

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BOLIVIA

MAIRANA-BERMEJO SEGMENT RECONSTRUCTION PROJECT

(BO-L1186)

LOAN PROPOSAL

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2.	ABC Road Maintenance Program
3.	Comprehensive Implementation Plan for Intelligent Transportation Systems in the RVF
4.	Technical Annex for Economic Integration
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6.	TESA study for rehabilitation of the Mairana-Bermejo segment
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ABBREVIATIONS

AADT	Annual average daily traffic
ABC	Administradora Boliviana de Carreteras [Bolivian Highway Administration]
CNC	Cuenta Nacional de Carreteras [National Highways Account]
EIRR	Economic internal rate of return
ENPV	Economic net present value
ESA	Environmental and Social Analysis
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMR	Environmental and Social Management Report
ITS	Intelligent Transportation Systems
MOPSV	Ministry of Public Works, Services, and Housing
RVF	Red Vial Fundamental [Primary Road Network]
SGCV	Subgerencia de Conservación Vial [Road Maintenance Department]
TESA	Technical, economic, social, and environmental study
VMT	Office of the Deputy Minister for Transportation

PROJECT SUMMARY

BOLIVIA

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Financial Terms and Conditions			
Borrower:	Source	Amount (US\$)	%
Plurinational State of Bolivia	IDB (Regular OC):	54,400,000	85
Executing agency:	IDB (Concessional OC):	9,600,000	15
Administradora Boliviana de Carreteras [Bolivian Highway Administration]	Total:	64,000,000	100
	Regular OC (FFF) ^(a)	Concessional OC	
Amortization period:	22 years	40 years	
Disbursement period:	5 years		
Grace period:	6.5 years	40 years	
Interest rate:	LIBOR-based	0.25%	
Credit fee:	^(b)	N/A	
Inspection and supervision fee:	^(b)	N/A	
Weighted average life:	15.25 years	N/A	
Approval currency:	U.S. dollars		
Project at a Glance			
Project objective/description: The project's overall objective is to help improve Bolivia's productivity and its national and regional economic integration. The specific objective is to help improve the level of service of the Primary Road Network (RVF) through the reconstruction and upgrading of the Mairana-Bermejo segment, thereby reducing vehicle operating costs and travel times.			
Special contractual condition precedent to the first disbursement of the loan: None.			
Special contractual execution conditions: Prior to the physical start of the works on each front determined by the ABC, the ABC will submit for the Bank's no objection, evidence of the release of the right of way, including 100% of the impacts for the respective work front (paragraph 3.3). See Annex B of the project's Environmental and Social Management Report (required electronic link 3).			
Exceptions to Bank policies: None			
Strategic Alignment			
Challenges: ^(c)	SI <input type="checkbox"/>	PI <input checked="" type="checkbox"/>	EI <input checked="" type="checkbox"/>
Crosscutting themes: ^(d)	GD <input type="checkbox"/>	CC <input checked="" type="checkbox"/>	IC <input type="checkbox"/>

^(a) Under the terms of the Flexible Financing Facility (document FN-655-1), the borrower has the option of requesting changes to the amortization schedule, as well as currency and interest rate conversions. The Bank will take operational and risk management considerations, prevailing market conditions, and the loan's level of concessionality into account when reviewing such requests, in accordance with applicable Bank policies.

^(b) The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with applicable policies.

^(c) SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

^(d) GD (Gender Equality and Diversity); CC (Climate Change and Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problem addressed, and rationale

- 1.1 **Economic context.**¹ Bolivia's economy performed well during the 2006-2016 period, with gross domestic product (GDP) growing at an average annual rate of approximately 5%. In this context, the transportation sector accounted for 8.63% of GDP in 2016 and created 5.8% of the jobs. A decrease in the price of exports that began in 2014 has weakened Bolivia's economy and impacted the primary sector. However, the use of countercyclical policies dampened the effects of this slowdown, resulting in controlled inflation and stable monetary and financial markets. As a result of these policies, for the 2014-2016 period, Bolivia posted an average overall deficit of 5.5% of GDP, after having fiscal and external surpluses for more than a decade.
- 1.2 **Relevance of the transportation sector to the country's productivity and to local and regional integration.** Bolivia is known for having main cities located at considerably different altitudes and a geographically dispersed population.² Together with its landlocked status,³ this creates major challenges for the development of its internal and external road communication infrastructure. These conditions increase transportation⁴ and logistics costs and constrain the competitiveness and productivity of companies. A study by Vargas (2015)⁵ identified the transportation variable as one of the obstacles to the operation and productivity of companies. In addition, according to the World Economic Forum's Global Competitiveness Report, Bolivia ranked 114th among 138 countries⁶ on the quality and availability of infrastructure for international trade, and 105th on the quality of roads. In the World Bank's Logistics Performance Index, Bolivia ranked 138th⁷ among 160 countries, mainly based on its transportation infrastructure.
- 1.3 The corridors of Bolivia's Primary Road Network (RVF) (paragraph 1.5) are hubs of economic integration, and their condition is essential to regional trade and to Bolivia's economic development. In 2015, 61% of exports (excluding hydrocarbons) and more than 88% of imports were transported by road, showing that the country relies heavily on this type of transportation. These corridors are also fundamental links between production and consumption zones ([optional electronic link 4](#)).

¹ IDB country strategy with Bolivia (2016-2020).

² Surface area of 1.1 million square kilometers and population of 10 million inhabitants (9.13 inhabitants per square kilometer).

³ The department of Santa Cruz, one of the main production centers, is located 1,171 kilometers from the port of Arica (Chile); 2,153 kilometers from the port of Santos (Brazil); and 2,261 kilometers from the port of Rosario (Argentina) by road or 3,442 kilometers through the Paraguay-Paraná waterway.

⁴ The estimated freight transportation cost in metric tons per kilometer is US\$0.1337, above the average of US\$0.091 for the Andean countries. IDB, Freight Transport and Logistics Yearbook, 2014.

⁵ Results suggest that company size matters; medium-sized and large companies have more problems, since small companies may not rely as much on transportation systems. For a representative company, the probability of facing a major or very severe obstacle is 30%. Vargas, Jose P. Mauricio; IMF Working Paper; Identifying Binding Constraints to Growth: Does Firm Size Matter? 2015.

⁶ Bolivia's global competitiveness ranking decreased from 117th to 121st among 138 countries. World Economic Forum. The Global Competitiveness Report 2016-2017.

⁷ World Bank: Logistics Performance Index 2016.

- 1.4 Lastly, having an improved RVF increases consumption and income for the beneficiary population, promotes job creation, and drives the adoption of new technologies in the agriculture sector and the productivity of agricultural areas.⁸
- 1.5 **The RVF.** This road network falls under the jurisdiction of the federal government and is the responsibility of the Bolivian Highway Administration (ABC). The RVF is made up by national routes that connect department capitals, allowing for international integration by linking these roads with the main routes in neighboring countries. It measures 15,961 kilometers in length, around 38% of which is paved, and its five corridors form the backbone of the national territory: East-West, North-South, West-North, West-South, and Central-South. One of the main corridors is East-West, linking the department of Santa Cruz to neighboring countries and to the departments of La Paz and Cochabamba.

Table 1. Length and type of surface for the RVF (kilometers)

	2005	2006	2007	2010	2011*	2012	2013	2014	2015
Paved	4,394	4,513	4,742	5,883	5,413	5,997	6,200	6,064	6,063
Gravel	5,845	6,455	5,805	4,051	7,232	6,998	7,243	7,059	7,043
Dirt	5,426	5,060	3,384	3,021	-	-	-	-	-
Construction (**)	-	-	2,033	2,445	2,595	2,235	1,618	2,253	2,249
Uninventoried	-	-	-	742	742	742	926	606	606
Total	15,665	16,028	15,964	16,142	15,982	15,972	15,987	15,982	15,961⁹

* From 2011 onwards, dirt roads are classified as gravel roads.

** Paved roads under construction. Data is only available for the period since the ABC was created.

- 1.6 Records show that there currently are 6,063 kilometers of paved roads, of which approximately 1,000 kilometers are newly paved¹⁰ and 5,063 kilometers are older roads, considered for various levels of rehabilitation. The latest evaluation by the ABC found that more than 15% of the paved network is in poor condition, needing an estimated intervention of US\$373 million ([optional electronic link 2](#)). Conditions are worse for older roads, for which the effects of climate change were not taken into account. They suffer frequent traffic-flow interruptions,¹¹ particularly during the rainy season.
- 1.7 **Institutional factors for the sector.** The sector's lead agency is the Ministry of Public Works, Services, and Housing (MOPSV), which oversees the Office of the Deputy Minister for Transportation (VMT). The VMT's role includes proposing policies and rules and implementing sector plans for ground, sea, river, lake, rail, and air transportation. The ABC, under the MOPSV's supervision, is an

⁸ Sources: (i) Gertler, P. et al. (2014) "The Effects of Road Quality on Household Welfare: Evidence from Indonesia's Highways"; (ii) Escobal, J. and Ponce, C. (2004) "The Benefits of Rural Roads: Enhancing Income Opportunities for the Rural Poor"; (iii) Dercon, S., et al. (2008) "The Impact of Agricultural Extension and Roads on Poverty and Consumption Growth in Fifteen Ethiopian Villages"; and (iv) Aggarwal, S. (2013) "Do rural roads create pathways out of poverty?" A review of the evaluations and studies available demonstrates the validity of the interventions proposed for Bolivia.

⁹ The decrease in the length of the RVF is due to improvements in horizontal alignment during its rehabilitation or upgrading.

¹⁰ Works executed and concluded starting in 2010 are considered newly paved roads.

¹¹ <http://transitabilidad.abc.gob.bo/mapa/>.

administratively autonomous agency organized and operating under public law, responsible for planning and management of the RVF.

- 1.8 The ABC defines its work on the RVF as implementing both a maintenance program and an upgrading and expansion program. The maintenance program identifies several levels of intervention, ranging from routine, periodic maintenance and simple works to more costly and complex interventions intended to restore deteriorated parts of the road network. Routine maintenance work, such as cleaning of drains and the road surface, is performed by local private microenterprises that are supervised by ProVial,¹² which is managed by the ABC's Road Maintenance Department (SGCV). Periodic maintenance and rehabilitation are performed by private companies hired for such purpose. To finance RVF investments and road maintenance, the ABC uses funds from various sources: (i) the Cuenta Nacional de Carreteras [National Highways Account] (CNC), which takes in revenue from tolls and the excise tax on hydrocarbons and derivatives; (ii) the National Treasury; and (iii) external financing.
- 1.9 **Road management and systems for toll collection and vehicle weight and size inspection.** Under the ABC's supervision, Vías Bolivia¹³ is responsible for managing toll collection systems and weigh stations on the RVF. It transfers part of the money collected to the CNC, which allocates resources for the construction and maintenance of the road network.
- 1.10 **Identification of the problem.** Despite significant increases in investment,¹⁴ currently the RVF still offers low levels of service¹⁵ (paragraph 1.6). This is an obstacle to promoting the productivity of businesses and the economy as a whole. The poor condition of roads increases vehicle operating costs, restricting local competitiveness by limiting international trade, which in turn decreases growth opportunities for the economy and increases transportation times.
- 1.11 From 2006-2016, 4,030 kilometers of road were built. During 2015, a total of 906.76 kilometers of road were completed throughout the RVF. The ABC's budget execution¹⁶ increased from US\$182 million in 2006 to more than US\$938 million in 2015, with an estimated investment of US\$1.223 billion by the end of 2016 ([optional electronic link 1](#)).
- 1.12 The additional resources necessary to maintain the RVF total more than US\$270 million per year and are partly fulfilled by the tolls collected on this road

¹² ProVial is an office of the ABC that is under the management of the SGCV. Local private microenterprises are made up of partners who benefit from these work opportunities.

¹³ Vías Bolivia administers 123 toll plazas and 17 vehicle weight and size inspection stations, only 7 of which are certified to impose fines. In 2016, it transferred US\$56.7 million to the CNC, equivalent to 83% of its revenue intake.

¹⁴ Public investment increased from 8.6% of GDP from 2000-2005 to 15.5% from 2006-2014 (document GN-2843), according to a Ministry of Economy and Public Finance report. The approved road investment budgets for 2015 and 2016 were 3.7% and 4.1% of GDP, respectively.

¹⁵ The levels of service reflect road traffic conditions and consider speed, travel times, safety, comfort, and vehicle operating costs.

¹⁶ 2016 Management Report, ABC.

network.¹⁷ As far as road management tools, Vías Bolivia has developed systems to administer and record toll collection. It is currently implementing a pilot project for Intelligent Transportation Systems (ITS), which can be used to oversee toll collection and measure vehicle flow,¹⁸ classify vehicle types, and enforce vehicle weight and size requirements.

- 1.13 National route F-007 links the departments of Cochabamba and Santa Cruz,¹⁹ representing an alternative to Bolivia's east-west corridor, the country's most traveled. Built during the 1950s, in its time it was the only link between the country's east and west, and is now part of the national corridors that connect the country's southern departments. From the perspective of regional integration, the Mairana-Bermejo segment contributes to connecting the production areas of the project's targeted municipios, as it allows the transportation of goods and persons both domestically and internationally due to connections with regional integration corridors. This specifically applies to the RVF East-West corridor, which allows traffic between Bolivia, Chile, and Brazil; and the connection to the North-South corridor, which provides a regional link between Bolivia, Brazil, and Argentina.
- 1.14 The Mairana-Bermejo segment represents 12% of the Cochabamba-Santa Cruz corridor and covers rolling, mountainous terrain. This feature, associated with uncontrolled water on the roads, has caused the wearing surface of the road to deteriorate completely. The segment also includes critical areas with unstable slopes responsible for the complete loss of layers of pavement in these sectors. The traffic lanes are not wide enough, due to design standards of the time, and are unable to safely accommodate freight vehicles.
- 1.15 **Interventions on the Mairana-Bermejo segment.** This includes reconstruction²⁰ investments in the 58.2-kilometer Mairana-Bermejo segment,²¹ which is part of RVF route F-007. The works will include paving and addressing critical areas through slope stabilization,²² recovery, and roadbed upgrades, widening traffic lanes along 20% of the segment ([optional electronic link 6](#)). The identified intervention is estimated to cost US\$51.2 million, with an expected increase in annual average

¹⁷ In 2016, Vías Bolivia reported toll revenues of US\$68.3 million throughout the RVF, and estimated losses of 30% due to evasion, falsely declared destinations, and discrepancies between the automated system and manual collection. There are currently 125 toll plazas and 16 weigh stations on the RVF. Only 21 toll plazas have collection systems and only 4 weigh stations operate on a year-round basis.

¹⁸ This implementation is being financed under loans 3385/BL-BO and 3540/BL-BO.

¹⁹ The old road connecting Cochabamba and Santa Cruz is approximately 488 km long. The Mataral-Mairana segment completes the rehabilitation of the last 128 km in the department of Santa Cruz, supporting the financing of loan 3385/BL-BO from Comarapa to Angostura.

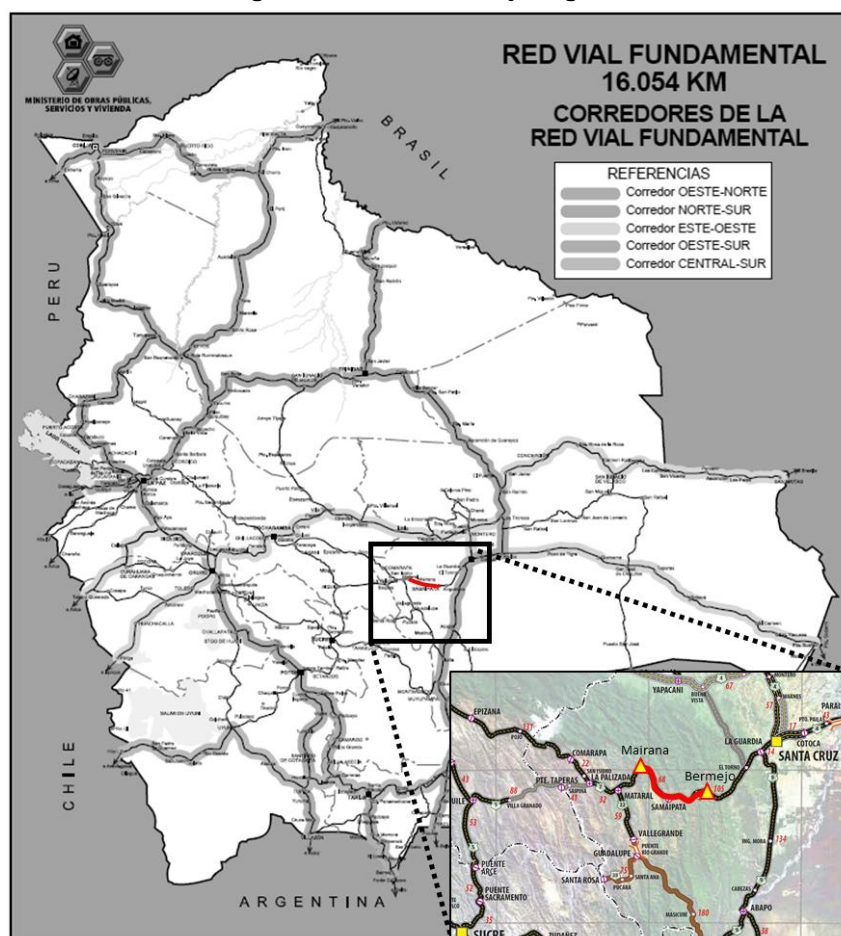
²⁰ The terms rehabilitation and reconstruction are used in this document to refer to the execution of the works necessary to restore the road's original characteristics, while extending its useful life. Upgrading involves the expansion of the design standards. Lastly, maintenance and conservation refer to the interventions necessary to maintain the level of service initially projected, without extending its useful life.

²¹ This route was classified as poor based on the visual and structural evaluation of the technical, economic, social, and environmental study (TESA), showing values above seven for the International Roughness Index. The reconstruction includes building a new toll plaza with traditional technology ([optional electronic link 6](#)).

²² Interventions in critical areas and major engineering works represent 19.3% of the total works, totaling US\$3.2 million and US\$6.6 million, respectively.

daily traffic (AADT) of 438 vehicles in 2020 and 2,265 vehicles in 2038, with 52% of the vehicles carrying freight or passengers (buses) ([optional electronic link 5](#)).

Figure 1. Mairana-Bermejo segment



- 1.16 **Rationale and proposed interventions.** To address the problems identified, the operation aims to contribute to the improvement of the RVF, and specifically the Mairana-Bermejo segment, helping the Government of Bolivia fulfill its Agenda 2025. To do so, the operation will rebuild the Mairana-Bermejo segment, seeking to decrease vehicle operating costs and travel times, improve productivity, and promote local and regional economic integration.
- 1.17 **Empirical evidence.** Several studies found that infrastructure has an impact on growth and productivity. Diechmann et al. (2002) found that a 10% improvement in market access can increase labor productivity by 6%.²³ Kiprono and Matsumoto (2014) used a difference-in-differences model for interventions on new roads and the rehabilitation and maintenance of infrastructure in Kenya. They concluded that for every 1% improvement in travel times between the production area and the

²³ <http://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-2900>.

largest town, crop yields rise by 1.5% (measured in kilograms of output per hectare). Henderson, Shalizi, and Venables (2001) showed that the doubling of transportation costs can reduce trade volume by 80%.²⁴ Also, using a gravity model of trade with transportation costs and the CIF/FOB ratio, Limao and Venables (2001) showed that an improvement in infrastructure from the 50th to the 25th percentile would be equivalent to bringing a country 2,358 kilometers closer to its trading partners.

- 1.18 **The Bank's knowledge of the sector.** The Bank has provided support for the development of Bolivia's transportation sector over the past few decades. During the 2006-2016 period, the Bank approved nine operations in the sector for US\$821 million, of which US\$735 million are devoted to improving the RVF. The Bank has taken action on 18% of the RVF, paving, building, or rehabilitating 118 km and maintaining 506 km.²⁵ The Bank's involvement, while insufficient to close the road investment gap, has helped consolidate the main export corridors, but given the size of the territory and low road coverage, it is still necessary to improve the connections of Bolivia's production areas to the RVF. The Bank has also supported institutional strengthening at the central government level, especially the improvement of cost recovery mechanisms (tolls) and weight control for proper maintenance. Moreover, the Bank has helped with the rehabilitation and upgrading of primary networks in other countries in the region, especially in landlocked situations similar to Bolivia's, providing support through initiatives for institutional capacity building.
- 1.19 **Progress of multiple works programs I and II and lessons learned.** Parts I and II of the Road Infrastructure Program to Support Development and Management of the Primary Road Network (3385/BL-BO and 3540/BL-BO), which are currently in execution, show significant advances in linking Bolivia's export corridors to Peruvian ports on the Pacific. They include the construction of 84 kilometers of roads for the East-West corridor and the rehabilitation of more than 350 kilometers in the departments of La Paz and Santa Cruz. For road asset management, two systems are being implemented. The ITS will consolidate the automation of tolls and weight control on the RVF, and the Road Management System will enable an analysis of what is needed physically and financially to maintain the road infrastructure in an efficient manner. This operation will conduct the impact evaluation for the works associated with the Intelligent Transportation Systems implementation along the RVF East-West corridor. For loan 3385/BL-BO, 26% of the proceeds have been disbursed, and 60% have been committed in execution. For operation 3540/BL-BO, 30% of the proceeds are under contract and at least 70% are expected to be under contract by the end of 2017.
- 1.20 The following are the key lessons learned from road projects: (i) the importance of having complete engineering studies and updated designs; (ii) the need to prioritize investment in road rehabilitation and strengthen its management; and (iii) the need to provide technical support during works execution to ensure quality through supervision, monitoring, and certification systems.

²⁴ <http://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-2456>.

²⁵ Considering the nine operations approved in the last decade, it is estimated the Bank projects have benefitted more than 1.5 million people, 45% of whom are low-income, with an economic value of around US\$1 billion, for an investment of US\$745 million; or an average benefit/cost ratio of 1.4.

Table 2. Lessons learned

Main lessons learned	Inclusion in project design
Have complete engineering studies and updated designs (3385/BL-BO)	The Mairana-Bermejo segment has all preinvestment studies approved and reviewed by the Bank.
Prioritize investment in rehabilitation and management (3385/BL-BO and 3540/BL-BO)	More than 95% of the project is allocated to road rehabilitation.
Provide technical support during works execution to ensure quality through supervision, monitoring, and certification systems (3385/BL-BO and 3540/BL-BO)	Dedicated, full-time inspectors will be contracted for each work included in the sole component.

- 1.21 **Government strategy and IDB country strategy.** In its Country Development Plan, the Bolivian government emphasized improving road infrastructure as a central issue for its 2020-2025 development agenda. This operation is included in the 2017 Operational Program Report (document GN-2884) and is aligned with the IDB country strategy with Bolivia (2016-2020) (document GN-2843), through the strategic objective of improving the delivery of quality public goods and services, which is part of the priority area of increasing productivity and diversification in the economy.
- 1.22 **Strategic alignment.** The project is consistent with the Update to the Institutional Strategy (UIS) 2010-2020 (document AB-3008) and will contribute to the Corporate Results Framework (CRF) 2016-2019 (document GN-2727-6) through the “roads built or upgraded” indicator. It is strategically aligned with the following development challenges: (i) productivity and innovation, under the criteria of providing suitable, reliable, and affordable infrastructure and public services, since road infrastructure upgrades will facilitate nationwide connectivity, reduce costs and travel times, and facilitate access to markets and services, technology adoption, and production progress in the project’s area of influence; and (ii) economic integration through interventions in transportation infrastructure to facilitate market access following the criteria of multinational targeting and national subsidiarity, for improving routes that are essential to Bolivia’s international trade ([optional electronic link 4](#)).
- 1.23 The project is also strategically aligned with the crosscutting topic of climate change and environmental sustainability, since it increases the resilience of roads to climate change and decreases the impact of extreme weather phenomena in the project’s area of influence. Approximately 7.88% of the operation’s resources will be invested in climate change adaptation activities, according to the Joint Report on Multilateral Development Banks’ Climate Finance ([optional electronic link 9](#)). These resources contribute to the IDB Group’s target of increasing financing for climate change projects to 30% of all operations approved by the end of 2020.
- 1.24 The project is consistent with the IDB Infrastructure Strategy: Sustainable Infrastructure for Competitiveness and Inclusive Growth (document GN-2710-5), since it supports the following strategic principles: (i) financing and technical assistance for infrastructure that supports economic growth, provides access, and fosters regional and global integration; and (ii) planning, building, and maintaining road infrastructure to support the delivery of quality services that promote the country’s sustainable and inclusive growth. The project will also finance the impact

evaluation of the infrastructure and equipment for the ITS related to the toll plazas and weigh stations financed under loans 3385/BL-BO and 3540/BL-BO.

- 1.25 The project is also consistent with the Transportation Sector Framework Document (document GN-2740-7), since it contributes to the following: (i) improving the coverage, capacity, quality, and connectivity of infrastructure and associated transportation services; and (ii) implementing new technologies and innovative trends in the transportation sector in an efficient and timely manner.

B. Objectives, components, and cost

- 1.26 The project's overall objective is to help improve Bolivia's productivity and its national and regional economic integration. The specific objective is to help improve the level of service of the RVF through the reconstruction and upgrading of the Mairana-Bermejo segment, thereby reducing vehicle operating costs and travel times.
- 1.27 **Sole component. Works, supervision, and road safety (US\$63.6 million).** This component includes: financing of works to rebuild, rehabilitate, and upgrade the Mairana-Bermejo segment, applying design standards that contribute to the infrastructure's high levels of service and safety; and implementing speed-reduction devices in urban areas and school zones. Design standards will be also applied to ensure increased resilience to climate change in the infrastructure. In addition, levels of service will be maintained through multiyear maintenance contracts that guarantee the sustainability of investments and the applicable monitoring and supervision of the works. This component also includes financing potential contingency costs and addressing socioenvironmental issues that were not foreseen during the design stage.
- 1.28 **Project administration (US\$400,000).** This will finance the operating costs of project management, impact evaluation, and monitoring, and the corresponding audits.
- 1.29 **Cost and financing.** The total cost of this Bank-financed operation is US\$64 million. Below are the costs per category.

Table 3. Project costs (US\$ millions)

Categories	IDB	%
Sole component. Works, supervision, and road safety	63.60	99.38
1.1 Reconstruction and/or upgrading works	52.00	81.25
1.2 Road safety	1.00	1.56
1.3 Supervision of works	3.60	5.63
1.4 Inspection of works	0.78	1.22
1.5 Socioenvironmental factors	0.52	0.81
1.6 Price escalation and contingencies	5.70	8.91
Project management	0.40	0.63
Audits	0.10	0.16
Monitoring and impact evaluation	0.30	0.47
Total	64.00	100.00

- 1.30 **Project beneficiaries.** The project beneficiaries will be individuals who use the Mairana-Bermejo segment and live in neighboring communities, as well as users of freight transportation services and other logistics supply chain stakeholders. Overall, the Mairana-Bermejo segment includes the municipios of Mairana and Samaipata in Florida province of the department of Santa Cruz.²⁶ As a result of more reliable and predictable ground transportation, the intervention will contribute directly to improvements in operating times and costs, making the country's production sector more competitive.
- 1.31 **Technical and economic evaluation.** A technical, economic, social, and environmental study (TESA) of rehabilitation works prepared by the ABC with support from specialized consulting firms provided suitable technical solutions and construction cost estimates that are consistent with current market values ([optional electronic link 6](#)).
- 1.32 The economic aspects of the investments for the reconstruction of the Mairana-Bermejo segment were comprehensively evaluated in the context of the road network, using a consumer surplus methodology. The benefits generated were quantified relative to the base case alternative for a period of 20 years, using the Highway Development and Management Model, Version 4 (HDM-4), adapted to local conditions. Estimates were made of savings from lower vehicle operating costs, shorter travel times, and fewer accidents. The economic return indicators were determined, based on the aforementioned costs and benefits using a discount rate of 12%. Table 4 summarizes the results. Additionally, the sensitivity analysis for the various scenarios showed that even if costs rise by 20% and benefits drop by a similar amount, the Mariana-Bermejo segment will still have an economic internal rate of return (EIRR) above 12% ([optional electronic link 5](#)).

Table 4. Results of cost-benefit analysis and sensitivity analysis

Segment	AADT 2019	Length (km)	Investment cost (US\$ million)	ENPV ²⁷ (US\$ million)	EIRR (%)			
					Base case	+20% investment cost	-20% benefits	+20% investment cost; -20% benefits
Mairana-Bermejo	2,218*	58.2	57.1**	26.95	20.1	18.4	16.2	13.5

* The value is obtained using a weighted average of the total AADT for the two sections making up the segment.

** Includes costs for monitoring and supervision of works.

²⁶ The segment crosses Samaipata and Mairana, and is the only road connecting them with the rest of the country. The population of these municipios is 20,649; 85% of them are poor, based on unmet basic needs criteria (National Statistics Institute, 2012). In 2014, the annual average daily traffic (AADT) was 1,815: 40% freight vehicles; 22% public transportation of passengers; and 38% private transportation. The main economic activity is agriculture, and nearly 80% of the agricultural production is sold nationwide. Tourism is a relevant activity because of archaeological and natural attractions.

²⁷ ENPV: economic net present value.

C. Key results indicators

- 1.33 The main expected outcomes are: (i) decreased average travel times; and (ii) decreased annual vehicle operating costs. The project is expected to measure the outcomes using the following indicators: (i) average travel times (in minutes); and (ii) vehicle operating costs (in U.S. dollars per vehicle per kilometer).

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 The project is an investment loan under the specific works modality. The loan's amortization period will be 22 years for the regular Ordinary Capital resources, and 40 years for the concessional Ordinary Capital resources. The planned execution period is five years, as of the entry into force of the loan contract. The following table show the estimated disbursements.

Table 5. Annual project flow

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Amount (US\$ thousands)	7.7	20.3	24.9	8.3	2.8	64.00
Percentage (%)	12.0	31.7	38.9	13.0	4.4	100

B. Environmental and social risks

- 2.2 According to the Environment and Safeguards Compliance Policy (Operational Policy OP-703), the project has been classified as a category B operation. For the Mairana-Bermejo segment project, there is a TESA study that evaluates the options, as well as an Environmental Maintenance Plan. These have been complemented by an Environmental and Social Analysis (ESA) with detailed information on the "Río Grande - Valles Cruceños"²⁸ departmental protected area and an Environmental and Social Management Plan (ESMP) to comply with the Bank's safeguard policies. The project does not present significant negative socioenvironmental impacts. The majority of these impacts are temporary and limited to the immediate surroundings, and are related to spoil banks, industrial camps and plants, and a few sales stands; as well as to potential soil, air, and water pollution; waste generation; and slight impact on the flora and fauna.
- 2.3 Environmental management plans include measures to prevent and mitigate negative environmental impacts due to air, water, and soil pollution during the construction phase; and environmental management for the closing and rehabilitation of camps, spoil banks, sluice gates, and industrial areas. There is also a contingency plan for unexpected archaeological findings, and a specific training and signage plan to help manage the protected area and preserve the rights of way.
- 2.4 Public consultations were conducted in the municipios of Mairana and Samaipata, based on the actors who were identified and the consultation strategy that was developed. During the consultations, participants expressed their support for the project, asked a few questions ([optional electronic link 8](#)), and made requests that the ABC took into account. These are reflected in the preparation of the ESMP and the Community Relations Plan. In addition, the ABC conducted a specific consultation process for five women-owned sales stalls, since they may be

²⁸ This departmental protected area was created in 2007, 30 years after the road was built.

temporarily affected during the execution of works. It was verified that an involuntary resettlement plan will not be necessary.

- 2.5 The project's Environmental Maintenance Plan, ESA, and ESMP have been available on the Bank's public website since 25 May 2017, prior to the analysis mission. The final versions are also available on the website and include the additional agreements reached during the analysis mission.

C. Fiduciary risks

- 2.6 Given the ABC's experience in the execution of road projects and programs, no significant problems are anticipated at project launch. However, during project preparation, a risk evaluation matrix was prepared, identifying certain risks classified as medium. Mitigation actions have been proposed for these risks and will be implemented by the executing agency, with the project team's support for verification and compliance.
- 2.7 To minimize the risk of calls for bids that receive no bids or invalid ones, the ABC will: (i) prepare bidding documents and requests for proposals that take into account qualification requirements in line with the complexity and scale of the contract; (ii) verify that the budgets or reference prices are up-to-date and in line with current market conditions; and (iii) ensure that the bid committees and other control bodies have a good understanding of the agreed-upon lending framework procedures, in order to properly review the bids (including bid deviations, omissions, or reservations; correction criteria; clarification of bidding documents; and awards to the lowest evaluated bid).

D. Other project risks

- 2.8 **Macroeconomic.** The fiscal deficit that has been ongoing since 2014 may eventually result in budget modifications to public investment plans. Therefore, this issue should be monitored periodically.
- 2.9 **Sustainability of investments.** Once the reconstruction and upgrade works have been completed, they will become the responsibility of the ABC under its Road Maintenance Program. This program has resources from the CNC for maintenance of the RVF and follows the criteria of the ABC's maintenance manual.
- 2.10 To reduce the risk of additional costs, the TESA study on the rehabilitation of the Mairana-Bermejo segment ([optional electronic link 6](#)), prepared by consultants engaged by the ABC, was reviewed and the necessary adjustments were made to the project budget. This will reduce the likelihood of: (i) the bids received exceeding the estimated budget; (ii) substantial changes in the works' design and/or amounts during construction; and (iii) delays to the construction process due to contractor claims or alterations to the designs, resulting in cost escalation due to extensions of the works and supervision contracts.
- 2.11 A study was also conducted to estimate the probability of additional costs, using a Monte Carlo simulation ([optional electronic link 7](#)). The results indicate that, with a 90% probability, the additional costs would be no higher than 10% of the value of the works. This includes a price update prior to tendering, price escalation during construction, and additional costs of works.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of implementation arrangements

- 3.1 **Borrower and executing agency.** The borrower will be the Plurinational State of Bolivia. The executing agency will be the ABC, an administratively autonomous agency under the supervision of the MOPSV. The ABC is supported by three divisions: (i) the National Technical Division, which supervises the Construction Department, the Road Maintenance Department, and the Socioenvironmental Department; (ii) the National Financial and Administrative Division, which consists of the Financial Department and the Administrative Department; and (iii) the National Legal Division, with its Legal Affairs Department.
- 3.2 **Execution mechanism.** The project will be executed by the ABC,²⁹ which will be responsible for: (i) programming of works and services to be contracted; (ii) preparation of bidding documents; (iii) bidding processes; (iv) contracting processes; and (v) monitoring and administration of contracts for consulting services, goods, and works and verification of compliance with all socioenvironmental specifications and management plans. For international bidding, the ABC will appoint a bid committee and inform the Bank about it in order to conduct a strengthening session on the application of Bank policies, the standard bidding documents, and the conditions applicable to each process. With respect to fiduciary control, the ABC, acting through the National Financial and Administrative Division, will be responsible for: (i) implementation and maintenance of effective systems for contract administration, accounting/financial administration, and internal control, consistent with Bank requirements; (ii) timely submission of disbursement requests and supporting documentation for eligible expenditures based on an updated financial planning system; (iii) preparation and submission of semiannual financial reports on the status and use of funds provided in the form of advances, and any other required reports; (iv) maintenance of an exclusive line under the single treasury account that is separate from other sources to manage Bank funds, and use of the Integrated Financial Management System, with support, if necessary, from the Bank's integrated financial management system; (v) maintenance of an effective record-keeping system for supporting documentation of eligible expenditures; (vi) timely delivery of the audited financial statements for the project; and (vii) updates to the entity's website to reflect all information of a public nature related to project execution.
- 3.3 **Special contractual execution conditions.** Prior to the physical start of the works on each front determined by the ABC, the ABC will submit for the Bank's no objection, evidence of the release of the right of way, including 100% of the impacts for the respective work front, in order to meet the execution timelines for the works and minimize risks of social impacts.
- 3.4 **Procurement of goods, works, nonconsulting services, and consulting services.** The procurement policies applicable to this loan are the Policies for the

²⁹ The coordination between the ABC and Vías Bolivia for the execution of toll plazas and weigh stations under Component 2 will be detailed in an interagency agreement. This agreement will include the obligations of the parties and define the responsibilities for preparing bidding documents, providing technical support for procurement processes and delivery procedures for infrastructure and equipment, as well as maintenance responsibilities.

Procurement of Works and Goods Financed by the IDB (document GN-2349-9) and the Policies for the Selection and Contracting of Consultants Financed by the IDB (document GN-2350-9). Procurement supervision will be based on the relevant procurement plan ([required electronic link 4](#)). Procurement processes for goods, nonconsulting services, and works in amounts below the thresholds for national competitive bidding will be subject to ex post review, as will contracts with individual consultants or consulting firms below US\$200,000. These thresholds may be raised subsequently based on the updated institutional capacity assessment. Rehabilitation works will be contracted as a whole, including a maintenance period to ensure the levels of service.

- 3.5 **Disbursements.** The loan will be disbursed under the advance of funds modality. The frequency of advances will be determined on the basis of the operation's financial programming, which will be updated periodically by the ABC. The Bank may process a new advance of funds when at least 80% of the total funds disbursed in the form of advances have been justified. The financial review of disbursement requests will be conducted on an ex post basis.

B. Summary of arrangements for monitoring results

- 3.6 The project's monitoring and evaluation arrangements are based on a "before and after" analysis, which will evaluate the change in output and outcome indicators before and after project implementation. An ex post economic analysis will also be performed. Project monitoring arrangements will involve inspection visits, administration missions, semiannual status reports, annual external audits, and a final evaluation report, as described in the Monitoring and Evaluation Plan ([required electronic link 2](#)). The project financial statements and eligibility of expenditures will be audited annually by an independent audit firm acceptable to the Bank, which will be engaged by the executing agency. Auditing services will be financed with the loan proceeds. The project's audited financial statements will be delivered to the Bank no later than four months after the close of each fiscal year of the entity, in accordance with the procedures and terms of reference previously agreed upon with the Bank.
- 3.7 **Impact evaluation.** Given the lack of robust empirical evidence in Bolivia and the region and of the implementation of ITS technologies in toll plazas and weigh stations implemented in prior operations (3385/BL-BO and 3540/BL-BO) (paragraph 1.19), the project includes a nonexperimental impact evaluation to estimate some of the effects. The synthetic control method is proposed to measure the causal effect of installing toll plazas and weigh stations with ITS technology that are connected to a centralized information system ([optional electronic link 3](#)). The evaluation will estimate short- and medium-term changes in productivity and economic integration that are attributable to this operation. The operation is expected to increase the utilization of the targeted roads for commercial purposes by producers, as a result of improved road quality, better pavement markings, and decreased vehicle operating costs, which should provide incentives for use. Improved quality of roads is expected because of a decrease in overloaded vehicles as a result of enforcement through weigh stations, which should extend the useful life of the roads. In addition, increased collections due to modernized toll plazas are expected to contribute to compliance with annual maintenance plans and provide more resources for maintenance. To measure productivity and economic integration, the impact evaluation will use associated variables or proxies, based on

the number of freight vehicles and their classifications. Baseline and high-frequency (monthly) monitoring data will be available through a network of microenterprises that operate throughout the RVF. The synthetic control method consists of comparing the evolution of segments with new stations against a weighted average of similar segments without targeted stations. The differences between the synthetic control and the targeted segments will be attributed to this operation.

C. Post-approval design activities

- 3.8 To ensure the smooth performance of project execution, the following needs are envisaged: (i) monitoring of the technical aspects of the bidding process for works; and (ii) monitoring of the ABC's fulfillment of the contractual conditions precedent to the first disbursement.

Development Effectiveness Matrix		
Summary		
I. Corporate and Country Priorities		
1. IDB Development Objectives	Yes	
Development Challenges & Cross-cutting Themes	-Productivity and Innovation -Economic Integration -Climate Change and Environmental Sustainability	
Country Development Results Indicators	-Roads built or upgraded (km)*	
2. Country Development Objectives	Yes	
Country Strategy Results Matrix	GN-2843	i) Improve the provision of quality public goods and services; and ii) Reduce vulnerability to natural disasters and climate change.
Country Program Results Matrix	GN-2884	The intervention is included in the 2017 Operational Program.
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		
II. Development Outcomes - Evaluability	Evaluable	
3. Evidence-based Assessment & Solution	8.4	
3.1 Program Diagnosis	1.8	
3.2 Proposed Interventions or Solutions	3.6	
3.3 Results Matrix Quality	3.0	
4. Ex ante Economic Analysis	10.0	
4.1 The program has an ERR/NPV, a Cost-Effectiveness Analysis or a General Economic Analysis	4.0	
4.2 Identified and Quantified Benefits	1.5	
4.3 Identified and Quantified Costs	1.5	
4.4 Reasonable Assumptions	1.5	
4.5 Sensitivity Analysis	1.5	
5. Monitoring and Evaluation	9.6	
5.1 Monitoring Mechanisms	2.5	
5.2 Evaluation Plan	7.1	
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood	Low	
Identified risks have been rated for magnitude and likelihood	Yes	
Mitigation measures have been identified for major risks	Yes	
Mitigation measures have indicators for tracking their implementation		
Environmental & social risk classification	B	
IV. IDB´s Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)		
Non-Fiduciary		
The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions:		
Gender Equality		Under a multisector framework, training programs will be structured for micro-maintenance companies with a representative participation of women.
Labor		
Environment		
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project	Yes	
The ex-post impact evaluation of the project will produce evidence to close knowledge gaps in the sector that were identified in the project document and/or in the evaluation plan	Yes	The synthetic control method will be used to estimate the impact of the new ITS technology applied to tolls and weights.

Note: (*) Indicates contribution to the corresponding CRF's Country Development Results Indicator.

The main objective of the program is to contribute to Bolivia's productivity and national and regional economic integration. The specific objective is to improve the service level of the Road Network (RVF) through the rehabilitation and improvement of road Mairana-Bermejo, which will result in the reduction of vehicle operating costs and travel times.

The project presents in the diagnosis the identification of the main problems, the beneficiaries and the main factors that contribute to the problem. However, for some of these factors, the empirical evidence and quantification is missing. The results matrix has a clear vertical logic, the indicators presented are SMART and contain means of verification.

The economic analysis is complete and the results suggest that the project is economically viable under various sensitivity scenarios. However, it would have been good to present a more detailed justification on the probability of occurrence of the sensitivity scenarios.

The monitoring and evaluation plan is solid, and includes an impact evaluation, an ex-post economic analysis, and a before-and-after assessment. Given the methodology of the impact evaluation (synthetic control) and its evaluation question about the impact of the use of new toll and weighting technologies, it is considered that the project contributes to reducing knowledge gaps.

The risk matrix of the operation could have been strengthened by better defining the follow-up indicators.

RESULTS MATRIX

Project objectives	The project's overall objective is to help improve Bolivia's productivity and its national and regional economic integration. The specific objective is to help improve the level of service of the Primary Road Network (RVF) through the reconstruction and upgrading of the Mairana-Bermejo segment, thereby reducing vehicle operating costs and travel times.
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Outcome indicator	Unit	Baseline (2017)	Target (2021)	Comments/Mean of verification
Shorter average travel time on the targeted road segment				
Average travel times on the Mairana-Bermejo segment ¹	Hours	1.45	1.23	The baseline was determined using the floating vehicle method for the average number of vehicles operating in this route, with data from the traffic study that was part of the technical, economic, social, and environmental study (TESA) for the rehabilitation of the Mairana-Bermejo segment. The target was determined using the Highway Development and Management Model, Version 4 (HDM-4), with the modeled average speed for the total number of vehicles. Three months after the works completion date, speed studies will be carried out on the targeted segments, using the plate and floating vehicle method. This work may be part of the works supervision closing report or a contract with a specialized consulting firm.
Lower annual vehicle operating costs on the targeted road segment				
Vehicle operating costs on the Mairana-Bermejo segment ²	US\$/veh-km	5.89	5.47	The baseline and target data were obtained from the economic evaluation update using the HDM-4 for the Mairana-Bermejo segment. Three months after the works completion date, field measurements, estimates, and updates of the costs of vehicle parameters will be prepared and entered into the HDM-4. ³ This work may be part of the works supervision closing report or a contract with a specialized consulting firm.

OUTPUTS

Outputs	Unit	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Target	Comments/Mean of verification
Sole component. Works, supervision, and road safety									
1.1 Output 1. Kilometers of the RVF reconstructed	Kilometers	0	-	-	-	-	58.2	58.2	ABC reports, Mairana-Bermejo (58.2 kilometers).

¹ Estimated based on the road segment rehabilitation study with data from the HDM-4.

² Estimated based on the road segment rehabilitation study with data from the HDM-4.

³ The baseline parameters will be maintained based on the economic evaluation of the final design of the segment.

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Country: Plurinational State of Bolivia
Project number: BO-L1186
Project name: Mairana-Bermejo Segment Reconstruction Project
Executing agency: Administradora Boliviana de Carreteras [Bolivian Highway Administration]
Prepared by: Carolina Escudero and Diana M. De León (FMP/CBO)

I. EXECUTIVE SUMMARY

- 1.1 This annex was prepared taking into account the experience and performance of the Bolivian Highway Administration (ABC) as executing agency in several Bank-financed operations.
- 1.2 Accounting for the operation, as well as budget and cash management, will be carried out using Bolivia's the Public Management System (SIGEP). For execution, the Bank's standard bidding documents will be used or those agreed upon with the Office of the Deputy Ministry for Public Investment and External Financing (VIPFE) and made available on the Public Procurement System ([SICOES](#)).¹
- 1.3 Procurement announcements (calls for proposals, requests for expressions of interest, clarification circulars, amendment circulars, and award announcements) will be published on the United Nations Development Business portal for international competitive bidding (ICB) and consulting services above US\$200,000; for the remaining procurement processes, the SICOES portal and national newspapers with broad circulation may be used.
- 1.4 The Government of Bolivia and the Bank are currently in the process of signing an agreement under which the partial use of the Basic Standards of the Goods and Services Administration System (NB-SABS) will be adopted for Bank-financed operations in Bolivia. The program may apply this agreement once it takes effect.

II. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY

- 2.1 The ABC is a decentralized public agency, governed by Law 1178 of 20 July 1990 on government administration and control (SAFCO Act).² Its administrative and financial structure is designed to execute projects with internal and external

¹ Bidding documents authorized by the Bank for application in processes below the international competitive bidding (ICB) thresholds.

² This law regulates Bolivia's resource administration and control systems and their relationship to national planning and public investment systems.

- financing. The agency has regional offices for project supervision and procurement execution.
- 2.2 The ABC's execution of investment expenditures in 2016 came to Bs 8.94 million. For 2017, it is expected to execute Bs 9.94 million. For procurement execution, the ABC uses NB-SABS, or the system stipulated in the external financing agreement.
- 2.3 The ABC's volume of resources for 2017 reinforces the need for it to update its manuals, guides, flowcharts, and systems; increase the number and capabilities of its human resources; and define performance indicators. The Bank provided support to analyze these needs, with consulting services that were aimed at mapping internal processes associated with administrative and financial management, in order to identify opportunities for improvement and efficiency gains.
- 2.4 The program's contracting and payment activities will be handled at the ABC central headquarters, for which the executing agency will ensure effective fiduciary monitoring and control.

III. FIDUCIARY RISK EVALUATION AND MITIGATION MEASURES

- 3.1 The ABC's fiduciary performance in the execution of Bank-financed projects has been satisfactory. However, the steady increase in the annual volume of resources for execution has not been accompanied by an increase in its technological, regulatory, and human resource capabilities, jeopardizing its management capacity. The ABC (jointly with the Bank) therefore considers the fiduciary risk associated with this operation to be medium.
- 3.2 To address this, a risk mitigation plan³ has been developed. This plan will be coordinated by the ABC with Bank support. This plan includes the following measures to address fiduciary risks: (i) reinforce the expertise of the team responsible for execution (technical and administrative specialists) and of the bid committee⁴ regarding the proper application of procurement policies for the Bank's standard bidding documents; (ii) reinforce good practices to manage the information and communications generated during bid processes (meetings, clarification circulars, amendments, etc.); (iii) strengthen the ABC's Central Contracting Unit by hiring an expert in managing contracts with a risk and complexity level that match the plans for Parts II and III of the Road Infrastructure Program to Support Development and Management of the Primary Road Network; and (iv) assess and upgrade financial processes to improve timelines to meet payment and other transaction commitments.
- 3.3 To minimize the risk of calls for bids that receive no bids or invalid ones, the ABC will: (i) prepare bidding documents and requests for proposals that take into account qualification requirements in line with the complexity and scale of the contract; (ii) verify that the budgets or reference prices are up-to-date and in line with current market conditions; and (iii) ensure that the bid committees and other control bodies have a good understanding of the agreed-upon lending framework procedures, in

³ The project risk management matrix includes a risk mitigation plan.

⁴ The ABC has reported that the appointment of a bid committee is governed by the provisions of Supreme Decree 00181. This committee is appointed two days before bids are received by the person in charge of the procurement process, who in turn is appointed by the highest executive authority.

order to properly perform duties including analyzing bids for deviations, omissions, or reservations; applying correction criteria and correction criteria for mathematical errors; handling requests for clarification of bidding documents; evaluating whether bids are substantially compliant; and awarding contracts to the lowest evaluated bid.

- 3.4 In the case of works supervision, the ABC will ensure effective planning and management of the selection and contracting processes, so that the timetable allows sufficient time for necessary revision of the preinvestment study before the works commence.

IV. CONSIDERATIONS FOR THE SPECIAL PROVISIONS OF THE CONTRACT

- 4.1 **Financial statements and other audited reports.** Throughout the loan disbursement period, the executing agency will be required to submit annual financial statements as well as midterm reports as of 30 June of every fiscal year, in accordance with terms of reference agreed upon with the Bank. These financial statements will be accompanied by the opinion of an independent audit firm acceptable to the Bank. The audit firm will be retained under a multiyear contract that will be in force until the program's closing date. If applicable, other related reports may be required.
- 4.2 **Procurement.** Procurement will be carried out in accordance with the Policies for the Procurement of Works and Goods Financed by the IDB (document GN-2349-9) and the Policies for the Selection and Contracting of Consultants Financed by the IDB (document GN-2350-9), and in accordance with the partial use of the NB-SABS (paragraph 1.4).

V. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION

- 5.1 **Procurement execution.** Procurement will be detailed in the procurement plan approved by the Bank and will be carried out in accordance with the policies set forth in documents GN-2349-9 and GN-2350-9, or in accordance with the partial use of the NB-SABS (paragraph 1.4).
- 5.2 **Procurement of works, goods, and nonconsulting services.** Contracts for works, goods, and nonconsulting services arising under the program and subject to ICB will be procured using the Bank's current standard bidding documents. For processes below the ICB threshold, documents agreed upon with the VIPFE and made available via the SICOES will be used. Any amendments to these documents will require the Bank's no objection.
- 5.3 **Selection and contracting of consultants.** Consulting services will be contracted taking the following into account:
- (i) **Selection of consulting firms.** The project will use the current standard request for proposals issued by the Bank.
 - (ii) **Shortlist of consulting firms.** This list may comprise entirely (100%) of Bolivian firms for contracts below the thresholds set by the Bank for Bolivia, which is US\$200,000.

- (iii) **Selection of individual consultants.** Individual consultants will be selected according to their qualifications for the work, based on a comparison of the qualifications of at least three candidates, and as a rule, interviews will not be conducted.

- 5.4 **Procurement planning.** The ABC will publish the procurement plan in the Procurement Plan Execution System (SEPA) and update it at least annually, or as required.
- 5.5 **National preference.** No national preference will be applied in the contracts.
- 5.6 **Terms of reference and technical specifications.** The review of the criteria for the selection of shortlists, terms of reference, and/or technical specifications (including qualification requirements for bidders or consultants) is the responsibility of the Sector Specialist as Project Team Leader, and will in all cases be agreed upon in advance with the executing agency.

Table 1. Thresholds (US\$ thousands)

Works			Goods			Consulting firms	
ICB	NCB	Shopping	ICB	NCB	Shopping	International advertising (shortlist of max. 2 firms of same nationality)	National advertising (shortlist may be 100% national)
Greater than US\$3,000	Less than or equal to US\$3,000	Less than or equal to US\$250	Greater than US\$200	Less than or equal to US\$200	Less than or equal to US\$50	Greater than US\$200	Less than or equal to US\$200

Table 2. Planning of main procurement processes

Description	Procurement method	Estimated date	Estimated amount (US\$ thousands)
Consulting firms			
Works supervision for rehabilitation of Mairana-Bermejo	QCBS	TBD	3,570
Works supervision for maintenance of Mairana-Bermejo	QCBS	TBD	3,700
Supervision of multiple works	QCBS	TBD	830
Supervision of works for weigh stations/toll plazas	QCBS	TBD	500
Update of the Comprehensive Implementation Plan for Intelligent Transportation Systems for the RVF	QCBS	TBD	1,000
Preinvestment studies	QCBS	TBD	2,000
Impact evaluation	QCBS	TBD	300
Update of the National Road Safety Plan	QCBS	TBD	500
Financial audit, ex post review of procurement	QCBS	TBD	100
Works			
Works for rehabilitation of Mairana-Bermejo segment	ICB	TBD	51,000
Works, multiple works	ICB	TBD	11,500
Works and equipment for weigh stations/toll plazas	ICB	TBD	10,000

Description	Procurement method	Estimated date	Estimated amount (US\$ thousands)
Goods			
Equipment for the Central Laboratory	ICB	TBD	3,000
Equipment for ProVial	ICB	TBD	800
Individual consultants			
Consultants (several contracts) for technical support of program management	IICQ/NICQ	TBD	1,000
Consultants (several contracts) for training of ProVial	IICQ/NICQ	TBD	200

- 5.7 **Procurement supervision.** Annual visits will be made to update the level of procurement management capacity and the level of fiduciary risk associated with program execution. If applicable, annual ex post review visits will be made.
- 5.8 The thresholds for ex post review are presented in Table 3 (direct contracting and procurement not listed there are subject to ex ante review). The external audit firm will be responsible for carrying out ex post review of procurement.

Table 3. Thresholds for ex post procurement review (US\$ thousands)

Works	Goods and nonconsulting services	Consulting firm services	Individual consulting services
Contracts for amounts less than or equal to US\$3,000	Contracts for amounts less than or equal to US\$200	Contracts for amounts less than or equal to US\$200	No limit

- 5.9 **Operating or recurrent expenses.**⁵ Such expenses will be agreed upon with the Project Team Leader, entered into the project budget, and included in the procurement plan. These will be contracted following the NB-SABS and/or the executing agency's administrative procedures. The Bank may refrain from financing these expenses if it determines that their application has violated basic principles of competition, efficiency, and economy. The external audit firm will be responsible for reviewing the supporting documentation for expenses.
- 5.10 **Records and files.** The ABC will be responsible for establishing the controls necessary for the safekeeping and integrity of the documentation generated during the ex ante or ex post execution of the program. The Bank may verify the standards of organization, control, and security of the records at any time.

VI. FINANCIAL MANAGEMENT

- 6.1 The program's financial management system will be the SIGEP, which integrates the budget, accounting, and treasury subsystems, and provides coverage and universality for the entire nonfinancial public sector.

⁵ Expenses necessary for the program's operation include: office rental; radio, print, or television announcements, ads, or communications (does not refer to communications campaigns that may be included in an operation component); translations; bank fees; office supplies; photocopies; mail services; fuel; maintenance; short courses; and travel expenses for line staff (driver, secretary).

- 6.2 **Programming and budget.** Bolivia's national budget system has an extensive regulatory framework that is clearly reflected in its user manuals. Its programmatic structure facilitates the linking of expenses with planned objectives and results for annual work plans, and ensures integrated, real-time management of transactions. The ABC's Planning and Budget Bureau, in coordination with the National Financial and Administrative Division, will be responsible for programming and budget formulation based on the agreed-upon annual work plan.
- 6.3 **Accounting and information systems.** The Accounting and Reporting Subsystem applies generally accepted accounting principles, which are described in the Basic Rules of the Integrated Accounting System. These rules are compatible with the International Public Sector Accounting Standards, which have not been adopted by the Bolivian government. This subsystem integrates the following accounting steps: budget records, asset records, and treasury records. For the operation's financial management, preparation of financial statements, and rendering of accounts to the Bank, until the accounting management module for projects with external financing of the SIGEP is implemented, the ABC will use the Bank's Integrated Project Management System, which will be provided by the IDB.
- 6.4 **Disbursements and cash flow.** The Treasury subsystem has a simple, complete regulatory framework. The Treasury Master Account has nationwide coverage and includes advanced control, monitoring, and reporting procedures. It also features multiple currency capabilities, making it a reliable, effective, and efficient system to manage government revenues and project funds. Its computerized procedures are efficient and cover all treasury management processes that can be automated, as well as their integration with the budget and accounting systems. The primary disbursement modality will be advances of funds based on cash programming, without excluding other mechanisms that the Bank may use to make payments or reimburse expenditures. The Bank will process a new disbursement when at least 80% of the total funds disbursed in the previous advance have been justified, as established by IDB policy.
- 6.5 **Administration of the loan proceeds.** Funds disbursed to the project will be deposited in a special account that is part of the Treasury Master Account at the Central Bank of Bolivia, and subsequently transferred to another account in local currency, following the procedures established by the Office of the Deputy Minister of the Treasury for the management of loan proceeds. Both accounts will be used exclusively for this operation.
- 6.6 **Internal control and internal audit.** The ABC's financial management is subject to annual reliability reviews by the Internal Audit Unit and the administration itself. The program is expected to be included in reviews of this kind.
- 6.7 **External control and reporting.** There will be an annual external audit, which will be financed with the loan proceeds and conducted by an independent audit firm acceptable to the Bank based on agreed-upon terms of reference. Audit progress reports will be submitted every year, no later than 30 September, and will include data up until 30 June. In addition, audited financial statements will be submitted up until 120 days after the end of the fiscal cycle. In accordance with its current Access to Information Policy, the Bank will publish the annual audited financial statements.
- 6.8 **Financial supervision plan.** Supervision activities may be adjusted based on the annually updated project risk assessment reports prepared by the fiduciary team in

conjunction with the executing agency and external auditors. These activities may include monitoring visits; onsite visits; review of audit reports and monitoring of internal control findings; and monitoring of the implementation of risk mitigation actions.

- 6.9 **Execution mechanisms.** The operation will be executed under the ABC's organizational structure. The executing agency will have a multidisciplinary team that includes project coordinators, regional managers, technical/engineering staff, inspectors, the financial/administrative division, legal advisors, and internal auditing.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/___

Bolivia. Loan ____/BL-BO to the Plurinational State of Bolivia
Mairana-Bermejo Segment Reconstruction Project

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Plurinational State of Bolivia, as Borrower, for the purpose of granting it a financing to cooperate in the execution of the Mairana-Bermejo segment reconstruction project. Such financing will be chargeable to the Bank's Ordinary Capital (OC) resources in the following manner: (i) up to the amount of US\$9,600,000, subject to concessional financial terms and conditions ("Concessional OC"); and (ii) up to the amount of US\$54,400,000, subject to financial terms and conditions applicable to loan operations financed from the Bank's regular program of OC resources ("Regular OC"), as indicated in the Project Summary of the Loan Proposal, and subject to the Special Contractual Conditions of said Project Summary.

(Adopted on ____ _____)