OFFICIAL USE ONLY
R2016-0142/1

July 6, 2016

Closing Date: Monday, July 25, 2016 at 6 p.m.

FROM: Vice President and Corporate Secretary

Paraguay - Transport Connectivity Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed loan to Paraguay for the Transport Connectivity Project (R2016-0142), which is being processed on an absence-of-objection basis.

Distribution:
Executive Directors and Alternates
President
Bank Group Senior Management
Vice Presidents, Bank, IFC and MIGA
Directors and Department Heads, Bank, IFC and MIGA

Document of
The World Bank

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Report No: PAD1248

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$100 MILLION

TO THE

REPUBLIC OF PARAGUAY

FOR A

TRANSPORT CONNECTIVITY PROJECT

June 28, 2016

Transport and ICT Global Practice
Latin America and the Caribbean Region

CURRENCY EQUIVALENTS

Exchange Rate Effective May 3, 2016

Currency Unit	=	Paraguayan Guaraní (PYG)
PYG 5,579	=	US$1
US$0.0.00018	=	PYG 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AADT	Average Annual Daily Traffic
ANTSV	*Agencia Nacional de Tránsito y Seguridad Vial* (National Transit and Road Safety Agency)
CBP	Central Bank of Paraguay
COSO	Committee of Sponsoring Organizations of the Treadway Commission
CREMA	*Contrato de Rehabilitación y Mantenimiento en Base a Resultados* (Performance-Based Road Rehabilitation and Maintenance Contract)
DA	Designated Account
DCP	*Dirección de Crédito Público* (Public Credit Directorate)
DGSA	*Dirección Nacional de Gestión Social y Ambiental* (Directorate of Social and Environmental Management)
DGEEC	*Dirección General de Estadística , Encuestas y Censos* (National Statistics Institute)
DNCP	*Dirección Nacional de Contrataciones Públicas* (National Office of Public Procurement)
DTPC	*Dirección de Transparencia y Participación Ciudadana. (*Directorate of Transparency and Citizen Participation)
DV	*Dirección de Vialidad del MOPC* (MOPC's Roads Directorate)
EIRR	Economic Internal Rate of Return
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FM	Financial Management
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GMANS	*Contratos de Gestión y Mantenimiento por Niveles de Servicio* (Performance-Based Road Maintenance Contract)
GOP	Government of Paraguay
GRSF	Global Road Safety Facility
HDM-4	Highway Development and Management Model
IAU	Internal Audit Unit
ICB	International Competitive Bidding
IFR	Interim Financial Report
IGAP	Improvement Governance Action Plan
iRAP	International Road Assessment Program
IRI	International Roughness Index

M&E	Monitoring and Evaluation
MECIP	*Modelo Estándar de Control Interno para las Entidades Públicas del Paraguay* (Standardized Internal Control Model for Public Sector Entities in Paraguay)
MOF	*Ministerio de Hacienda* (Ministry of Finance)
MOPC	*Ministerio de Obras Públicas y Comunicaciones* (Ministry of Public Works and Communications)
NDP	National Development Plan
NPV	Net Present Value
OM	Operations Manual
PP	Procurement Plan
RAP	Resettlement Action Plan
ROW	Right-of-way
Route 1	RN-1 (Ruta Nacional 1)
Route 3	RN 3-8 section (Ruta Nacional 3-8)
SBD	Standard Bidding Document
SOE	Statement of Expenditure
ToR	Terms of Reference
UPGP	*Unidad de Preparación y Gestión de Proyectos* (Project Preparation and Management Unit)
UEP	*Unidad Ejecutora del Proyecto* (Project Executing Unit)
UOC	*Unidad Operativa de Contrataciones del MOPC* (Procurement Unit)
VEA	*Ventana de Acceso a la Información* (Citizen Engagement Web-based System)

Regional Vice President:	Jorge Familiar
Country Director:	Jesko Hentschel
Senior Global Practice Director:	Pierre Guislain
Practice Manager:	Aurelio Menendez
Task Team Leader(s):	Veronica I. Raffo and Maria Claudia Pachon

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Paraguay Transport Connectivity Project

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Paraguay

Transport Connectivity Project (P147278)

PROJECT APPRAISAL DOCUMENT

LATIN AMERICA AND CARIBBEAN

Transport and ICT Global Practice

Report No.: PAD1248

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Basic Information			
Project ID P147278	EA Category B - Partial Assessment		Team Leader(s) Veronica Ines Raffo, Maria Claudia Pachon
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 30-Mar-2017	Project Implementation End Date 30-Jun-2024		
Expected Effectiveness Date 15-Mar-2017	Expected Closing Date 30-Jun-2024		
Joint IFC No			
Practice Manager/Manager Aurelio Menendez	Senior Global Practice Director Pierre Guislain	Country Director Jesko S. Hentschel	Regional Vice President Jorge Familiar
.			
Borrower: Ministry of Finance			
Responsible Agency: Ministry of Public Works and Communications (MOPC)			
Contact: Ruben Melgarejo		Title: Coordinator	
Telephone No.: 5959214149539		Email: upgp@mopc.gov.py	
.			
Project Financing Data(in US$, millions)			
[X] Loan	[ ] IDA Grant	[ ] Guarantee	

[ ] Credit	[ ] Grant	[ ] Other					
Total Project Cost:	100.00			Total Bank Financing:	100.00		
Financing Gap:	0.00						

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Financing Source	Amount
Borrower	0.00
International Bank for Reconstruction and Development	100.00
Total	100.00

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Expected Disbursements (in US$, millions)

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024
Annual	6.00	15.00	20.00	22.00	15.00	15.00	4.00	3.00
Cumulative	6.00	21.00	41.00	63.00	78.00	93.00	97.00	100.00

.

Institutional Data

Practice Area (Lead)

Transport & ICT

Contributing Practice Areas

Cross Cutting Topics

[X] Climate Change

[ ] Fragile, Conflict & Violence

[X] Gender

[ ] Jobs

[X] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Transportation	Rural and Inter-Urban Roads and Highways	85	8.0	
Transportation	General transportation sector	15	0	
Total		100		

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

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Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Financial and private sector development	Infrastructure services for private sector development	10
Trade and integration	Export development and competitiveness	60
Human development	Injuries and non-communicable diseases	10
Urban development	Other urban development	10
Rural development	Rural services and infrastructure	10
Total		100

.

Proposed Development Objective(s)

The project development objectives (PDO) are to (a) reduce transport connectivity costs and improve road safety along selected paved road sections that pass through targeted departments; and (b) improve the Borrower's planning and national road asset management capacity.

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Components

Component Name	**Cost (US$, millions)**
Component 1: Road Rehabilitation and Maintenance CREMA Contracts	77.00
Component 2: Road Safety	12.00
Component 3: Road Asset Planning and Management	3.75
Component 4: Project Management and Implementation Support	7.00

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Systematic Operations Risk- Rating Tool (SORT)

Risk Category	**Rating**
1. Political and Governance	Substantial
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Substantial

8. Stakeholders	Moderate
OVERALL	Substantial

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Compliance	
Policy	
Does the project depart from the CAS in content or in other significant respects?	Yes [ ] No [X]

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Does the project require any waivers of Bank policies?	Yes [ ] No [X]
Have these been approved by Bank management?	Yes [ ] No [X]
Is approval for any policy waiver sought from the Board?	Yes [ ] No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X] No [ ]

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Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04		**X**
Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10	**X**	
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

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Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Institutional Arrangements (Section I.A.1 of Schedule 2 to the Loan Agreement)	**X**		CONTINUOUS

Description of Covenant

The Borrower, through the MOPC, shall operate and maintain, at all times throughout project implementation, the Project Executing Unit (*Unidad Ejecutora del Proyecto*, UEP), with functions and responsibilities acceptable to the World Bank, which shall be responsible for overall project coordination

and day-to-day implementation of the project, and staffed with competent personnel in adequate numbers, with qualifications, experience and terms of reference satisfactory to the World Bank, as set forth in the Operations Manual (OM).

Name	Recurrent	Due Date	Frequency
Participation Agreements (Section I.B.1 of Schedule 2 to the Loan Agreement)		Prior to the carrying out of any works under the pertinent Road Safety Intervention	CONTINUOUS

Description of Covenant

For purposes of carrying any given Road Safety Intervention under Part 2.2 of the project, and prior to the carrying out of any works under the pertinent Road Safety Intervention, the Borrower, through the MOPC, shall: (a) select each eligible municipality in accordance with the eligibility criteria set forth in the OM; and (b) thereafter enter into an agreement with the corresponding eligible municipality and National Transit and Road Safety Agency *(Agencia Nacional de Tránsito y Seguridad Vial*, ANTSV) (the Participation Agreement), under terms and conditions acceptable to the World Bank, as established in the OM, setting forth their respective roles and responsibilities regarding the implementation of the pertinent Road Safety Intervention works under Part 2.2 of the project.

Name	Recurrent	Due Date	Frequency
Safeguards (Section I.E.2 of Schedule 2 to the Loan Agreement)		Prior to the carrying out of any works under any CREMA contract	CONTINUOUS

Description of Covenant

After the final detailed designs of the works to be carried out under any CREMA contract have been completed, the Borrower shall: (a) prior to the carrying out of any works under any said CREMA contract, update the RAP in a manner acceptable to the World Bank (which updated RAP shall be consistent with the pertinent provisions of the Resettlement Policy Framework); and (b) immediately thereafter, implement and/or caused to be implemented, the updated RAP in accordance with its terms and in a manner acceptable to the World Bank.

Name	Recurrent	Due Date	Frequency
Safeguards (Section I.E.6 of Schedule 2 to the Loan Agreement)	**X**		CONTINUOUS

Description of Covenant

The Borrower, through the MOPC, shall ensure that the contractors for civil works under the project include the obligation of the relevant contractor to comply with the relevant safeguard documents, as applicable to such civil works commissioned or carried out pursuant to said contract.

Name	Recurrent	Due Date	Frequency
Safeguards Section I.E.7 of Schedule 2 to the Loan Agreement)	**X**		CONTINUOUS

Description of Covenant

The Borrower, through the MOPC, shall ensure that the terms of reference for any consultancy in respect of any project activity shall be satisfactory to the World Bank following its review thereof and, to that end, such terms of reference shall duly incorporate the requirements of the World Bank's applicable safeguards policies, as applied to the advice conveyed through such technical assistance.

Name	Recurrent	Due Date	Frequency
Financial Management, Financial Reports and Audits (Section II.B.4 of Schedule 2 to the Loan Agreement)		Not later than six month after the Effective Date and prior to the commencement of each calendar year during project implementation	YEARLY

Description of Covenant

The Borrower, through the Ministry of Public Works and Communications (*Ministerio de Obras Públicas y Comunicaciones*, MOPC), shall, not later than six months after the Effective Date and prior to the commencement of each calendar year during project implementation thereafter, create, and thereafter maintain throughout each calendar year of project implementation, a specific budget line to keep track of the expenditures incurred during project implementation, including a specific allocation for expenditures related to the implementation of the Resettlement Action Plan (RAP) under the the Performance-Based Road Rehabilitation and Maintenance Contracts (*Contrato de Rehabilitación y Mantenimiento en Base a Resultados*, CREMA).

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Conditions

Source of Fund	Name	Type

Description of Condition

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Veronica Ines Raffo	Team Leader (ADM Responsible)	Senior Infrastructure Specialist		GTI04
Maria Claudia Pachon	Team Leader	Sr Transport. Spec.		GTI03
Gustavo Adrian Canu	Procurement Specialist (ADM Responsible)	Procurement Specialist		GGO04
Juan Carlos Serrano-Machorro	Financial Management Specialist	Sr Financial Management Specialist		GGO22

Aracelly G. Woodall	Team Member	Senior Program Assistant		GTI04
Claudia Nin	Team Member	Program Assistant		LCC7C
Claudio Luis Daniele	Safeguards Specialist	Consultant		GENDR
Graciela Sanchez Martinez	Safeguards Specialist	Senior Social Development Specialist		GSU04
Hector Miguel Mansilla	Team Member	Consultant	Sr. Highway Engineer	GTIDR
Rodrigo Archondo-Callao	Team Member	Sr Highway Engineer		GTI03
Stephen Muzira	Team Member	Sr Transport. Spec.		GTI01
Steven Farji Weiss	Team Member	Economist		GTI04
Virginia Maria Henriquez Fernandez	Team Member	Consultant	Transport Specialist	GTI04

Extended Team

Name	Title	Office Phone	Location
Ana Ferrer	Sr. Road Safety Consultant		Barcelona
Antonio Riu	Sr. Road Safety Consultant		Barcelona
Ramon Ledesma	Road Safety Legal Advisor Consultant		Madrid

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Locations

Country	First Administrative Division	Location	Planned	Actual	Comments

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Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required? Consulting services will be required.

I. STRATEGIC CONTEXT

A. Country Context

1. **During the past 15 years, Paraguay's economy witnessed a significant improvement of key economic indicators with positive impacts on poverty reduction.** Average annual gross domestic product (GDP) growth rate exceeded 4.7 percent, between 2003 and 2015. Exports, driven by a modern agribusiness (mostly soy and meat) sector, have experienced sharp increases within the last decade, soaring from 4 percent of annual growth in 1994–2003 to 15 percent in 2004–2013. Agriculture was the second biggest contributor to GDP growth after trade and services, while on the demand side, private consumption was the driving factor. According to the Permanent Household Survey, as of 2015, poverty levels had decreased to 22.2 percent of Paraguay's total population (compared to 44 percent in 2003). Out of those under the poverty line, 10 percent were in extreme poverty (compared to 21.2 percent in 2003). Between 2004 and 2014, incomes of the lower two quintiles grew at an annual rate of 5.3 percent (compared to 4.9 percent for the average person), suggesting that growth was pro-poor.

2. **Stable food prices and better access to jobs have been among the most important drivers of poverty reduction, and roads have played a key role in both respects.** On one hand, high rates of economic growth opened new labor opportunities for the poor in better-paid sectors (such as construction and public administration) and other types of employment (such as off-farm agriculture). On the other hand, a more stable macroeconomic environment slowed the increase in local food prices (in 2012 and 2013, food price inflation fell, leaving the value of basic food items almost unaltered). According to a paper prepared by the World Bank,[1] about two-thirds of the reduction in poverty was driven by improved labor market outcomes.

3. **The transport sector is a strategic component of Paraguay's economy given the country's landlocked condition and reliance on exports.** Since the late 2000s, cereals and oil crop production, including maize, wheat, rice, soybeans, and sunflower, represent 70 percent of the gross value of agriculture production in the country, which represents 30 percent of the total value added to the economy. Livestock is also an important activity, especially for its contribution to exports (meat), representing a gross yearly export value of US$920 million.[2] Agricultural production has been directed to exports; more precisely in 2015, 60 percent of all Paraguayan exports came from agriculture. Thus, efficient logistics and transport infrastructure and services to link production to the ports are necessary. National, departmental, and rural road networks need priority attention to improve connectivity of rural populations and production areas toward the main consumption centers and export nodes. The National Development Plan (NDP 2014–2030), envisages a strong public investment effort to alleviate binding infrastructure constraints. In particular, the country's road infrastructure modernization and preservation has been identified as a critical effort to reach the NDP goals, to improve physical access to urban agglomerations where jobs and social services are located and where consumer demand for agricultural and other products is the highest.

[1] World Bank. 2004. "Volatility and Inequality as Constraints to Shared Prosperity: Paraguay Equity Assessment." Working Paper. World Bank, Washington, DC.
[2] *Servicio Nacional de Calidad y Salud Animal*, 2013.

B. Sectoral and Institutional Context

4. **Paraguay's road network.** Concentrating nearly 90 percent of total freight volume movements, the road sector is the dominant mode of transport in the country. Paraguay's road network length is estimated at 100,000 km, of which only 32,208 km are classified and fall under the Ministry of Public Works and Communications (*Ministerio de Obras Públicas y Comunicaciones*, MOPC) administration.[3] Table 1 shows the road network classification under MOPC's administration. Around 68,000 km of the network is under the administration of local authorities.

Table 1. Road Network Classification under Administration by the MOPC

Classification	Surface Type					
	Paved (km)	Cobblestone (km)	Stones (km)	Gravel (km)	Earth (km)	Total (km)
National	2,971	0	0	0	657	**3,628**
Departmental	2,502	10	947	286	10,927	**14,672**
Rural	0	0	557	726	12,625	**13,908**
Total	**5,473**	**10**	**1,504**	**1,012**	**24,209**	**32,208**

Source: MOPC.

5. **Available surface condition surveys carried out in 2011 and 2014 over approximately 4,860 km of paved roads indicate that roads are deteriorating rapidly probably because of insufficient maintenance.** As such, while in 2011 some 68 percent of the paved network was in good condition (measured through its roughness, International Roughness Index [IRI] < 3),[4] in 2015 surveys this figure has gone down to 59 percent, with an increased share of roads in fair condition up to 33 percent (3 < IRI < 5) and 9 percent that are in poor condition (IRI > 5).

6. **Road maintenance remains significantly deferred and insufficiently funded.** Over the past six years, the MOPC's annual budget has ranged between US$250 million and US$450 million, distributed among investment expenditures (80 percent on average, of which 20 percent is for maintenance), personnel, administrative costs, and others (20 percent on average). This budget corresponds mainly to allocations from the general treasury and, to a lesser degree, funds stemming from the collection of tolls. Resources allocated to rehabilitation and maintenance averaged US$45 million per year during the 2003–2014 period, while recent estimates suggest that the average budget for 2014–2018 should be US$95 million per year and US$72 million per year from 2019 to 2023. According to the MOPC, funds collected from tolls amount to US$17 million annually.

7. **Government's road sector strategy**. In 2012, the MOPC developed the National Transport Master Plan (2012–2032) directed toward reducing logistic challenges. Based on the results of the Master Plan, the current administration has established a long-term road sector strategy aimed at (a) completing the key national corridors (bi-oceanic corridor and international corridors); (b) improving the condition of the existing road assets; (c) ensuring adequate

[3] The MOPC is responsible for goods and services of the following public sector areas: Public Works, Transport, Communications, Energy, Mines, Tourism, National Parks, and National Monuments.

[4] Pavement roughness is generally defined as an expression of irregularities in the pavement surface that adversely affect the ride quality of a vehicle (and thus the user). Roughness is an important pavement characteristic because it affects not only ride quality but also vehicle delay costs, fuel consumption and maintenance costs. The IRI is a roughness index most commonly used to define a characteristic of the longitudinal profile of a traveled wheel track and is measured in meters per kilometer (m/km) or millimeters per meter (mm/m).

maintenance to minimize total road user costs and improve road safety; and (d) ensuring the sustainability of the road programs by prioritizing investments to assure an alignment with available resources while expanding the tolling network to increase the revenues available. Table 2 summarizes the main activities financed by International Financial Institutions in the 2014-2018 period which the Bank is partially supporting.

Table 2. Performance-based Contracts of Paved Network

Section		Length (km)	Reference Cost (US$)
a.	**Paved Roads Management and Maintained by Service Levels**	**5,400**	**730,000,000.00**
	Financed by the Inter-American Development Bank (2014/2015)	1,245.00	530,000,000.00
	Financed by CAF (2015)	419.00	
	Financed by the World Bank (2016)	317.00	
	Financed by the Local Fund (2014)	774.00	
	Financed by - To be Defined	2,645.00	200,000,000.00
b.	**Toll (28) and Weighting Stations (26) - 2014–2018**	**—**	**123,300,000.00**
	Axle Load Control Network Expansion Project	—	89,700,000.00
	Toll Network Expansion Project	—	33,600,000.00
	TOTAL	**5,400.00**	**853,300,000.00**

Source: MOPC.
Note: CAF = *Corporación Andina de Fomento* (Development Bank of Latin America)

8. For the proposed project, the MOPC prioritized two corridors based on the following criteria: (a) Socioeconomic importance (agribusiness and interurban mobility), for example, Route 3 is an important zone of soybean production and Route 1 has important livestock production; (b) Areas where the poverty level is high, for example, San Pedro and Caaguazú; (c) Corridors that have not been already included in a financing program with other development partners; (d) Road sections that are a continuity of those included in the previous Bank-financed project; and (e) Complementarity between the proposed project and other projects that take care of the rural roads network.

9. **By 2020, Paraguay's fatality rate would be at least 10 times the rate of best practice countries in Europe, representing a serious development challenge.** Paraguay has a toll of 17.5 deaths per 100,000 inhabitants. Annually, about 1,200 lives are lost and approximately 40,000 serious injuries occur because of road traffic crashes.[5] Road fatalities have increased over 200 percent since 2000. Injuries resulting from road crashes are the first cause of death for people between 15 and 29 years old, and the second cause of death of children between 5 and 14 years old. The economic cost of road crashes is estimated at 2 percent to 4 percent of Paraguay's GDP. In response to the road safety concerns, in 2013, the Government of Paraguay (GOP) approved the National Traffic and Road Safety Law No. 5016,[6] which created the National Traffic and Road Safety Agency (*Agencia Nacional de Tránsito y Seguridad Vial*, ANTSV).

[5] Data from the Ibero-American Road Safety Observatory (www.oisevi.org).
[6] Approved by Congress in 2013, and promulgated by the President in May 2014.

10. **Climate change risks for the country**. With their increased frequency in Paraguay because of the 'El Niño' phenomenon, floods have been causing serious damages to road infrastructure. Adaptation to the adverse impacts of climate change is one of the main priorities for the Government. El Niño 2015–2016 left major damages in the transport infrastructure (around 35 affected points and 40 bridges damaged or destroyed). Given the dimension of the damages, the World Bank is supporting the MOPC with funds from the Global Facility for Disaster Reduction and Recovery (GFDRR) to assess the damages in the transport sector through a Post-Disaster Needs Assessment to prepare a sector strategy for rehabilitation and reconstruction. Many areas in the northern region have been rendered inaccessible, and sections of Route 1 have been significantly damaged by floods and land-slides

Box 1. The World Bank's Engagement in the Transport Sector in Paraguay

Since the early 1960s, the World Bank has provided continued financial and technical support to the country´s evolving transport sector. In the course of over 50 years, the World Bank has completed 12 lending operations and 6 non-lending technical assistance activities, ranging from economic and sector work in multiple areas including infrastructure and logistics diagnostics, to investment loans, primarily in the roads sector. Some of the most notable investments include the upgrade, rehabilitation, and maintenance activities along the country´s core transport network, particularly the Asunción-Encarnación Highway, which connects Paraguay´s two main cities and serves the country´s soybean and cotton industries.

Efforts since the 1980s have been directed at expanding Paraguay´s primary road network, but an analysis of the results of these investments indicates that road expenditures generally have been imbalanced. Too much has been spent on building and paving main roads. Conversely, too little has been spent on improving secondary and rural roads (many areas are still inaccessible) and maintaining the paved and unpaved road networks. Similarly, little attention has been given to management and planning practices, which has resulted in weak institutional capabilities of the key stakeholders in the transport sector.

To respond to these challenges, the World Bank has reoriented its engagement prioritizing road asset management and sector planning and coordination, first through the Road Maintenance Project approved in 2006 and now under the proposed Transport Connectivity Project. Both projects introduce innovative service delivery models such as performance-based contracting and focus on sustainable road management strategies that include road safety measures and capacity building for the chief implementing agencies. These projects are helping the MOPC strengthen institutional frameworks to guarantee the sustainability of the road sector. In this sense, important actions have been taken to improve planning tools and data collection to establish investment priorities based on sound technical and economic criteria and to develop efficient and prioritized works programs aligned with existing budgets with an integrated vision of the road network.

11. **Rationale and issues to be addressed**. Crucial steps for road sector sustainability include moving toward a more efficient road sector that would allow the MOPC to accomplish the following:

(a) Gradually move toward a steady-state condition of the road network. The road network requires important rehabilitation interventions to upgrade its overall condition and overcome the backlog of deferred maintenance. This implies higher financial requirements than those under a steady-state scenario. Based on past experience, the MOPC recently decided to include within the scope of the performance-based contracts (PBCs), segments of the network that are in poor condition and require an initial rehabilitation phase, following the Performance-Based Road Rehabilitation and Maintenance Contracts (*Contrato de Rehabilitación y Mantenimiento en Base*

a Resultados, CREMA) model.[7] Expanding the use of PBCs is a step in the right direction to improved asset management practices.

(b) Establishing adequate strategies and institutional frameworks to guarantee the sustainability of the road sector within a given fiscal framework. Institutional and regulatory frameworks represent a major bottleneck for road network modernization. While much progress has taken place over the last five years, shortcomings in the planning, road asset management, implementation, and budget execution capacities of the MOPC need to be addressed urgently.

(c) Improving road safety standards. The GOP is currently setting up the organizational structure and operational strategy of the new road safety agency with a clear mandate to coordinate multisectoral and multi-jurisdictional actions and policies, empowering it as lead agency in the field of road safety. The new road safety agency will need to build its institutional capacity, financial resources, and skills to ensure sound coordination between the various actors, leading strategic investments and interventions, and achieving measurable results.

(d) Improving emergency response preparedness. According to the National Emergency Secretariat Paraguay, the floods caused by the El Niño phenomenon (2015–2016), were possibly one of the strongest events since 1950. The World Bank will work with the MOPC and other national and local government entities in charge of road management and emergency response on better incorporation of vulnerability assessments in planning and designing road programs, improving decision-making tools and designing flexible processes that better address decision-making under uncertainty and capacity building for the sustainability of these practices.

(e) Improving governance and transparency in the allocation and use of existing resources. The MOPC manages the largest investment budget among public institutions in the country and is responsible for a large number of contracts. Developing systems that clearly establish what is being achieved through those contracts and at what costs is of utmost relevance. Under the Road Maintenance Project (P082026, closing on June 30, 2016) several actions were foreseen to support the development and implementation of an Improvement Governance Action Plan (IGAP). These will continue in the proposed project, reinforced by the new legal framework established by Law No. 5282/14 of Public Access to Information and Governmental Transparency.

C. Higher Level Objectives to which the Project Contributes

12. The proposed Project is well aligned with the World Bank Group Country Partnership Strategy (CPS) 2015–2018 for the Republic of Paraguay (Report No. 82487-PY), discussed by the Board of Executive Directors on November 7, 2014. More specifically, the Project substantially contributes to CPS Results Area 3 Fostering Market Integration and directly contributes toward the achievement of the CPS results indicator: Travel time on two 200 km segments of roads in selected priority departments (San Pedro, Caaguazú, and Caazapá or similar) reduced by at least

[7] CREMA contracts, with their mix of capital intensive, high value rehabilitation works, and labor-intensive low-cost routine maintenance, encourage large contractors to subcontract the latter work, which helps to promote a healthy development of small local contractors, while the main contractor retains the overall responsibility. The MOPC recently bid out 148.5 km of the road network under the CREMA modality, to be financed with its own funds. These contracts will consist of a two-year rehabilitation period and five years of routine maintenance, for a total duration of seven years.

30 minutes by 2018. Furthermore, the project[8] will contribute to the Government's NDP by improving and maintaining the condition of national roads to ensure transport connectivity across the country, thus fostering regional and national productivity and a more geographically-balanced development growth.

13. The Project will contribute to the World Bank's twin goals of poverty reduction and shared prosperity by targeting historically poor areas in the country. Data obtained through the project's socioeconomic diagnostic[9] in six districts located along the extended catchment area of Route 1 (Misiones and Itapúa) and six districts in the area of influence of Route 3 (Departments of San Pedro and Caaguazú) indicate that those districts are some of the poorest in the country or with above-average levels of rural poverty incidence, respectively.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

14. The project development objectives (PDO) are to (a) reduce transport connectivity costs and improve road safety along selected paved road sections that pass through targeted departments and (b) improve the Borrower`s planning and national road asset management capacity.

Project Beneficiaries

15. The project's key beneficiaries will be road users of Route 1 and Route 3, as well as farmers, livestock producers, and freight and passenger transport companies from the catchment area and beyond. Benefits will accrue to them because of the expected reduction in travel costs and times, together with the accompanying road safety outcomes. Among road users and beneficiaries, the project equally targets both men and women. The project will address the mobility and accessibility needs of approximately 385,000 inhabitants, of which close to half live in rural areas.

16. The second group of direct beneficiaries includes the following Government agencies: (a) the MOPC, which will improve its contracting and road asset management practices through tailored capacity-building activities, (b) the Directorate of Social and Environmental Management (*Dirección Nacional de Gestión Social y Ambiental*, DGSA), which will enhance its systems and internal processes particularly in monitoring environmental and social safeguard compliance; and (c) the ANTSV and selected local governments receiving support on road safety policy planning and subsequent road safety interventions.

[8] This project is also referred to as *'Habilitación de la Red Pavimentada'* in Spanish, as shown in the Loan Agreement.

[9] The socioeconomic diagnostic and road user satisfaction survey of the Paraguay Transport Connectivity Project was conducted in Q4 2015. Its objective was to assess the expected distributional and socioeconomic effects of improved road connectivity along Routes 1 and Routes 3, with a particular focus on welfare gains for the poor and other vulnerable groups. The study included household surveys and consultations with vulnerable groups of beneficiaries such as women and indigenous peoples, together with local agencies. The study also focused on road user satisfaction, especially on vulnerable users. Findings are summarized in annex 6.

PDO Level Results Indicators

17. The PDO level results indicators (see Results Framework in Annex 1) are the following:

(a) Reduction in average travel time[10] along two project corridors[11]

(b) Fatalities on the CREMA corridors normalized by Average Annual Daily Traffic (AADT) (Route 1 and Route 3)

(c) Roads in good and fair condition as a share of total classified roads (which includes a supplemental indicator that tracks the number of kilometers in the network).

III. PROJECT DESCRIPTION

A. Project Components

Component 1: Road Rehabilitation and Maintenance CREMA Contracts (Total Cost: US$77 million)

18. To reduce average travel time in targeted departments, this component will support (a) carrying out, under the terms of two CREMA contracts, the rehabilitation and maintenance works for approximately 319 km of the following identified sections of the national paved roads, RN1 and RN3-8, in the targeted departments of San Pedro, Caaguazú, Canindeyú, Misiones, and Itapúa: (i) San Juan Bautista-Encarnación (approximately169.7 km); (ii) Mbutuy-Yasy Kañy (approximately 70.6 km); and (iii) Carayao-Tacuara-Calle 6000 *y Acceso a San Estanislao* (approximately 78.4 km); and (b) carrying out the supervision of works under the CREMA contracts; all aiming at reducing transport costs in the targeted departments.

Component 2: Road Safety (Total Cost: US$12 million)

19. To improve road safety along selected paved road sections of targeted departments, this component includes two subcomponents: (a) Subcomponent 2.1 - the financing of road safety improvement interventions (including, *inter alia*, the installation of side guardrails, the carrying out of signaling works, the improvement of identified roundabouts and the construction of shoulders and of pedestrian walkways) targeting the most vulnerable users near urban areas along the identified sections of the national paved roads referred to under Component 1 of the Project 12; and (b) Subcomponent 2.2 - an additional pilot subcomponent will support road safety improvement interventions (other than those under the CREMA Contracts) with the goal of improving road safety conditions in eligible municipalities, within project targeted departments, such as, inter alia, road marking of exclusive areas, the installation of traffic lights in urban areas, the construction of speed bumps, roundabouts, ramps for people with disabilities and of pedestrian

[10] A reduction in transit time, implies that transport connectivity costs will be reduced as time represents a significant share of transport costs.
[11] In line with the World Bank Group Country Partnership Strategy (2015–2018) Result Indicator 3.2.
[12] Interventions are prioritized as a result of a road safety audit carried out during project preparation. (*Estudio y Auditoría de Seguridad Vial: Ministerio de Obras Públicas y Comunicaciones. Asunción*, Paraguay. December 2015).

paths in school vicinities, as described in the project's Operations Manual (OM) and designed in coordination with the recently created ANTSV.[13]

Component 3: Road Asset Planning and Management (Total Cost: US$3.75 million)

20. To improve national planning and road asset management capacity, this component will support the consolidation of the MOPC's strategic road management methodologies and systems, building on the efforts of the Road Maintenance Project to strengthen the client's monitoring and evaluation (M&E) capacity by (a) completing the road network inventory; (b) expanding, operating, and maintaining the traffic counting system; and (c) operationalizing the road asset management system.

Component 4: Project Management and Implementation Support (Total Cost: US$7 million).

21. To ensure the quality and timely attainment of project objectives, this component will provide assistance to the MOPC in implementing the project, through financing, among others: (a) operating costs related to project management functions of the Project Executing Unit (Unidad Ejecutora del Proyecto, UEP), including M&E activities and training; (b) project annual audits; (c) the implementation of the project's citizen engagement web-based system (Ventana de Acceso a la Información, VEA);[14] (d) environment and social management, including, among others, safeguard compliance supervision activities; (e) the promotion of indigenous communities' social inclusion by addressing their specific needs, differentiated by gender; and (f) the acquisition of land and the provision of compensation (including cash compensation and other resettlement assistance) related to the implementation of the Resettlement Action Plan (RAP).

B. Project Financing

22. The lending instrument is an Investment Project Financing loan that will finance 100 percent of Project costs.

C. Project Cost and Financing

Project Components		Project cost (US$, millions)	IBRD Financing (US$, millions)	% Financing
Component 1: Road Rehabilitation and Maintenance CREMA Contracts		77.0	77.0	100
Component 2: Road Safety		12.0	12.0	100
Component 3: Road Asset Planning and Management		3.75	3.75	100
Component 4: Project Management and Implementation Support		7.0	7.00	100
Total Costs	Total Project Costs	99.75	99.75	100
	Front-end Fee	0.25	0.25	100
Total Financing Required		100.00	100.00	100

[13] Created under the National Traffic and Road Safety Law No. 5016 (Approved by Congress in 2013, and promulgated by the Executive Power in April 2014).

[14] The VEA, will be implemented by the Directorate of Transparency and Citizen Participation (DTPC), and builds on the aforementioned IGAP experience and includes three tools (a feedback-grievance redress mechanism, an interactive map of civil works, and a financial, physical, environmental, and social monitoring tool)

D. Lessons Learned and Reflected in the Project Design

23. **Promote long-term road rehabilitation and maintenance commitments through the implementation of CREMA contracts to further improve road asset management efficiency.** Historically, due to the Government's efforts to contain public expenditures, resources allocated to road rehabilitation and maintenance have been subject to disruptive 'stop-and-go' type of implementation. The introduction, under the previous project, of a longer-term performance-based road maintenance contracting model (*Contratos de Gestión y Mantenimiento por Niveles de Servicio,* GMANS) has been a means to reverse this tendency. This project builds on the GMANS experience and aims at further improving road asset management efficiency by implementing CREMA contracts, which include comprehensive rehabilitation along the road sections and longer-term maintenance commitments that receive higher budgetary processing priority than other expenditures. Lessons gathered from the implementation of the GMANS contracts financed under the Road Maintenance Project, particularly regarding technical specifications, contract length, payment modalities, penalties in case of noncompliance supervision requirements and such, have been taken into consideration for project design.

24. **Advocate for a comprehensive road safety agenda development and implementation to ensure sector and institutional sustainability.** Evaluative evidence captured in the Independent Evaluation Group's report *Making Roads Safer*[15] recommends a comprehensive and systematic approach to raise road safety awareness and develop a strong road safety agenda, championing said agenda at a senior political level. Based on this, the World Bank team is working with members of the National Senate and the vice minister of Public Works of the MOPC, including the Road Safety Division within the Road Planning Directorate. The project is designed to support, under Component 2, the recently created ANTSV, in addition to financing road safety measures and raising awareness in the most vulnerable population, located in the project's area of influence.

25. **Concentrate and prioritize the design and implementation of the institutional component—Component 3: Road Asset Planning and Management—to ensure the project's attainment of goals.** It is generally recognized that Borrowers and executing agencies, in most Bank-financed projects, tend to give higher priority to the execution of physical investments than to the institutional components, thus deferring the implementation of the latter. This situation often results in falling short of achieving institutional outputs and objectives, which has been particularly true for the previous projects. The proposed project reflects this lesson by focusing only on few critical activities in line with the PDO.

26. **Build on the implementation experience of the IGAP to better utilize its potential.** During the preparation of the Road Maintenance Project, the World Bank in close collaboration with the MOPC designed an IGAP as a tool to contribute to implementation efficiency, transparency, and mitigation of corrupt practice opportunities. It was formulated to be used for both internal and external progress monitoring of the project objectives. Despite being recognized as a best practice model designed to improve governance in a challenging environment within the transport sector, its implementation had some important shortcomings. Overall, the tool's scope was too ambitious considering capacity constraints and the weak environment in which it was

[15] World Bank. 2014. *Making Roads Safer: Learning from the World Bank's Experience.* Independent Evaluation Group, Washington, DC: World Bank.

being implemented. The IGAP became a public web-based financial monitoring tool which is fed, in real time, with data processed by the MOPC. The project's M&E will build upon the lessons learned from this experience, for example, implementing the project's citizen engagement web-based system, VEA.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

27. **Implementing agencies.** The Ministry of Finance (*Ministerio de Hacienda,* MOF) will be the representative of the Republic of Paraguay (the Borrower). The Project's implementing agency will be the MOPC through the Roads Directorate (*Dirección de Vialidad del MOPC,* DV).

28. **Project management.** Implementation arrangements for the proposed project will be similar to those under the Road Maintenance Project. The proposed project will be managed by a UEP[16] within the DV, which was created in 2004 for the preparation and implementation of the Road Maintenance Project,[17] complemented by line staff of the DV. For the particular purpose of the pilot road safety Subcomponent 2.2, the MOPC, while remaining the executing agency accountable for results, will work in close coordination with the recently created ANTSV and the beneficiary municipalities.

B. Results Monitoring and Evaluation

29. The M&E system is designed to assess whether the project is being implemented in line with the proposed objectives and its achievement of expected results. Project progress reports will be prepared by the UEP, with inputs from all MOPC directorates/divisions involved, on a semiannual basis and submitted to the World Bank for review and comments within 45 days from the end of the reporting period. In addition, an in-depth project implementation progress assessment will be carried out at the midterm review; the UEP will prepare a report and make a formal presentation of the progress made during the project life up to that point. Any additional costs incurred under the M&E framework will be financed by the project.

C. Sustainability

30. The project will pursue sustainability through (a) the implementation of cost-effective infrastructure solutions to maintain the road network in a steady-state condition where annual needs become manageable; (b) initiatives to institutionalize a culture of road safety in targeted departments; and (c) the successful adoption of strategic planning tools and better road management practices that link road management activities to budget allocation. The expansion of long-term performance-based contracts will help to secure the required funds and reduce future annual costs.

31. In addition, the project will promote road network sustainability by assessing climate change vulnerability and providing technical assistance for the implementation of appropriate

[16] The UEP will be the main World Bank interlocutor and will coordinate project implementation with other MOPC directorates/divisions involved. Details of the implementation arrangements can be found in the annex 3.
[17] Initially, it was named Project Preparation and Management Unit (UPGP) and reported directly to the vice minister. Now it reports to the Roads Directorate and is referred to in this document as the UEP.

mitigation and adaptation measures. A World Bank-executed grant is being processed in the amount of US$200,000 with the purpose of providing technical assistance to enhance tools to support climate vulnerability analyses and investment plans to provide more robustness and flexibility of the road network and propose mitigation and adaptation measures. The engineering designs under preparation consider specific measures for areas vulnerable to climate risks, in particular flooding.

V. KEY RISKS

A. Risk Ratings Summary Table

Risk Categories		Rating
1.	Political and governance	Substantial
2.	Macroeconomic	Moderate
3.	Sector strategies and policies	Substantial
4.	Technical design of project	Moderate
5.	Institutional capacity for implementation and sustainability	Substantial
6.	Fiduciary	Substantial
7.	Environment and social	Substantial
8.	Stakeholders	Moderate
Overall		Substantial

B. Overall Risk Rating and Explanation of Key Risks

32. The overall risk rating is Substantial considering the country and agency capacity constraints with the observed slow implementation performance of the Road Maintenance Project. The substantial risks by category are summarized below:

(a) Political and governance. Issues to consider include (a) possible delays in Congress approving the proposed loan, which may significantly delay its effectiveness; (b) opposition to the project arising on the use of loan funds for non- civil works related activities; and (c) complex road safety agenda that requires strong leadership from the ANTSV. Mitigation measures will include active dialogue with Congress members by MOPC's management to explain project design and expected impacts; and support to the ANTSV through the Global Road Safety Facility (GRSF) Grant

(b) Sector strategies and policies. Risks include (a) the MOPC's highly ambitious strategic agenda overshadowing the implementation of this project; (b) the need to ensure adequate interinstitutional coordination mechanisms and ownership among key stakeholders (MOPC, ANTSV, and municipalities); and (c) lower than anticipated toll collection or allocation of toll revenues to maintenance activities. These risks are mitigated by the empowerment of the UEP's dedicated team to ensure visibility and sustained ownership, promoting continuous training on road safety management best practices to improve multi-jurisdictional coordination; and the introduction of a specific budget line to monitor allocation of toll revenues for maintenance.

(c) Institutional capacity for implementation and sustainability. Risks include (a) a cumbersome decision-making process and/or communications among MOPC's departments/directorates involved in project implementation; (b) overall limited capacity of the MOPC technical staff; and (c) weak institutional capacity/ownership in the MOPC to move the

road safety subcomponent forward with municipalities. The OM provides for detailed coordination mechanisms to improve efficiency and effectiveness in budgeting, procurement, contract management processes, and interinstitutional collaboration. Continuous training is envisioned throughout project implementation for key project stakeholders (including participating municipalities).

(d) Fiduciary. Capacity constraints and/or cumbersome procedures associated with budgeting for programmed activities as well as procurement and contract management processes may result in slow implementation. Weak procurement capacity and timely information on contract execution may affect project monitoring and budget reprogramming. In financial management (FM) the risk is associated to weaknesses in the financial reporting systems, which hinder the ability to adequately and promptly report on the project expenditures. Special coordination arrangements have been included in the OM, building on the lessons learned from the Paraguay Road Maintenance Project, and a specific fiduciary training plan has been developed. The World Bank team will provide specific training in fiduciary aspects at the start of implementation, for all existing and new staff working on the project in the ministry.

(e) Environment and social. The project has a substantial risk from the safeguards perspective. The main risks are (a) lack of intra-ministry coordination and collaboration on environmental and social issues and (b) differences between the World Bank's environmental and social safeguards standards and the MOPC's systems, particularly those related to resettlement and indigenous peoples. The project triggers the Indigenous Peoples (OP/BP 4.10) and Involuntary Resettlement (OP 4.12) safeguards policies. These are addressed by four instruments, specifically an Indigenous Peoples Plan, an Indigenous Peoples Planning Framework, a RAP, and a Resettlement Policy Framework that have been prepared by the MOPC. Moreover, clear accountability lines have been established in the OM; continuous training of environmental and social staff in the UEP and DGSA will be provided throughout project implementation.

VI. APPRAISAL SUMMARY

A. Economic Analysis

33. The MOPC performed a project-level economic evaluation of each CREMA contract (with Highway Development and Management Model [HDM-4]), with updated road condition and traffic data, with the objective of (a) identifying sections to be maintained and sections in which some kind of rehabilitation work is economically justified; (b) computing the net benefits of possible project alternatives; and (c) applying a discount rate of 6 percent over a 20-year horizon.

34. The economic analysis also considers economic benefits stemming from the reduction in economic losses associated with road accidents because of road safety countermeasures on the two selected corridors. The unit values of economic loss for death and injury are estimated at US$0.314 million and US$0.031 million, respectively, according to the International Road Assessment Program (iRAP) methodology, relating the economic value of a fatality to the GDP of a country. The project's physical and institutional interventions are assumed to reduce the number of annual deaths and injuries by 3 percent and 22 percent, respectively. The benefits are calculated as a saving in costs compared to the reference case.

35. **Economic evaluation results.** The economic evaluation of the project, including both the rehabilitation and maintenance CREMA contracts and road safety interventions on Route 1 and

Route 3 (Component 1 and Subcomponent 2.1), at a 6 percent discount rate yields a net present value of US$96.34 million. The corresponding economic internal rate of return (EIRR) is calculated at 20.3 percent. Under worst-case scenarios considering a reduction of benefits by 20 percent or an increase in costs by 20 percent from the base level, the two proposed CREMA contracts remain economically viable in a significant way (details are presented in Annex 5).

36. **Project's impact on CO_2 emissions.** In addition, an assessment of the project's impact in terms of CO_2 emissions (as a proxy to greenhouse gases) was undertaken, focusing on Component 1. The assessment concluded in a net reduction of about 10.4 thousand tons of CO_2 emissions or 0.30 percent as compared to the reference scenario on the 319 km of highway, disaggregated in 16 road sections, under the project (details are presented in Annex 5).

37. **Public sector financing and Bank value added.** Public sector financing is the appropriate vehicle for financing the rehabilitation and maintenance of the proposed roads because the project is part of a comprehensive Government strategy to improve the road quality of key corridors that, because of their characteristics and traffic levels, cannot be financed through toll projects. Public investment in road infrastructure is desirable because it is a way by which the Government plays a key role in implementing actions and public goods as road safety. The World Bank's role is justified because of the project's economic and social benefits and because of the value added it brings beyond financing from experience implementing PBC elsewhere, strong construction quality control, sustainability of maintenance, transport planning, environmental risk management, safeguards, procurement, and financial management (FM).

B. Technical

38. The project will finance rehabilitation and maintenance activities, including road safety interventions, through the implementation of two PBCs (CREMA) on the national paved network. The works will be executed on existing paved roads and will include (a) restoring pavement and shoulder conditions; (b) rehabilitating longitudinal and transversal drainage; and, (c) upgrading horizontal and vertical signaling; and other interventions to improve road safety.

39. Pavement rehabilitation activities include, but are not limited to minor corrections, milling, patching, crack sealing, and applying different thicknesses of cold micro-agglomerates, and hot asphalt mixtures. The design of the rehabilitation program was based on sound technical criteria and is in line with current international standards. The maintenance and rehabilitation strategies were selected with due consideration being given to the main factors that affect pavement performance: surface condition, structural strength, traffic characteristics, and climatic conditions. Sections that will be subject to routine maintenance alone are those that currently exhibit good riding quality with little surface defects and sufficient structural capacity and are, generally speaking, traveled by low to medium traffic. Sections that will receive asphalt concrete overlays in thickness ranging from 3 to 6 cm have a weak structural capacity associated with severe surface distress and relatively high roughness values. The overlays have been designed to substantially enhance their structural strength and to provide good riding quality over the next 10 to 15 years.

C. Financial Management

40. An FM assessment of the project was conducted. The assessment's conclusion is that overall FM arrangements are acceptable and meet minimum World Bank requirements. The arrangements of this project will be similar to those used in the Paraguay Road Maintenance

Project. FM coordination and administration will be carried out by the MOPC's Public Credit Directorate (*Direccion de Credito Publico*, DCP), which is specifically in charge of FM tasks of projects financed by international financial institutions. The DCP has considerable experience managing projects financed by the World Bank. Nonetheless, their performance in terms of FM has shown some weaknesses, which, among others, include financing the portion of local counterpart funds with World Bank's resources, delay in presenting financial reports, and problems on internal control. The mitigation measures are detailed in Annex 3.

41. To monitor the project's FM arrangements, the World Bank will conduct at least two full FM supervision missions per year which will look into the operation of the control systems and FM arrangements, including but not limited to the payments and accounting systems, the reconciliation process, and the overall internal control. Also, the World Bank will conduct desk reviews of unaudited interim financial reports (IFRs) and annual audit reports.

D. Procurement

42. Procurement will be conducted according to the World Bank 'Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers (issued in January 2011 and revised in July 2014) for the supply of goods, civil works, and non-consulting services, and the 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers (issued in January 2011 and revised in July 2014) for technical assistance and other consultant assignments.

43. The procurement activities for all components will be carried out by the existing UEP and its Procurement Unit (*Unidad de Contrataciones del MOPC*, UOC). The UEP has been in charge of the preparation and implementation of the Road Maintenance Project. A World Bank assessment of this unit's capacity identified some factors that may potentially affect project implementation, which were briefly mentioned in section V.B., under Fiduciary Risks. The description of risks and proposed mitigation measures are detailed in Annex 3. The Procurement Plan (PP) of the project for the first 18 months was approved on May 13, 2016.

E. Social (including Safeguards)

44. The proposed Project will generate largely positive social benefits to the local population, including: (a) construction and maintenance phase: jobs creation and associated demand of goods and services; and (b) operation phase: improved travel conditions, reduced transport costs; improved road safety; productivity gains for the agricultural workforce; increased competitiveness and contribution to growth of local economies; increased access to markets and social services - particularly to education and health centers; reduced isolation of communities and discouraged migration; creation of direct and indirect employment. The project is gender informed as (i) the socio-economic diagnostic included gender specific needs and mobility patterns of women questions, and includes monitoring activities of these trends throughout the project cycle; (ii) specific actions to address women, girls and boys needs by establishing criteria to select priority road safety interventions have been included; (iii) the social inclusion of indigenous communities is actively promoted by addressing their specific needs of road access to the two corridors and foresees activities differentiating indigenous women and men needs (training). Additionally, the Project engages citizens by enabling beneficiaries and stakeholders to provide feedback and by integrating their feedback to improve Project results throughout the project cycle through the

Project's public citizen engagement system (VEA) and its three web-based tools, as mentioned in Section III. A. and further described in the Project's Monitoring and Evaluation system.

45. The social assessment and consultations have confirmed that there is widespread support to the Project amongst key stakeholders, including local residents, commercial, agricultural and industrial users of the roads, a department and municipal governments, and indigenous communities. The balance of the proposed Project's impacts is largely positive as per the cited benefits. Negative social impacts will be minimal and temporary during rehabilitation and maintenance of the road works. These impacts on the local population (public safety, noise, traffic disruption) and other social risks, including those associated with compliance with the Bank's safeguards, will be managed according to the sub-project's environmental and social management plans of the two roads to be intervened.

46. **The project triggers the Indigenous Peoples (OP/BP 4.10) and Involuntary Resettlement (OP 4.12) safeguards policies.** These are addressed by four instruments, specifically an Indigenous Peoples Plan, an Indigenous Peoples Planning Framework, a RAP, and a Resettlement Policy Framework that have been prepared by the MOPC. Public consultations have been held on these instruments with project beneficiaries and relevant stakeholders. The documents, with date May 6, 2016, have been disclosed and final versions were published on May 12, 2016 (by the Bank and the Borrower).

47. **Related to Indigenous Peoples (OP/BP 4.10),** an Indigenous Peoples Plan and an Indigenous Peoples Planning Framework have been prepared by the MOPC. Public and culturally adequate consultations were held with relevant indigenous communities and organizations that are present in the extended catchment area of the Project. Specific measures respectful to indigenous people's culture, such as the use of indigenous language and adoption of their own conflict resolution mechanisms, among others, are included in the grievance redress system for the project that is tailored to indigenous peoples.

48. **On the Resettlement Policy (OP 4.12),** although road rehabilitation and upgrading works are to be carried out within the existing right-of-way (ROW) of long established interurban roads, the Project has developed a RAP and a Resettlement Policy Framework. Public consultations on the RAP and the Resettlement Policy Framework have been carried out, and final versions (with date May 6, 2016) of the documents were disclosed on May 12, 2016.

49. The RAP states that the Project will require the resettlement of approximately 77 individuals and families, including some micro-businesses and houses along the ROW of the corridors of the two roads (Route 1 and Route 3), including two roundabouts (Cruce Tacuara and Calle 6000 of Route 3) to be financed by the project[18]. The RAP will be implemented by the MOPC through the DGSA with the support, as pertinent, of a consulting firm for the adequate and timely

[18] Initially Affected People Survey data include occupants' names, geo-referenced locations, economic activities, and estimated values of their commercial physical structures and houses in some cases. The RAP will be updated by completing the census and socioeconomic survey once the detailed designs of the works to be carried out under the CREMA Contracts have been finalized in the first phase of project implementation (CREMA Contracts involve, prior to the rehabilitation and maintenance works, a first phase which consists of the design and programming of said works).

implementation before the start-up of civil works. The RAP and RPF also foresee a tailored grievance redress mechanism that is part of the project mechanism.

50. **Gender.** The project is gender-informed as (a) the socioeconomic diagnostic included needs and mobility patterns of women and includes monitoring these activities throughout the project cycle and (b) specific actions to address the needs of women, girls, and boys by establishing criteria to select priority road safety interventions are included.

51. **Citizen engagement.** The project actively promotes social inclusion of indigenous communities by addressing their specific needs of road access to the two corridors to be intervened by the project and foresees activities differentiating the needs of indigenous women and men (training); and engages citizens by enabling beneficiaries and stakeholders to provide feedback and by integrating their feedback to improve results throughout the project cycle through the project's public citizen engagement system (VEA) and its three web-based tools, as mentioned in Section III.A and further described in the project's M&E system. Furthermore, the project foresees a grievance redress mechanism comprising claims entry/reception, analysis, monitoring of analysis, resolution, and return to claimer.

F. Environment (including Safeguards)

52. **Environmental classification.** The project has been classified as 'Category B', according to OP 4.01, as no significant negative impacts that could jeopardize the natural environment of its area of influence are foreseen. No significant adverse environmental impacts are expected on human populations or environmentally important or sensitive areas.

53. **Environmental assessment. OP/BP 4.01** was triggered because the physical interventions resulting from the implementation of investments under Component 1 and 2 could have some negative impacts on the environment, mainly related to construction site management and public safety. Works on routes 3-8 and especially on Route 1 are in an environment highly transformed by agricultural and urban activities. The environmental assessment determined that, because this project involves rehabilitation and maintenance works in existing roads within the ROW, no major environmental impacts that could endanger the natural surroundings of the area of influence or the local population are expected. As part of the EA, the Borrower prepared an Environmental and Social Assessment (EVAS) for each section along Routes 1 and 3-8. In both cases, no major environmental impacts that could endanger the natural surroundings of the area of influence or the local population are to be expected. The majority of project activities are expected to have low to moderate impacts that can be solved with standard mitigation measures.

54. The project's Environmental and Social Management Framework (ESMF) and two Environmental and Social Management Plans (ESMPs) for the CREMA contracts have been prepared by the MOPC to address the mitigation of social and environmental impacts of each specific works contract, including, as the case may be, waste management, environmental protection measures (soil, air, flora, fauna, water, and landscape), and public information, among others. All environment documents (drafts and final versions of ESMF and environmental chapter of OM and drafts versions of EVAS with its ESMP) were consulted during 2015 within a detailed consultation plan that was previously approved by the Bank team. This plan included at least two rounds in situ consultations with these key stakeholders of the project. A summary of the feedback received per plan is available in the plans. The DGSA will be accountable for assessing, developing, and supervising environmental and social plans and programs, conducting public

consultations, obtaining licenses—including environmental—as necessary, and maintaining the due recording and filing of the environmental and social documentation of all works to be funded by the Project. The final version of the Environmental Assessments, dated May 6, 2016, was disclosed on May 12, 2016.

G. Other Safeguards Policies Triggered

55. OP 4.11 - Physical Cultural Resources is triggered. The project does not involve significant excavations, demolitions, earth movements, or other major environmental changes. However, a 100 km long stretch of Route 1 is the so-called 'Ruta Jesuítica', a territory of historical-cultural importance and a tourist destination. The Jesuit Ruins[19] are considered a World Heritage Site close to the road. The project may involve chance finds of physical cultural resources and, although unlikely, might involve impacts on physical cultural resources. The ESMF will include screening criteria to evaluate potential impacts on cultural resources and provide guidance on chance finds procedures. In addition, the DGSA has prepared a set of environmental and social technical specifications for each section (Route 1 and 3-8), which are mandatory fulfilment by the contractor. This technical guidelines for the prevention of damage, also includes the obligation to do a detailed inventory of physical cultural heritage in the area of influence of the project, specific rules for controls of the activities and the presence of specialists in the field during construction. Safeguards staff with knowledge of Physical Cultural Resource issues and policy will follow the Physical Cultural Resource aspects. The ESMP includes the assessment of the impacts and the mitigation strategy.

H. World Bank Grievance Redress Service

56. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit www.worldbank.org/grs. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

[19] Jesuit Missions of La Santísima Trinidad de Paraná and Jesús de Tavarangue are located about 10 km apart and each is surrounded by its own buffer zone. The Mission of Santísima Trinidad del Paraná stands as the best preserved urban complex. It was also the most ambitious of the missions with a complex of buildings covering an area of about 8 ha. In addition to the main church, evidence survives of the small church, college or school, cloister, cemeteries, kitchen gardens, belfry, native houses, and workshops.

Annex 1: Results Framework and Monitoring

Country: Paraguay

Project Name: Transport Connectivity Project (P147278)

Results Framework

Project Development Objectives										
PDO Statement										
The project development objectives (PDOs) are to (a) reduce transport connectivity costs and improve road safety along selected paved road sections that pass through targeted departments; and (b) improve the Borrower's planning and national road asset management capacity.										
These results are at	Project Level									
Project Development Objective Indicators										
		Cumulative Target Values								
Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	End Target
Average reduction in travel time along two project corridors (Route 1 and Route 3) (Minutes)	158.00	158.00	158.00	158.00	134.00	134.00	134.00	134.00	134.00	134.00
Fatalities on the CREMA corridors normalized by AADT (Number) (Route 1 and Route 3)	0.00	0.00	0.00	0.00	5.00	7.00	10.00	12.00	15.00	15.00

(Percentage)										
Roads in good and fair condition as a share of total classified roads (Percentage) - (Core)	80.00	80.00	80.00	80.00	80.00	85.00	85.00	85.00	90.00	90.00
Size of the total classified network (kilometers - Subtype: Supplemental) - (Core)	5,400.00	—	—	—	—	—	—	—	—	5,930.00
Intermediate Results Indicators										
		Cumulative Target Values								
Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	End Target
Roads rehabilitated, non-rural (kilometers) - (Core)	0.00	0.00	0.00	50.00	100.00	245.00	245.00	245.00	245.00	245.00
Road safety countermeasures identified in the road safety audit implemented (Number)	0.00	0.00	0.00	3.00	6.00	8.00	8.00	8.00	8.00	8.00
Urban road safety plans approved (Number)	0.00	0.00	0.00	0.00	1.00	2.00	4.00	5.00	5.00	5.00

Road management system operational (Text)	Not operational	Not operational	Not operational	Not operational	Installed	Fully operational/ with operational support	Fully operational/ with operational support	Fully operational/ with operational support	Fully operational/ with operational support	Fully operational/ with operational support
Number of kilometers in inventory (Number)	45,000.00	45,000.00	45,000.00	52,000.00	59,000.00	66,000.00	73,000.00	80,000.00	87,000.00	94,590.00
Number of kilometers with pavement condition measurements (IRI) (Number)	4,800.00	4,800.00	4,800.00	4,800.00	4,800.00	5,365.00	5,365.00	5,365.00	5,930.00	5,930.00
Direct project beneficiaries (Number) - (Core)	0.00	—	—	—	—	—	—	—	—	385,000.00
Female beneficiaries (Percentage - Subtype: Supplemental) - (Core)	0.00	—	—	—	—	—	—	—	—	192,500.00
Road users satisfied with quality of roads (Percentage)	27.00	—	—	—	—	50.00	—	—	—	75.00
Female road users satisfied with quality of roads (Percentage - Subtype: Breakdown)	25.00	—	—	—	—	50.00	—	—	—	75.00

Male road users satisfied with quality of roads (Percentage - Subtype: Breakdown)	32.00	—	—	—	—	50.00	—	—	—	75.00
Social Transparency System (VEA) in place and being used to monitor feedback trends, with issues being closed out and monthly reports being prepared. (Yes/No)	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Indicator Description				
Project Development Objective Indicators				
Indicator Name	Description (Indicator Definition and so on)	Frequency	Data Source/Methodology	Responsibility for Data Collection
Average reduction in travel time along two project corridors (Route 1 and Route 3)	Average reduction in travel time in the San Juan Bautista-Coronel Bogado-Encarnacion corridor (Route 1) and Mbutuy-Yasy Kay, Tacuara-Rotonda Calle 6000, Carayao-Tacuara corridor (Route 3) for all road users including private vehicles, buses and trucks.	Baseline, midterm and end of project	Project progress report with inputs from contract supervisor	MOPC-UEP
Fatalities on the CREMA corridors normalized by AADT (Number) (Route 1 and Route 3)	Reduction in numbers of annual fatalities on the two selected road safety corridors. The base value (denominator) is the number of fatalities in 2014 in the selected corridors (Route 1: 3 fatalities; Route 3: 9 fatalities), normalized by the AADT in those corridors. This indicator is based on 2014 statistics, which only considers fatalities occurring at the location of the accident. Number of vehicles at appraisal in Route 1 was 3.685 vehicles per day and 2.954 vehicles per day for Route 3.	Yearly	Annual report with inputs form MOPC's Road Safety Directorate.	National Observatory ANTSV
Roads in good and fair condition as a share of total classified roads	Percentage of the total classified road network in the project area that is in good and fair condition depending on the road surface and the level of roughness. Classified roads are the roads that have been included in the roads legislation as public roads. Please note that this indicator requires supplemental information **Supplemental value.** Total classified network in the project area (km). The supplemental value is the total classified network in the project area. Classified roads are the roads that have been included in the roads legislation as public roads.	Midterm and final year	Road pavement condition survey	MOPC-UEP from data provided by the PBC Unit (GMANS)
Size of the total classified network	Classified roads are the roads that have been included in the roads legislation as public roads.	Midterm and final year	Road pavement condition survey	MOPC-UEP from data provided by the PBC Unit (GMANS)

Intermediate Results Indicators				
Indicator Name	Description (indicator definition and so on)	Frequency	Data Source/Methodology	Responsibility for Data Collection
Roads rehabilitated, non-rural	Kilometers of all non-rural roads reopened to motorized traffic, rehabilitated, or upgraded under the project. Non-rural roads are roads functionally classified in various countries as trunk or primary, secondary or link roads, or sometimes, tertiary roads. Typically, non-rural roads connect urban centers/towns/settlements of more than 5,000 inhabitants to each other or to higher classes of road, market towns, and urban centers. Urban roads are included in non-rural roads.	Biannually (June and December)	Project progress report with inputs obtained from the Works Supervision Contracts	MOPC-UEP from data provided by the PBC Unit (GMANS)
Road safety countermeasures identified in the road safety audit implemented	Solutions to eliminate criticality for road safety spots may include intersection improvement, signaling improvement, infrastructure modification to improve visibility, guardrails and shoulder installation, installation of fixed equipment to curb and control speed, pedestrian walkways, and so on.	Annually	Project progress report with inputs provided by the Road Safety Directorate within the MOPC and the ANTSV	MOPC-UEP
Urban road safety plans approved	As part of Subcomponent 2.2, municipalities located in the project area of influence will access funds and design their urban road safety plans. The plan will be approved by the MOPC.	Annually	Project progress report with inputs provided by the Road Safety Directorate within the MOPC and the ANTSV	Eligible municipalities MOPC-UEP
Road management system operational	Percentage of achievement of the road management system's operations. For the system to be considered implemented and operational it will require (a) having all the data/information captured and updated; (b) staff assigned and trained to operate it; (c) produce a multi-year prioritized investment plan; and an (d) investment plan updated on a yearly basis. The investment plan will include the paved roads rehabilitation and investment needs.	Yearly starting year 3	Project progress report with inputs from the contract supervisor	MOPC-UEP from data provided by the Road Planning Directorate

Number of kilometers in Inventory	This is a cumulative number of kilometers of the total national/departmental/rural network inventoried. Some 24,000 km are inventories with detailed information while some additional 44,000 km have basic information. The target is to increase the number of kilometers with detailed information up to 46,000 km and having the remaining 54,000 km with basic information.	Annually	Project progress with inputs obtained from the Supervision Contracts	MOPC-UEP from data provided by the Road Planning Directorate
Number of kilometers with pavement condition measurements (IRI)	Pavement measurement campaigns will start every other year. As such, it is expected that every two years, the MOPC should have updated roughness measurements for some 5,400 km of paved roads (cumulative number for a two-year period).	Yearly	Project progress with inputs obtained from the Supervision Contracts	MOPC-UEP from data provided by the Road Planning Directorate
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention (that is, children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. **Supplemental value: female beneficiaries (percentage).** Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.	Mid-term and final year	This indicator will be collected through secondary sources such as the census prepared by the National Statistics Institute (DGEEC). Project beneficiaries considered are all the inhabitants of the municipalities directly served by Route 1 and Routes 3. Secondary sources (DGEEC, census projections)	DGSA/MOPC
Female beneficiaries	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.	Midterm and final year	This indicator will be collected through secondary sources such as the census prepared by the DGEEC. Project beneficiaries considered are all the inhabitants of the municipalities directly served by Route 1 and Routes 3 and 8. Secondary sources (DGEEC, Census Projections)	DGSA/MOPC

Road users satisfied with quality of roads	The percentage of respondents who consider road quality as good or excellent. The baseline indicator for both Routes 1 and 3 was obtained from the road user satisfaction survey completed in November 2015.	First and final year	Project progress report. Follow up road user satisfaction survey.	DGSA/MOPC
Female road users satisfied with quality of roads	The percentage of female respondents who consider road quality as good or excellent. The baseline indicator for both Routes 1 and 3 was obtained from the road user satisfaction survey completed in November 2015.	First and final year	Project progress report. Follow up road user satisfaction survey.	DGSA/MOPC
Male road users satisfied with quality of roads	The percentage of male respondents who are satisfied with the quality of the project roads (different for Route 1 and Route 3) before and after the Project. The baseline indicator was obtained from the road user satisfaction survey completed in October, 2015.	First and final year	Project progress report. Follow up road user satisfaction survey.	DGSA/MOPC
Social transparency system (VEA) in place and being used to monitor feedback trends, with issues being closed out and monthly reports being prepared.	This indicator will be measured through statistics produced by the web-based tools of the VEA including the feedback/grievance redress mechanism, the interactive map of works and the physical, environmental, and social monitoring tool.	Yearly from the first year of project implementation.	Project progress with inputs obtained from the VEA statistics	DGSA/DTPC/MOPC

Annex 2: Detailed Project Description

PARAGUAY: Transport Connectivity Project

1. The project includes four components, namely (a) Road Rehabilitation and Maintenance CREMA Contracts; (b) Road Safety; (c) Road Asset Planning and Management; and (iv) Project Management and Implementation Support.

Component 1: Road Rehabilitation and Maintenance CREMA Contracts (Total Costs Including Supervision of Works and Contingencies US$77 million, of which World Bank Financing US$77 million)

2. To reduce transport costs in targeted departments, this component will support two performance-based road rehabilitation and maintenance contracts, under the CREMA modality, for approximately 319 km of paved roads. The MOPC prioritized two corridors (Routes 1 and 3) based on the following criteria: (a) socioeconomic importance (agribusiness and interurban mobility), for example, Route 3 is an important zone of soybean production and Route 1 has important livestock production; (b) areas where the poverty level is high, for example, San Pedro and Caaguazu; (c) corridors that have not already been included in a financing program with another development partner; (d) road sections that are a continuity of those included in previous Bank-financed projects; (e) to provide complementarity between this proposed transport project and those that take care of the rural roads network. Table 2.1 presents the details for each of the two contracts.

Table 2.1. CREMA Contracts Details

Road No.	Contract	Length (km)	Estimated Costs (US$, millions)	Estimated Unit Costs (US$/km/year)	Unit Costs of Routine Maintenance (US$/km/year)	Unit Costs Rehabilitation Works (US$/km)	Estimated Cost Road Safety Intervention (US$, millions)
1	CREMA 1	149	31.1	29,797	6,600	149,213	4.5
3	CREMA 2	170	31.9	26,879	6,600	96,869	3.0
Total	**–**	**319**	**63**	**–**	**6.600**	**–**	**7.5**

3. The contracts are lump-sum contracts to be executed during a seven-year period; the rehabilitation works are customarily carried out during the first two years while routine road maintenance is carried out throughout the entire contract period. CREMA contracts, including environment and social specificities have the following characteristics: (a) medium-term contracts, including routine asset maintenance, turning the private contractor into a delegated manager of the road ROW; (b) the MOPC provides basic engineering designs and establishes minimum works to be carried out but the responsibility for the final design lies with the contractor; (c) globalized prices, not unit prices, for rehabilitation payments, shifting some responsibility onto the private contractor; and (d) performance-based payments for routine maintenance activities.

4. The average cost of these contracts is estimated at US$31 million. Pavement rehabilitation works will cover around 75 percent of the total contracted extension and represent about 78 percent of the total contract amount. The remaining 22 percent of the contract amount will be allocated to

road safety activities, preventive maintenance activities (for example, cold mix micropaving, and microsurfacing), and routine maintenance with an average cost of US$6.000 per km per year (pavement and shoulders maintenance and repairs such as crack sealing, pothole patching, edge break repairing, drainage cleaning, ROW clearing, and signalization maintenance).

5. The rehabilitation works will include (a) a pavement rehabilitation solution consisting of polymer-treated asphalt concrete, with thicknesses ranging between 3 and 6 cm; (b) shoulder rehabilitation and/or surfacing to protect the shoulder surfaces from erosion; and (c) repairing/upgrading of superficial and profound drainage systems, (d) repairing bridge equipment, and (e) undertaking horizontal and vertical signalization.

Table 2.2. Polymer treated asphalt concrete thickness

Asphalt Thicknesses	Distribution Percentage
1–2 cm (microsurfacing)	25
3 cm (asphalt concrete, AC)	47
5 cm (asphalt concrete, AC)	16
6 cm (asphalt concrete, AC)	12
Weighted Average Thickness (AC)	**3.9 cm**

6. The road rehabilitation solutions have been designed for an 8-year to 10-year life period after which a new asphalt overlay will be needed. The proposed solutions will enable the provision of a quality level of service and improved traffic circulation, in accordance with an IRI ranging between 2.5 and 3.0 m/km; some localized areas where only minimum micropaving is envisioned might result in higher roughness ranges, but always with an IRI below 4. The routine maintenance carried out throughout the contract period, will allow for the patching of 100 percent of potholes and sealing of cracks as soon as they occur, thus preserving the pavement's life span.

7. The CREMA contracts to be tendered cost between US$26,000 per km per year and US$30,000 per km per year, compared with the previous GMANS which have an average cost of US$7,500 per km per year. This difference is explained by the fact that initial interventions in the GMANS are minimal (microsurfacing) as compared to those included in the CREMAs. As such, GMANS does not include a requirement for a maximum IRI within its key performance indicators.

Component 2: Road Safety (Total Costs US$12 million, of which World Bank Financing US$12 million)

8. To improve road safety along selected paved road sections, this component comprehends two subcomponents. Subcomponent 2.1, will finance road safety interventions (including, among others, the installation of side guardrails, the carrying out of signaling works, the improvement of identified roundabouts and the construction of shoulders and pedestrian walkways) under the terms of the two CREMA contracts referred to under Component 1, targeting the most vulnerable users near urban areas along the identified sections of the Borrower's national paved roads. An initial road safety audit carried out with iRAP in 2011, over some 4,000 km of the road network, helped to identify some critical spots over the two corridors to be financed under this project. However,

during project preparation a more detailed road safety audit[20] was carried out to fine-tune the iRAP exercise and provide basic engineering designs to be included in the bidding document of the CREMA Contracts.

9. The project will embrace a series of engineering activities concentrated near urban areas where the accident rate is very high and the local population is among the primary victims. Based on current accident information, the MOPC has identified interventions to be financed under the proposed project for road safety infrastructure improvement, including improving the design of dangerous road junctions and side guardrails; construction of shoulders when deemed necessary, for instance on road sections with some non-motorized traffic; construction of pedestrian walkways, particularly in urban areas and near schools; signaling; and so on.

10. Subcomponent 2.2 will support road safety measures (other than those under the CREMA contracts) identified and prioritized by eligible municipalities, within project targeted departments, out of a catalogue of predefined possible interventions in urban and interurban roads, as described in the project's OM. Municipalities willing to access these funds would need to meet certain eligibility criteria, also specified in the OM, which will be designed in coordination with the ANTSV. To avoid complex institutional arrangements, once a municipality is found eligible, the MOPC will implement the agreed measures.

11. The main aim of this subcomponent is to finance road safety initiatives that have a demonstrable effect on road safety improvement, as a means to encourage the national government and municipal governments to extend the tested approaches to other parts of the country's road network. This subcomponent will include the financing of small civil works and necessary consultancy services, non-consultancy services, and goods purchases. A list of eligible road safety interventions could include, for instance: pedestrian paths in school vicinities, speed bumps, traffic lights in urban areas, roundabouts, ramps for people with disabilities, road marking of exclusive areas such as pedestrian crossings and so on.

12. A Bank-executed grant from the Global Road Safety Facility has been approved by the World Bank to provide support to the ANTSV in its initial stages in areas such as (a) creating a national license and registry and a national driver evaluation system; (b) strengthening of the National Road Safety Observatory, providing technical assistance to establish methodology for data management (collection, processing, and analysis), following on the International Traffic Safety Data and Analysis Group – Latin America and the Caribbean methodologies and international standards; (c) strengthening public awareness through the design of effective educational and communication campaigns; and (d) providing institutional strengthening and support of municipal governments through the leadership of the ANTSV to develop local road safety plans, strategies, and programs (this structure will then be leveraged by the funding to be provided under Component 2 of this project to finance road safety interventions in municipalities).

Component 3: Road Asset Planning and Management (Total Costs US$3.75 million, of which World Bank Financing US$3.75 million)

[20] *Estudio y Auditoría de Seguridad Vial: Ministerio de Obras Públicas y Comunicaciones. Asunción,* Paraguay. December 2015.

13. To improve national planning and road asset management capacity, this component will support the consolidation of the MOPC's strategic road management methodologies and systems, building on the efforts from the Road Maintenance Project to strengthen the client's M&E capacity by (a) completing the road network inventory; (b) expanding, operating, and maintaining the traffic counting system; and (c) operationalizing the road asset management system.

Component 4: Project Management and Implementation Support (Total Costs US$7 million, of which World Bank Financing US$7 million)

14. To ensure the quality and timely attainment of project objectives, this component will provide assistance to the MOPC in implementing the project, financing, among others, (a) costs related to project management functions of the UEP, including M&E activities, training as well as additional support, if deemed necessary; (b) project financing annual audits; (c) the project's citizen engagement web-based system VEA, implemented by the DTPC, which builds on the aforementioned IGAP experience and includes three tools (a feedback-grievance redress mechanism, an interactive map of civil works, and a financial, physical, environmental, and social monitoring tool); (d) environment and social management, including, among others, safeguard compliance supervision activities; (e) the promotion of indigenous communities' social inclusion by addressing their specific needs, differentiated by gender; and (f) the acquisition of land and the provision of compensation (including cash compensation and other resettlement assistance) related to the implementation of the RAP.

Annex 3: Implementation Arrangements

PARAGUAY: Transport Connectivity Project

Project Institutional and Implementation Arrangements

Project Administration Mechanisms

1. **Executing agencies.** The MOF will be the representative of the Republic of Paraguay (the Borrower). The project's executing agency will be the MOPC through the DV.

2. **Project management.** Implementation arrangements for the proposed loan will be similar to those under the Road Maintenance Project. The project will be managed by line staff of the DV complemented by the UEP within the DV, which was created in 2004 for the preparation and implementation of the previous loans. The UEP has experience preparing and implementing World Bank-financed projects, and has gained some expertise in procurement, disbursements, environmental and social guidelines, and auditing requirements.

3. The UEP will have the overall responsibility for the project and will be the main focal point with the World Bank. The UEP will coordinate project implementation with relevant MOPC directorates/divisions responsible for executing different aspects of the project, including the following:

(a) Social and Environmental Directorate, responsible for the overall compliance with the project safeguards, including assessment and plans

(b) UOC, responsible for preparing and processing project procurement documents

(c) PBC Unit within the Roads Directorate (currently known as *Unidad GMANS*), responsible for the execution of the CREMA contracts

(d) Road Planning Directorate, responsible for the implementation of activities under the Planning and Asset Management component and overseeing the road safety initiatives

(e) Road Safety Division within the Road Planning Directorate, responsible for the monitoring and reporting on road safety initiatives and coordinating within the Roads Directorate on the execution of agreed works with municipalities

(f) DCP within the Vice Ministry of Administration and Finance, responsible for FM matters and will be responsible for the reporting and accounting functions of the project

4. In accordance with the project OM, the MOPC will ensure that the UEP at all time has (a) the necessary staff to carry out its functions, with training, experience, and terms of reference (ToR) acceptable to the World Bank and (b) adequate facilities to operate. The UEP's organizational structure and staff allocation will be composed as follows:

- The head of the UEP

- Quality management and monitoring coordination
- CREMA component coordination
- Road safety component coordination
- Project management and implementation support coordination

5. Each component coordinator will plan, facilitate, monitor, evaluate, and will report the component's progress on preparation processes, contracting, and execution. Specific responsibilities are detailed in the OM.

6. The UEP as the project coordinating unit will

(a) act as a permanent link between the MOPC and the World Bank, including follow-up on implementation support missions and maintaining regular contacts with the head of the Roads Directorate concerning program execution;

(b) ensure adequate communication flows with the different departments/divisions involved in project implementation and with the World Bank;

(c) coordinate with the ANTSV and municipalities;

(d) prepare instructions or guidelines needed for proper program execution;

(e) coordinate with and supervise with other directorates or units and other agencies involved in project implementation regarding the preparation of the estimated budgets, ToR, contracts, and technical parts of bidding documents and request for proposals;

(f) coordinate and conduct preparation of bidding documents, request for proposals, and bid/proposal evaluation reports;

(g) liaise with the World Bank and prepare and submit the request of 'No Objections';

(h) ensure the execution of procurement norms and processes proposed in the OM and in the Loan Agreement, such as publication of bids and expressions of interest; conduct bid-opening sessions, elaborate bid record opening, and respond to bidder's request for clarifications;

(i) prepare, update, and monitor the PP;

(j) manage the implementation of contracts execution, including its modifications;

(k) manage the reports produced by the different departments/divisions mentioned above concerning progress of the different activities, for further submission to the World Bank;

(l) monitor and assess project implementation, including the financial and physical progress, and report to the director of the DV and the World Bank;

(m) prepare project progress reports of the program;

(n) maintains the OMs available and updated;

(o) coordinate the preparation of the annual budgetary request for project funding;

(p) control information related to project eligibility criteria in the case of the pilot subcomponent with municipalities, informing the World Bank directly on the level of compliance attained; and

(q) liaise with the different departments/divisions involved in project execution to ensure compliance with the different project requirements and to monitor progress under each project component.

7. The UEP will remain at all times during project implementation headed by the director of the Roads Directorate (in the capacity of general coordinator) and assisted by a chief coordinator and other professional technical, fiduciary, and administrative staff, all with numbers, qualifications, and experience acceptable to the World Bank.

8. For the particular purpose of Subcomponent 2.2, the MOPC will remain the executing agency accountable for results, same as for all other project components, but will work in close coordination with the recently created ANTSV and the beneficiary municipalities. The implementation of this subcomponent will require the signature of implementation or participation agreements between the MOPC, ANTSV, and eligible municipalities detailing the nature and responsibilities of the parties, given the inter-jurisdictional nature of Subcomponent 2.2. The OM will define the criteria, the selection process, and the mechanism for working with the ANTSV and the municipalities and will include a template participation agreement in the annex. The ANTSV's main role will be to provide technical support in the preparation of their urban road safety plan. There will be no transferring of resources; the UEP will carry out the procurement activities required.

Financial Management, Disbursements and Procurement

Financial Management

9. An FM assessment of the project was conducted. The assessment's conclusion is that overall FM arrangements are acceptable and meet minimum World Bank requirements. The arrangements of this project will be similar to those used in the Paraguay Road Maintenance Project. From the FM standpoint, the project risk is Substantial mainly because of a number of weaknesses identified both in the MOPC's financial reporting capacity and in its internal control systems, which hinder the ability to adequately and promptly report on the project expenditures. These include the lack of an automated accounting system linked to the MOPC institutional accounting system and inconsistent operational procedures which have resulted in continuous delays in reporting to the World Bank, the expenditures paid from the designated account (DA), and repetitive audit findings. Considering these FM risks along with the risks identified in the

procurement capacity assessment, both aspects (either FM or procurement) are equally weighted to rate the overall fiduciary risk as Substantial. Mitigation measures include the existence of a project OM, which will detail internal control procedures for the project, the annual external audit which will be conducted under the ToR acceptable to the World Bank, periodic provision of ad hoc fiduciary trainings to the MOPC staff, and technical assistance aimed at improving the capacity of the MOPC's internal audit unit (IAU) to monitor and review the project's operations based on best international practices. This last factor will be critical to improve the overall internal control environment and the capacity of the project to promptly and opportunely report its financial information, including appropriate monitoring of funds associated to the RAP.

10. The main FM arrangements that will operate under the project are described in the following paragraphs.

11. **Implementing entity.** As noted in section VI.C, the overall responsibility for project coordination will be the UEP of the MOPC. The FM coordination and administration will be carried out by the DCP. These entail among others, managing the project's DA, coordinating supervision missions, overseeing budgeting formulation and execution, transferring funds, assuring adequate and timely financing of eligible expenses, preparing project's accounting records, issuing financial reports required by the World Bank, and coordinating the project's external audit. The procedures for these activities will be reflected in the project's OM.

12. **Budgeting.** As brought out in the last Public Expenditure and Financial Accountability Assessment,[21] overall budget execution at the Central Government in Paraguay shows systematic and significant sub-execution of primary expenditure. In the particular case of the MOPC, the problems found in the implementation of previous projects mostly relate to the fact that the portion of local counterpart funds have been financed with World Bank's resources.

13. The Vice Ministry of Management and Finance through the Economic Planning Directorate (*Dirección de Planificación Económica*) is responsible for the preparation of the MOPC's annual budget, which is submitted to the MOF for approval. Budget execution reports for internal and external purposes are prepared periodically from the *Sistema Integrado de Administración Financiera-Sistema Integrado de Contabilidad* system in spreadsheet formats. The MOPC will include specific lines reflecting the budget approved for the project to follow up on the expenditures incurred during project implementation.

14. **Accounting and financial reporting.** The UEP will carry out the project's activities and provide the necessary information (that is, invoices and contracts) to the DCP so that it can process payments to providers of goods and services and capture the financial information in the project's management information system and Government budget system (*Sistema Integrado de Administración Financiera-Sistema Integrado de Contabilidad*). As noted earlier, the project's management information system does not have a direct link with the MOPC's institutional FM information system; thus, the DCP needs to manually input the information in both systems which do not communicate with each other. Moreover, the DCP also needs to use Excel spreadsheets to maintain control over transactions in dollars, and report on the use of DA and Statement of

[21] The Public Expenditure and Financial Accountability report was issued in December 2011.

Expenditures (SOE) control. These manual entries and use of spreadsheets exposes the project to errors and inconsistencies of information.

15. To mitigate the above referenced risk, the MOPC conducts periodic reconciliation of information; however, despite this control, during the previous phase of the project there were a number of problems associated with the reliability of financial information. Therefore, to enhance the control over financial information in addition to keeping the current reconciliations as a key control, the project will enhance the capacity of the IAU which will in turn contribute to have increased assurance over the adequacy of financial information.

16. FM M&E will be done through the preparation of the semiannual project unaudited interim financial reports (IFRs) and the annual audited project financial statements. These will be prepared on a cash basis using the standard formats that have been agreed with the DCP. After loan effectiveness, the financial reports shown in table 3.1 will be presented by the DCP to the World Bank.

Table 3.1.Financial Reporting

Report	Due Date
Semiannual unaudited project IFRs reflecting the sources and uses of funds for each semester and cumulative uses by category, including beginning and ending cash balances. Draft format of annual and interim financial statements acceptable to the World Bank	Within 45 days after the end of each calendar semester
Annual audit report on project financial statements and eligibility of expenditures	Within six months after the end of each calendar year of loan disbursements (or other period agreed with the World Bank).
Special opinions on SOEs and DA	

17. **Internal control and internal auditing.** The overall internal control function in the MOPC is weak**.** The internal control framework in Paraguay was established through the Standardized Internal Control Model for Public Sector Entities in Paraguay (*Modelo Estandar de Control Interno para las Entidades Publicas del Paraguay*, MECIP).[22] The oversight of the application of the MECIP is the responsibility of the *Auditoria General del Poder Ejecutivo* (the country's Internal Audit Agency) and the *Contraloria General de la República* (the country's Supreme Audit Institution).

18. The MECIP is a comprehensive framework based on the principles of the Committee of Sponsoring Organizations of the Treadway Commission[23] (COSO). This model consists of five integrated components: Control Environment, Risk Assessment, Control Activities, Information and Communication, and Monitoring Activities. Each entity in the Paraguay public sector has performed self-assessments of the advances in the implementation of the MECIP model. The MOPC's last self-assessment (dated June 30, 2015) revealed a deficient implementation (2.7 points on a scale of 1 to 5, with 5 being the top rating).

[22] Issued by Presidential Decree under the 'Resolución No. 425' dated May 9, 2008.

[23] Originally formed in 1985, COSO is a joint initiative of five private sector organizations and is dedicated to providing thought leadership through the development of frameworks and guidance on enterprise risk management internal control and fraud deterrence. COSO's sponsoring organizations are the American Accounting Association, the American Institute of Certified Public Accountants, Financial Executives International, The Institute of Internal Auditors, and the Institute of Management Accountants. More information can be found on: www.coso.org.

19. In addition, the capacity assessment conducted as part of the project preparation process has shown some areas which require improvement in the IAU of the MOPC, mainly the lack of physical infrastructure, well-trained human resources, and procedures aligned to best international practices. For this reason, as mentioned earlier, the World Bank will follow up on the advances in implementation of the MECIP, and will strengthen the IAU through the provision of training on international internal audit standards to the key unit staff, and strengthening the unit procedures to gradually align them with international best practices

20. **External audit arrangements.** Annual project financial statements will be audited based on ToR acceptable to the World Bank. The audit will be conducted based on International Standards on Auditing issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants. The audit report shall be submitted to the World Bank within six months of each calendar year. Annual audits will cover all funding and expenditures reported in the project's annual financial statements. The external audit will be conducted by a private sector audit firm acceptable to the World Bank. In addition, funds spent under the RAP component will be subject to a concurrent technical audit.

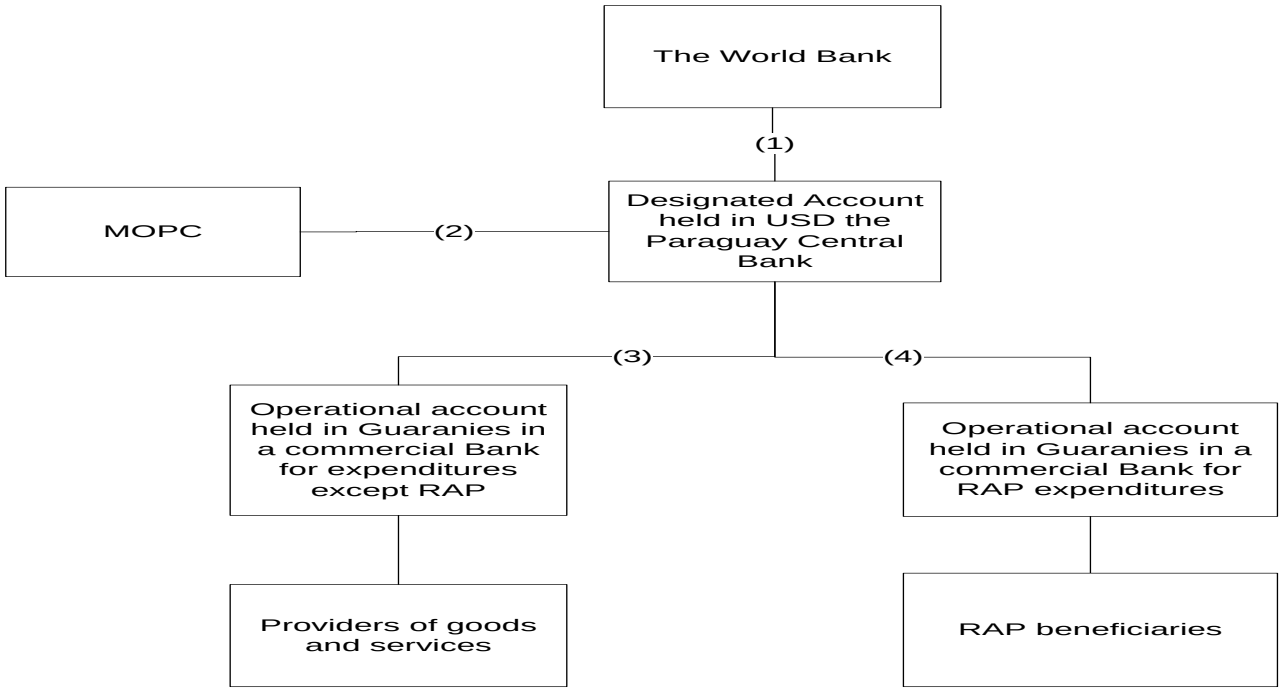
Disbursements

21. **Flow of funds and disbursement arrangements.**[24] The following disbursement methods may be used under the loan: (a) Advance (as primary method); (b) Reimbursement; and (c) Direct Payment.

22. To facilitate project implementation, the DCP will open a segregated DA in U.S. dollars at the Central Bank of Paraguay (CBP) through the MOF. Funds deposited into the DA will follow the World Bank's disbursement operating policies and procedures described in the Disbursement Letter. Withdrawals from the DA will be solely made for payments of eligible expenditures incurred. Figure 3.1 reflects the project's flow of funds:

[24] Disbursements arrangements still need to be confirmed with the Loan Department. At this point, it has not identified the need to finance.

Figure 3.1. Flow of Funds



23. The World Bank will transfer funds into a loan account opened at the CBP. Based on project funding needs, the MOPC will instruct the CBP to transfer funds to the project's operational bank accounts held in local currency in commercial banks. The MOPC will instruct payments through a Request for Transfer which will be submitted to the MOF for approval and then paid to providers of goods and services. For the funds spent under the RAP component, the MOPC will open a specific bank account. For all cases of compensation and to avoid misuse of funds, the process will involve a series of verifications of affected families' documentation and account details for each compensation payment. The results of these processes will be registered in each monthly certificate for payment before the payment transfer is done. The DCP has developed specific controls, which will be documented in the project's OM.

24. Disbursement arrangements[25] are summarized in table 3.2.

Table 3.2. Disbursement Arrangements

Retroactive expenditures[26]	Eligible payments • These are made during the year or 12 months before the date of loan signing • They do not exceed 20 percent of the loan amount • They are applicable for items procured in accordance with applicable Bank procurement procedures

[25] For details, please see the Disbursement Handbook for World Bank Clients.
[26] The project will possibly require disbursement of retroactive expenditures; however, the amount is not confirmed at this stage of preparation.

Primary disbursement method	• Advance to a segregated DA in U.S. dollars held in the CBP managed by DCP as explained earlier with a ceiling of US$5 million for outstanding advances.
Other disbursement methods	• **Direct payments to suppliers.** The minimum application size for direct payment requests will be US$100,000. • Reimbursement of eligible expenditures into a treasury account controlled by the GOP. The minimum application size for reimbursement requests will be US$1,000,000.
Supporting documentation	• SOEs • Records (supplier contracts, invoices, and receipts).

Table 3.3. Disbursement Table

Number	Category Description	Amount of the Loan Allocated (US$)	% of Expenditures to be Financed
1	Goods, works, non-consultant services, consultant services, training, and operating costs	99,490,000	100
2	Land acquisition and cash compensation for RAP	260,000	100
3	Front-end Fee	250,000	100
	Total	100,000,000	100

Procurement

25. Procurement will be conducted according to the World Bank's 'Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers' (issued in January 2011 and revised in July 2014) for the supply of goods, civil works, and non-consulting services, and the 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers' (issued in January 2011 and revised in July 2014) for technical assistance and other consultant assignments.

26. For each contract, which would be financed by the loan, the applicable procurement methods or consultant selection methods, the need for prequalification, when necessary, estimated costs, prior review requirements, and time frame will be agreed between the Borrower and the World Bank in the PP.

27. The structures responsible for carrying out procurement activities, monitoring, and supervising the fiduciary arrangements as well as the final procurement risk rating, was defined as a result of the capacity assessment carried out by the World Bank in April 2015. The assessments reviewed the organizational structure, the staff responsible for procurement, the relationship between the procurement, technical, administrative, and financial offices, and the systems used for supervising and controlling.

28. The analysis concluded that although the UEP has experience in the World Bank's operations, there are some weaknesses because of its institutional context. Evidence of this is the lack of timely information about contract execution from the offices involved in contract administration—affecting both monitoring and budget reprogramming of the project—and the low inclusion of the procurement specialist in the technical teams for the preparation of procurement

documents as an institutionalized practice. On the other hand, there is a high uncertainty about the continuity and substitution of the current procurement specialist, whose contract expired in June 2016. The overall project risk for procurement is Substantial.

29. The key measures for the procurement risk mitigation strategy for this project include (a) an OM with special procurement conditions aimed at strengthening the role of the implementation unit in ensuring compliance with the provisions of the Loan Agreement, setting up appropriate accountabilities and internal procedures; (b) the requirement for the Borrower to maintain, throughout the project implementation, a technical and fiduciary office with key staff with functions, experience, responsibilities, and qualifications acceptable to the World Bank, including a procurement specialist; (c) a special procurement provisions part in the Loan Agreement because the national procurement regulations are not totally consistent with the World Bank's Guidelines; and (d) a capacity-building activity on the use of the World Bank's guidelines and procurement process implementation oriented to all procurement staff, the UOC included.

General

30. The PP will be updated at least annually or as required to reflect the actual project's implementation needs and improvements in institutional capacity. The World Bank's Standard Bidding Documents (SBDs) and Standard Request for Proposals will govern the procurement of World Bank-financed International Competitive Bidding (ICB) goods and civil works and consultant services respectively. All SBDs will be used for each procurement method, as well as model contracts for works, goods, and consultants procured, and should be included in the OM.

Goods and Works and Non-consulting Services

31. **Procurement of goods.** Goods to be procured will be mostly equipment, networks, and software.

32. **Advertisement.** All procurement notices shall be advertised in the National Office of Public Procurement (*Dirección Nacional de Compras Públicas*, DNCP) web page and in at least one local newspaper of national circulation. In addition, in the case of ICB, procurement notices and contract award information shall be advertised in the United Nations Development Business online. The DNCP shall also be used to publish information on awarded contracts in accordance with provisions of paragraphs 2.60 of the Procurement Guidelines and as mandated by the local legislation.

33. **Procurement of works.** Civil works procured under this project will include two performance-based contracts for the rehabilitation and maintenance of paved roads (CREMA). A performance-based contract bidding document will be prepared and approved by the World Bank to be included in the project's OM. Some minor works could be financed under Component 2 for minor road safety activities in municipalities or under Component 3 to implement the traffic counting system.

34. **Procurement of non-consulting services.** It is planned to procure non-consulting services to complete the inventory of the road network.

Selection of Consultants

35. **Firms.** The project will hire consultant firms for road safety audits, supervision of performance-based contracts, development of the road asset management system, geological/geotechnical design studies, and financial audits. Short lists of consultants for services estimated to cost less than US$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

36. **Individual consultants.** Most of the consulting services to be contracted will be related to supervision, training, and technical assistance. The consulting services mentioned may be provided by individual consultants selected by comparison of qualifications of at least three candidates and hired in accordance with the provisions of Section V of the Consultant Guidelines. The consultant's fee for the UEP staff may be in accordance with the range established in the Government law. Contracts will be signed for the expected duration of the assignment, subject to annual reviews for performance.

37. **Advertisement.** The DNCP and a local newspaper of national circulation (if necessary) shall also be used to advertise a request of expression of interest for consulting firms or individuals, and to publish information on awarded contracts in accordance with provisions of paragraphs 2.31 of the Consultants Guidelines and as mandated by local legislation. Contracts expected to cost more than US$300,000 shall be advertised in the United Nations Development Business online.

Operating Costs

38. Operating costs will be procured using the implementing agency's administrative procedures. This includes expenditures for the operation and maintenance of equipment and facilities required for the implementation of the project; transportation fares, combustible, rental car, travel expenses, and per diem of the project's staff related to management and supervision activities, based on an annual budget previously approved by the World Bank.

Details of the Procurement Arrangements involving Methods and Review

39. Thresholds for the use the different procurement methods and recommended thresholds for World Bank prior review are given in table 3.4.

Table 3.4. Thresholds for Procurement Methods and for Recommended World Bank Review (Except Emergency Procurement)

Estimated Value Contract Threshold	Procurement Method	World Bank Prior Review
Works		
≥ US$5,000,000	ICB	All
< US$5,000,000 and ≥ US$200,000	NCB	None
< US$200,000	Shopping	None
< US$100.000	Direct Contracting	None (task team leader may carry out a technical review)
≥ US$100.000	Direct Contracting	All
Goods and Non-consulting Services		
≥US$1.000,000	ICB	All
<US$1.000,000 and ≥ US$100,000	NCB	None

Estimated Value Contract Threshold	Procurement Method	World Bank Prior Review
<US$100,000	Shopping	None
< US$100.000	Direct Contracting	None (task team leader may carry out a technical review)
≥US$100.000	Direct Contracting	All
Consulting Firms		
<US$100.000	SSS	None (task team leader may carry out a technical review)
≥ US$100.000	SSS	All
≥US$300,000	QCBS, QBS, FBS, LCS,	All
<US$300,000	QCBS, QBS, FBS, LCS, CQS.	None.
Individual Consultants		
<US$100.000	SS	None (except key staff)
≥ US$100.000	SS	All
≥US$200,000	3 CV	All
<US$200,000	3 CV	None (except key staff)

Note: NCB = National Competitive Bidding; SS = Sole Source; SSS = Single-Source Selection; QCBS = Quality- and Cost-Based Selection; QCS = Quality-Based Selection; FBS = Selection under Fixed Budget; LCS = Least-Cost Selection; CQS = Selection Based on the Consultants' Qualification; IC = 3 CV Qualifications

40. The PP will define the contracts that are subject to World Bank prior review based on the recommended thresholds given in table 3.4. Such recommended thresholds could be revised at every update of the PP.

41. **Procurement post review arrangements.** The World Bank will carry out ex post reviews through an annual supervision mission on procurement. The UEP and the World Bank, including procurement and FM staff, will meet annually to review their procurement and to carry out the ex post review.

42. **Procurement records.** Detailed procurement records, reflecting the project's supply of goods, civil works construction/rehabilitation and consultant services, including records of time taken to complete key steps in the process and procurement activities related to supervision, review, and audits, will be maintained by the UEP. These records will be maintained for at least two years after the project's closing date. The records for civil works and goods will include public notices, bidding documents and addenda, bid opening information, bid evaluation reports, formal appeals by bidders and outcomes, signed contracts with related addenda and amendments, records on claims and dispute resolutions, and any other useful information. The records for consultant services will include public notices for expression of interest, request for proposals and addenda, technical and financial reports, formal appeals by consultants and outcomes, signed contracts, addenda and amendments, records on claims and dispute resolution, and any other useful information. The filing, record keeping, auditing, reporting, post review, and monitoring of the smaller procurement activities are crucial for the successful application of the funds for ensuring economy, efficiency, and transparency.

Special Procurement Conditions

43. The following shall apply to procurement under the project:

General

(a) Procurement of goods, works, non-consultant services and consultants' services (in respect of firms) shall be carried out using (i) SBDs (which bidding documents in respect of works shall include, if applicable, a provision whereby the pertinent contractor must comply with the pertinent provisions of the safeguard documents and standard requests for quotations/proposals (as the case may be), all acceptable to the World Bank, which shall all include, among others, a settlement of dispute provision and the pertinent provisions of the World Bank's Anticorruption Guidelines; (ii) model bid evaluation forms, and model quotations/proposals evaluation forms (as the case may be); and (iii) model contract forms, all acceptable to the World Bank.

(b) A two-envelope bidding procedure shall not be allowed in the procurement of goods, works, and non-consultant services.

(c) After the public opening of bids for goods, works, and non-consultant services, information relating to the examination, clarification, and evaluation of bids and recommendations concerning awards shall not be disclosed to bidders or other persons not officially concerned with this process until the publication of the contract award. In addition, bidders and/or other persons not officially concerned with the process shall not be allowed to review or make copies of other bidders' bids.

(d) After the public opening of consultants' proposals, information relating to the examination, clarification and evaluation of proposals and recommendations concerning awards, shall not be disclosed to consultants or other persons not officially concerned with this process until the publication of contract award (except as provided in paragraphs 2.23 and 2.30 of the Consultant Guidelines). In addition, consultants and/or other persons not officially concerned with the process shall not be allowed to review or make copies of other consultants' proposals.

(e) Foreign bidders or foreign consultants shall not, as a condition for submitting bids or proposals and/or for contract award (i) be required to be registered in Paraguay (except as provided in the SBDs referred to in paragraph (a) (i) above); (ii) be required to have a representative in Paraguay; and (iii) be required to be associated or subcontract with Paraguayan suppliers, contractors, or consultants.

(f) The invitations to bid, bidding documents, minutes of bid openings, requests for expressions of interest and the pertinent summary of the evaluation reports of bids and proposals of all goods, works, non-consultant services, and consultants' services procured by the Borrower, through the UEP, shall be published in the web page of the DNCP, and in a manner acceptable to the World Bank. The bidding period shall be counted from the date of publication of the invitation to bid or the date of the availability of the bidding documents, whichever is later, to the date of bid opening.

(g) The provisions set forth in paragraphs 2.49, 2.50, 2.52, 2.53, 2.54, and 2.59 of the Procurement Guidelines shall also be applicable to contracts for goods, works, and non-consultant services to be procured under National Competitive Bidding procedures.

(h) References to bidders in one or more specialized magazines shall not be used by the Borrower, through the UEP, in determining if the bidder, in respect of goods, whose bid has been determined to be the lowest evaluated bid, has the capability and resources to effectively carry out the contract as offered in the bid, as referred to in the provision set forth in paragraph 2.58 of the World Bank's Procurement Guidelines. The provision set forth in paragraph 2.58 of the World Bank's Procurement Guidelines (including the limitation set forth herein) shall also be applicable to contracts for goods to be procured under national competitive bidding procedures.

(i) Witness prices shall not be used as a parameter for bid evaluation, bid rejection, or contract award.

(j) The Borrower, through the UEP, shall (i) supply the Procurement Plans Management System (*Sistema de Ejecución del Planes de Adquisiciones)* with the information contained in the initial PP within 30 days after the project has been approved by the World Bank, and (ii) update the PP at least every three months, or as required by the World Bank, to reflect the actual project implementation needs and progress and shall supply the Procurement Plans Management System with the information contained in the updated PP immediately thereafter.

(k) The provisions of paragraphs 2.55 and 2.56 of the Procurement Guidelines providing for domestic preference in the evaluation of bids shall apply to goods manufactured in the territory of the Borrower in respect of contracts for goods to be procured under ICB procedures.

(l) Compliance by bidders with the norms issued by the International Organization for Standarization (ISO) with respect to any given goods procured under the project shall not be used as a parameter for the contract award.

(m) Consultants shall not be required to submit bid or performance securities.

(n) Contracts of goods, works, and non-consultant services shall not be awarded to the 'most convenient' bid, but rather to the bidder whose bid has been determined (i) to be substantially responsive and (ii) to offer the lowest evaluated bid, provided that said bidder has demonstrated to the Borrower, through the UEP, to be qualified to perform the contract satisfactorily.

(o) The types of contracts described in Section IV of the Consultant Guidelines shall be the only types of contracts to be used by the Borrower, through the UEP, in connection with the contracting of consultants' services provided by a firm and to be financed with the proceeds of the loan.

Environmental and Social (including safeguards)

44. The project will generate largely positive social benefits to the local population, including: (a) construction and maintenance phase: jobs creation and associated demand of goods and services; and (b) operation phase: improved travel conditions, reduced transport costs; improved road safety; productivity gains for the agricultural workforce; increased competitiveness and contribution to growth of local economies; increased access to markets and social services - particularly to education and health centers; reduced isolation of communities and discouraged migration; creation of direct and indirect employment. The project (i) is gender informed as the socio-economic diagnostic included gender specific needs and mobility patterns of women questions, and includes monitoring activities of these trends throughout the project cycle; (ii) includes specific actions to address women, girls and boys needs by establishing criteria to select priority road safety interventions; (iii) actively promotes social inclusion of indigenous communities by addressing their specific needs of road access to the two corridors to be intervened by the project and foresees activities differentiating indigenous women and men needs (training); and (iv) engages citizens by enabling beneficiaries and stakeholders to provide feedback and by integrating their feedback to improve Project's results throughout the Project cycle through the project's public citizen engagement system (VEA) and its three web-based tools, as mentioned in Section III. A. and further described in the Project's Monitoring and Evaluation system.

45. The social assessment and consultations have confirmed that there is widespread support to the project amongst key stakeholders, including local residents, commercial, agricultural and industrial users of the roads, a department and municipal governments, and indigenous communities. Balance of project's impacts is largely positive as per its cited benefits. Negative social impacts will be minimal and temporary during rehabilitation and maintenance of the road works. These impacts on the local population (public safety, noise, traffic disruption) and other social risks, including those associated with compliance with the Bank's safeguards will be managed according to the sub-project's environmental and social management plans of the two roads to be intervened.

46. The project triggers Indigenous Peoples (OP/BP 4.10) and Involuntary Resettlement (OP 4.12). Both policies requirements have been addressed by four instruments, specifically an Indigenous Peoples Plan, and Indigenous Peoples Planning Framework, a Resettlement Action Plan and Resettlement Policy Framework that have been prepared by MOPC. Public consultations have been held on these instruments with beneficiaries of the Project and relevant stakeholders. Documents were disclosed prior to their consultations and were published on the MOPC website (April 29) and the World Bank external site before Project appraisal and were updated afterwards (May 17). In both opportunities, these documents were found acceptable to the Bank. Additionally, a suitable grievance redress system comprising procedures and arrangements for feedback and claims handling and return to the claimers is foreseen for the Project and tailored for each of the instruments, as summarized below and fully described in this annex. All advertising of the grievance redress system of the Project, will include information on the WB's Grievance Redress Service (GRS)

47. The four social plans and frameworks, as all other environmental plans of the Project with the exception of the RAP, will be implemented by the Contractor of civil works, and overseen by a third-party supervising firm as well as by the MOPC through the Directorate of Social and

Environmental Management (DGSA). While specific provisions to ensure adequate and timely implementation of the three social plans are being included in the bidding documents and the corresponding contract, and their costs will be paid out of the civil works contract proceeds, tailored institutional measures were set for the MOPC to implement the REAP. Implementation monitoring of all social instruments will include continuous internal and external monitoring, along with mid-term and final evaluations. Monitoring will be carried out by the MOPC's DGSA, and will involve relevant key external actors, and auditors.

48. **Related to Indigenous Peoples (OP/BP 4.10),** an Indigenous Peoples Plan (IPP) and an Indigenous Peoples Planning Framework (IPPF) have been prepared by MOPC in public and culturally adequate consultations with relevant indigenous communities and organizations that are present in the extended catchment area of the corridors of the two Roads (RN 1 and RN 3) to be financed by the Project, particularly located in five Departments of Paraguay (Misiones, Itapua, Canendiyú, San Pedro and Caaguazu). Specific measures respectful to indigenous people's culture such as the use of indigenous language, adoption of their own conflict resolution mechanisms among others are included in the tailored to indigenous people's grievance redress system for the Project.

49. While the IPP has been prepared for the around 2,900 indigenous peoples (36 communities, among them 14 villages) comprising 577 families that live in the above described extended catchment area of the Project to address their needs of rural road access to the two corridors to be intervened by the project and contribute in their capacity enhancement through i.e. training activities differentiating indigenous women and men needs. The IPPF has been developed to guide IPP preparation and implementation, though also to be used for any need that might arise during project's implementation.

50. Both the IPP and the IPPF fully considered lessons such as the delay in the implementation of the IPP of the ongoing Road Maintenance Project (P082026). Besides institutional strengthening measures, specific indicator for monitoring expected outcomes of the IPP during the project cycle (first, second and final year) has been included in the Results Framework and Monitoring of the Project.

51. **On to the Resettlement Policy (OP 4.12),** although road rehabilitation and upgrading works are to be carried out within the existing right of way (ROW) of long established inter-urban roads, the Project has developed a Resettlement Action Plan (RAP) and a Resettlement Policy Framework (RPF) that will guide implementation of the RAP during project implementation. Public consultations on the RAP and the RPF have been carried out, and final versions of the documents will be disclosed by the MOPC and on the World Bank' external website before appraisal of the Project.

52. The RAP states that the project will require the resettlement of approximately 77 individuals and families, including micro-businesses and some houses, based on a detailed Initially Affected People Survey (IAPS) that was carried out along the Right of Way (ROW) of the corridors of the two Roads (R1 and R3) including two roundabouts (Cruce Tacuara and Calle 6000 of R3) to be financed by the Project. IAPS' data in the RAP include occupants' names, geo-referenced locations, economic activities and estimated values of their commercial physical

structures and houses in some cases. The RAP will be updated by completing the census [1] and socio-economic survey once the detailed designs of R1 and R3 (including roundabouts) have been completed in the first phase of project implementation. Although the IAPS has initially identified all occupants in the ROW of corridors and roundabouts, tenure and land ownership situation, especially of those occupants around the roundabouts (preliminarily 51), will be confirmed during completion of the census.

53. While affected people without recognizable legal right or claim to the land they are occupying will be provided with resettlement assistance, affected people that are found to own property or have formal legal rights to land or do not have formal legal rights to land at the time the census begins but have a claim to such land or assets—provided that such claims are recognized under Paraguayan Law or become recognized through a process identified in the RAP—will be offered compensation at full replacement costs for their land according to the principles of OP 4.12 that are detailed in the RAP.

54. The RAP and the RPF also foresee a tailored grievance redress mechanism that is part of the Project. Specifics for the resettlement mechanism result from the domestic law that include to make payments of compensations by the judiciary system when administrative agreement is not reached.

55. Institutional responsibilities on environmental and social management including citizen engagement of the project are aligned to agreements on institutional arrangements and implementation of the project within the MOPC, which establishes as executing the MOPC through the DV, the UEP as the main interlocutor before the World Bank and functional units responsible for technical endeavors and outcomes.

56. **Environmental and social management of the project will be undertaken by the DGSA,** which will be responsible of assessing, developing environmental and social plans, conducting public consultations, supervising the implementation of environmental and social programs (ETAS) and licenses—as they are necessary—of all works (subprojects) to be funded by the project, and record keeping. Environmental and social plans include environmental and social programs and standards as well as provisions on communications and management of citizen feedback and claims.

57. Institutional arrangements fully considered the main risks posed by lessons learned from implementation of the previous project and the capacity assessment carried out during this project's preparation, and include (a) discontinuity of responsibility of the environmental and social management of the project because of many changes of the former environmental unit of the MOPC, (b) lack of intra-ministry coordination and collaboration in environmental and social issues, (c) underqualified staffing in environment and social areas of the UEP, and (d) differences among the World Bank's environmental and social safeguards standards and the MOPC's systems, particularly those related to resettlement and indigenous peoples, which affected smooth internal supervision and external compliance.

[1] Census as defined under OP/BP 4.12.

58. The DGSA, which has been restructured and strengthened with the incorporation of environmental and social specialists in recent years, including some with experience in the World Bank's safeguard policies has prepared the ESMF, which is part of the OM of the project, and the ESMPs for the CREMA contracts. All these instruments have been developed on the basis of the principles and procedures of the safeguard policies of the World Bank (OP 4.01, 4.11, 4.10, and 4.12) and national law. The ESMF and the ESMPs were disclosed on the MOPC website, and on the World Bank external website on May 12, 2016.

59. **An Environmental and Social Institutional Support Program for the project** has been prepared, based on the results of the institutional capacity assessment carried out during project preparation. This Environmental and Social Institutional Support Program is detailed in the ESMF and the OM of the project, which includes detailed ToR per activity, and comprises (a) adequacy in the number and expertise of skilled staffing for the DGSA, by hiring at least three specialists in environmental, social, and communication areas; (b) increase of timely and efficient capacity for environmental and social monitoring through the development and use of a web-based tool for environmental and social monitoring that includes an interactive map of works and feedback/grievance redress mechanism; (c) improvement in the ability to identify environmental and social risks and opportunities in paved roads rehabilitation and maintenance works, including updating the General Technical and Environmental Specifications and the Social Manual of the MOPC. Improved standards will include environment - hazardous waste and non-hazardous, air, water, soil pollution, safety, and contingency response and social - social dimensions into environmental assessment and plans, including—besides indigenous peoples and resettlement—citizen engagement, gender, consultation; and (d) capacity building to improve the implementation of ETAS, through the organizing internal and external trainings in the MOPC (contractors and supervisors).

60. **Prior review.** All environmental and social activities, including ToR, assessments, plans, and programs will be subject to prior review by the World Bank.

61. **Environment and social filing and records:** Detailed records, reflecting the project's environmental and social management per works or services will be filed and maintained by the DGSA. These records will be maintained for at least two years after the project's closing date. The records shall include ToR, assessments, plans, programs, claims management, and any public notice or information related to safeguard documents.

62. **Grievances redress mechanism of the project.** The proposed project foresees a grievance redress system comprising claims entry/reception, analysis, monitoring of analysis, resolution, and return to the claimer. This system, which is detailed in the ESMF of the project and all environmental and social plans for Route 1 and Routes 3 is based on these three principles: (a) availability for beneficiaries and stakeholders considering and respecting their sociocultural characteristics and needs; (b) known procedures and timeline of claim analysis and resolution; and (c) affordability of their resolution for the claimers.

63. Claims can be addressed by three instances. The first instance is within the MOPC (National Law 19,549 on Administrative Procedures, Art. 7). When agreement is not possible, external instances to the MOPC such as mediation, ombudsman, and judiciary system will apply. Claims brought before the judiciary apply the existing legal system of the country.

64. This system will be supported by the web-based feedback-grievance redress mechanism, one of the project's citizen engagement systems, VEA.

65. All advertising of the grievance redress system of the Project, will include information on the World Bank's GRS.

Citizen Engagement

66. The project's citizen engagement mechanisms will be under the DTPC's overall responsibility.

67. The DTPC will be responsible for the implementation and supervision of the web-based feedback-grievance redress mechanism, one of the three web-based tools of the project's citizen engagement system, VEA, that will be a web-based system. The DTPC will also oversee implementation of the other two citizen engagement tools: (a) the interactive map of works; and (b) the financial, physical, environmental, and social monitoring tool, though will coordinate with the Directorate of Communications, DGSA, and other functional units of the MOPC in charge of the project's activities that will feed the tools.

68. The web-based feedback-grievance redress mechanism of the VEA is based on the principles and procedures of the grievance redress mechanism of the project, and will be ready to integrate to external systems with similar or complementary objectives of improving public transparency and citizen engagement such as the Unified Portal of Public Information of Paraguay. The VEA will be a web-based system that will feature several integrated modules to manage electronically citizen's feedback/claims, capturing them from different starting points (table entry of the MOPC, site work, web, phone, social networks, and mobile devices), recording them in a central database, and automatically distributing them to different units of the MOPC to address them and reply to the citizens in standardized timelines.

69. Detailed ToR of the three web-based tools of VEA will be part of the project's OM. These ToR include technology needs and coordination and accountability flows of these tools among the MOPC's functional units.

70. The DTPC, which has recently been restructured, becoming a directorate reporting directly to the minister, will be strengthened by hiring a specialist in communication and citizen engagement to support the development and implementation of the system.

Monitoring and Evaluation

71. The UEP will have the overall responsibility of monitoring and evaluating project outcomes and satisfactory project implementation. Specific responsibilities, among project implementation stakeholders, related to the results framework M&E are detailed in Annex 2. Limited additional costs will be required for the project M&E: most indicators either result from usual supervision processes (for example, for works) or result from particular technical assistance provided under the project.

72. The UEP will report to the World Bank on a biannual basis. Reporting will include, among others: (a) an update on the results achieved based on the indicators and target values established

in the results framework; (b) the activities carried out throughout the reporting period under each component; (c) key issues or constraints or risks affecting project implementation that require attention and proposed measures to address them; (d) disbursement calendar for the next six months; and (e) progress achieved in the implementation of the environmental and safeguards plans, including the project's RAP for Routes 1 and 3. The UEP will be responsible for project data collection, and compilation as well as the overall project M&E assessment.

ANNEX 4: IMPLEMENTATION SUPPORT PLAN

PARAGUAY: Transport Connectivity Project

Strategy and Approach for Implementation Support

1. The strategy for implementation support has been developed based on the project's design and its risk profile, as well as particular mitigation measures required during implementation, as identified through the Systematic Operations Risk Rating Tool. The strategy remains a flexible tool that may be amended during project implementation in response to the Borrower's changing needs.

2. There is a continuous partnership between the GOP and the World Bank and in the transport sector. The MOPC has been most recently responsible for the implementation of the previous operation. Building on past experiences, the Project has been designed to correct some observed shortfalls, while also attempting to address some challenges identified in this operation. The implementation support strategy envisages taking advantage of existing knowledge, partnerships, and experiences, and supporting further strengthening during the course of the project.

3. **Technical.** The activities included in the project's main component will be carried out through the implementation of two CREMA contracts. The main implementation risk related to this component stems from the need to ensure that the MOPC, contractors, and supervisors become familiar with this contract model and in particular enforce or comply with its payment methodology and penalty system to obtain the expected cost efficiencies. As such, the World Bank's implementation support will be particularly intense during the early years while the procurement process takes place to (a) ensure that contracts are awarded to contractors with the required capacity to implement these contracts and understand the risks being transferred to them; (b) ensure that supervision firms understand the concepts behind this new model; and (c) train the MOPC staff responsible for managing these contracts as required. Once contracts are awarded, the World Bank's technical inputs will focus on supporting the MOPC's efforts related to the monitoring of contract execution including (a) reviewing of final designs being proposed by contractors; (b) monitoring of works being carried out in accordance with the agreed specifications and following the work activity schedules; (c) ensuring that contracts are being enforced (performance indicators are being monitored and payments are based on the achievement of such indicators/levels of service, penalties are applied if needed); and (d) monitoring the evolution of contract costs so as to ensure that contracts remain lump-sum-based.

4. The execution of road safety activities included in the CREMA contracts will be monitored along with the CREMA contracts. The team will need to monitor the impacts on road fatalities once the interventions are completed. The World Bank's value added will be most relevant in the subcomponent with municipalities which will involve significant interagency coordination and require substantial technical and policy implementation support (promote policy dialogue, create road safety awareness, and so on). The World Bank will execute the Global Road Safety Facility Grant and coordinate with consultants that will provide technical assistance to the ANTSV. Component 3 (Road Asset Planning and Management) activities are relatively straightforward and a continuation of activities already being carried out in the country.

5. **FM.** The MOPC has adequate experience with the World Bank's FM requirements from the previous loan; yet, the World Bank team will provide further FM training to the Project Coordination Unit staff. Implementation support missions will review the Project's FM system, including, but not limited to, accounting, reporting, and internal controls.

6. **Procurement.** The implementation support strategy for procurement aims at ensuring that the procurement capacity for project implementation is fully maintained. This includes early identification of potential bottlenecks in the MOPC's procurement unit, capacity building, and hands-on procurement support from the World Bank. The World Bank's procurement support will be most intensive during the procurement process of the two CREMA contracts.

7. **Environmental and social safeguards.** The implementation support strategy aims at assuring that the environmental and social capacity for project implementation is fully maintained, through hands-on support from the World Bank, if needed. Besides the basic due diligence required to ensure compliance with the environmental and social management instruments of the project, particular attention will be placed during project implementation to (a) ensure that contractors are following the environmental and social specifications in the CREMA contracts; (b) monitor implementation of road safety interventions to ensure that benefits to the most vulnerable populations are being achieved; and (c) monitor the implementation of citizen engagement mechanisms.

Implementation Support Plan

8. Given that about 80 percent of the project is allocated to the first Bank-financed CREMA contracts in Paraguay and that the project foresees supporting road safety policy dialogues beyond the normal scope of the MOPC (mostly centered toward execution of civil works), the level of technical support needed for implementation is considered substantial on the technical side, moderate on the fiduciary side, and moderate on the environmental and social sides. The World Bank team will conduct at least two implementation support missions, desk reviews and field visits to follow up with project implementation. Detailed inputs from the World Bank team are outlined below.

9. **Technical.** A highway engineer and a road safety specialist from the World Bank team will (a) engage and guide the technical and institutional dialogue, based on known national and international best practices; (b) advise on the design of activities envisaged within their respective subcomponents, including processes for the preparation of ToR, budget, and bidding documents; (c) participate in field visits to advance the dialogue with the client and review progress; and (d) engage with the client to enable knowledge transfer and guidance.

10. **Fiduciary.** The scope of project implementation support will review the implementation of FM arrangements and FM performance, identify corrective actions, if necessary, and monitor fiduciary risk. It will include (a) reviewing of IFRs; (b) reviewing of the auditors' reports and follow-up of any issues raised by auditors in the Management Letter, as appropriate; (c) participation in project supervision, including at least one on-site visit and one desk review per year, and (d) updating the FM rating in the Implementation Status and Results Report.

11. The World Bank will conduct annual reviews of the project fiduciary implementation, review reports, verify compliance with agreed fiduciary procedures, identify potential capacity gaps including staffing, and evaluate adequacy of documentation and record-keeping arrangements and systems. Continuous support will be made available by the World Bank when needed.

12. **Environmental and social safeguards**. The World Bank will monitor and evaluate the implementation effectiveness of the agreed environmental and social plans and frameworks (and other documents as needed). Continuous support will be provided by the World Bank when identified or required by the client, particularly during the execution of the CREMA contract rehabilitation phases. During implementation, the World Bank will (a) monitor compliance with the agreed environmental and social plans and frameworks as triggered by the project and (b) address concerns from the client or other stakeholders on safeguards policies. Regular training to counterparts on World Bank safeguard policies will also be fostered.

13. Table 4.1 summarizes the human resources and skill mix requirement for implementation support.

Table 4.1. Human Resources and Skill Mix Requirement for Implementation Support

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task team leaders	10 in first year, then 8 annually	Semiannual mission, field visit as required	Staff, Washington-based
Support technical team (Transport specialist, extended-tem consultants, and/or short-term consultants)	8 annually	Semiannual mission, field visit as required	Extended-term consultants/short-term consultants Washington-based
Procurement specialist	4 in first year, then 3 annually	Semiannual mission	Staff, country office-based
FFM specialist	3 annually	Semiannual mission	Staff, country office-based
Environmental specialists	6 annually in first year, then 4 annually	3 annual mission field visits during the first years and thereafter annually or as required	Staff/ETC, country office-based
Social specialist	6 annually in first year, then 4 annually	3 annual mission field visits during the first years and thereafter annually or as required	Staff, country-based
Highway engineer	7 while procurement process takes place, then 5	Semiannual mission field visit as required	Consultant, international consultant with PBC experience
Road safety specialists	4 in first two years, then 2	2 missions	International consultant

Annex 5: Economic Appraisal and CO_2 Emission Analysis

PARAGUAY: Transport Connectivity Project

1. This annex summarizes the economic appraisal undertaken for the project to determine its viability. A greenhouse gas analysis on possible CO_2 emission reductions accruing from the project has also been undertaken to supplement the economic analysis work. The economic evaluation is based primarily on the physical works component for which costs and benefits can be readily quantified and assessed and which accounts for the bulk of project financing costs.

2. The use of public-private partnerships for funding road preservation works is not presently the policy of the GOP due to the relatively low traffic on the road network. Public investment is presently the option chosen by the Government for road preservation works. The World Bank's financing is justified because of the project's economic benefits and the value added it brings beyond financing in areas such as sustainability of road maintenance, transport planning, safeguards, procurement, and FM.

Economic Evaluation

3. **Performance-based road rehabilitation and maintenance.** The evaluation using HDM-4 assessed streams of saving on road user costs and rehabilitation/maintenance costs (as compared to a reference or 'without project' scenario) in road works over 20 years. Road user costs consist of (a) vehicle operating costs such as fuels and damage to vehicles' bodies and parts due to vibration during driving, and (b) travel time of passengers and freights, which is converted into monetary terms. The analysis was conducted on the two road sections along Routes 1 and 3 described in Annex 2, for a total of about 319 km.

4. The basic parameters of the model, including existing pavement conditions, traffic volumes, and unit costs of vehicle operation, were obtained mostly through field surveys and desk reviews. Types and costs of rehabilitation works for each section are identified in the preliminary designs prepared by the MOPC. The following two scenarios were simulated: (a) project scenario - rehabilitation in the first two years, routine maintenance for the entire period, and additional rehabilitation works when IRI is beyond 4 and (b) reference scenario (or 'without project' scenario) - light rehabilitation when IRI reaches 9 and routine maintenance for the entire period. Other alternatives were tested for different design lives of the pavement and intermediate interventions, but were discovered not to be viable, and were discarded in favor of the reference scenario tested and presented here. The initial roughness conditions of the road sections and the corresponding base traffic levels and financial road work costs are presented in tables 5.1 and 5.2.

Table 5.1. Route 1: Initial Roughness Conditions and Traffic Volumes in the Base Year

No.	Route No.	Road Section	Length of Section (km)	IRI (m/km)	AADT (vehicles/day)	Road Work Cost (US$/km)
1	R001	S1 San Juan-San Ignacio	12.7	1.3	3,621	107,877
2	R001	S2 San Juan-San Ignacio	0.80	1.4	3,621	107,877
3	R001	S3 San Juan-San Ignacio	2.40	1.3	3,621	107,877
4	R001	S4 San Juan-San Ignacio	0.28	1.3	3,621	107,877

No.	Route No.	Road Section	Length of Section (km)	IRI (m/km)	AADT (vehicles/day)	Road Work Cost (US$/km)
5	R001	S5 San Juan-San Ignacio	10.92	1.3	3,621	107,877
6	R001	S6 San Juan-San Ignacio	1.65	2.4	3,621	107,877
7	R001	S7 San Ignacio-Santa Rosa	4.25	2.1	3,621	110,545
8	R001	S8 San Ignacio-Santa Rosa	15.00	1.8	3,621	99,633
9	R001	S9 San Ignacio-Santa Rosa	8.60	2.2	3,621	107,877
10	R001	S10 Santa Rosa-A. San Cosme	0.80	3.1	3,621	110,545
11	R001	S11 Santa Rosa-A. San Cosme	5.00	2.5	3,621	107,877
12	R001	S12 Santa Rosa-A. San Cosme	4.30	2.2	3,621	107,877
13	R001	S13 Santa Rosa-A. San Cosme	1.80	2.4	3,621	110,545
14	R001	S14 Santa Rosa-A. San Cosme	7.40	2.1	3,621	107,877
15	R001	S15 Santa Rosa-A. San Cosme	1.60	2.9	3,621	110,545
16	R001	S16 Santa Rosa-A. San Cosme	18.50	2.6	3,621	107,877
17	R001	S17 Santa Rosa-A. San Cosme	10.00	2.5	3,621	99,633
18	R001	S18 A. San Cosme-Coronel Bogado	14.40	2.9	3,621	107,877
19	R001	S19 A. San Cosme-Coronel Bogado	0.50	3.6	3,621	145,189
20	R001	S20 A. San Cosme-Coronel Bogado	1.60	3.5	3,621	140,922
21	R001	S21 Cnel Bogado-Carmen Del P.	1.55	3.6	4,621	168,295
22	R001	S22 Cnel Bogado-Carmen Del P.	5.64	2.2	4,621	99,686
23	R001	S23 Cnel Bogado-Carmen Del P.	3.29	2.1	4,621	99,542
24	R001	S24 Cnel Bogado-Carmen Del P.	2.42	2.8	4,621	140,922
25	R001	S25 Carmen Del P.-Encarnacion	2.60	2.6	4,621	107,877
26	R001	S26 Carmen Del P.-Encarnacion	6.50	2.5	4,621	99,633
27	R001	S27 Carmen Del P.-Encarnacion	3.60	2.9	4,621	140,922
28	R001	S28 Carmen Del P.-Encarnacion	13.60	3.2	4,621	140,922
29	R001	S29 Carmen Del P.-Encarnacion	3.22	3.4	4,621	140,922
30	R001	S30 Carmen Del P.-Encarnacion	4.78	3.7	4,621	162,961
		Total (length);Weighted Average (IRI, AADT)	**169.7**	**2.4**	**3,899**	**—**

Table 5.2. Route 3: Initial Roughness Conditions and Traffic Volumes in the Base Year

No.	Route No.	Road Section	Length of Section (km)	IRI (m/km)	AADT (vehicles/day)	Road Work Cost (US$/km)
1	R517	S1 Carayo-Mbutuy	13.00	3.8	2,327	204,946
2	R517	S2 Carayo-Mbutuy	8.00	3.0	2,327	127,815
3	R517	S3 Carayo-Mbutuy	2.00	2.6	2,327	127,815
4	R517	S4 Carayo-Mbutuy	3.20	2.8	2,327	127,815
5	R216	S1 Mbutuy-Tacuara	32.80	2.4	1,696	119,571
6	R216	S2 Mbutuy-Tacuara	2.7	3.8	1,696	160,860
7	R216	S3 Tacuara-Calle 6000	2.3	4.4	1,696	204,946
8	R216	S4 Mbutuy-Tacuara	3.00	3.1	3,747	204,946
9	R216	S5 Mbutuy-Tacuara	7.00	2.3	3,747	160,860
10	R218	S1 Acceso a San Estanislao	4.40	2.7	1,696	127,815
11	R502	S1 Mbutuy-Lim. Dptal. San Pedro	19.28	3.8	1,202	209,213
12	R212	S1 Lim. Dptal. San Pedro-Lim. Dptal. Canindeyu	16.55	3.8	1,202	231,971
13	R212	S2 Lim. Dptal. San Pedro-Lim. Dptal. Canindeyu	2.75	4.7	1,202	188,233

No.	Route No.	Road Section	Length of Section (km)	IRI (m/km)	AADT (vehicles/day)	Road Work Cost (US$/km)
14	R1412	S1 Lim. Dptal. Canindeyu-Yasy Kanhy	1.42	4.7	1,202	188,233
15	R1412	S1 Lim. Dptal. Canindeyu-Yasy Kanhy	7.00	4.2	1,202	231,971
16	R1412	S1 Lim. Dptal. Canindeyu-Yasy Kanhy	23.55	3.4	1,202	188,233
		Total (length);Weighted Average (IRI, AADT)	**148.95**	**3.3**	**1,711**	**—**

5. The basic input vehicle fleet economic costs and basic characteristics into the model are as shown in table 5.3. Normal traffic was estimated to conservatively grow at 3 percent per year over the evaluation period for all vehicle types. The International Monetary Fund predicts that the GDP will grow at 4 percent per year from 2016 to 2020. No generated traffic was included on the analysis considering that the road works will have little impact on the vehicle speeds.

Table 5.3. Vehicle Indicators

	Car	SUV	Mini Bus	Light Truck	Medium Truck	Articulated Truck
New vehicle cost (US$ per vehicle)	10,348	18,275	147,134	35,011	51,948	134,985
New tire cost (US$ per tire)	52.59	86.19	419.27	151.93	352.07	419.27
Fuel cost (US$ per liter)	1.08	0.77	0.77	0.77	0.77	0.77
Lubricant cost (US$ per liter)	3.08	3.08	2.58	2.58	2.58	2.58
Maintenance cost (US$ per hour)	4.87	4.87	4.87	4.87	4.87	4.87
Crew cost (US$ per hour)	0.00	0.00	4.70	3.53	5.63	5.63
Miscellaneous costs (US$ per hour)	0.00	0.00	4,753.56	546.84	592.90	1,137.36
Passenger work time (US$ per hour)	2.96	2.96	0.47	0	0	0
Passenger non-work time (US$ per hour)	1.48	1.48	0.24	0	0	0
Km driven per year (km)	20,000	30,000	121,800	51,000	54,000	70,200
Hours driven per year (h)	480	720	2923	1224	1296	1685
Service life (years)	7	7	10	9	9	10
Number of passengers	2	1	38	0	0	0
Gross vehicle weight	1.45	2.48	14.00	6.70	15.50	45.00
ESA load factor	0.02	0.02	0.18	0.18	3.00	4.50
Typical traffic composition (%)	71	12	4	2	2	9

6. The estimated unit road user costs, in U.S. dollars per vehicle-km, for different roughness levels are presented in table 5.4.

Table 5.4. Estimated Unit Road User Costs

Roughness (IRI, m/km)	Car	SUV	Mini Bus	Light Truck	Medium Truck	Articulated Truck
1	0.264	0.318	0.920	0.580	0.759	1.512
2	0.265	0.319	0.924	0.583	0.762	1.520
3	0.266	0.321	0.934	0.589	0.768	1.535
4	0.269	0.326	0.988	0.603	0.791	1.594
5	0.273	0.334	1.043	0.620	0.816	1.655
6	0.278	0.344	1.098	0.641	0.845	1.727
7	0.285	0.360	1.155	0.664	0.877	1.810
8	0.293	0.381	1.214	0.692	0.914	1.896

7. The net benefits of the works are estimated as a reduction in the costs of road works and vehicle operations as compared to the reference scenario. Over 20 years, the net present value (NPV), at a 6 and 12 percent discount rate, and the related EIRR of the investments in the works component are given in table 5.5. The overall component has an EIRR of 20.9 percent and an NPV of US$90.74 million, at 6 percent discount rate.

Table 5.5. Results of Economic Analysis

Project Scenario	NPV at 6% (US$, millions)	NPV at 12% (US$, millions)	EIRR (%)	Benefit-Cost Ratio at 6%
CREMA Route 1	50.41	23.61	24.6	4.3
CREMA Route 3	40.33	13.03	17.8	2.9
Total Project	90.74	36.64	20.9	3.5

8. A sensitivity analysis has also been undertaken to investigate whether Component 1 remains viable when key variables are changed. The key variables tested are increase in the investment costs and reductions in projected benefits. On the investment costs, the sensitivity analysis runs the economic modelling on the basis of a 20 percent increase in costs assumption. On the benefits side, the sensitivity analysis undertakes the economic modelling on the basis of a 20 percent reduction in benefits. A third sensitivity analysis combines the case of a 10 percent increase in investment costs with a 10 percent reduction in projected benefits. The results of these sensitivity analysis tests are presented in table 5.6. The project maintains economic viability in all the test scenarios explored.

Table 5.6. Results of Sensitivity Analysis Tests

Project Scenario	CREMA Route 1		CREMA Route 3	
	NPV at 6% (US$, millions)	EIRR (%)	NPV at 6% (US$, millions)	EIRR (%)
Original	50.41	24.6	40.33	17.8
20% increase in costs	47.32	21.9	36.04	15.4

Project Scenario	CREMA Route 1		CREMA Route 3	
20% reduction in benefits	37.23	21.3	27.97	14.9
10% increase in costs and 10% reduction in benefits	42.28	21.6	42.01	15.2

9. **Road safety.** The economic evaluation of the road safety interventions considers cost-benefit viabilities of works interventions on the two selected corridors. The benefits related to road safety stem from reduction in economic losses associated with road accidents due to road safety countermeasures on the two selected corridors. The evaluation considers economic losses from road accidents, deaths, and injuries. The baseline considers an estimated 3 deaths and 27 injuries per year on Route 1 (San Juan Bautista-Encarnación) and 9 deaths and 81 injuries per year on Route 3 (Mbutuy-Yasy Kañy, Rotonda Calle 6000/Ruta 3-Tacuara, Acceso a San Estanislao, and Carayao-Tacuara). The annual increase in accidents of 3 percent is assumed corresponding to the increase in traffic volume used for the economic evaluation of the CREMA component. The unit values of economic loss for death and injury are estimated at US$0.314 million and US$0.031 million, respectively, according to the iRAP methodology relating the economic value of a fatality to the GDP of a country. The project's physical and institutional interventions are assumed to reduce the number of annual deaths and injuries by 3 percent and 22 percent, respectively. The benefits are calculated as a saving in costs compared to the reference case.

10. Based on the above assumptions, over 20 years, the NPV, at a 6 percent discount rate, and the EIRR of the investments in this component are estimated respectively at US$1.22 million and 12.9 percent for Route 1 and US$4.38 million and 15.2 percent for Route 3. Overall, the road safety component yields an NPV, at a 6 percent discount rate, of US$5.60 million and an EIRR of 14.6 percent.

11. **Overall project economic benefits.** Table 5.7 recaps the overall project benefits, summing up the results obtained for Components 1 and 2.

Table 5.7. Overall Project Benefits

	Net Present Value @ 6% (US$, millions)	Net Present Value @ 12% (US$, millions)	Economic Rate of Return (%)
Component 1	90.74	36.64	20.9
Component 2	5.60	1.17	14.6
Total	96.34	37.81	20.3

CO_2 Emission Analysis

12. The greenhouse gases accounting evaluation was conducted to assess impact of the project on CO_2 emission. Following the economic evaluation, the analysis focuses on Component 1, the project's Road Rehabilitation and Maintenance CREMA Contracts component, for the total extension of 319 km. The assessment period is 20 years, same as for the economic appraisal. Considering methodological challenges on the CO_2 emission assessment in the transport sector,

including difficulties in definition of project boundaries and the reference (base) scenario to specify the project's contributions to CO_2 emission and unavailability of data and information, particularly related to civil works, the analysis was limited to vehicle emissions on roads under the project, which are known to be substantially more than the ones generated by road works. The project's impact on emissions was defined as the difference in emission between the project and reference scenarios which are generally same as the ones envisaged for the economic evaluation.

13. Vehicle emissions are assessed by using the HDM-4 simulation together with the economic evaluation. The HDM-4 model calculates CO_2 emission through the following steps: (a) estimation of average vehicle speed based on road conditions, traffic level, and vehicle characteristics; and (b) estimation of CO_2 emission from vehicles through the formula as a function of vehicle speed, which is defined in HDM-4. The total emissions in the project and reference scenarios are 3.46 million tCO_2 and 3.47 million tCO_2 respectively over 20 years, resulting in an emission reduction of 0.010 million tCO_2, as compared with the reference scenario.

Table 5.8. CO^2 Emissions

	Project Scenario tCO_2	**Without Project Scenario tCO_2**	**Savings tCO_2**
Route 3	1,057,076.10	1,063,698.50	6,622.39
Route 1	2,405,929.65	2,409,695.53	3,765.87
Total	3,463,005.76	3,473,394.02	10,388.26

14. **Conclusion.** Based on the above, the analysis concluded that the net reduction in CO_2 emission of the project is 10,400 tCO_2 over the evaluation period of 20 years.

Annex 6: Poverty and Social Impact Analysis

PARAGUAY: Transport Connectivity Project

1. Drawing on a socioeconomic diagnosis and social assessment[27] carried out as part of project preparation, this annex identifies sociodemographic conditions, poverty figures, mobility patterns, and beneficiary perceptions about the project in the area of influence of the Paraguay Transport Connectivity Project. The study used a series of qualitative and quantitative tools, to describe the social, economic, and occupational profile of the target population, as well as some guidelines for maximizing the distributive and social impact of the project. This annex is organized in three sections. First, to understand the economic and social trajectory that Paraguay has followed in the last decade, country-level poverty and shared prosperity metrics are presented. Second, drawing on consultations and policy recommendations obtained through the socioeconomic diagnostic, the annex describes basic socioeconomic parameters of the beneficiary population, as well as the critical mobility and accessibility constraints in selected project areas. The section further highlights the main problems related to road safety in the catchment area, together with the perceptions of current road users on quality of infrastructure and public transport services. This annex concludes by discussing how the poor and bottom 40 percent are likely to benefit from the proposed road rehabilitation, maintenance, and road safety interventions.

Poverty and Shared Prosperity in Paraguay: A Snapshot

2. Despite experiencing a sustained period of slow and at times negative growth in the 1980s and 1990s and historical and geographic limitations, Paraguay has made considerable progress in recent years in promoting inclusive development and combatting poverty and inequality, an inherent characteristic of the country. Improved economic growth and stability over recent years had positively affected poverty throughout the country. According to the Permanent Household Survey conducted by the DGEEC, as of 2015, poverty levels had decreased to 22.2 percent of Paraguay's total population, compared to 44 percent a decade earlier. Out of those under the poverty line, 10.0 percent were in extreme poverty, compared to 21.2 percent in 2003. Furthermore, the bottom 40 percent benefited from higher income growth than the top 60 throughout the same period, with their incomes growing in 2004–2014 at an annual rate of 5.3 percent compared to 4.9 percent of the average person. Finally, pro-poor growth facilitated an unprecedented reduction in inequality. Indeed, by 2015, the Gini coefficient stood at 0.49, placing Paraguay well ahead of other larger countries in the region such as Brazil, Colombia, and Mexico. Moreover, the size of the middle and upper class (defined as those with household income above

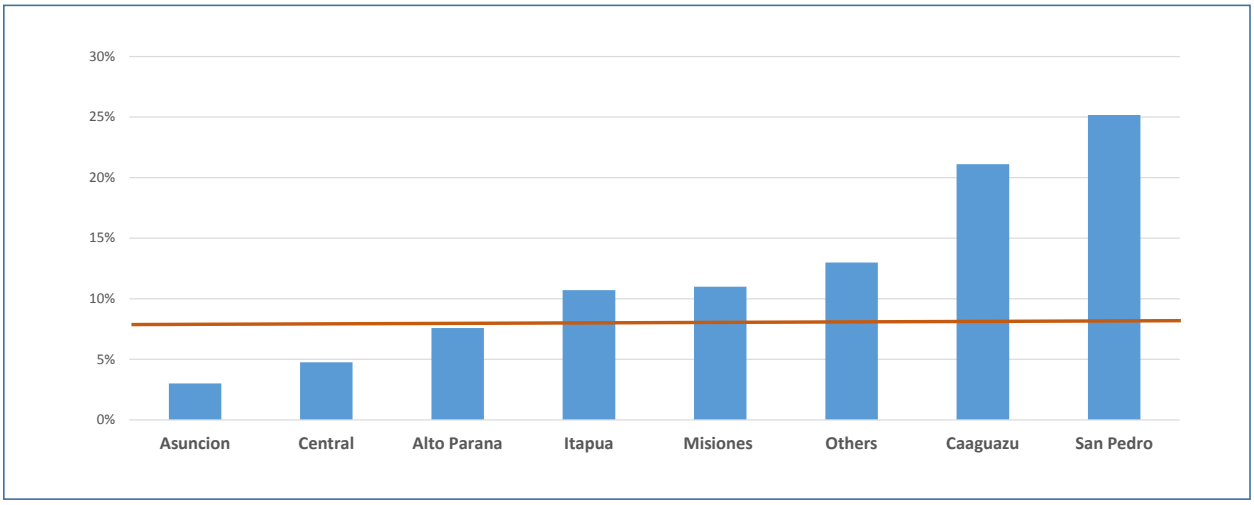
[27] The socioeconomic diagnostic and social assessment of the Paraguay Transport Connectivity Project was carried out between May and June 2015. Its objective was to assess the expected distributional and socioeconomic effects of improved road connectivity along Route 1 and 3, with a particular focus on welfare gains for the poor and other vulnerable groups. The study looked at the impact of improved connectivity with regard to labor markets, consumption, and access to basic goods and services among the lower income population, especially for beneficiaries of social welfare programs, the elderly, and indigenous communities. The study examined livelihood conditions in six municipalities along both Routes 1 and 3. A total of 600 households were interviewed and an additional 5 focus group discussions and 12 in-depth interviews were conducted with key project stakeholders in 12 districts located in the area of influence. The study's findings are summarized in this annex and the full report is contained in the project files.

US$10 a day per person) grew by over 20 percentage points; and by 2014, this group represented 40 percent of the total population of the country.

3. While these positive developments have resulted in increased welfare of the population, Paraguay continues to lag behind its neighbors on some indicators. For example, while Paraguay's per capita GDP reached its highest value in history in 2013 (US$5,290), it was still only slightly over half the regional average (US$10,354), though higher than countries such as Bolivia, Guatemala, Guyana, Honduras, and Nicaragua. Additionally, the country still faces important sources of risk and volatility. Despite important progress in promoting rural development, the socioeconomic difference between cities and the countryside is still very large. For instance, the poverty headcount in rural areas is twice the one observed in cities (32 percent versus 15 percent). Despite the increasing reliance on agriculture and the substantive decline in poverty, two-thirds of the extreme poor live in rural areas and heavily rely on the volatile agricultural sector. By 2015, approximately 132,000 families were unable to meet the cost of a basic food basket, and 72 percent of these families were living in rural areas.

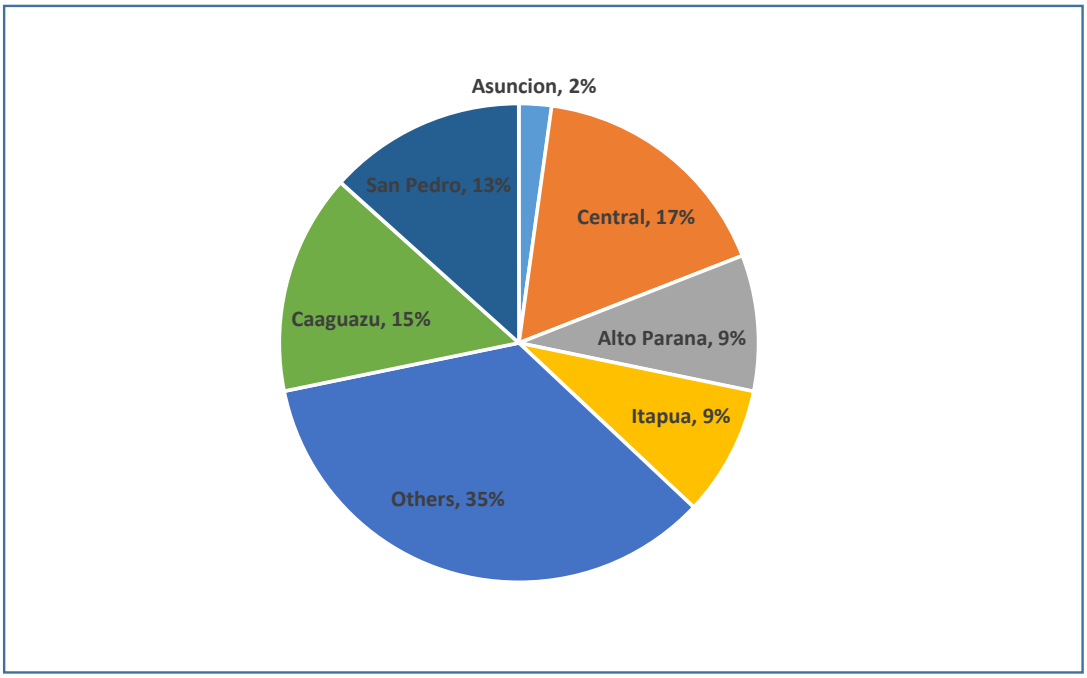
4. Gaps in poverty incidence arise not only between urban and rural areas, but also across geographic areas. More than one-fifth of the population is unable to satisfy their basic food requirements in the central departments of San Pedro and Caaguazú (both of which are served by Route 3), whereas, in Asunción and Departmento Central, less than 5 percent of the population is in this situation (figure 6.1). However, because they are the most populous, these two departments account for 20 percent of the extreme poor in the country.

Figure 6.1. Extreme Poverty Incidence by Department, 2015



Source: DGEEC, *Encuesta Permanente de Hogares* 2015.

Figure 6.2. Demographic Distribution of Extreme Poverty, 2015



Source: DGEEC, *Encuesta Permanente de Hogares* 2015.

5. Added to this, there is a high degree of vulnerability throughout the country with one in three Paraguayans considered economically insecure, with a sizeable probability of falling back into poverty. In a highly volatile environment such as Paraguay and in the face of recent large socioeconomic advancements, it is important to seek mechanisms to ensure that the gains of the periods of growth are not reversed as soon as the economic situation changes. This necessarily involves providing sustainable regional employment and income opportunities for the poor in rural communities, where poverty is highest.

6. One important channel for achieving this goal is through the provision of adequate and well-maintained transport links as well as reliable and safe year-round transport services. In Paraguay, a high proportion of the poor live in rural areas isolated by distance and terrain from employment and economic opportunities, markets, health care, and education. The road network in the country is still constrained in both coverage and quality and suffers from lack of maintenance. Road network constraints are considered one of the main reasons for unequal development of the different regions of the country, and the analysis presented below shows that there is an unequivocal correlation between the quality of road infrastructure of regions and the level of poverty of its population. Before discussing the existing mobility and accessibility constraints along the five departments that are part of the alignment of Routes 1 and 3, the next subsection presents some sociodemographic characteristics of the targeted project beneficiaries.

Socioeconomic Profile of Beneficiaries along Routes 1 and 3

7. The rehabilitation of national roads along Route 1 in the south and Route 3 in the northeast of Paraguay will bring better connectivity to a catchment area comprising the departments of Itapúa, Misiones, Caaguazú, Canindeyú, and San Pedro, attending to the mobility and accessibility needs of approximately 385,000 inhabitants, of which close to half live in rural areas. This group

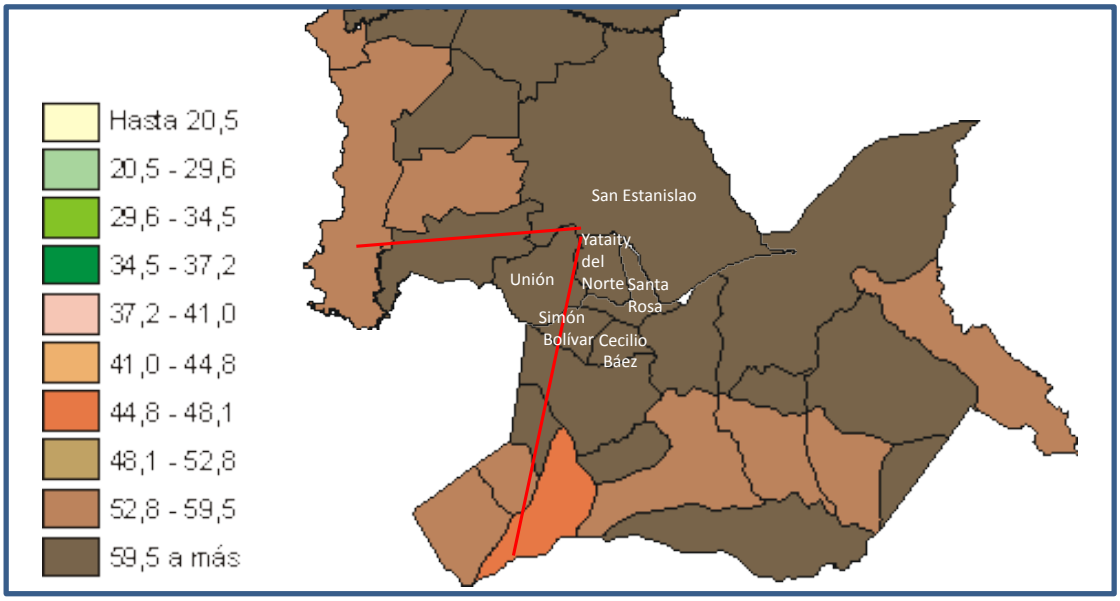
of key beneficiaries will enjoy better connectivity to markets, jobs, and services. As mentioned above, the majority of these beneficiaries are situated below the poverty line. The project also targets vulnerable women as well as over 2,500 people of indigenous descent. End-consumers in the catchment area and elsewhere will also benefit indirectly from lower transport and logistics costs, which should translate into reduced prices for consumer goods.

8. Zooming into the specific socioeconomic characteristics of inhabitants along the alignment of areas of influence of Routes 1 and 3 allows better discernment of the strong divide that exists between rural and urban areas, as well as the relatively higher levels of poverty and inequality that have traditionally existed in some of the country's more remote departments. The analysis below summarizes the demographic, educational, and occupational structure in the two areas of influence where road rehabilitation and maintenance works will take place under the project.

9. Data collection took place in six districts located along the catchment area of Route 1, namely the southern departments of Misiones and Itapua, and in six northern districts of the departments of San Pedro and Caaguazu in the area of influence of Routes 3 and 8. The analysis sheds light on the connectivity and mobility needs of the population within the immediate and extended project catchment area. The social, economic, and occupational profile of the target population follows common characteristics of the countryside in Paraguay, where over 80 percent of employment is almost exclusively in farming and livestock production. Except for the city of San Estanislao along Route 3 and Misiones, San Ignacio, and Encarnacion along Route 1, the population of all other municipalities ranges between 6,000–20,000 inhabitants. When looking at poverty levels by district, data from the 2015 Household Survey (*Encuesta Permanente de Hogares*) confirms that the districts along Route 3 are some of the poorest in the country (figure 6.3). Overall, the proportion of households earning less than the moderate poverty line for rural areas[28] exceeds 60 percent in most of municipalities under study.

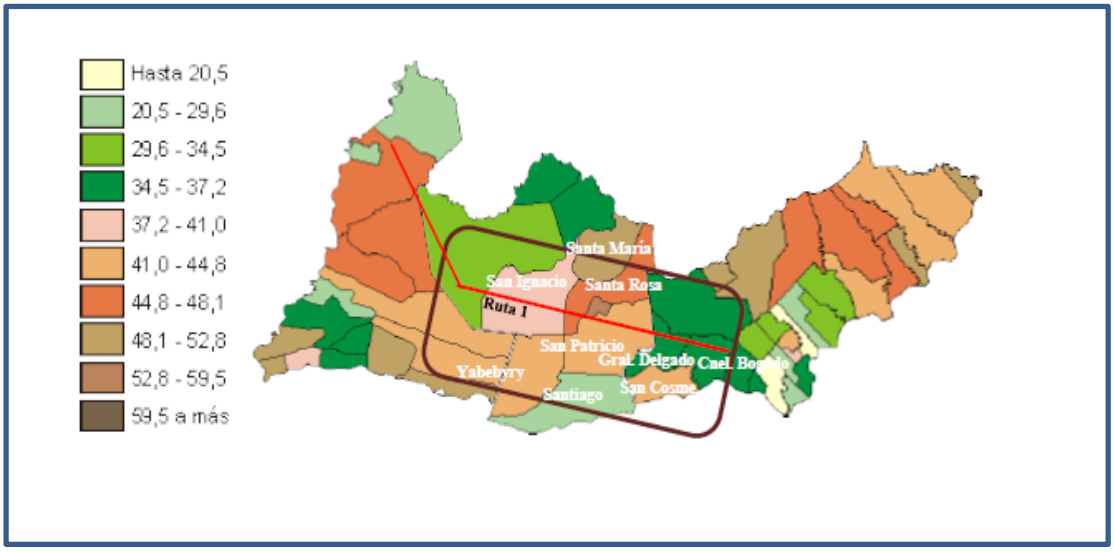
[28] The moderate poverty line for 2015 in rural areas was set at monthly income of PYG 396,266 or US$70 per household.

Figure 6.3. Moderate Poverty Incidence (Percentage of Total District Population) in Catchment Area of Routes 3



Source: DGEEC, *Encuesta Permanente de Hogares*, 2015.

Figure 6.4. Moderate Poverty Incidence (Percentage of Total District Population) in Catchment Area of Route 1



Source: DGEEC, *Encuesta Permanente de Hogares*, 2015.

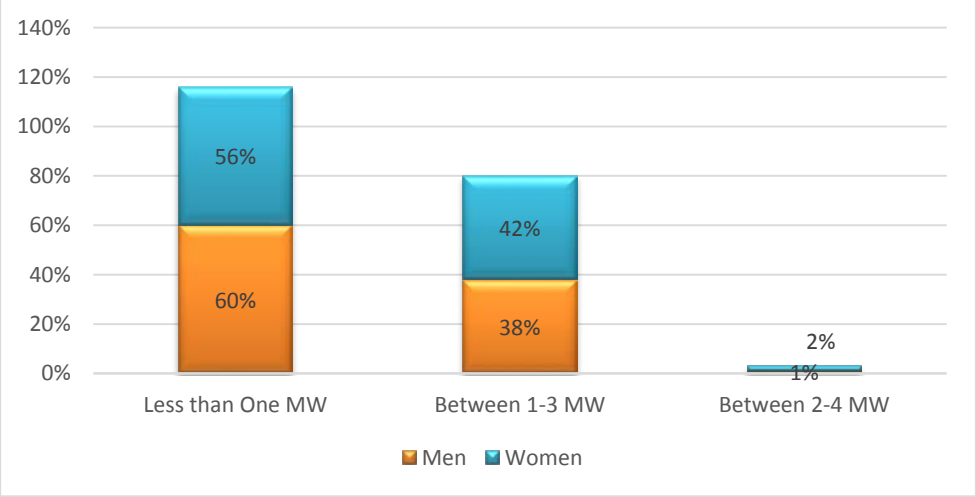
10. In the case of Route 1, results from the household survey demonstrate that though the level of poverty incidence is lower than in the catchment area of Route 3, it is nonetheless above the average for selected rural areas where up to 52 percent of the population are situated below the moderate poverty line in rural areas. Within this group, a further 42 percent could be classified as extreme poor as they are beneficiaries of cash transfer programs of the state, considering that to enter these programs, one of the conditions is to be in the range of extreme poverty or highly vulnerable as are the elderly, which interestingly account for about 63 percent of the surveyed population in extreme poverty. This finding further lends support to the case for implementing

transport policies and programs that address the mobility needs of, not only the poor, but also the elderly, who on average commute less that other age groups but nonetheless have higher needs for accessing health services.

11. Results from the quantitative study further confirm the precarious and vulnerable living conditions of most of the beneficiary population. Three main findings are worth highlighting.

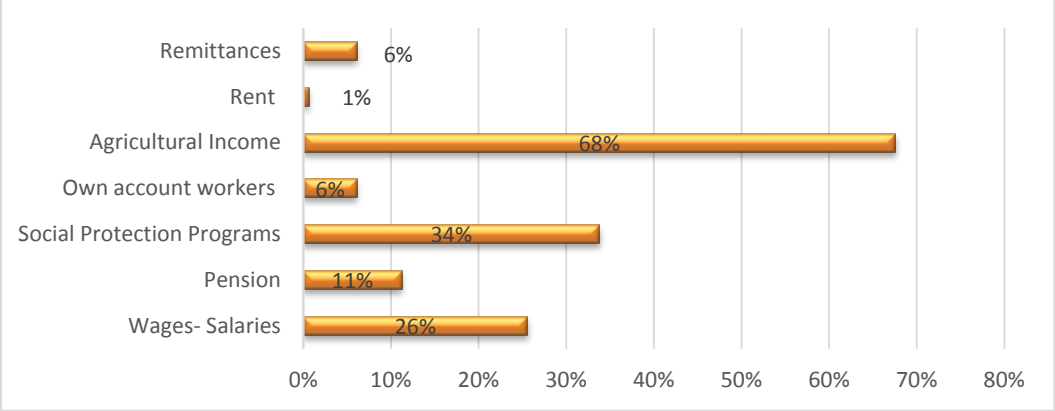
- First, the overwhelming majority of the population is employed in small-scale farming and ancillary agricultural activities with 60 percent of households earning less than the minimum wage of US$330 a month (figure 6.5). The significant share of income is derived from agricultural activities, with several of these households, particularly in the northern region, also being recipients of social protection programs, which may work as a financial cushion in times of poor agricultural harvest or low prices. At the end, these households are vulnerable to both communal and idiosyncratic shocks that may push them further into poverty (figure 6.5).

Figure 6.5. Household Income Level Northern and Southern Zones



Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.

Figure 6.6. Source of Household Income in Project Area of Influence: Route 3*



Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.
*Note:** Households may report multiple sources of income thus total share of each category may be higher than 100 percent.

- Second, results from the household survey show that overall education attainment in the area is low, with less than 13 percent of the sample having completed secondary or tertiary education (figures 6.7 and 6.8). However, even in households with high education attainment, migration of skilled workers to urban centers (mainly Asuncion) and neighboring countries has become a ubiquitous phenomenon. For example, youth migration to Argentina is alarming and continues to grow, as evidenced by each of the interviewed households who revealed having between two and three relatives in Buenos Aires.

Figure 6.7. Education Attainment in Area of Influence - Route 3

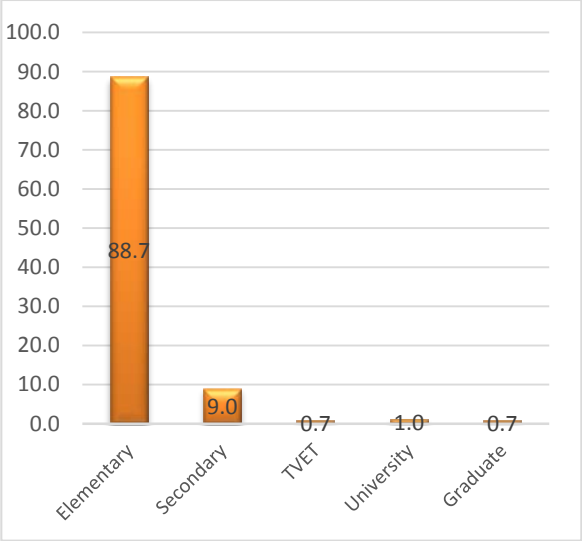
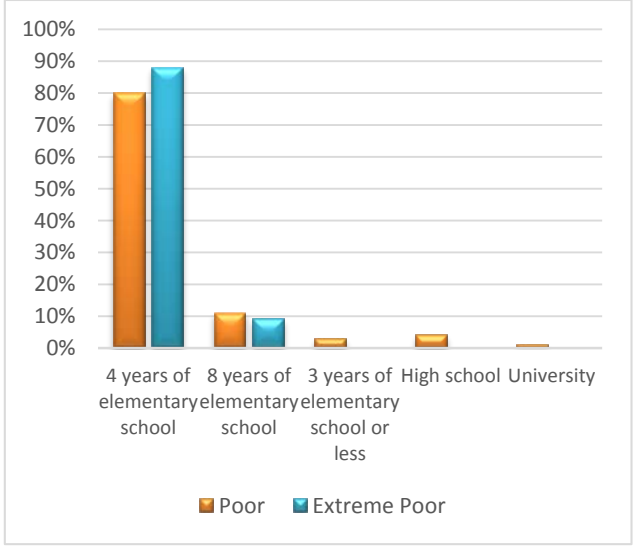


Figure 6.8. Education Attainment in Area of Influence - Route 1



Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.

- Third, women face structural barriers in finding full-time employment (figures 6.9 and 6.10) and are generally paid less than their male counterparts. These additional burdens have implications for gender equality and, on a more general level, social inclusion, and poverty reduction. For instance, they are often time-impoverished as they undertake several activities to support the household—childcare and informal sector employment and also head-loading and journeys to meet subsistence needs.

Figure 6.9. Occupation of Head of Household Male Route 3

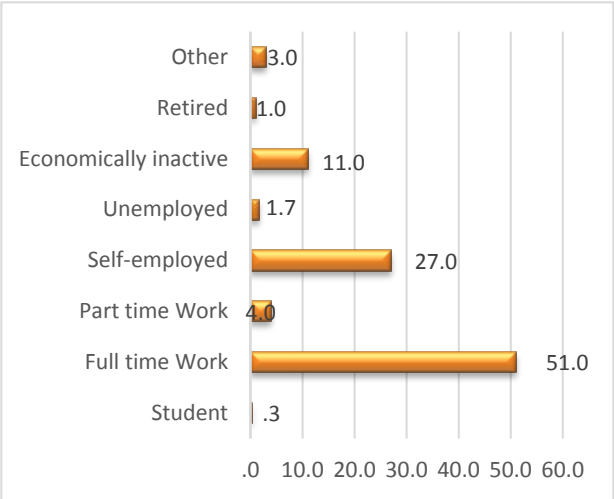
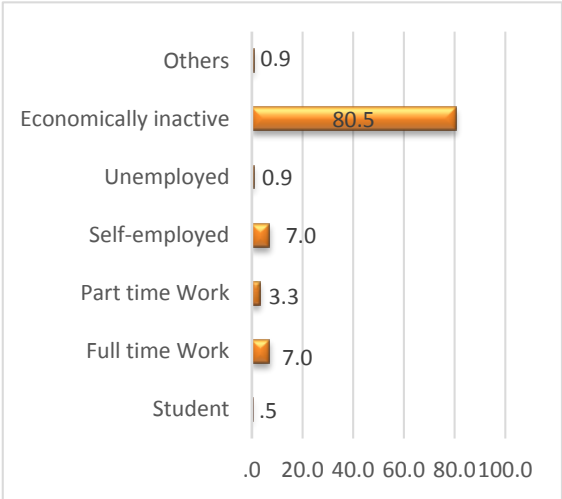


Figure 6.10. Occupation of Dependent Female - Route 3



Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015

12. While the reasons underpinning these findings are multiple and at times structural rather than merely circumstantial, inadequate connectivity in the project area may be one of the factors underlying the relatively disadvantaged livelihood conditions or rural communities. For example, households encounter transport constraints (both physical and financial) in accessing schools, technical and vocational education and training institutions, and universities. Well-maintained roads can mitigate the multiple sources of risk that rural communities face by (a) securing year-round access to markets, seasonal off-farm employment opportunities, basic education, and health services and (b) ensuring that women can effectively undertake household management activities while concomitantly finding income-generating opportunities.

Mobility and Accessibility Constraints in Selected Project Areas

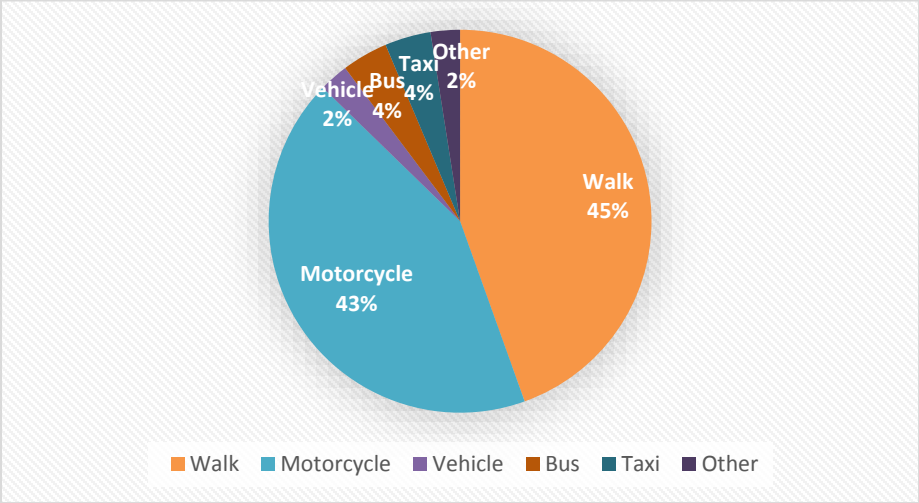
13. Results from the survey tend to demonstrate that mobility and connectivity constraints in the catchment area of both Routes 1 3, which directly affect the livelihood conditions of low-income households and marginalized communities, particularly in terms of access to health, education, and safety. These limitations also impinge on the capacity of the rural labor force in expanding production, marketing local products, purchasing cheap inputs, and accessing information about commodity prices. Highlights on the distinctive travel patterns of poor and vulnerable groups obtained through the household survey and consultations with the community, together with the perceptions of local transport infrastructure and services, are presented below:

(a) First, because transport services tend to be insufficient and at times unaffordable in rural areas, the poor make fewer trips per capita than the non-poor. The situation is even worse for women who, more often than not, do not have access to private means of transport. These mobility constraints in turn, can contribute to a chronic inability

to strengthen human capabilities and accumulate the private and social assets that are necessary for a sustainable livelihood[29] (Boot et al. 2000).

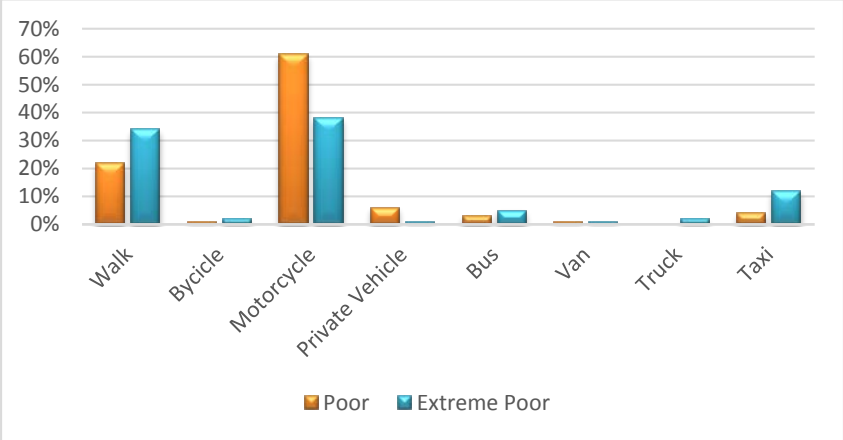
(b) The modal split of the poor and the composition and purpose of their trips is different. The findings from the socioeconomic diagnostic show that, though trips by buses and public transport have been growing substantially, the great majority of trips completed by the poor within the municipalities are still by foot (figures 6.11 and 6.12), though less so in the area of influence of Route 1 because of the relatively lower density and need for financially accessible motorized travel options such as motorcycles. Predictably, along the catchment area of Route 3, where the vehicle ownership ratio is lower, walking accounts for most of trips, at times imposing a heavy burden on students and women in particular, who often have to walk 5 km or more.

Figure 6.11. Modal Composition of Trips in Route 3 Catchment Area



Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.

Figure 6.12. Modal Composition of Trips in Route 1 - Catchment Area by Income Strata (Intra-municipal Trips Only)

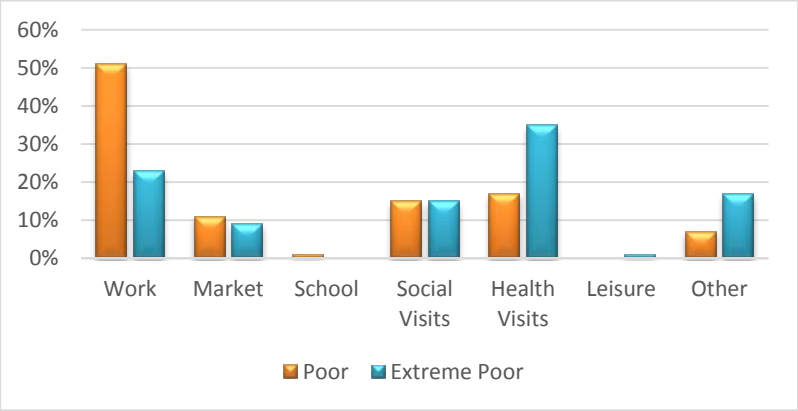


Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.

[29] Booth, David et al. 2000. Poverty and Transport. London: Overseas Development Institute.

(c) The survey shows that there are broadly three groups of travel purposes that present significant weight, namely, activities relating to professional life (work and study), social life (including visits and entertainment), and housework (shopping/health visits, activities related to the home). For low-income groups, this 'forced' mobility rate is greater as unaffordable transport costs and geographical isolation means that members of a poor household will travel less and commute mostly for work, education, or housework. Even within the lower income strata, there are some marked differences on trip motive and this is a reflection of the slightly different sociodemographic characteristics of each group. Because there are more elderly among the population living below the extreme poverty line, this implies that the mobility of this group is more constrained and health visits account for a larger share of trips (figure 6.13).

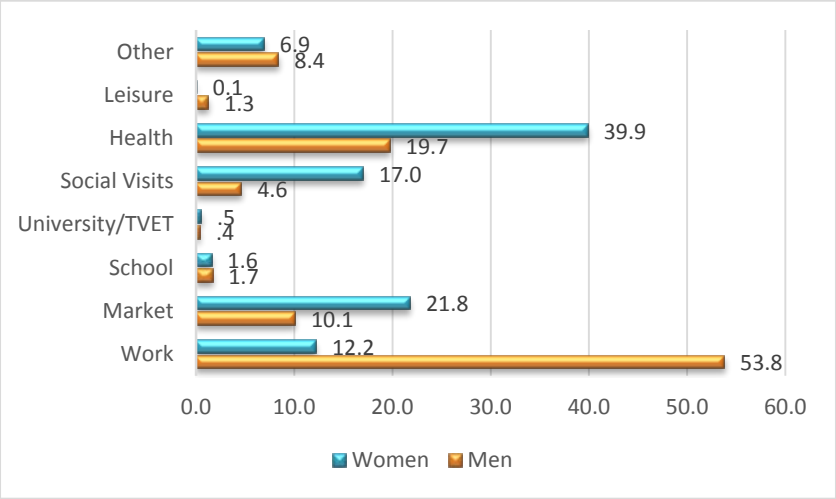
Figure 6.13. Trip Purpose - Poor versus Extreme Poor: Route 1



Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.

(d) The data on trip purpose also gives some evidence on the unequal division of labor between men and women and how they use transport primarily to fulfil the 'reproductive' tasks of the household, which of course is a key determinant of transport demand and use of transport services. For instance, over half of the trips completed by men are for work and other income-generating opportunities. When looking at women's trip composition, about two-thirds are either for social, health, or market visits with less than 12 percent corresponding to work (figure 6.14).

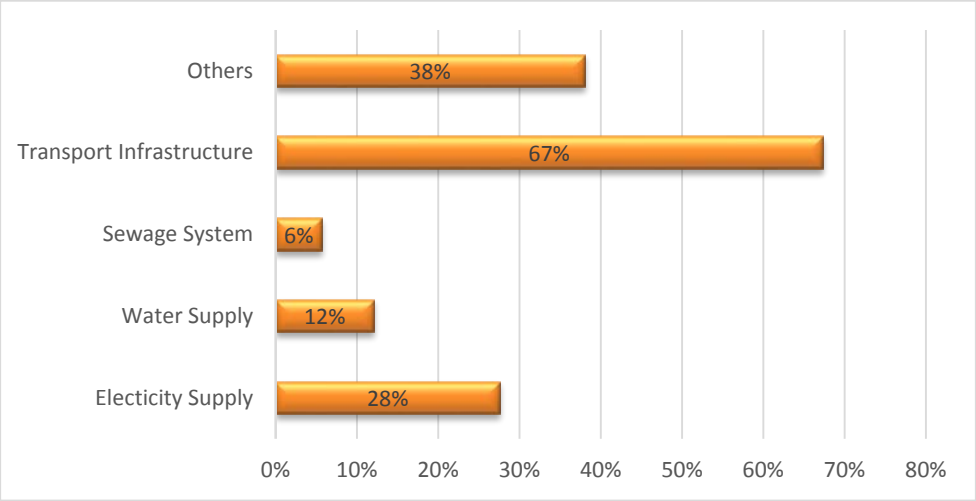
Figure 6.14. Trip Purpose (Route 3) - Women vs Men



Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.

(e) Despite some recent investments in the local and regional road network, the quality of transport infrastructure in the catchment area remains low and there is considerable regional variation with regard to access to markets and basic services. The socioeconomic diagnosis asked questions related to road user perceptions on (i) quality and road transitability, (ii) reliability of public transport services, (iii) road safety, and (iv) adequacy of the existing national and regional road network for reaching jobs, markets, and social services. The survey confirmed the importance of Routes 1 and 3 as a structuring axis of socioeconomic mobility in both the southern and northern regions. Notwithstanding the importance of these corridors, the population in the catchment area report a low level of satisfaction with road quality. Indeed, about 40 percent rated maintenance of Route 3 as very poor and over 50 percent rated local roads in the area as very poor. Unsurprisingly, respondents of the survey rate transport infrastructure deficiencies as the biggest problem their communities face (Figure 6.15). There is a common perception that deteriorating road conditions have increased transport costs and hence better and more frequent routine maintenance could have a positive impact on travel cost and the time needed to reach most frequent destinations. Poor quality of roads increases maintenance expenses and operating costs not only for farmers and rural households, but also for the commercial and industrial sector who find it more costly to procure supplies and deliver outputs. Continued asset management, routine road maintenance, and more reliable access to public transportation could reduce transportation costs bringing important benefits to households, farmers, and firms alike.

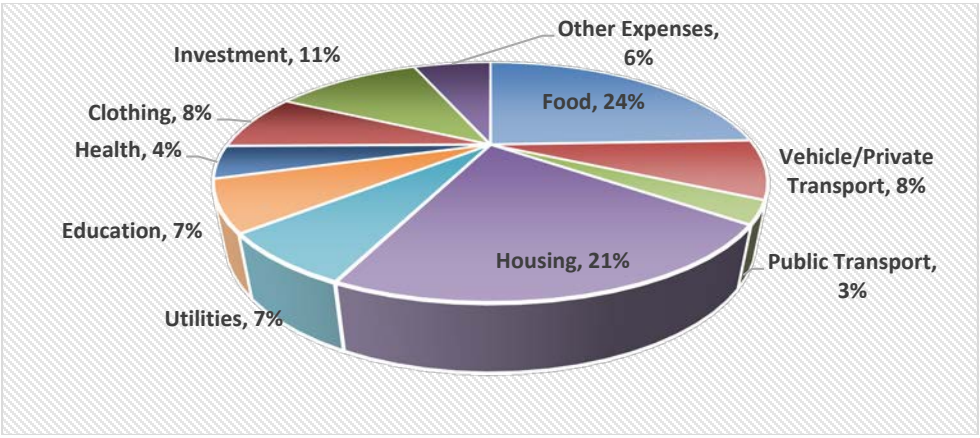
Figure 6.15. Main Problems Affecting Surveyed Settlements



Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.

(f) Finally, transport accounts for a high share in overall expenditure for the households in the sample, with motorized mobility options sometime unavailable for the lowest income strata. Indeed, survey results show that for the core poor the cost is the critical constraint to their use of transportation services. While overall transport expenses for the population amount to 10 percent to13 percent of household income, the share for captive users of public transport forced to make interregional trips on a daily basis might be much higher. For example, the survey found that while most beneficiaries carry out their main social and economic activities within their municipalities, a significant proportion of close to one-third of households from the lowest stratum utilize public transport for round-trip distances of over 50 km each day. Total expenditure for such transport amounts to PYG 600,000 per month. For an individual earning less than the minimum wage (over half of the interviewed sample), this corresponds to 30–35 percent of the total household income. The impact of high or unaffordable fares may in turn affect a person's work search incentives for better paid, but more distant locations, outside of agriculture.

Figure 6.16. Composition of Household Expenditures



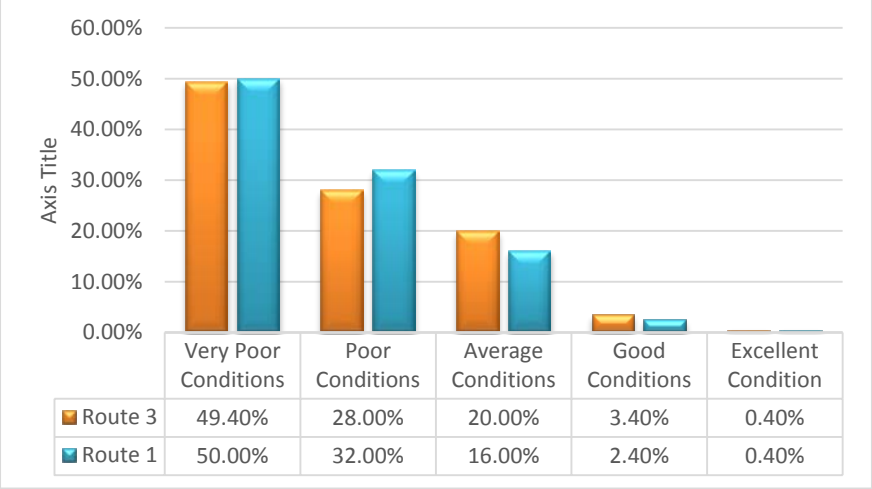
Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.

14. All of these findings strengthen the case for supporting investments in road asset management throughout the catchment area to ensure that farmers can sustainably market their products, the unemployed can find jobs, children can go to school and health centers, and teachers and health care providers can get to their workplace every day. The qualitative research carried out as part of the socioeconomic diagnostic corroborates the poor condition of the roads and the negative consequences that this has had on the poor. Because most farmers do not have private means of transportation, they rely heavily on local traders who provide services to transport local products but charge high prices mostly due to relatively bad road conditions. According to estimates of producers themselves, the freight cost is often doubled because of the poor state of local and secondary roads and raised even more in the rainy season. This, of course, affects profitability of farmers, but more importantly, may force rural households to ration budgets prioritizing the travel needs of the breadwinner at immense welfare cost to the household as whole.

Road Safety Aspects

15. Road safety constitutes a sensitive issue for both the authorities and the dwellers located in the project's catchment area. The high rate of accidents, especially for motorcycles, bicycles, and pedestrians, has forced the local authorities to resort to ad hoc, sometimes precarious measures, to improve safety in the immediate alignment of Routes 1 and 3. Added to this, there are generally very poor signaling arrangements on both the national and local road networks and poor lighting which increases the chances of being involved in an accident. Risk exposure is prevalent particularly for pedestrians, motorcyclists, and others as urban centers are located along the routes' alignments. The survey carried out in the context of the socioeconomic diagnostic demonstrated the extent to which road safety constitutes a matter of growing concern for the community (figure 6.17). The low ratings assigned to the roads, which are seen as very unsafe due to their impassable conditions, lack of lighting and signaling, and generally poor maintenance, demonstrate the emphasis that beneficiaries place on road safety.

Figure 6.17. Beneficiary Perception of Road Safety in Routes 1 and 3



	Very Poor Conditions	Poor Conditions	Average Conditions	Good Conditions	Excellent Condition
Route 3	49.40%	28.00%	20.00%	3.40%	0.40%
Route 1	50.00%	32.00%	16.00%	2.40%	0.40%

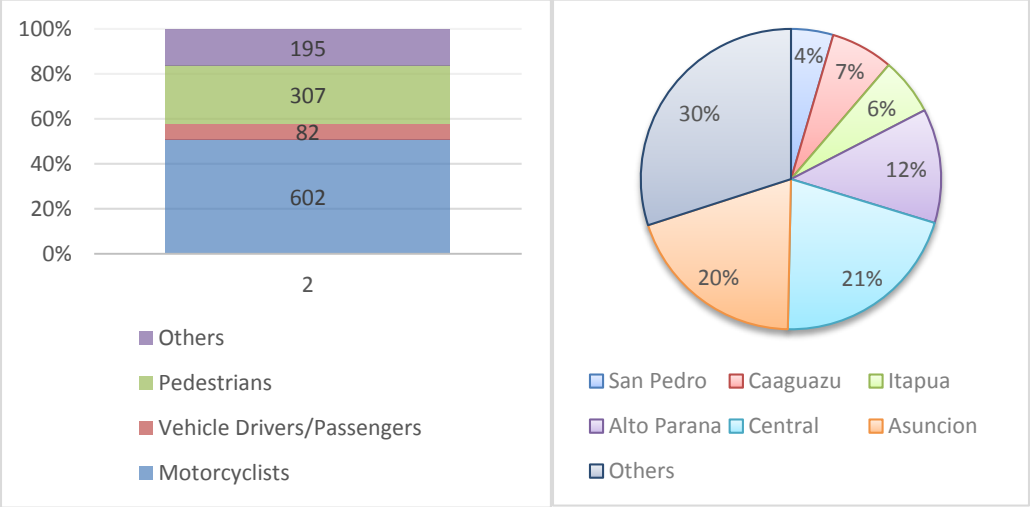
Source: Socioeconomic diagnostic of Transport Connectivity Project, 2015.

16. Among road traffic victims, vulnerable population groups tend to be particularly affected by road-related traffic deaths and serious injuries. Not only are the poor and bottom 40 percent

disproportionately overrepresented among the victims, but road trauma often results in untold misery for low-income groups who may be deprived of the sole income-generating source following a fatality or an accident. If the head of household or breadwinner is killed or severely injured, the impact to that household can be devastating.

17. While road accident statistics for the project's catchment area are not available, reports from the Ministry of Health show that pedestrians and motorcyclists are the most vulnerable road users. Out of 1,188 recorded deaths in Paraguay, 909 (76 percent) corresponded to these two types of vulnerable road users. Furthermore, a large percentage of these accidents have occurred in Departmento Central and Caaguazu, which account for 20 percent of the extreme poor in the country. In recent years, there was a slight decrease in the number of them being fatally injured and a slight increase in the number of them being seriously injured. While accurate data on the socioeconomic profile of these users is not available, it is believed that the majority of crash victims in these two categories of vulnerable road users (pedestrians and motorcyclists) fall into the bottom 40 percent of the income distribution. Whether living in urban or rural areas, pedestrians in the bottom 40 percent are more exposed to risk when compared with the top 60 percent of the distribution. The same applies to motorcyclists although this group tends to be overrepresented in accidents in interurban corridors, such as the ones targeted through the proposed project. Improving road safety for pedestrians in both urban and rural areas and motorcyclists in interurban corridors will result in fewer victims among the bottom 40 percent and, as a result, less household financial stress.

Figure 6.18. Road Fatalities by User Mode and by Department, 2013.



Source: Ministry of Health, 2013

18. This is so because the long-term financial impact of road crashes on the household can be quite severe. Household-level data for Paraguay is not available, but results of a survey on the situation in South Korea show that 70.7 percent of the disabled and 27.6 percent of the non-disabled victims of road crashes experienced job losses after a traffic incident. Furthermore, 67.9 percent of the disabled and 24 percent of the non-disabled who lost their jobs remain unemployed for long periods of time. Similarly, the medical treatment of a victim, for example, may continue over many years ahead or even for their entire lifetime. Without a secure and sustainable source of revenue, poor and vulnerable households will have an increasing inability to overcome the

trauma. Therefore, a coherent and well-implemented road safety strategy can be a cost-effective tool for protecting the poor from becoming poorer and for preventing those who are already vulnerable from becoming even more so in the future. It is therefore important in budgeting and resource planning to ensure that the social benefits of enhanced road safety are considered and that road safety interventions are assessed fairly when compared to other social investments.

19. Overall, the existing transport infrastructure deficiencies in the area of influence of the Transport Connectivity Project coupled with Paraguay's poor record in road safety may be an important driver of poverty in the country. Lack of adequate infrastructure—not only roads and bridges, but also paths, trails, and sidewalks—makes it difficult for poor people to fully develop themselves and achieve economic freedom. There is a clear evidence that physical isolation is associated with low agricultural production (linked to poor market access and low use of fertilizers and modern agricultural technologies). It is also linked with poor health and low enrollment rates or negative schooling outcomes. The main way rural people access markets, health care, education, and socioeconomic opportunities is through roads that connect rural communities to market towns. As such, a well-maintained primary road network and road safety measures are both a sine qua non for a country to prosper and for low-income populations to sustainably escape poverty and manage risk.

Expected Project Contribution to the Twin Goals

20. At the most direct level, the Transport Connectivity Project will ensure that employment opportunities are available both under the CREMA and microenterprise components. This will include not just management-level roles but also lower skill roles such as laborers, gangers, plant operators, and administration assistants. It is expected that during project implementation, direct job opportunities and training are created under a CREMA contract. Income opportunities will be predominantly available in rural communities in the departments of Caaguazu and San Pedro for Route 3 and Itapua and Misiones for Route 1, where the prevalence of poverty is highest. The envisioned routine and periodic maintenance activities are also expected to generate multiplier effects in the local economies. Unlike short-term road construction projects, the maintenance programs that will be initiated under the project are expected to provide long-term jobs, likely to last beyond the project period.

21. Indirectly too, the Transport Connectivity Project may, in the medium to longer term, improve other welfare indicators for the local population, becoming an important channel for achieving key developmental goals. Some of these indirect impacts are already anticipated by the households and stakeholders consulted in the context of the socioeconomic diagnostic. Most project beneficiaries, who rely on agriculture as a source of livelihood and income generation, must permanently cope with problems of poor quality and serviceability of roads, which directly affects earnings and use of social services. The perceptions and opinions of participants of focus group discussions and household surveys show that rehabilitation and maintenance of roads is expected to positively affect social and economic indicators of these areas and overcome some of the major difficulties they face today in relation to transport infrastructure. Households, farmers, and other stakeholders who were consulted strongly believe that continued road maintenance will bring benefits with regard to market accessibility, increased production volumes and productivity, reduced travel time and costs, reduction of production cost, and improvement of access to health services and education.

22. Finally, road safety considerations included in project design are anticipated to have a positive distributional outcome. Existing data demonstrates that the majority of road traffic fatalities in Paraguay are among vulnerable road users (pedestrians and motorcyclists), who are often the primary breadwinners of rural households; hence, there is a clear rationale for improving road safety on equity grounds. The costs and impacts because of road crashes have a higher burden for the poor. The expected road safety interventions envisaged under the project may not only reduce the number of road-related deaths and injuries but could also assist policy makers in determining the appropriate policies that have a poverty alleviation potential. Other than this, comprehensive transportation planning, including asset management and routine maintenance, could reduce road accidents among poor people who constitute one of the main groups of road users in the area of influence and in Paraguay as a whole.

Annex 7: Building Climate Resilience

PARAGUAY: Transport Connectivity Project

1. According to the United Nations Office for Disaster Risk Reduction ranking, Paraguay has a medium disaster risk (3.2). Historically, Paraguay has been exposed to floods, droughts, epidemics, storms, and forest fires. According to the International Disaster Database, EM-DAT, the extreme event that has hit Paraguay with the highest frequency in the last 25 years is floods (39.3 percent) and floods also is the event that has caused the highest mortality (40.1 percent).[30] The most important events that have been recorded because of the El Niño and La Niña phenomena by the changes in their regime of rainfalls and temperatures were the events of 1982–1983 and 1997–1998. El Niño 2015–2016 is considered as strong as those two events and surpassed them in terms of temperature. El Niño 2015–2016 increased the intensity and frequency of rainfall in the eastern region and in the bottom of the Chaco Region by the end of October and in the months of November and December 2015. As a result, the Paraguay River, in Bahia Negra, rose 1.5 meters above the average height, as well as in other ports such as Concepcion, Asuncion, and Pilar. The Parana River also recorded an increase in flow levels (between 17,000 m^3/s and 31,500 m^3/s).[31]

2. Currently there are 1.37 million people (21 percent of the total population of the country) living in 34 cities along the Paraguay River, including the Central Department where Asuncion, the capital city, is located. These cities have river protection systems in poor condition, which are about to be surpassed by the river. The consequences of El Niño 2015–2016 resulted in a displacement of the population living along the river to shelters and temporary settlements (approximately 70,000 people) and also had an impact on their livelihoods. A study from the United Nations World Food Program32 determined that in Asuncion, 45 percent of the families have a food insecurity index between severe and moderate. The conditions of basic sanitation also generated an increase in the epidemiological profiles of zika, chikungunya, and dengue, for which a health emergency was declared. which highlights the need to improve the monitoring of road sections for natural disasters, the collection of updated climate related data, and carry out a comprehensive vulnerability assessment of roads to climate change, as well as to strengthen Paraguay's ability to better manage the vulnerability to climate change in the sector, and emergency response such that it is more efficient but does not compromise accountability.

3. El Niño 2015–2016 also left major damages in the transport infrastructure (around 35 affected points and 40 bridges damaged or destroyed). Given the dimension of the damages, the World Bank is supporting the MOPC with funds from the Global Facility for Disaster Reduction and Recovery (GFDRR) to assess the damages in the transport sector through a Post-Disaster Needs Assessment report to prepare a sector strategy for rehabilitation and reconstruction. Even though all damaged points have been temporarily restored, there are important needs for permanent reconstruction and to strengthen Paraguay's ability to better manage the vulnerability to climate change in the sector, among others. It is expected that changing conditions will continue to affect

[30] http://www.preventionweb.net/countries/pry/data/

[31] Climate and Hydrologic Conditions and Outlook for the first semester of 2016, First National Forum of Hydroclimate Outlook, Outlook for the period April to June 2016. March 2016.

[32] Final report, field study for the evaluation of food security in emergencies, World Food Program, March 2016.

the country. A study of vulnerability to climate change in Paraguay[33] established a constant precipitation increase for decades 2011–2020, 2021–2030, and 2031–2040. It also concluded that the greatest expected impact is the increase in temperature, resulting in more intense drought periods.

Project Activities Addressing Climate Resilience

4. Under Component 1, Road Rehabilitation and Maintenance CREMA Contracts, the CREMA contracts include activities that will help build climate resiliency along the road sections included in the project. The activities have been identified in three groups: (a) the first works included as part of the rehabilitation works during the first two years of the contracts, (b) the works included in the maintenance activities during the five years of the contract after the rehabilitation, and (c) emergency works, that had been required in Paraguay in the past to repair damages due to a climate-related event (the zone where the CREMA contracts will be or is vulnerable to this type of risk).

5. The activities included in the contract as part of the rehabilitation works are clearing of the ROW, clearing of drainage structures, provision of protection structures at drainage and slopes, and replacement of concrete drainage structures. Additionally, the cost difference between conventional asphalt and asphalt with polymers that will be used in the road sections was included, given that its properties make it perform better in high temperatures and increased rainfall.

6. A proper maintenance regime will help build the resilience of the existing infrastructure. After rehabilitation, appropriate clearing of the ROW and drainage structures, restoration of the slope erosion, and maintenance of breaches will help the road perform as designed in the case of an intense rain season. The emergency works could also include repairs of drainage structures to increase drainage capacity.

7. Considering the activities identified above, it has been estimated that around US$6.73 million under Component 1 could be attributed to climate resilience measures.

8. The project is not carrying out activities that contribute to mitigate climate change.

Climate Co-benefits per Component

9. Considering the above information, the project adaptation co-benefits are calculated using the climate change coding methodology. Table 7.1 presents the co-benefits estimated by sector.

Table 7.1. Co-benefits Estimated by Sector

Component	Activities	Bank Commitment (US$, millions)	Sector Codes (%)	Adaptation Associated Sector (US$, millions)	Mitigation Associated Sector (US$, millions)
Component 1	Road Rehabilitation and	77.00	S1. Rural and interurban road	6.7	0

[33] Vulnerability to Climate Change Report in El Gran Chaco Americano, United Nations Environment Programme, Regional Gateway for Technology Transfer and Climate Change Action in Latin America and the Caribbean, June 2003.

Component	Activities	Bank Commitment (US$, millions)	Sector Codes (%)	Adaptation Associated Sector (US$, millions)	Mitigation Associated Sector (US$, millions)
	Maintenance CREMA Contracts		and highways (100%)		
Component 2	Road Safety	12.00	S1. Rural and interurban road and highways (60%) S2. General transportation sector (40%)	0	0
Component 3	Road Asset Planning and Management	3.75	S2. General transportation sector (100%)	0	0
Component 4	Project Management and Implementation Support	7.00	S2. General transportation sector (100%)	0	0

10. Based on the data presented in table 7.1, 8.0 percent of the adaptation co-benefits can be assigned to the rural and interurban road and highways sector, and 0 percent to the general transportation sector. As presented above, there are no mitigation co-benefits that can be assigned to the project activities nor to the project sectors.

Annex 8: Map

PARAGUAY: Transport Connectivity Project