFEGUARDS

### 1. Institutional Arrangement and Environmental Management Plan

The environmental protection leading group

According to the Environmental Management Plan (EMP) of World Bank financed Tongren Rural Traffic Project, the Construction Office of Tongren World Bank financed Rural Traffic Project was responsible to monitor and assess the implementation of environmental management and restoration activities so as to ensure that environmental management is implemented in accordance with the provisions of the Code of Practice for Environment and Environmental Management Plan.

Implementation of the EMP

In the process of project construction, in order to work on environmental protection, all relevant units of the project set up environmental management departments or set up professional responsible persons according to the responsibilities specified in the environmental management plan, and implemented the environmental protection responsibilities to persons. In the construction organization design, the contractor listed environmental protection as a special topic, and formulated practical environmental protection measures according to the project site and the surrounding environment along the line.

During the project, the project supervisor regarded environmental protection compliance as an important content of on-site inspection, and put forward rectification requirements in time for places where on-site environmental protection measures are not put in place. At the coordination meeting of supervision project, the environmental protection standard was taken as the main topic, the places where the environmental protection measures were not implemented properly during the construction period were pointed out in time, and the supervision notice was issued in time to require rectification for the contractor's insufficient rectification efforts. In the monthly supervision report, the rectification of environmental protection problems was fed back to the owner, and whether the environmental protection of the project construction meet the standards was taken as the premise of quality acceptance and project payment.

EMP implementation monitoring and reporting

According to the requirements of environmental experts of the World Bank, the PMOs were requested to submit environmental management plan implementation report to the World Bank every six months. In the past five years of project implementation, seven environmental management plan implementation reports were submitted to the World Bank. The reports reflected the environmental performance of relevant units, the implementation of environmental protection measures by contractors, the real-time environmental monitoring data, the compliance implementation of environmental control objectives, the environmental problems encountered in the implementation of the project and the countermeasures taken in a timely manner. The implementation report provided the detailes on the rectification and implementation of environmental protection and safety problems found in the inspection of the World Bank delegation.

Environmental performance evaluation

The project construction has obviously improved the traffic conditions in the construction area, and the trees and flowers landscape in the road green belts made the scenery along the line more beautiful, and also made the living environment in rural areas more beautiful. There is no residual construction garbage residue in the completed road area, and the environmental quality has reached the target requirements in the project environmental management plan.

## 2. External Environmental Monitoring and Trainings

Up to now, the Environmental External Monitoring Unit has submitted the 7 issues of semi-annual reports to World Bank. In February, July, December 2017 and January 2018, the first three periods of on-site external environmental monitoring were carried out. A total of 75 lines were monitored. The overall environment was well implemented, spoils of most lines were not stacked disorderly and the effective protective measures were taken for the slope of spoil that was temporarily stacked of most lines. But for a small part of lines, spoils (wastes) were still stacked arbitrarily on steep slopes, woodlands, rivers and stream slopes. In April 2017, the World Bank environmental experts, external environmental monitoring agencies, Tongren PMO and construction units exchanged their opinions on the environmental problems that occurred during the construction in Tongren and urged the contractors to rectify the environmental problems occurred. Meanwhile, they put forward to strengthen environmental training on the construction units.

In May 2017, Tongren World Bank Office organized the personnel from Tongren PMO, construction units and supervision units to conduct study and communication in Guiyang World Bank Project and they participated in Implementation Training on Environmental Management Plan of Tongren Rural Road Project organized by the environmental monitoring unit in Guizhou University. In October 2017, the environmental monitoring unit conducted environment training for the third batch of construction units in Sinan. In June 2018 and January 2019, the fourth and fifth external environmental monitoring work was carried out. The monitoring unit carried out environmental acceptance on 21 lines, and the overall acceptance results were satisfying. The third batch of 12 lines were randomly selected, and all the problems during the construction period of the lines were rectified. From June to July 2019, the sixth external environmental monitoring work was carried out, and the monitoring unit carried out environmental acceptance on 48 lines. By the completion of the project, the atmospheric and noise indicators in the monitored area all meet the requirements of relevant national environmental standards.

## 3. Climate Change

During the nearly five-year construction period of the project implementation, the environmental protection supervision department of the government carried out synchronous and directional monitoring on the environmental influencing factors generated by the project construction, and required the contractor to take effective supervision measures such as covering the residual soil on the site with dense mesh network, sprinkling water on site, full coverage of transport vehicles, and designating the discharge places for transportation of construction wastes. Under the supervision of government environmental protection supervision department, owner and site supervision, the contractor earnestly implemented the environmental protection measures formulated in the Project Environmental Management Plan, and strictly controlled the impact of building construction on air pollution. Through the on-site monitoring of atmosphere and noise by environmental monitoring units, all atmospheric indexes meet the requirements of relevant national environmental monitoring standards.

A number of greening works have been added to the project, which has certain positive significance for improving the atmospheric environment.

## ANNEX 7. SOCIAL SAFEGUARDS

### 1. The Project Land Acquisition Impacts

Land acquisition and resettlement of this project involved Fuxing Town, Dejiang County, Hexing Town, Nangan Township, Pingyuan Township, Tongjing Township, Yantang Township, Changbao Town, Changfeng Township, Longquan Township, Jiancha Town, Shaxi Township, Gonghe Town, Chaodi Town, Fengxiangxi Town, Wenping Town, Jingjiao Township, Gaoshan Town, Quankou Town, Qinglong Street and Yushui Street in Dejiang, and Wengxi Town, Daheba Township, Yangjiaao Township, Tianqiao Township, Wenjiadian Town, Sandaoshui Town, Yingwuxi Town, Kuanping Township, Qinggangpo Town, Zhangjiazhai Town, Hepengxi Town, Silin Township and Shuangtang Stree in Sinan. By December 2020, the land acquisition and demolition work has been completed for the four batches of Guizhou Tongren Rural Road Project. After verification, the total land acquisition of the project is 794.79mu, including 507.95 mu in Dejiang and 286.84 mu in Sinan. Land acquisition of the project is 979.95 mu less than that in RAP. Among them, the actual requisitioned cultivated land is 579.17 mu, which is 30.98 mu more than that in RAP; and the actual requisition of non-cultivated land is 215.62 mu, which is 1,010.93mu less than that in RAP.

**Change of Land Acquisition Quantity of Tongren Rural Road Project**

| Area | Project batch | Quantity of land acquisitioned in RAP (mu) | | | Actual quantity of land acquisitioned (mu) | | | Change in quantity of land acquisitioned (mu) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Cultivated lands | Non-cultivated land | Subtotal (II) | Cultivated lands | Non-cultivated land | Subtotal (II) | Cultivated lands | Non-cultivated land | Total |
| Dejiang County | Batch 1 project | 351.07 | 818.62 | 1169.69 | 40.25 | 0 | 40.25 | -55.44 | -814.4 | -869.84 |
| | Batch 2 project | | | | 39.08 | 4.46 | 43.54 | | | |
| | Batch 3 project | | | | 236.8 | 13.66 | 250.46 | | | |
| | Batch 4 project | 40 | 168.1 | 208.1 | 19.5 | 154.2 | 173.7 | | | |
| | Subtotal (Dejiang) | 391.07 | 986.72 | 1377.79 | 335.63 | 172.32 | 507.95 | | | |
| Sinan County | Batch 1 project | 157.12 | 239.83 | 396.95 | 18.08 | 0 | 18.08 | +86.42 | -196.53 | -110.11 |
| | Batch 2 project | | | | 154.77 | 42.98 | 197.75 | | | |
| | Batch 3 project | | | | 70.69 | 0.32 | 71.01 | | | |
| | Subtotal (Sinan) | | | | 243.54 | 43.3 | 286.84 | | | |
| **Total** | | **548.19** | **1226.55** | **1774.74** | **579.17** | **215.62** | **794.79** | **30.98** | **-1010.93** | **-979.95** |

Note: The data in the table did not include the implemented roads by using the counterpart funds.
Mu is a Chinese square unit and one mu approximately equals to 666.7 square meters.

### 2. The Project Resettlement Impact

According to the preliminary design of the project, 12,569㎡ of various types of buildings are required to be demolished for the Tongren Rural Road Project. Among them, Dejiang County is expected to demolish 9858㎡ buildings, and Sinan County is expected to demolish 2605㎡ buildings. Most of these buildings are ancillary houses

used by farmers in rural areas to bake tobacco leaves, but not the residential houses for villagers. Moreover, most of Tongren Rural Road Projects are grade IV roads, and the width of lanes is mostly between 4.5m and 5m. The roadbed width can be the optimized routes and avoid house demolition. Before the implementation of the project, the local government and the project designer, optimized the project design based on the principle of minimizing house demolition. All those who can take engineering measures to avoid house demolition will not be demolished, thus greatly reducing house demolition. By December 2020, the actual area of buildings to be demolished in the project is 763.18㎡(with three households affected), which is 11,699.8㎡ less than the houses expected to be affected in RAP.

**Change Table of House Demolition Quantity of Tongren Rural Highway Project**

| Area | Project batch | Demolition quantity in RAP (m 2 ) | | | Number of buildings actually demolished (m 2 ) | | | Changes in the number of land acquisition and demolition | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Housing | Affiliated building | Subtotal (II) | Housing | Affiliated building | Subtotal (II) | Housing | Affiliated building | Total |
| Dejiang County | Batch 1 project | 8855 | 1003 | 9858 | 0 | 0 | 0 | -8333.6 | -761.22 | -9094.82 |
| | Batch 2 project | | | | 0 | 0 | 0 | | | |
| | Batch 3 project | | | | 521.4 | 241.78 | 763.18 | | | |
| | Batch 4 project | | | | 0 | 0 | 0 | | | |
| | Subtotal (Dejiang) | | | | 521.4 | 241.78 | 763.18 | | | |
| Sinan County | Batch 1 project | 605 | 2000 | 2605 | 0 | 0 | 0 | -605 | -2000 | -2605 |
| | Batch 2 project | | | | 0 | 0 | 0 | | | |
| | Batch 3 project | | | | 0 | 0 | 0 | | | |
| | Subtotal (Sinan) | | | | 0 | 0 | 0 | | | |
| **Total** | | **9460** | **3003** | **12463** | **521.4** | **241.78** | **763.18** | **-8938.6** | **-2761.22** | **-11699.8** |

## 3. Reasons for Changes in the Number of Land Acquisition and Demolition

By comparing the actual acquired land and the number of demolished buildings with the number in RAP, it is found that the actual acquired land and the number of demolished houses in the project have decreased significantly. The reasons for the decrease in the number of land acquisition and demolition include the following aspects.

1) In the implementation process, the PMOs optimized the road alignments to avoid and minimize the land acquisition and resettlement as much as possible. In the implementation process, the People's Governments of Dejiang and Sinan repeatedly communicated with the project designer according to the actual situation of the construction site, optimized the routes, and minimized land acquisition and demolition, especially avoided house demolition. Due to the flexibility of rural route selection, by optimizing the route design, the demolition of a large number of houses was reduced and the impact on livelihoods and living conditions of residents were hence reduced. Minimizing resettlement consequently reduced the project cost and ensured smooth construction.

2) The data of land acquisition and demolition in RAP was the calculated number, which was deviated from the actual number of land acquisition and resettlement at the time of implementation. At the time of preparing the RAP, the

project design was still in the preliminary design stage, and the scope of land acquisition for the project line had not been determined. The land acquisition and demolition data in the RAP report were based on the calculation of the preliminary design of the project, and there would definitely be differences between the data and the actual land acquisition and demolition data.

3) The new contents of the implemented projects have been adjusted and the construction contents have changed. In the RAP preparation stage, the PMOs preliminarily evaluated and screened the candidate projects, and drew up a list of projects to be implemented in each batch. However, in the implementation process, the local government used its own funds to transform 15 rural roads ahead of schedule. In 2018, after coordinating with the World Bank and using loan savings, Dejiang increased 11 rural roads as the fourth batch of projects implemented, and the quantity of acquired land for these new projects was less than that of previous projects. Naturally, the adjustment of project construction content leads to changes in the number of land acquisition and resettlement.

## 4. Implementation of Land Acquisition and Resettlement

In 2017, Dejiang and Sinan allocated the land compensation funds for the first and second batches of projects to villages and towns. In April 2018, Dejiang and Sinan set up the special accounts for each affected village according to the requirements of the World Bank, and allocated land compensation funds to the village accounts. In August 2018, Dejiang and Sinan PMOs have completed the statistics and verification of land acquisition in each village of the third batch of projects implemented. From September to October 2018, the Dejiang Department of Transportation and Sinan Department of Transportation began to allocate land compensation funds to each affected township one after another, and each township put land acquisition compensation funds into the special accounts of each affected village, and provided the World Bank with financial evidence for the disbursement of funds. Through on-the-spot investigation, the external social monitoring agency has confirmed that the land compensation funds have been allocated from the township to the village account, and the villagers also knew the information such as the arrival and use plan of the land funds. The affected village committees held townhall meetings to agree on the plan to use the land compensation funds. Considering each house had a very minor area of land acquired, the amount of compensation for each household was quite small. With the consent of affected households, the land compensation fees were largely pooled with government subsidies to develop public facilities to maximize social development outcomes for concerning villages. After reviewing the village-level compensation funds use plan, the PMOs and the Township Governments allocated the land acquisition fees for the construction of "group-to-group and other public welfare projects. The subsequent 4 batches of projects were also processed according to the first two batches.

## 5. Recovery of Production and Life after Land Acquisition and Demolition

Rural roads are the "Capillaries" of the whole transportation network. Reconstruction of rural roads has directly improved the transportation and sales conditions of local agricultural products, created conditions for local development of industry, tourism and other non-agricultural industries, transformed local resource advantages into economic advantages, and became a new way for poor people to increase their income. With the cooperation of the PMOs and the local government, the external social monitoring agency investigated the household incomes in affected villages in Dejiang and Sinan counties in 2016, 2017 and 2018 from July to August 2019. According to the survey conducted by the external social monitoring agency, in the income composition of local poor families, agricultural operating income still accounts for a large proportion. In the past, because some rural roads were gravel dirt roads with narrow roads and steep slopes, the roads were muddy in rainy season, and large trucks could not pass through, which led to high loss rate and cost of local agricultural products transportation. When the price of agricultural products is high and the sales market is good, the characteristic agricultural products produced by many farmers cannot be transported out for sale in time because the roads are too muddy in rainy weather. This directly restricts the improvement of local farmers' household income. After the completion of the rural road projects, the transportation conditions and capacity of villages along the local roads have been significantly improved, and the

characteristic agricultural products produced by poor farmers can be transported out in time and sold at better prices, which directly increases the income of poor farmers. According to the summary statistics of the survey, the income of the affected villages has increased considerably after the completion of the project. Moreover, after the roads were repaired, it can not only greatly reduce the transportation cost and save time, but also reduce the physical burden of residents. This could greatly improve the quality of life of ordinary people and enhance their happiness. The resettlement ICR report concluded that land acquisition caused negligible impacts to the displaced person's livelihoods. The project communities enjoyed significant social and economic benefits brought in by the project.

## 6. Social Performance Evaluation of the Project

Construction of the project broadened the original roads, optimized the alignment of rural roads, changed the defects of many bends and steep slopes of the original rural roads, and paved asphalt (cement) on the pavement. Before the implementation of the project, the traffic speed of most rural roads was only about 10km/h, and the traffic speed of a few rural roads was only 5km/h due to potholes on roads. Upon the completion of the projects, the transportation conditions in rural areas along the routes have been rapidly improved, with no dust in sunny days and no mud in rainy days. According to the measurement of vehicle speed on the completed roads, the vehicle speed has increased to 20-40km/h, with an average of 30.6km/h, which is more than three times higher than the average of 10km/h before the implementation. Upon the completion of the traffic survey, it is calculated that the average daily traffic volume in 2021 will reach 399pcu/d, which is slightly higher than the predicted value in the feasibility study stage of the project.

Many traffic accidents caused by unscientific road alignment in the past was also greatly reduced, eliminating many hidden dangers of traffic safety. After the completion of the project, local residents can go to school, see a doctor, go shopping or go out to work by means of fast and convenient motor vehicles, whether in sunny days or rainy days, which save them a lot of time and cost, greatly facilitates the travel of local residents and improves their quality of life.

According to the survey and statistics of the beneficiary population of the Project, by the end of December 2017, the Project had benefited 7,091 families and 30,611 people in 5 villages and towns and 17 administrative villages, and created conditions for 4,354 poor people to to get rid of poverty and become rich. As of August 2018, the project has improved the road traffic conditions in 17 townships and 52 administrative villages, benefiting 34,078 families and 105,477 people, and creating conditions for 16,053 poor people to get rid of poverty and become rich. As of August 2019, the project has improved the road traffic conditions in 34 townships and 108 administrative villages, benefiting 98,932 families and 333,665 people, and creating conditions for 46,614 poor people to get rid of poverty and become rich. By December 2020, the project has improved the road traffic conditions in 34 townships and 124 administrative villages, benefiting 106,216 families and 362,855 people, and creating conditions for 47,359 poor people to get rid of poverty and become rich.

**Project beneficiary areas and beneficiary population**

| Deadline | Beneficial villages and towns | Accumulation of beneficiary village | Accumulation of beneficiary families (households) | Accumulation of beneficiary population (person) | Accumulation of beneficiary poor population (person) |
|---|---|---|---|---|---|
| December 2017 | 6 | 17 | 7091 | 30611 | 4354 |
| August 2018 | 17 | 52 | 34078 | 105477 | 16053 |
| August 2019 | 34 | 108 | 98932 | 333665 | 46614 |
| December 2020 | 34 | 124 | 106216 | 362855 | 47359 |
| **Total** | **34** | **124** | **106216** | **362855** | **47359** |

## ANNEX 8. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

### EXPERIENCES AND LESSON LEARNT

In the Borrower's ICR report, the following experiences and lessons were provided.

**A. EXPERIENCES**

**4. Strong institutional arrangement**

Institutional arrangement is an important factor influencing project implementation. For this project, the municipality established a leading group (LG), which was responsible for coordination among all parties and allocation of available resources. If any issues or bottleneck occurred, the LG could mobilize necessary resources to lead and support the project implementation.

**5. Professional project management team**

According to the project design and formulation, county-level Project Management Offices (PMO) were established at Dejiang and Sinan Counties to implement the project on daily-bases. The county-level PMOs were responsible for the civil works and related coordination throughout the project implementation period. The PMO directors had sufficient management experiences in managing foreign funded projects and could make timely responses and resolve any issues occurred. The county-level PMOs regularly reported the project status and progress directly to the county leaders to seek necessary and timely guidance and supports.

**6. Timely adjustment of the project scope**

During implementation, the project scope was timely adjusted according to the actual local needs, which was under the preconditions of ensuring fully achieving the project development objectives. In the middle of project implementation, it was found that there was large loan proceed savings, about US$19.41 million, due to mainly competitive contract biddings. Then, the PMO proposed some additional project scope, like more roads and bridges, and additional road safety and greening works, according to the available loan proceeds. The main purpose was (i) maximizing the utilization of the World Bank loan proceeds, (ii) expanding the project effectiveness, and (iii) enhancing functions of the road network and reducing road safety risks.

**B. LESSON LEARNT**

1. Inadequate project preparation

During implementation, some project roads were blocked by local villagers due to unfamiliar with the policies, which postponed the project implementation. Hence, the municipal and county transport bureaus, related township governments, and village heads well explained and disseminated related government policies to the villages and alleviated the problems, which ensured smoothly implementation of the project. For the following road sections under the project, the local governments and the PMOs had sufficient disclosure and explanation of related government policies and obtained adequate understanding and supporting from the local villagers, which successfully ensured implementation of the project.

2. Malignancy behaviors of some contractors

Although the World Bank has clear and restrictive guidance in procurement, some bidders for the civil works contracts proposed much lower contract prices. For some cases, the proposed prices were about 60 percent to 70 percent lower than the estimated contract costs. It is a common phenomenon in many World Bank financed projects in China. During contract implementation, such contractors tried hard to have some contract variations to pay their losses. It caused slow implementation of some contracts, or even terminations of the contracts, and/or increasing in the contract prices. The results disturbed the project owners in properly managing the project funds and brought some uncertainty and risks.

## ANNEX 9. SUPPORTING DOCUMENTS

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11. Tongren Municipal Government. May 2021. *Study on Road Safety Capacity Building Program*. Contract Number: TRZX-03. Beijing Zhongjiaohua'an Technology Co. Ltd.