



Report and Recommendation of the President to the Board of Directors

Project Number: 51366-001
July 2019

Proposed Loan People's Republic of China: Guizhou Gui'an New District New Urbanization Smart Transport System Development Project

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 27 June 2019)

Currency unit	–	yuan (CNY)		
CNY1.00	=	\$0.1454	or	€0.1276
\$1.00	=	CNY6.8770	or	€0.8773
€1.00	=	CNY7.8384	or	\$1.1398

ABBREVIATIONS

ADB	–	Asian Development Bank
EMP	–	environmental management plan
GDAD	–	Gui'an Direct Administrative District
GGAND	–	Government of Gui'an New District
GHG	–	greenhouse gas
ha	–	hectare
HCD	–	human-centered design
ICVS	–	intelligent connected vehicle system
ITS	–	intelligent transport system
O&M	–	operation and maintenance
PAM	–	project administration manual
PMO	–	project management office
PRC	–	People's Republic of China
YREB	–	Yangtze River Economic Belt

NOTE

In this report, "\$" refers to United States dollars, and "€" refers to Euro.

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PROJECT AT A GLANCE

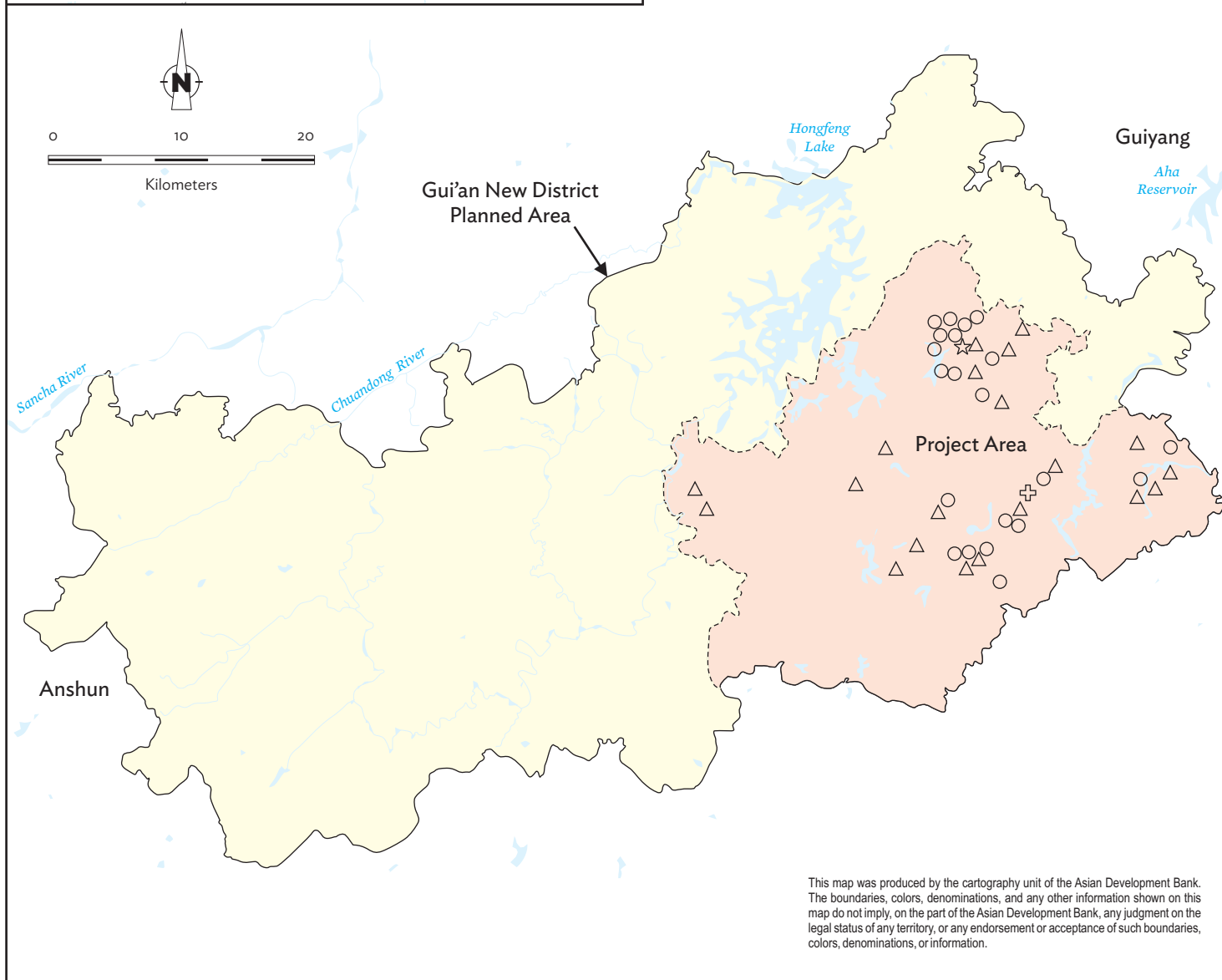
1. Basic Data		Project Number: 51366-001	
Project Name	Guizhou Gui'an New District New Urbanization Smart Transport System Development Project	Department /Division	EARD/EASI
Country Borrower	China, People's Republic of People's Republic of China	Executing Agency	Government of Gui'an New District
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Transport	Urban public transport		125.66
	Urban roads and traffic management		73.80
	Total		199.46
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	CO2 reduction (tons per annum)	300
Environmentally sustainable growth (ESG)	Global and regional transboundary environmental concerns	Climate Change impact on the Project	Medium
	Urban environmental improvement	ADB Financing Mitigation (\$ million)	108.59
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Client relations, network, and partnership development to partnership driver of change	Effective gender mainstreaming (EGM)	✓
	Institutional development		
	Organizational development		
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas		
	Knowledge sharing activities		
	Pilot-testing innovation and learning		
5. Poverty and SDG Targeting		Location Impact	
Geographic Targeting	No	Urban	High
Household Targeting	No		
General Intervention on Poverty	No		
SDG Targeting	Yes		
SDG Goals	SDG5, SDG9, SDG10, SDG11, SDG12, SDG13		
6. Risk Categorization:	Low		
7. Safeguard Categorization	Environment: B Involuntary Resettlement: B Indigenous Peoples: C		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		199.46	
Sovereign Project (Regular Loan): Ordinary capital resources		199.46	
Cofinancing		0.00	
None		0.00	
Counterpart		296.35	
Government		296.35	
Total		495.81	
Currency of ADB Financing: EUR			



GUIZHOU GUI'AN NEW DISTRICT NEW URBANIZATION SMART TRANSPORT SYSTEM DEVELOPMENT PROJECT IN THE PEOPLE'S REPUBLIC OF CHINA

-  Gui'an New District: Planned Area
-  Gui'an Direct Administrative District: Project Area
-  Bus Station Sites
-  Charging Station Sites
-  Intelligent Connected Vehicle System Demonstration Zone
-  Supporting Road Site
-  River

Boundaries are not necessarily authoritative.



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I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the People's Republic of China (PRC) for the Guizhou Gui'an New District New Urbanization Smart Transport System Development Project. The project will support Gui'an in developing an intelligent transport system (ITS) and sustainable transport infrastructure.¹ This will make public transportation in Gui'an a preferred mode of travel—averting congestion, improving transport safety, and making the city livable. This, in turn, will attract private sector investment and talented professionals. Sustainable green transport will establish Gui'an as a low-carbon city. This innovative project is expected to play a demonstrative role in the Yangtze River Economic Belt (YREB) and beyond.

II. THE PROJECT

A. Rationale

2. **Strategic context.** The YREB is one of the PRC's three key economic growth engines. Its nine provinces and two specially administered municipalities account for more than 40% of the population, 40% of freshwater resources, and about 45% of the country's economic output. While the YREB has benefited from extensive development since the late 1980s, particularly in the eastern delta area, economic growth in the middle and upper reaches of the Yangtze River Basin lags that of the coastal areas and is below its potential. These parts of the YREB still face significant development challenges as a result of (i) increasing pollution and pressure on natural resources; (ii) slow transformation into green development and economic diversification; (iii) limited integration of waterways, ports, and intermodal logistics; and (iv) weak institutional coordination for strategic planning. The YREB faces a growing imbalance between economic achievement and environmental quality. To manage these challenges, the Government of the PRC formulated the YREB development plan, 2016–2030, which prioritizes ecological protection and the promotion of green development as the guiding principle for the YREB's future growth.² Inclusive green development aims to (i) shift from a traditional, subsector approach to a cross-cutting, integrated approach—leading to a sustainable development model; (ii) solve the challenges of rapid urbanization; and (iii) serve as a guide to socioeconomic development.

3. Guizhou, in the southwest PRC, is part of the YREB but has slow economic growth. In 2017, it had one of the lowest gross domestic products per capita in the PRC, at CNY37,956 or 63.6% of the PRC average (CNY59,660), and its poverty rate of 7.75% was more than double the national rate (3.10%). Some 46% of its population of 35.8 million is urban.

4. The State Council of the PRC established Gui'an New District (Gui'an) as a new city in January 2014, with the objective of making it the economic development driver of Guizhou and surrounding provinces. The key strategies for Gui'an are to develop a high-level technology innovation hub to attract talent and private business; encourage innovation and high-technology industrial development; and conserve the natural environment to ensure a healthy green city and foster ecotourism.³ This is in line with the PRC's new urban development strategy in its 13th five-year plan, which places increasing importance on innovation, eco-friendly policies, and people-

¹ Intelligent Transport Systems are applications that combine leading-edge information and communications technologies used in transportation which help relieve congestion, reduce pollution and increase safety. Sustainable transport infrastructure is defined as transport infrastructure that provides mobility that is accessible, safe, environment-friendly, and affordable for the present and future generations.

² Government of the PRC. 2016. *Outline of the Yangtze River Economic Belt Development Plan, 2016–2030*. Beijing.

³ Guizhou Provincial Government. 2014. *Gui'an New District Master Plan (2013–2030)*. Guiyang.

centered development and urbanization.⁴ To be able to meet these key strategies, Gui'an has to be livable, with transport playing a crucial role in its development.

5. Gui'an's planned development area spreads over 1,795 square kilometers. Its population is 0.73 million (2016 estimate) and is expected to reach 2.30 million in 2030. Gui'an is growing exponentially, with gross domestic product expected to increase by about 58% annually from CNY17 billion in 2015 to CNY150 billion in 2020, targeting 11% agriculture, 56% industry, and 33% service sector development, reflecting the government's focus on urbanization.

6. **Challenges.** Within Gui'an's planned development area is Gui'an Direct Administrative District (GDAD), the project area. GDAD covers 470 square kilometers and forms the core of Gui'an. It is designed to have four distinct economic zones (city center, technology, universities, and tourism) with a population of 330,000 in 2017 that is set to double by 2020 and reach 1.4 million by 2030 (footnote 3). Public transport in GDAD is still in its initial stages of development. There is heavy reliance on private modes of transport and the share of public transport is only 10%. Since the opening of the first bus route in July 2014, only a total of nine bus routes have been in operation. Bus services are unreliable with passenger waiting times of about 30 to 45 minutes. Road incidents are also high (1,430 crashes in 2018) relative to the existing population.

7. Without transport system integration and communication, GDAD will experience inadequate transport connectivity, including suboptimal road infrastructure planning and traffic signaling, traffic bottlenecks, and congestion. A lack of integrated public transport infrastructure and systems leads to poorly planned timetables and overcrowding. Consequently, users become frustrated with their experience of public transportation and choose other options such as private vehicles, resulting in lower ridership in public transportation. The resulting inefficiencies reduce mobility within the urban environment; hinder the ability to attract residents, tourists, and private sector investments; and constrain overall economic growth.

8. Rapid economic and population growth and urbanization have strained the delivery of basic services and transportation systems in cities. This has resulted in overcrowded road networks, poor traffic management, a high rate of traffic incidents, and parking difficulties. Poor and inadequate provision of public transport and its associated facilities has led to mobility and connectivity problems for citizens, especially the underprivileged. Traffic congestion has contributed to deterioration of the air quality and higher fuel consumption and carbon emissions. The PRC has recognized the need for balancing urban development strategies with measures to address the transport problems that arise in cities, particularly in the western region. Overcoming these issues will require improving urban development and transport systems and processes.

9. As a new urban core, GDAD has the opportunity to chart a development path building on lessons learned in other cities, focusing from the start on economic growth and urbanization that is people-centered, integrated, environment-friendly, and innovative. To establish a sustainable transport system and minimize key mobility-related challenges, an integrated transport system characterized by high public transport utilization is required. The development of an ITS that connects all modes of transport, facilitates travel demand management measures, and provides a seamless public transport experience, particularly to users switching between modes, is the foundation of sustainable mobility. It is also a key pillar in sustainable urbanization and the creation of more livable cities. Without active forward planning and technological innovation,

⁴ Government of the PRC. 2015. *The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China, 2016–2020*. Beijing.

GDAD's targets of a public transport modal share of 60% and a green transport modal share of 80% by 2030 will be difficult to achieve.⁵

10. **Proposed solutions.** Technology plays a crucial role in developing sustainable transport networks and systems. Intelligent transport systems (ITSs) can connect transport networks across modes, improving efficiency, coordination, and safety. They use information and communication technology in vehicles and transport infrastructure to collect, manage, and distribute information to improve transport outcomes. ITSs use a range of technologies that provide information to enable services such as coordinated incident and emergency response systems; and management of parking, public transport, bicycle sharing systems, and freight. ITSs can accelerate better and faster development of surface transportation and reduce accidents by about 7%.⁶ To ensure that the introduction of the ITS results in more inclusive, gender-sensitive transport solutions, the project team used human-centered design (HCD) methodology—an innovation that aims to make products and systems user-friendly by focusing on the users and their needs, and by applying human factors.

11. These ITS services provide various users and operators with critical information for decision making, enabling safer and more coordinated use of transport networks, and optimizing infrastructure utilization. One key ITS service is traffic demand management, which harnesses traffic and user data to determine transport demand and redistribute users over time or to alternate routes. This enables people and freight to move easier, reducing congestion and emissions, improving the quality of the urban environment, and encouraging economic growth.

12. Developing a sustainable transport system includes the improved use of public transportation, and provision and use of clean energy public transport modes such as electric buses, which are proven to reduce greenhouse gas (GHG) and local emissions in cities. Electric buses reduce GHG emissions by 30%–40% and do not contribute to local nitrogen oxides and emissions from particulate matter of less than 2.5 micrometers in diameter. Cities could reduce their GHG emissions in turn by 8%–12%. The implementation of electric buses in a system will improve the overall mobility and sustainability of the urban transport system and compound the positive impact of the technology.⁷

13. ITS technologies and services can be complemented by advances in vehicle technology such as intelligent connected vehicles,⁸ electric vehicles, and electric buses, to provide more environment-friendly and efficient transport services. The adoption of these high-level technologies and their integration into the urban fabric is crucial for the development of sustainable urban transport systems. Up-front planning and design of an efficient, integrated urban transport system in new cities—incorporating the needs of its users—is crucial to avoid the problems of historic, car-centric transport systems and achieve the vision of a livable city with sustainable economic growth.

14. **Value added by ADB assistance.** Under Strategy 2030 of the Asian Development Bank (ADB), the project will focus on two of the seven operational priorities: (i) making cities more livable; and (ii) tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability.⁹ ADB will help GDAD explore new and existing technologies and

⁵ Green transport is the use of transport modes that do not negatively impact the environment and that use clean energy. The modal share by 2030 is envisaged to be 25% walking, 5.0% bicycle, 27.5% bus, 22.5% train, and 20.0% car and/or motorcycle.

⁶ ADB. 2016. [Safety and Intelligent Transport Systems Development in the People's Republic of China](#). Manila.

⁷ ADB. 2018. [Sustainable Transport Solutions: Low-Carbon Buses in the People's Republic of China](#). Manila.

⁸ Intelligent Connected Vehicles (ICV) are vehicles which are equipped with information and communications technologies that can communicate with other vehicles and with the infrastructure around them.

⁹ ADB. 2018. [Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific](#). Manila.

approaches to urbanization that encourage integrated, safe, green, and inclusive urban development and make cities more livable. ADB will add value by introducing an ITS in new urban development through new technologies and best practices in project design and implementation, including international expertise at the forefront of ITS development, an intelligent connected vehicle system (ICVS), and clean transport technology. ADB's involvement provides access to international best practice in HCD. ADB provides a platform to transfer knowledge in sustainable, inclusive, and participatory urban transport planning, design, and operation to other regions. The experience and knowledge gained from such an innovative project can also be replicated in other cities in and outside the PRC.¹⁰

15. During project preparation, the project team gathered extensive user and stakeholder feedback to identify innovation opportunities on the ITS, buses, and bus stations using HCD methodology. The HCD research also guided the design of communication and participation mechanisms.¹¹ The communication strategy focuses on integrating stakeholder inputs into the planning and implementation of the ITS and transport infrastructure so that road users, including underrepresented groups, can participate in providing solutions to key accessibility and mobility issues. The project will launch behavior change communication campaigns to increase patronage for public buses and other green transport modes. The social development and gender action plan contributes to narrowing the digital divide in GDAD.¹²

16. ADB's participation will create an enabling environment that will ensure opportunities for private sector participation by (i) creating a livable city to attract and retain workers; (ii) strengthening the transport backbone so the private sector can invest in additional auxiliary services, such as car-sharing or wayfinding applications; and (iii) facilitating a high-technology workforce to provide a qualified labor pool thereby attracting private sector investments.

B. Impact and Outcome

17. The project is aligned with the following impact: economic activity and livability improved (footnote 3). The project will have the following outcome: efficiency and sustainability of transport system in Gui'an improved.¹³

C. Outputs

18. **Output 1: Intelligent transport systems designed and installed.** To provide an integrated solution to address the potential traffic management, safety, and infrastructure capacity issues, the project team proposes a comprehensive ITS suite: (i) developing a real-time traffic and road-weather monitoring system; (ii) setting up a big data service center; (iii) creating a multimodal transportation systems management and operations center;¹⁴ and (iv) establishing an integrated traffic operations, and security and emergency management system.¹⁵

¹⁰ Summary of Innovation Features (accessible from the list of linked documents in Appendix 2).

¹¹ The HCD approach enhances effectiveness and efficiency, improves human well-being, user satisfaction, accessibility, and sustainability; and counteracts possible adverse effects of use on human health, safety, and performance. ISO 9241-210:2010(E).

¹² Summary of Knowledge Sharing and Capacity Strengthening Plan (accessible from the list of linked documents in Appendix 2).

¹³ The design and monitoring framework is in Appendix 1.

¹⁴ The operations center will be set up in an existing office space, without involving civil works.

¹⁵ Real time data on traffic conditions will be collected through various technologies. This data will be stored, managed, and maintained in the big data service center. Different management systems for different transport modes (buses, taxis, bicycles, passenger cars, and freight vehicles), parking, and law enforcement will be created. Data from these management systems will flow to the multimodal transportation systems management and operations center to analyze and manage different services. The integrated traffic operations, and security and emergency management system will monitor real time multi-modal operations by a platform that includes software and computer network systems, and communications technologies.

19. **Output 2: Sustainable transport infrastructure built.** To promote maximum public transportation use in new urban development, the transport system must be flexible and enable users to switch safely and seamlessly between modes, including walking, cycling, buses, trains, and cars:

- (i) build 20 bus stations, including six hub stations, 11 terminal stations, and three bus depots—this infrastructure will work together with ITS elements to optimize infrastructure and overall urban mobility;
- (ii) purchase 200 clean energy buses to increase the bus route coverage and reduce emissions from public transport services;
- (iii) build a regional network of 21 electric charging stations for both private and public vehicles to encourage green vehicles and reduce emissions;
- (iv) construct a network of about 8.16 kilometers of new urban roads in the core of GDAD as part of the transport network backbone—these roads will provide access to key existing north–south and east–west trunk roads and will be equipped with ITS equipment; and
- (v) set up an ICVS demonstration zone for research and development of ICVS and associated technologies, including the application of information technology in the transport infrastructure, auxiliary equipment, and data center platform in the designated area.¹⁶

20. **Output 3: Smart transport capacity strengthened.** The project includes capacity strengthening activities to ensure a relevant and up-to-date ITS and consider clean transport technology at the design, implementation, and operation phases. The capacity of the Government of Gui'an New District (GGAND) will be strengthened by applying communication and stakeholder engagement approaches. This will ensure that the ITS and infrastructure design and services are inclusive, gender-responsive, safe, and sustainable; and that transport users are motivated through behavior change communication campaigns to choose green transport modes. The project will provide consulting services for supervision and project management, including HCD and knowledge transfer related to the ICVS demonstration zone.

D. Summary Cost Estimates and Financing Plan

21. The project is estimated to cost €435.00 million (\$495.81 million equivalent) (Table 1).

Table 1: Summary Cost Estimates
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Intelligent Transport System Development	93.03
2. Sustainable Transport Infrastructure Development	205.23
3. Capacity Strengthening	12.08
4. Project Preparation and Management	107.84
5. Land Acquisition and Resettlement	3.21
Subtotal (A)	421.39
B. Contingencies^c	53.10
C. Financial Charges During Implementation^d	21.32
Total (A+B+C)	495.81

Note: Numbers may not sum precisely because of rounding.

^a Includes taxes and duties of \$16.85 million to be financed from government resources and the Asian Development Bank (ADB) loan resources. Such amount does not represent an excessive share of the project cost. The government will finance taxes and duties in cash from government resources.

^b In December 2018 prices.

¹⁶ The ICVS demonstration zone design will follow the Administrative Measures of Road Test for Intelligent Connected Vehicles (for trial implementation) jointly issued by the Ministry of Industry and Information Technology, the Ministry of Public Security, and the Ministry of Transport on 12 April 2018.

- ^c Physical contingencies computed at 7.6% of the base cost. Price contingencies computed at average of 1.54% on foreign exchange costs and 2.28% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.
- ^d Includes interest and commitment charges. Interest during construction for the ordinary capital resources loan has been computed at the 5-year United States dollar fixed swap rate plus an effective contractual spread of 0.5% and maturity premium of 0.2%. Commitment charges for the ordinary capital resources loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: Asian Development Bank estimates.

22. The government has requested a regular loan of €175 million (\$199.46 million equivalent) from ADB's ordinary capital resources to help finance the project. The loan will have a 30-year term, including a grace period of 5 years, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; a commitment charge of 0.15% per year; and such other terms and conditions set forth in the draft loan and project agreements. Based on the straight-line method, the average maturity is 17.75 years, and the maturity premium payable to ADB is 0.20% per year.

23. The summary financing plan is in Table 2. ADB will finance expenditures in relation to works, goods, consultants, and capacity strengthening. The government will ensure that counterpart funds for the project are provided in a timely manner. Detailed cost estimates by expenditure category and financier are in the project administration manual (PAM).¹⁷

Table 2: Summary Financing Plan

Source	Amount (\$ million)	Amount (€ million)	Share of Total (%)
Asian Development Bank			
Ordinary capital resources (regular loan)	199.46	175.00	40.0
Government	296.35	260.00	60.0
Total	495.81	435.00	100.0

Source: Asian Development Bank estimates.

24. **Climate finance.** Climate mitigation is estimated to cost €95.53 million. ADB will finance 100% of mitigation costs, which includes purchasing electric buses, installing charging stations, and providing bus depots, hubs, and stations. Details are in the PAM.

E. Implementation Arrangements

25. The executing agency for the project is the GGAND, acting through the Bureau of Economic Development of Gui'an. GGAND established the project management office (PMO) under the Bureau of Economic Development of Gui'an. GGAND will establish three project implementation units to assist the PMO in implementing bus hubs and buses, charging stations, and supporting roads. GGAND will recruit a project management consultant to assist in project management, technical support, safeguard monitoring, the social development and gender action plan, and implementation of the communication strategy. The implementation arrangements are summarized in Table 3 and described in detail in the PAM.

Table 3: Implementation Arrangements

Aspects	Arrangements
Implementation period	December 2019–December 2025
Estimated completion date	December 2025
Estimated loan closing date	June 2026
Management	
(i) Oversight body	Project steering committee Deputy director general, Government of Gui'an New District Management Committee (chair)

¹⁷ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

Aspects	Arrangements		
	Leaders from 24 project-related government agencies, entities, and townships (members)		
(ii) Executing agency	Government of Gui'an New District, acting through the Bureau of Economic Development of Gui'an		
Procurement	Open competitive bidding (with international advertisement)	16 contracts	€122.76 million (\$139.89 million equivalent)
	Open competitive bidding (with national advertisement)	13 contracts	€45.80 million (\$52.21 million equivalent)
Consulting services	QCBS	8 packages	€5.20 million (\$5.93 million equivalent)
Advance contracting	Advance contracting will apply to the recruitment of consultants and procurement of civil works and goods.		
Disbursement	The loan proceeds will be disbursed following ADB's <i>Loan Disbursement Handbook</i> (2017, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, QCBS = quality- and cost-based selection.

Note: Values are for ADB financing only.

Source: Asian Development Bank estimates.

III. DUE DILIGENCE

A. Technical

26. The project is technically feasible. The project team conducted feasibility studies for the ITS, public transport, and sustainable infrastructure components. The studies included the adoption of advanced technologies for (i) transport and data communication provision, (ii) the operation and maintenance (O&M) of electric buses, and (iii) charging systems. The project team selected suitable ITS design and engineering solutions considering costs, climate, environmental and social impacts, and O&M capacities. Preliminary designs of the data center and ITS components comply with the ITS conceptual design and data and communications standards in the PRC. Electric bus specifications and bus depot configuration adhere to international and domestic standards. The project team prepared a generic testing guideline and an ICVS safety framework based on the currently available ICVS technologies and commonly used testing scenarios. HCD features are incorporated in the integrated bus information system and bus station designs. Moreover, the project team designed programs to build smart transport capacity based on needs assessments, social surveys, and institutional analyses.

B. Economic and Financial

27. **Economic analysis.** The project team assessed the economic viability of the overall project and the main subcomponents in accordance with ADB's guidelines.¹⁸ The overall project is economically viable, with an estimated economic internal rate of return of 16.8%. Economic benefits of the project include savings in vehicle operating costs, time savings, safety benefits, and emissions reduction. The project will also generate unquantifiable wider economic benefits such as improved connectivity and poverty reduction. A sensitivity analysis of potential cost overruns and benefit reductions demonstrates that the project's economic viability is robust.¹⁹

28. **Financial analysis.** The project team conducted a financial analysis to establish the project's financial viability and sustainability.²⁰ For the three revenue-generating subprojects (charging stations, bus hubs, and electric buses), ADB based the financial viability assessment on the comparison between the projected financial internal rate of return and the weighted average

¹⁸ ADB. 2017. [Guidelines for the Economic Analysis of Projects](#). Manila; and ADB. 2009. [Financial Due Diligence: A Methodology Note](#). Manila.

¹⁹ Economic Analysis (accessible from the list of linked documents in Appendix 2).

²⁰ Financial Analysis (accessible from the list of linked documents in Appendix 2).

cost of capital. The project team assessed the charging station subproject as financially viable, as its projected financial internal rate of return exceeds the weighted average cost of capital. For the bus hubs and electric buses, government subsidies will be needed to service the O&M costs during operations. The financial sustainability assessment indicates that the GGAND has enough funds to support the counterpart funding requirements, provided that the national and provincial governments continue providing budget subsidies. However, reliance on these subsidies presents a risk to the project's financial sustainability.

C. Governance

29. **Financial management.** The financial management risk is *moderate* mainly because (i) the executing agency is unfamiliar with ADB's financial management policy and procedures, and (ii) the PMO lacks financial management staff. The executing agency needs to strengthen its financial management capacity by establishing a new financial management unit under the PMO, with adequate and experienced financial staff who are well trained in ADB's financial management policy and procedures. The project team will conduct training activities at regular intervals during the processing and implementation stages. The project team incorporated the mitigation measures agreed with the GGAND into the project design and will monitor these measures during project implementation, as specified in the PAM.

30. **Procurement and anticorruption.** The project team conducted an assessment of the project procurement risk, subject to the procurement capacity of the executing agency, in accordance with ADB's guidelines. The procurement risk of the project is assessed *medium* before mitigation measures. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and the GGAND. The specific policy requirements and supplementary measures are described in the PAM.

D. Poverty, Social, and Gender

31. The project will introduce efficient, affordable, and user-friendly public transport into an urbanizing but still predominantly rural area—enabling economic development and averting future congestion and pollution. The project's direct beneficiaries will include women and the poor. The ITS will be an enabler for GDAD's vision to become a technology hub that offers high quality of life, attracting entrepreneurial talent from across the PRC. In the long term, the project will benefit GDAD's residents and businesses by ensuring high-quality and affordable mobility in a livable city. The project also targets at least 30% women to be employed in new skilled jobs such as ticketing, bus driving, and maintenance.

32. Project preparation relied on extensive consultations with residents—including women, former farmers, and the elderly—using HCD methods. These consultations resulted in proposals for gender- and disability-sensitive bus and station design, which will be developed in the detailed design. The capacity strengthening component aims to narrow the digital divide in GDAD by (i) running inclusion-focused hackathons to develop ITS applications and services related to traffic safety, green mobility, gender, and disability inclusion; and (ii) motivate school-aged girls to consider careers in the fields of science, technology, engineering, and mathematics by participating in ITS coding camps. The project team developed a communication strategy to support the project's behavior change and inclusive participation aims. The project is classified *effective gender mainstreaming*.

E. Safeguards

33. In compliance with ADB's Safeguard Policy Statement (2009), the project's safeguard categories are as follows.²¹

34. **Environment (category B).** The project team prepared an initial environmental examination (IEE), including an environmental management plan (EMP), in accordance with the Safeguard Policy Statement. The project area and its vicinity do not involve any environmentally sensitive areas or physical cultural heritage. Potential negative environmental impacts during construction are short-term and localized; and are associated with fugitive dust, construction noise, wastewater, solid waste, disruption of traffic, and risks to occupational and community health and safety. Potential negative environmental impacts during operation include noise, waste, and wastewater at bus depots, hubs and stations, traffic noise, and emission induced from projects roads; hazardous materials from bus service areas; and end of life-cycle buses and batteries that require replacement. The EMP describes mitigation measures, monitoring requirements, and institutional responsibilities for ensuring adequate environmental management throughout the project's construction and operation. The project team will handle potential environmental complaints or disputes in accordance with the grievance redress mechanism established for the project. The executing agency committed to implement the agreed EMP, as reflected in the PAM and loan covenants. The IEE disclosed relevant project information and documents to the affected people and conducted meaningful public consultation in accordance with the Safeguard Policy Statement. The project team will conduct continuous reassessment of impact areas and consultations throughout project implementation.

35. The project team conducted a climate risk and vulnerability assessment and concluded that the highest risk that climate change poses to the project is higher flood peak flows resulting from increased intensity of storm events. To address this risk, the project team augmented the intensity of design storms by 10% in designing the road systems and sizing drainage pipes/channels. The detailed design team will also consider the potential effects of increased storm peak flows caused by climate change in setting the locations of important facilities and water-proofing project components, including electrical equipment.

36. The project team adopted a two-phased approach for the ICVS demonstration testing as reflected in the project agreement. During project processing, the first phase, the project team prepared a generic testing guideline and an ICVS safety framework based on the currently available ICVS technology and a commonly used ICVS testing plan scenario. During project implementation, the second phase, the team will engage ICVS experts to guide, review, and provide recommendations on the detailed design, testing plan scenarios, and safety management plan.

37. **Involuntary resettlement (category B).** The project will occupy 698.57 *mu* (46.57 hectares [ha]) of land for bus stations and charging stations, of which 481.96 *mu* (32.13 ha) is previously acquired state-owned land and 216.61 *mu* (14.44 ha) is rural collective land that needs to be acquired. The land acquisition will not impact any residential units.²² A total of 161 households with 697 persons will be affected marginally by land acquisition, since agriculture accounts for less than 2% of household income. The average land loss rate is about 6% of the total land and nonsignificant in nature. A resettlement plan (RP) has been prepared and disclosed. The PMO will ensure that compensation is paid in cash before acquisition and taking physical possession of the land. The project aims to provide skilled and unskilled job opportunities for local people during project construction and operation. Affected households will be given priority for such employment. The PMO will appoint a dedicated resettlement officer to handle resettlement planning and

²¹ ADB. [Safeguard Categories](#).

²² A *mu* is a Chinese unit of measurement (1 *mu* = 666.67 m²).

associated safeguard aspects. The project management consultant will support the PMO in implementing the resettlement plan. An external monitoring agency will be recruited to monitor the implementation of the resettlement plan.

38. **Indigenous peoples (category C).** Ethnic minorities in GDAD are well-integrated socially and economically into the urban fabric, and do not present any specific vulnerabilities. The social analysis has confirmed that they will not suffer any adverse impacts as a result of the project.

F. Summary of Risk Assessment and Risk Management Plan

39. Significant risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.²³

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigation Measures
Financial sustainability and debt sustainability mitigation depends on the continued availability of upper government funding.	ADB and the government include assurances on sufficient funds in the loan agreement. Government will include counterpart funds for the project in the annual government expenditure budget plan.
Inadequate project management office capacity in implementing the project.	GGAND will recruit adequate and experienced staff in project management, safeguards, procurement, and financial management.
Low familiarity with ADB requirements may lead to implementation delays.	ADB will conduct training at regular intervals during the processing and implementation stages.

ADB = Asian Development Bank.

Source: Asian Development Bank.

IV. ASSURANCES

40. The government and the GGAND have assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the PAM and loan documents.

41. The government and the GGAND have agreed with ADB on certain covenants for the project, which are set forth in the draft loan agreement.

V. RECOMMENDATION

42. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of €175,000,000 to the People's Republic of China for the Guizhou Gui'an New District New Urbanization Smart Transport System Development Project, from ADB's ordinary capital resources, in regular terms, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 30 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao
President

25 July 2019

²³ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

DESIGN AND MONITORING FRAMEWORK

Impact the Project is Aligned with Economic activity and livability improved (Gui'an New District Master Plan, 2013–2030) ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Efficiency and sustainability of transport system in Gui'an New District improved	By 2026: a. Public transport modal share increased to 50% (2018 baseline: 10%) b. Energy-efficient buses operating over a network of 800 km in length (2018 baseline: 415 km) c. Annual road crashes reduced by 20% (2018 baseline: 1,430 crashes)	BEDGA annual report Bus company annual report BEDGA annual report	Ridership may be lower than forecast and government investment in projects may decrease
Outputs 1. Intelligent transport system designed and installed	By 2025: 1a. One real-time traffic and road-weather monitoring system developed (2019 baseline: 0) 1b. One big data center set up (2019 baseline: 0) 1c. One multimodal transportation systems management and operations center created (2019 baseline: 0) 1d. One integrated traffic operations and security and emergency management center established (2019 baseline: 0) 1e. At least 30% women in skilled employment in the ITS big data center and associated offices (2019 baseline: 0)	1a–1e. BEDGA project progress or monitoring report, and project completion report	Rapid rate of technological change results in outdated project design
2. Sustainable transport infrastructure built	2a. 6 bus hubs, 11 terminals, and 3 bus depot stations constructed (2018 baseline: 0) 2b. At least 150% increase in clean energy buses in operation (2017 baseline: 55 buses) 2c. 21 electric charging stations installed (2018 baseline: 2)	2a–2h. BEDGA progress and monitoring reports	Change in government's priorities may delay available funding to support the project Development of intelligent connected vehicles in other countries may prompt the full-scale deployment of intelligent connected vehicles in certain

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	2d. About 8.16 km of supporting road constructed (2018 baseline: 0) 2e. Intelligent connected vehicle system demonstration site pilot tested (2019 baseline: 0) 2f. 40 additional bus routes developed (2017 baseline: 9) 2g. At least 10 gender- and disability-inclusive design features included in buses and bus stations (2019 baseline: 0) 2h. At least 30% women employed in new skilled jobs such as ticketing, bus driving, and maintenance (2019 baseline: 0)		areas, but not pilot testing
3. Smart transport capacity strengthened	3a. 120 ITS professionals report improved skills in the sector (30% of them women) (2018 baseline: 0) 3b. At least 600 girls aged 8–14 report having acquired ITS knowledge and coding skills by attending ITS coding camps and visits to big data center (2019 baseline: 0) 3c. At least 3,000 students and employees in university and technology zones report having acquired knowledge on green transport modes through behavior change communication campaigns (2018 baseline: 0)	3a–3c. Participants' feedback survey report BEDGA progress and monitoring reports BEDGA training completion report and training materials	Overall demographic growth of Gui'an may not provide sufficient women who may be interested in the ITS sector

Key Activities with Milestones 1. Intelligent transport system designed and installed 1.1 Complete ITS detailed design by Q4 2020. 1.2 Commence ITS procurement by Q4 2019. 1.3 Recruit supervision consultants by Q4 2019. 1.4 Complete ITS installation by Q2 2023. 2. Sustainable transport infrastructure built 2.1 Prepare bus stations and charging station standards and design by Q1 2020. 2.2 Commence bidding for procurement by Q4 2019. 2.3 Complete procurement by Q1 2024. 2.4 Operate stations, new routes, clean buses, and charging stations by Q3 2024. 2.5 Complete intelligent connected vehicles system detailed testing plan and health and safety protocol by Q2 2021. 2.6 Complete pilot intelligent connected vehicles testing and installation by Q2 2022. 3. Smart transport capacity strengthened 3.1 Commence recruitment of training consultants by Q4 2019. 3.2 Start training and capacity strengthening by Q1 2020. 3.3 Commence thematic studies by Q1 2020. 3.4 Complete smart transport development capacity strengthening program design by Q1 2024. Project Management Activities Recruit project management consultant (Q3 2019–Q1 2020). Provide project management support through a consultant team (Q1 2020–Q4 2024). Submit annual environmental monitoring reports to ADB (Q1 2020–Q4 2024). Submit semiannual external resettlement monitoring and evaluation reports to ADB (Q1 2020–Q4 2024). Implement social development and gender action plan, and communication strategy, monitor implementation, and submit semiannual social monitoring reports to ADB (Q1 2020–Q4 2024). Monitor and evaluate project impact, outcome, and outputs using the project performance management system; and submit quarterly project progress reports (Q1 2020–Q4 2024). Submit project completion report (Q2 2025). Inputs ADB: €175.00 million (\$199.46 million equivalent) (loan) Government: €260.00 million Assumptions for Partner Financing Not Applicable
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ADB = Asian Development Bank, BEDGA = Bureau of Economic Development in Gui'an New District, ITS = intelligent transport system, km = kilometer, Q = quarter.

^a Guizhou Provincial Government. 2014. *Gui'an New District Master Plan (2013–2030)*. Guiyang.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=51366-001-3>

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Transport
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Financial Analysis
8. Economic Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Risk Assessment and Risk Management Plan
12. Social Development and Gender Action Plan
13. Initial Environmental Examination
14. Resettlement Plan

Supplementary Documents

15. Gui'an New Area Intelligent Transportation System (ITS) Conceptual Design
16. Innovation Features (Summary)
17. Knowledge Sharing and Capacity Strengthening Plan