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Report No: PADHI01000

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED LOAN

IN THE AMOUNT OF US$200 MILLION

TO THE

STATE OF MATO GROSSO DO SUL

WITH A SOVEREIGN GUARANTEE FROM THE FEDERATIVE REPUBLIC OF BRAZIL

FOR A

BRAZIL PROACTIVE, SAFE, AND RESILIENT ROAD ASSET MANAGEMENT PROGRAM - STATE OF MATO GROSSO DO SUL PROJECT – PHASE 4 OF THE

MULTI-PHASE PROGRAMMATIC APPROACH

WITH AN OVERALL FINANCING ENVELOPE OF US$1,662.4 MILLION

APRIL 11, 2025

Transport Practice Area
Latin America And Caribbean Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2025)

Currency Unit =	BRAZILIAN REAIS (BRL)
BRL 5.74 =	US$1
US$0.174=	BRL 1

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Carlos Felipe Jaramillo
Regional Director:	Maria Marcela Silva
Country Director:	Johannes C.M. Zutt
Practice Manager:	Bianca Bianchi Alves
Task Team Leaders:	Eric R. Lancelot, Carlos Bellas Lamas

ABBREVIATIONS AND ACRONYMS

AGESUL	State Agency for Management of Enterprises of Mato Grosso do Sul *(Agência Estadual de Gestão de Empreendimentos)*
AM	Accountability Mechanism
CGE	Office of the Comptroller General of the State of Mato Grosso do Sul (*Controladoria-Geral do Estado de Mato Grosso do Sul)*
CNT	National Transport Confederation *(Confederação Nacional de Transpo*rtes)
COFIEX	External Financing Committee *(Comissão de Financiamentos Externos)*
CREA	Regional Council of Engineering and Agronomy *(Conselho Regional de Engenharia e Agronomia*)
CREMA	Performance-based contract for rehabilitation and road maintenance *(Contratos de Reabilitação e Manut*enção)
DBM	Design-Build-Maintain
DETRAN	State Traffic Department (*Departamento Estadual de Trâ*nsito)
EPE	Office of Strategic Partnerships *(Escritório de Parcerias Estratégicas*)
FEGAP	State Partnership Guarantee Fund *(Fundo Estadual Garantidor de Parcerias)*
FM	Financial Management
FMA	Financial Management Assessment
GBV	Gender-Based Violence
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GHG	Greenhouse Gas
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
HDM-4	Highway Development and Management Model (Version 4)
IBGE	Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística)*
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
IMASUL	Mato Grosso do Sul Environment Institute (*Instituto de Meio Ambiente de Mato Grosso do Sul)*
IP	Indigenous Population
IPF	Investment Project Financing
LAC	Latin American and the Caribbean
MEL	Monitoring, Evaluation and Learning
MoT	Ministry of Transport
MPA	Multiphase Programmatic Approach
NDC	Nationally Determined Contribution
PBC	Performance-Based Contract
PCM	Private Capital Mobilization
PCU	Project Coordination Unit
PDO	Project Development Objective
PPP	Public-Private Partnership
RSSAT	Road Safety Screening and Appraisal Tool
SEC	State's Secretary of Citizens *(Secretaria de Estado da Cidadania)*
SED	State's Secretary of Education (*Secretaria de Estado de Educação de Mato Grosso do Sul*)
SEGOV	State Secretariat for Government and Strategic Management (*Secretaria de Estado de Governo e Gestão Estratégica)*
SEILOG	Secretariat of Infrastructure and Logistics of the State of Mato Grosso do Sul (*Secretaria de Estado de Infraestrutura e Logística)*
SMS	State of Mato Grosso do Sul
TA	Technical Assistance

UA	Universally Aligned

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DATASHEET

BASIC INFORMATION

Project Beneficiary(ies)	Operation Name		
Brazil	Brazil Proactive, Safe, and Resilient Road Asset Management Program - State of Mato Grosso do Sul - Phase 4		
Operation ID	Financing Instrument	Environmental and Social Risk Classification	
P505590	Investment Project Financing (IPF)	Moderate	

Financing & Implementation Modalities

[✓] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Performance-Based Conditions (PBCs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternative Procurement Arrangements (APA)	[ ] Hands-on Expanded Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date	Expected Program Closing Date
11-Apr-2025	31-Mar-2034	31-Dec-2036
Bank/IFC Collaboration	Joint Level	
Yes	Complementary or Interdependent project requiring active coordination	

MPA Program Development Objective

The MPA Brazil Pro-Roads Program Development Objective is to improve access to sustainable, safe and resilient transport in selected states of Brazil

MPA FINANCING DATA (US$, Millions)

MPA Program Financing Envelope	2,545.00

Proposed Development Objective(s)

Improve access to sustainable, safe, and resilient transport in the State of Mato Grosso do Sul.

Components

Component Name	Cost (US$)
Proactive safe and resilient road asset management based on long-term (8–35 years) CREMA	334,205,000.00
Institutional strengthening	6,550,000.00
Resolution of road safety critical spots affecting state public schools	5,950,000.00
Project Management	2,795,000.00

Organizations

Borrower:	State of Mato Grosso do Sul
Implementing Agency:	Escritório de Parcerias Estratégicas do Governo do Estado de Mato Grosso do Sul

MPA FINANCING DETAILS (US$, Millions)

Board Approved MPA Financing Envelope	**2,545.00**
MPA Program Financing Envelope:	2,545.00
of which Bank Financing (IBRD):	1,662.40
of which Bank Financing (IDA):	0.00
of which Other Financing sources:	882.60

PROJECT FINANCING DATA (US$, Millions)

Maximizing Finance for Development

Is this an MFD-Enabling Project (MFD-EP)?	Yes
Is this project Private Capital Enabling (PCE)?	Yes

SUMMARY

Total Operation Cost	**350.00**
Total Financing	**350.00**
of which IBRD/IDA	**200.00**
Financing Gap	**0.00**

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	200.00

Non-World Bank Group Financing

Counterpart Funding	50.00
Local Govts. (Prov., District, City) of Borrowing Country	50.00
Commercial Financing	100.00
Unguaranteed Commercial Financing	100.00

Expected Disbursements (US$, Millions)

WB Fiscal Year	2026	2027	2028	2029	2030	2031	2032	2033	2034
Annual	5.00	10.00	25.00	35.00	35.00	30.00	25.00	22.00	13.00
Cumulative	5.00	15.00	40.00	75.00	110.00	140.00	165.00	187.00	200.00

PRACTICE AREA(S)

Practice Area (Lead)
Transport

Contributing Practice Areas
Education; Agriculture and Food

CLIMATE

Climate Change and Disaster Screening

Yes, it has been screened and the results are discussed in the Operation Document

SYSTEMATIC OPERATIONS RISK- RATING TOOL (SORT)

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

POLICY COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

ENVIRONMENTAL AND SOCIAL

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance

ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	Relevant
ESS 10: Stakeholder Engagement and Information Disclosure	Relevant
ESS 2: Labor and Working Conditions	Relevant
ESS 3: Resource Efficiency and Pollution Prevention and Management	Relevant
ESS 4: Community Health and Safety	Relevant
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Relevant
ESS 8: Cultural Heritage	Not Currently Relevant
ESS 9: Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

LEGAL

Legal Covenants

Sections and Description
The Borrower shall: Not later than thirty (30) days after the Effective Date, cause AGESUL to hire or designate a Focal Point with functions and resources acceptable to the Bank, as further detailed in the Project Operations Manual, and thereafter maintain said Focal Point throughout Project implementation; and Not later than ninety (90) days after the Effective Date, complete, in a manner acceptable to the Bank, the staffing of the PCU (including the hiring of consultants) as set out in the Project Operations Manual and the ESCP.
To facilitate the implementation of the Project, the Borrower, through EPE, shall, not later than sixty (60) days after the Effective Date, enter into (a) a Cooperation Agreement with IMASUL for the implementation of Part 2.1.(a) of the Project, (b) a Cooperation Agreement with DETRAN for the implementation of Parts 2.1.(a) and 3 of the Project, and (c) a Cooperation Agreement with each of the Municipalities involved in Part 3 of the Project (acting on a standalone basis or through a consortium of municipalities), as further specified in the Project Operations Manual, to cooperate on the resolution of hazardous spots affecting State public schools, in each case under terms and conditions acceptable to the Bank, and thereafter maintain said Cooperation Agreements throughout Project implementation.
The Borrower shall carry out the Project in accordance with the Implementation Arrangements set out in Section I, Schedule 2 of the Loan Agreement.

Conditions

Type	Citation	Description	Financing Source
Effectiveness	PCU Staffing	The PCU has been established, and its Key Staff hired or designated, all in a manner acceptable to the Bank (Section 5.01(a))	IBRD/IDA
Effectiveness	Subsidiary Agreement	The Subsidiary Agreement has been entered into in form and substance acceptable to the Bank, and all conditions precedent to their effectiveness (if any) have been fulfilled (Section 5.01(b))	IBRD/IDA
Effectiveness	Project Operation Manual	The Project Operations Manual has been prepared, approved, and adopted in form and substance acceptable to the Bank (Section 5.01(c))	IBRD/IDA
Disbursement	Retroactive Finance	No withdrawal shall be made for payments made prior to the Signature Date, except that withdrawals up to an aggregate amount not to exceed forty million Dollars (USD 40,000,000) may be made for payments made prior to this date but on or after the date falling twelve (12) months prior to the Signature Date, for Eligible Expenditures, following an Environmental and Social Report, satisfactory to the Bank, showing that the pertinent obligations set forth in this Agreement, as applicable to each Eligible Expenditure, have been complied with.	IBRD/IDA

I. STRATEGIC CONTEXT

1. **The present Project is Phase 4 of the Brazil Proactive, Safe and Resilient Road Asset Management Program – Brazil Pro-Roads**, a horizontal and simultaneous[1] Multi-phase Programmatic Approach (MPA). The Board of Executive Directors of the International Bank for Reconstruction and Development (IBRD) approved the MPA's overall financing envelope on September 10, 2024 in the amount of US$1,662.4 million across at least five phases. The Board approved Phase 1 of the MPA (P180555) on September 10, 2024, in the amount of US$150 million to support the MPA in the state of Bahia. Two other phases were approved in February and March of 2025: Phase 2, approved on March 18, 2025, will provide US$162.4 million to support the MPA in the state of Espírito Santo; Phase 3, approved on February 27, 2025, will provide US$300 million to support the MPA in the State of Santa Catarina. This Phase 4 will provide US$200 million to support the Program in the State of Mato Grosso do Sul (SMS).[2]

A. Project Strategic Context

2. **Brazil's real Gross Domestic Product (GDP) grew by 3.2 percent in 2023 and is estimated to have maintained the same pace in 2024, driven by strong consumption, supported by a resilient labor market and fiscal transfers.** Growth in 2023 was fueled by private consumption, fiscal stimulus, and declining inflation, while exports benefited from a record grain harvest and favorable external conditions. From January to September 2024, GDP grew 3.3 percent compared to the same period a year prior, underpinned by solid consumption and recovering investment. Growth is expected to moderate to 2.2 percent in 2025 and stabilize at 2.3 percent in the medium term, reflecting gains from recent structural reforms. The government has made progress in improving the business environment, financial sector, and indirect taxation. However, faster, inclusive, long-term growth requires additional reforms to enhance competitiveness, reduce financial and market distortions, expand infrastructure investment, integrate into global value chains, and improve education quality.

3. **In 2023, Brazil's poverty rate fell to 21.3 percent, linked to improvements in economic conditions and social protection policies.** By November 2024, the unemployment rate fell to 6.1 percent (marking the lowest rate in the all-time series), and real household incomes rose 3.4 percent year-over-year. The rapid decline in the poverty rates from 2022 and 2023 has slowed down in 2024 as Bolsa Familia transfers stabilized. Still, the poverty rate continued to decrease gradually to 21.3 percent in 2024, driven by a 3 percent increase in the real minimum wage and the strong labor market. Sustained job growth, further strengthening the targeting of the social protection system and lowering inflation could support faster poverty reduction over the coming years.

4. **Poverty and inequality remain significant challenges. After a sharp increase from 25.3 to 29.4 percent over 2019-21 amid the COVID recession, the poverty rate has decreased since 2021** and is projected to reach 20.5 percent by 2026. This is thanks to the recent economic rebound, labor market improvements (with the unemployment rate falling to 6.9 percent in June 2024), and consistent social protection policies. However, as of 2023, 43 million people (21.3 percent of the population) still lived below the poverty line (US$6.85 per day). Brazil ranks ninth globally in levels of inequality,[3] and access to services and opportunities varies sharply across subregions and population segments. On

[1] Horizontal means replicating a similar program among different borrowers, in this case States and the Federal Government while simultaneous means implementing several phases at the same time in the different territories. Link to the PAD for the MPA Program and Phase 1.
[2] Launched in 2023, the State of Mato Grosso do sul Program is called "*Programa de manutenção proativa, adequação a resiliência climática e segurança viária de rodovias do Estado de Mato Grosso do Sul - Programa Rodar MS*".
[3] The Gini index for Brazil is 0.518 in 2022. The wealthiest one percent owns around 32.2 percent of Brazil's household wealth.

average, rural areas are twice as poor as urban areas.[4] Women and minorities, especially Afro-descendants and members of indigenous populations (IPs), have the lowest rates of access to job opportunities and lower wages on average,[5] and poverty rates among them are the highest.[6]

5. **Over the past decades, transport infrastructure development in Brazil has faced challenges due to fluctuating public investment policies and periodic economic crises.** As a result, Brazil continues to rank low in terms of infrastructure quality, which poses challenges to the country's growth and inclusion efforts. The poor quality of transport infrastructure has negatively impacted people's mobility and increased the cost of doing business, leading to reduced accessibility and high logistics expenses. This further contributes to the phenomenon known as *Custo Brasil* ("Brazil Cost").[7] It is estimated that US$412 billion (or 7.5 percent of the GDP) investments in infrastructure will be required to bridge the infrastructure gap until 2030.[8]

6. **Brazil is highly vulnerable to climate change, which particularly affects those living in poverty. It ranks 27th on the Climate Risk Index out of 182 countries.**[9] The country experiences annual floods and droughts, costing over BRL 13.33 billion (US$2 billion), and these events are expected to intensify.[10] By 2040, the frequency of intense rainfall is projected to increase by at least 20 percent compared to 1970–1999 levels.[11] Climate change will have widespread negative effects, hindering the Country's growth and inclusion efforts. It will reduce agricultural productivity, increase rainforest fires, and lead to more severe droughts and floods.[12] Biodiversity loss and ecosystem degradation—especially in the Amazon, Mata Atlântica, and Cerrado—are expected. In rural areas, access to services, jobs, and markets will become more difficult during rainy seasons as roads become impassable. Although Brazil's per capita emissions are lower than other countries in the Latin American and the Caribbean (LAC) region**,** greenhouse gas (GHG) emissions have risen over the past three decades, with transport being the fastest-growing contributor.

7. **Building on a dynamic agribusiness industry and solid – albeit still young – institutions, SMS's economy is growing rapidly.** The SMS, created in 1979, has recently emerged as an important player in Brazil's economy and in the global food security agenda. With growth consistently higher than average for the States since 2020 (reaching 16 percent in 2021, 4.9 percent in 2022, and 6.6 percent in 2023),[13] SMS is already the largest grain producer in Brazil, accounting for 28.2 percent of the country's production in 2024,[14] as well as 8 percent of available cattle (19 million units).[15] In

[4] Tomás de Faria Balbino, Aline Cristina da Cruz, and Mariangela Furlan Antigo, "A Pobreza Rural e Urbana Brasileira sob a Ótica das Privações: Uma Análise Regional a partir de Dados Domiciliares de 2005 a 2019," *Revista Brasileira de Estudos Regionais e Urbanos [S. l.]* 15, no. 1 (2021): 28–56 https://revistaaber.org.br/rberu/article/view/724.

[5] Men earn a per capita household income of BRL 994.00, whereas women earn BRL 902.00—9.2 percent less than men. White men self-declaring their income earn an average per capita household income of BRL 1,437.00, whereas mixed-race and Afro-descendant men earn less, respectively, BRL 857.00 and BRL 570.00. Data from the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE) in 2023.

[6] More than 70 percent of population in situation of poverty in Brazil are afro-descendants or IPs (IBGE, 2024). 40.2 percent of afro-descendant men and 43 percent of afro-descendant women are in situation of poverty.

[7] "Custo Brazil" is an expression to illustrate the low competitiveness of the country – See the definition and the Brazil Federal Strategy to reduce it in this link.

[8] *Brazil Infrastructure Assessment 2022* (Washington, DC: World Bank, 2022).

[9] Global Climate Risk Index (CRI) measured by German Watch in 2021.

[10] According to the report of material damages and losses due to natural disasters in Brazil during 1995–2014—see *Relatório de danos materiais e prejuízos decorrentes de desastres naturais no Brasil—1995–2014* [In Portuguese] (Washington, DC: World Bank, 2016).

[11] The intense precipitation metric measures the maximum annual five-day sum of precipitation ("wettest five-day period"). The results presented the increase in intense precipitation on an annual average basis for each decade (2030, 2040) relative to the annual average for 1970–99.

[12] As detailed in *Brazil Country Climate and Development Report* (Washington, DC: World Bank, 2023), http://hdl.handle.net/10986/39782. In 2023 and 2024, two floods with a period of return of 10,000 years impacted Rio das Antas in Rio Grande do Sul. The flood that began in Porto Alegre in May 2024 is the main example.

[13] https://www.regiaonews.com.br/economia/mato-grosso-do-sul-cresce-16-em-um-ano; https://www.semadesc.ms.gov.br/pib-de-mato-grosso-do-sul-atinge-maior-patamar-da-historia-e-supera-media-de-crescimento-nacional/; https://www.semadesc.ms.gov.br/ms-tem-o-3o-maior-crescimento-economico-entre-os-estados-do-brasil/

[14] IBGE, *Levantamento Sistematico da Producao Agricola* (LSPA). https://agenciagov.ebc.com.br/noticias/202404/estimativa-cai-0-8-e-preve-safra-de-298-3-milhoes-de-toneladas-em-2024

[15] Pesquisa de Pecuaria Municipal, IBGE.

the last decade, the economy has been successfully transitioning from extensive agriculture towards the development of intensive agro-industries such as cellulose, bioenergy and biofuels, adding pressure to the State to develop a reliable logistics system to remain competitive.

8. **Despite a high Human Development Index by Brazilian standards (0.742), social inclusion challenges persist in SMS.** The State has a population of approximately 2.8 million people[16] on a territory of 357,142 square kilometers. There are high social disparities, and a large contingent of Indigenous and Afro-Descendent peoples are prevalent in the most disadvantaged groups.[17] Furthermore, the economic performance of the State, which shares international borders with Bolivia and Paraguay, attracts a significant influx of immigrant workers as well as workers from other States,[18] heightening exclusion challenges and requiring infrastructure and local services to adapt to a growing demand.

9. **In SMS, women represent 36 percent of the formal labor market, occupying roles traditionally held by men but continue to earn significantly less than their male counterparts.** Women also remain underrepresented in leadership roles. As of 2024, only 29 percent of organizations have women in managerial positions. Despite women representing a significant portion of the workforce, they remain concentrated in lower-paying roles and are underrepresented in leadership and technical positions. Women make up only 22 percent of the professionals registered with the Regional Council of Engineering and Agronomy *(Conselho Regional de Engenharia e Agronomia*, CREA), a legal requirement to be able to practice as an engineer or agronomist in Brazil. The CREA-SMS registration costs can create significant financial barriers, particularly for women, who are already underrepresented in these fields. In addition, women lack skills required for technical and in-demand jobs on the contractor side or in technical positions within transport and road agencies. By covering these expenses through project funding, the project aims to reduce these barriers and provide women with greater access to opportunities to practice engineering, thereby supporting their professional inclusion and long-term employability. Please, refer to Appendix 3 for more information on the Gender Gap Analysis.

10. **SMS remains fully committed to preserving its biodiversity, especially in the Pantanal, the biome with the highest number of protected species in Brazil, and to mitigating the impacts of climate change.**[19] The State Government has developed a strong legal framework and monitoring capacity[20] for environmental and biodiversity protection in the Pantanal, establishing strict criteria for land use and the protection of aquatic species. In 2023, the State complemented this framework with the adoption of the *Lei Pantanal* (Pantanal Law) to promote conservation, protection, restoration and sustainable exploitation of the biome in partnership with Brazil's *Ministério do Meio Ambiente e Mudança do Clima* (Ministry of Environment and Climate Change). In April 2024, SMS published an Environmental Emergency Decree focusing on the Pantanal biome, which establishes criteria for forest fire prevention work, including firebreaks on borders and the use of controlled burning techniques. All 79 SMS municipalities have mitigation and adaptation plans for conservation of the Pantanal biome. SMS also signed a technical cooperation agreement with the State of Mato Grosso to promote joint actions for its sustainable development.

[16] Accounting for 1.36 percent of the total population of Brazil. Source: Censo Demográfico 2022, IBGE.
[17] The SMS has the third largest indigenous population in Brazil, with 116,500 indigenous people, representing 4.22% of its total population according to the 2022 census.
[18] Considering only data related to the formal labor market, there were 6,067 foreign workers in the state in 2022, according to the 2023 Annual Report, a periodic publication by the International Migration Observatory (OBMigra). The document, produced in partnership with the National Secretariat of Justice (Senajus), shows a marked increase in the proportion of immigrants in the state in recent years. The 2022 result is four times higher than in 2013, when there were 1,419 immigrant workers. The number in SMS also surpasses those of neighboring states Mato Grosso and Goiás, which had 5,614 and 3,017 immigrant workers in 2022, respectively.
[19] https://www.imasul.ms.gov.br/pantanal-e-o-bioma-brasileiro-que-mais-preserva-especies-da-fauna-silvestre-mostra-estudo-do-icmbio/
[20] https://www.imasul.ms.gov.br/imasul-apresenta-estudo-inovador-sobre-monitoramento-de-queimadas-no-8-simposio-de-geotecnologias-no-pantanal/

11. **In 2014, SMS implemented a climate change policy[21] focused on climate resilient and sustainable growth and inclusion** that aims to achieve 95 percent clean energy and carbon neutrality by 2030. However, challenges in the road transport sector are hindering the SMS development agenda. While rail transport, and to more limited extent waterways, present opportunities for carrying freight, given the size of the State (6th largest in Brazil) and the fact that its production is highly dependent on logistics, road transport will continue to be essential in much of the SMS territory. SMS's road system comprises 4,635 km of federal roads, mostly paved (82.3 percent), and 15,215 km of state highway roads (34.5 percent paved). There are also 45,126 km of municipal roads, mostly unpaved and used for short feeder haulage.

B. Sectoral and Institutional Context

12. **SMS's road infrastructure is vulnerable to significant risks stemming from climate hazards.** The region faces immediate threats from flooding, leading to road washouts and landslides, and increasing occurrence of heat waves, which causes oxidation of the asphalt binder, making it more rigid and brittle and leading to the emergence of early cracks, which can result in significant disruptions in transportation connectivity. This vulnerability is exacerbated in a context where more than 65 percent of the state road network is unpaved and hence, particularly exposed to climate impacts. In addition, there is significant room to improve the state of the paved roads, as only 50 percent are in good conditions, with the remainder in average (42.8 percent) or poor to very poor condition (5.5 percent).[22] Improving Road asset management is key to SMS's climate goals. The introduction of better road asset management will reduce the effects of worsening climate events on infrastructure and road transport.[23] It will also extend the lifespan of roads and reduce the frequency of repairs, contributing to reduced GHG emissions from structural works. Finally, better road conditions will reduce vehicle emissions.[24]

13. **Poor road conditions have a negative impact on road safety, a critical issue in Brazil and in SMS.** According to Ministry of Health data, there were 34,881 traffic-related deaths at the national level in 2023, a 2.9 percent increase from 2022. In SMS, 671 traffic-related deaths were reported in 2022, a mortality rate of 24.2 deaths per 100,000 inhabitants, 50 percent higher than the national average, which, at 16 per 100,000 inhabitants, is already high by international standards. The State is among the worst performers in Brazil, on par with some of the worst countries in the world. This is due in part to unsafe road designs, and in part to fragmented governance in the sector, which impacts the capacity to design effective road safety programs. The death toll on roads, beyond the human suffering it represents, adds important economic costs for society. These costs stem from (a) the management of traffic crashes; (b) injuries with long-lasting impacts, affecting ability to work or care for others; and (c) future productivity losses of young generations, as most of affected individuals are young and educated. Overall, it is estimated that road safety costs represent a staggering 3.8 percent of the country's annual GDP.[25]

14. **In the face of these challenges, SMS has been implementing an ambitious plan to develop its road infrastructure by mobilizing a combination of public financing and private capital.** In 2010, the State began a series of investment

[21] Law 4.555/14 established the *Política Estadual de Mudanças Climáticas* (State Climate Change Policy, PEMC), within the SMS. http://aacpdappls.net.ms.gov.br/appls/legislacao/secoge/govato.nsf/448b683bce4ca84704256c0b00651e9d/c8e1c43dcb65a53104257d170051d5b1?OpenDocument=

[22] National Transport Confederation (Confederação Nacional de Transportes, CNT). Pesquisa CNT Rodovias. Brasília, Brazil. 2024. Available at: https://pesquisarodovias.cnt.org.br/.

[23] Lack of routine maintenance to clean drainages is at the root of accelerated deterioration of the pavement and the infrastructure

[24] GHG emissions can be reduced by a factor of 5 percent between roads in poor and good conditions

[25] Castro Lancharro, Borja; Job, Raymond Franklin Soames; Lancelot, Eric R.; Gauthier, Gregoire Francois; De Melo E Silva, Fernando; Howard, Eric William; Ledesma, Ramón; Bastos Carneiro, Igor Andre. *Federative Republic of Brazil - National road safety capacity review (English).* Washington, D.C.: World Bank Group. http://documents.worldbank.org/curated/en/904921468232158448/Federative-Republic-of-Brazil-National-road-safety-capacity-review

projects in transport infrastructure, which by the end of 2023 amounted to more than BRL3.5 billion, funded by State resources and with financial support from *Banco Nacional de Desenvolvimento Econômico e Social* and IBRD. Moreover, SMS embarked on an ambitious Public-Private Partnership (PPP) program with support from the World Bank (WB) (Mato Grosso do Sul State Road Transport Project – P118410), which led to the State's first concession contract (MS-306 in the North) in 2019, and a second one in 2022 (MS-112 and sections of BR-158 and 436). Those concessions, fully covered by toll revenues, have mobilized US$16.3 million of private capital in the first years of the MS-306, with a projected total of around BRL 3.4 billion in investments over the project's lifecycle. The State's current project pipeline foresees the structuring of another PPP for state highway MS-040 and federal highways BR-262 and BR-267.

15. **To support its PPP program, the State has developed robust regulatory, institutional and operational frameworks.** In 2015, SMS created a dedicated unit for the preparation and supervision of PPPs, the Office of Strategic Partnerships *(Escritório de Parcerias Estratégicas*, EPE),[26] an entity that could become a Secretariat in a near future. [27] The State is also the first in Brazil to have rationalized its PPP regulation, combining the two prevailing laws on PPP and concession into a single new law in 2022. [28] The Law has created guarantee instruments such as the *Fundo Estadual Garantidor de Parcerias* (State Partnership Guarantee Fund, FEGAP),[29] which relies on constitutional transfers from the Federal Government. Besides this framework, the State can also access existing road funds, such as the *Fundo de Desenvolvimento do Sistema Rodoviário de Mato Grosso do Sul*, created in 1999 to support management of the road sector. These mechanisms have been important for attracting private partners and can be customized for attracting private partners to the Performance-based contract for rehabilitation and road maintenance *(Contratos de Reabilitação e Manut*enção, CREMA) program supported by the MPA. This experience from SMS may be replicated for other States, leveraged by the MPA Monitoring, Evaluation and Learning (MEL) agenda.

16. **This Phase 4 Project will support SMS's objective of transforming and modernizing road asset management practices towards proactive climate resilience.** About 617 km of road maintenance will be contracted, using the long-term Design-Build-Maintain CREMA model. The work will be organized into clusters to enable more efficient and effective management and to account for future development across the entire State. The Project will also support the first 10-to-35-year pilot CREMA PPP on an extension of about 208 km, leveraging the positive results of private participation in road management in other States.[30] The delegation of road infrastructure management to the private sector, combined with targeted resilience works, will increase the overall resilience of the transport network to the impacts of climate change. It will also improve road safety. The SMS will both benefit from and contribute to the MPA learning agenda, which aims at improving the technical and institutional capacity of the States in the use of CREMAs.

Box 1.1: Brazil Pro-Roads CREMA Modalities

The Bank introduced multi-year rehabilitation and maintenance performance-based contracts in Brazil in the early 2000s. These were called *Contratos de Reabilitação e Manutenção* (CREMA)—or performance-based contracts for rehabilitation and road maintenance. This contractual modality was piloted in several states and at the federal level, often under World Bank-supported operations over the past two decades. They aimed at transferring to the private sector the technical responsibility of road infrastructure management via medium- to long-term contracts paid upon

[26] Among its diverse competencies, EPE is responsible for formulating guidelines, preparing plans and executing operational and coordination activities for public-private partnerships, as well as improving the institutional architecture for the development of long-term partnerships and its governance mechanisms.
[27] The EPE is a special regime body and is part of the structure of the SEGOV, created through State Decree nº 14,190/2015 and restructured by State Law nº 4,640/ December 24, 2020.
[28] Law number 5,829, creating the Mato Grosso do Sul Partnership Program (PROP-MS). http://aacpdappls.net.ms.gov.br/appls/legislacao/secoge/govato.nsf/448b683bce4ca84704256c0b00651e9d/e656ef603efcaee4042588020047f922?OpenDocument
[29] Fundo Estadual Garantidor de Parcerias (State Partnership Guarantee Fund).
[30] CNT. Série Parcerias – Rodovias. Brasília, Brazil. 2023. Available at this link.

the achievement of pre-determined outcomes. The approach has demonstrated interesting results, improving the effectiveness of road asset management and reducing its cost by 20 percent on average for equivalent or better road conditions than the traditional contracting model.[31] Among other limitations, though, contract duration was capped at 5 years in the context of the prevailing public procurement regulatory context. There has been a change, however, in the public procurement laws: contracts can now be authorized for a duration of up to 10 years. This, combined with the possibilities offered by the PPP regulation for even longer contracts,[32] and a renewed approach to the CREMA contracts, will further delegate responsibility to the private sector for infrastructure management. Along with the extended contract duration, the private sector will assume full technical responsibility in selecting rehabilitation and maintenance solutions. The contracts will also include targeted climate resilience / road safety improvements. In that context, two main CREMA types will be supported under the MPA:

- **CREMA-Design-Build-Maintain (DBM):** This will involve contracts of 8 to 10 years, which will follow a Design-Build-Operate-Maintain (DBOM) approach and will be contracted under the new public procurement regulation. Payment of rehabilitation works will be done upon the delivery of outputs that will follow the contactors' own design (except improvements), decided by the public sector. Maintenance services will be paid upon achievements of pre-determined standards of road conditions. Mechanisms of guaranteed retentions on payments during the rehabilitation phase, which is expected to represent up to 70-80 percent of the contract value, will require the mobilization of private finance in an amount estimated on average at 5 percent of the contracts.[33]
- **CREMA- PPP:** This will involve contracts, ranging from 10 to 35 years, and will follow a Design-Finance-Build-Operate-Maintain approach, contracted under the PPP regulation. The contract's full financing will be provided by the private sector to implement the rehabilitation works defined by the contractor itself, with improvement works defined by the delegating authority. Payment to the contractors will be made based on availability, and a road will be deemed available when it matches pre-determined standards of quality (resilient and safe roads in good condition). As the full amount of the contract is expected to be brought by the private sector, private capital mobilization (PCM) will be accounted for the amount of the contract.

C. Multiphase Programmatic Approach

17. **With over two-thirds of land transport in Brazil done by road, and with high logistics costs from unsuitable infrastructures, improving road sector management is key for the nation's competitiveness agenda. This MPA is designed to support the transformation and improvement of existing practices in road transport infrastructure management in Brazil.** The proposed 12-year duration will span multiple political cycles, ensuring that long-term public commitments to contracts lasting up to 10 years are fulfilled, thereby strengthening the credibility of these engagements for contractors. The MPA's comprehensive MEL agenda will facilitate the harmonization, simplification, and standardization of processes, promoting its adoption across different jurisdictions in Brazil, while also streamlining World Bank project preparation. The MEL framework will enhance the replicability and consistency of MPA implementation, amplifying its impact. Additionally, the Federal Ministry of Transport (MoT)'s commitment to this agenda and its leadership role will further solidify the anticipated shift in road asset management practices envisioned by the MPA, increasing its likelihood of success compared to standalone projects.

[31] World Bank Transport Paper #31, 2010.
[32] A pilot project was developed with support of the IFC in the State of Bahia in 2016.
[33] Innovations in payment modalities in a contract's rehabilitation phase will be tested to further foster the responsibility of the contractor in terms of quality (e.g., payment "at cost of execution" by kilometer executed independently from the solution employed). This advancement of funds during the rehabilitation phase from the private contractor can be up to 7 percent of the contract costs and can be counted as PCM. Between 5 and 7 percent of the rehabilitation costs will be withheld by the government.

18. **The MPA ambition is to tackle the difficult challenges of road management, climate resilience and road safety in Brazil at once, generating technical knowledge on how best to implement solutions at scale by different borrowers – learning from each other.** This is expected to be achieved through a paradigm shift in the management and design of road infrastructure, transferring to the private sector the responsibility to achieve specified road quality, climate resilience and road safety indicators using long-term (8-35 year) pluri-annual Performance-Based Contracts (PBCs). Moreover, the mobilization of private capital reduces the burden on public finance to manage the road infrastructure, as the MPA will also lay the groundwork for implementing the more complex CREMA-PPP contracts at scale in different states,[34] with support from the federal government and International Finance Corporation (IFC) – thus private capital will be mobilized in all phases. Other activities integrated in the Program include road safety and climate resilience critical interventions: bypasses in climate risk areas, rural access, and active mobility interventions in urban areas where roads pass through. The Program will also promote digitalization of logistics and promoting the employment of women in the construction and logistics sectors.

19. **The MPA theory of change (ToC) described in the MPA Project Appraisal Document (PAD) for Phase 1 remains relevant.** A theory of change for Phase 4 aligned with the MPA ToC is available in section II.A. The MPA Program Development Objective (PrDO) is to improve access to sustainable, safe, and resilient transport in selected states of Brazil. It remains relevant. The PrDO indicators will apply:
    a) **Improved access to sustainable transport:** Millions of people that benefit from improved access to sustainable transport infrastructure and services in selected states in Brazil (number).
    b) **Improved access to safe transport:** Change in annual road traffic fatalities along targeted state/federal road corridors in selected states in Brazil (number).
    c) **Improved access to resilient transport:** Share of the paved road networks with updated Management Response Plans for climate risks and natural disasters in selected states in Brazil (percentage).

20. **The MPA is a horizontal and simultaneous MPA that includes both the federal government and five state authorities**. Bahia (P180555) is Phase 1 of the MPA; Espírito Santo (P500469), Phase 2; Santa Catarina (P504253), Phase 3; and Mato Grosso do Sul (P505590) is the Phase 4. Additional phases are envisioned: one in Piauí, one with the federal government, through the Brazilian MoT, focusing on the Northeast region, and potentially other States joining: Sergipe, Goiás, Pernambuco, among others. The MPA Program includes four main components: (a) Component 1—Proactive maintenance based on a long-term (8–35 years) CREMA model using PBCs, either CREMA-DBMs or CREMA-PPPs; (b) Component 2— Institutional strengthening, covering three sets of activities: Proactive, safe, and resilient road asset management; Green mobility and logistics; and Social inclusion and gender; (c) Component 3— Safe and resilient improvements of road infrastructure, covering also three sets of activities – Construction of bypasses in areas prone to flooding and logistical bottlenecks along selected state road corridors; Safe active mobility infrastructure in selected urbanized areas; and Improvement to all-season access to transport in rural areas; and (d) Component 4—Project management.

21. **Progress toward achievement of the PrDO and overall implementation progress are limited, as the MPA is at a very early stage of implementation.** Meanwhile, preparation of phase 2 (Espírito Santo), 3 (Santa Catarina) and 4 (Mato Grosso do Sul) are substantially advanced and expected to start implementation in FY26.

i.Updated Program Framework and Learning Agenda

[34] Design-Finance-Build-Operate-Maintain model with availability payments (Government-Pays PPP), and no government payments during the rehabilitation period until the PBC is completed and the road is open.

22. No updates have been made to the MPA framework to date, yet the MPA learning agenda has already started. The MEL learning builds both on key standard documents (such as guidelines for CREMA and procurement documents), and on ad hoc innovative approaches by the participant states that can then be replicated (e.g., infrastructure guarantees, infrastructure funds, alternative procurement methods). The states are already actively participating in the preparation of those key documents through regular meetings. The MEL also relies on targeted knowledge sharing regarding program development solutions such as financial instruments. These can include infrastructure funds and involve the establishment of an independent financing source to guarantee payments for CREMAs (both DBM and PPPs). The MEL agenda will further expand this approach and disseminate knowledge to enhance state government staff capacity on topics including (i) long-term PBCs and financing strategies for proactive maintenance; (ii) road safety; (iii) climate resilience; (iv) green logistics; and (v) gender and social inclusion.

Table 1: Phases of the Pro-Roads MPA, proposed DOs, financing instruments, estimated approval date and E&S risk rating[35]

Phase #	Operation ID	Sequential or Simultaneous	Phase's Proposed DO*	IPF or P4R	Estimated IBRD Amount ($ million)	Estimated IDA Amount ($ million)	Estimated Other Amount ($ million)	Estimated Approval Date	Estimated Environmental & Social Risk Rating
1	P180555-Bahia	Simultaneous	Same as PrDO	IPF	150.00	0.00	50.00	September 10, 2024	High
2	P500469 – Espírito Santo	Simultaneous	Same as PrDO	IPF	162.40	0.00	157.60	March 18, 2025	Substantial
3	P504253 – Santa Catarina	Simultaneous	Same as PrDO	IPF	300.00	0.00	175.00	February 27, 2025	Moderate
4	P505590 – Mato Grosso do Sul	Simultaneous	Same as PrDO	IPF	200.00	0.00	150.00	April 2025	Moderate
5	Piauí*	Simultaneous	Same as PrDO	IPF	150.00	0.00	Tbc	Tbd	Moderate
	Federal Government and/or	Simultaneous	Same ad PrDO	IPF	700.00	0.00	Tbc	Tbd	Moderate

[35] * Piaui request for financing is still pending approval from the External Financing Committee (*Comissão de Financiamentos Externos*, COFIEX) – in the upcoming June 2026 meeting.
** At the time of the preparation of the MPA's first phase, the Ministry of Transport had submitted to COFIEX a US$700 million request for World Bank financing to support the Program targeting selected roads of the Federal Road network. This request has not yet been approved and may be revised. While the Ministry of Transport is committed to a leadership role in the Program, the form of its involvement (IPF Loan, IPF TA or other) and the amount of financing allocated to it from the MPA remains to be determined. At the same time, other States have expressed interest in participating in the Program, including the States of Sergipe, Pernambuco, Goiás which are working on the requests, and Minas Gerais, Alagoas, Maranhão or Paraná which expressed some interest, and it is possible that the US$700m originally allocated to the Ministry will be reallocated in part to those or other states.

	other States**								
						Revised Financing Envelope (US$m)		Total Program Cost (US$m)	$ 2,545.00
						Board Approved Financing Envelope **(US$m**	**$ 1,662.40**	**PCM/CF** (US$m)	$ 882.60

II. PROJECT DESCRIPTION

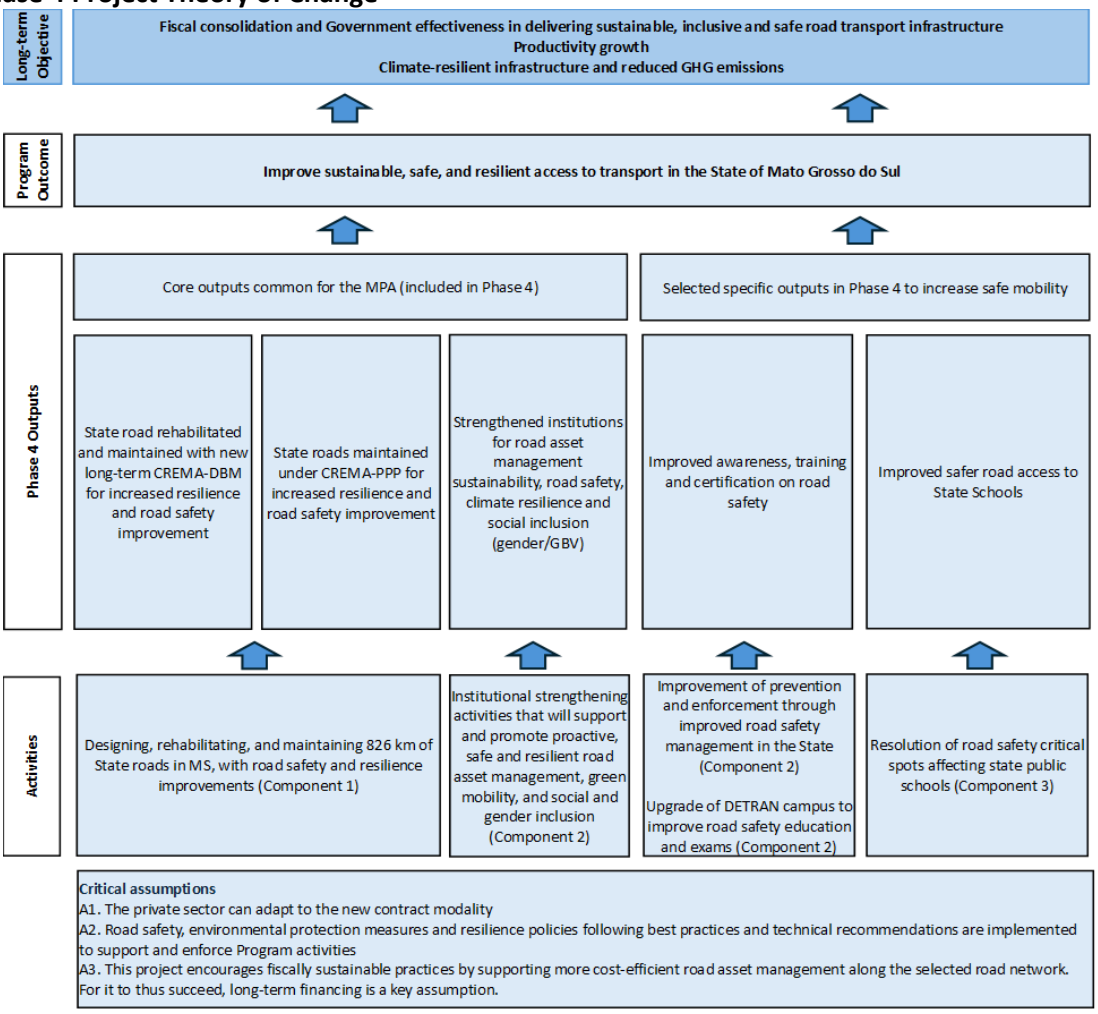
A. Project Development Objective

(i) PDO Statement

For Phase 4, the Project Development Objective (PDO) is to improve access to sustainable, safe and resilient transport in the State of Mato Grosso do Sul.

B. Theory of Change and PDO Indicators

(i) Phase 4 Project Theory of Change



(ii) PDO Level Indicators

(i) **Access to sustainable transport:** Millions of people that benefit from improved access[36] to sustainable transport infrastructure and services in the State of Mato Grosso do Sul (number).

(ii) **Access to safe transport:** Reduction in annual road crash fatalities along targeted state road corridors in selected areas of the State of Mato Grosso do Sul (number).[37]

(iii) **Access to resilient transport:** Share of the paved state road networks in the State of Mato Grosso do Sul with Management Response Plans (MRP) to climate risks and natural disasters in place (percentage).

(iv) **Private capital mobilization:** Total amount of money mobilized from private sector sources (amount (USD))

C. Project Beneficiaries

[36] Access in this case refers to improved transport connectivity (reduced operation costs and time for users) along main State Road corridors.
[37] Baseline indicator is 23 fatalities per year, and the target is a 10 percent reduction to 21 fatalities.

23. **The proposed Phase 4 Project interventions will directly benefit 1.55 million by integrating climate-resilient and disaster risk management systems into road design, thereby reducing the vulnerability of the infrastructure to climate events**. Targeted interventions will impact 27 municipalities (18 directly and 9 indirectly), which cover 23 percent of the State's area and are home to 840,000 people in two regions (Navirai and Nova Andradina), representing 30 percent of the 2.8 million residents of Mato Grosso do Sul, where increased temperatures and irregular rain patterns have degraded the road network, with serious impacts on local agriculture. The new CREMA contracts will require contractors to incorporate specific water management features to prevent structural damage to roads, benefiting family and large agriculture producers, rural cooperatives and agribusiness industries in the regions.

24. **Other beneficiaries will include vulnerable populations to road safety in selected areas.** The Project includes a dedicated component to improve road safety for children in 24 selected schools across the State. It will also benefit the populations of state road-adjacent urban areas engaged in pilots to promote road safety and nonmotorized transport. Finally, beneficiary institutions include States agencies that will participate in the MEL agenda – State Secretariat for Government and Strategic Management (*Secretaria de Governo e Gestão Estratégica,* SEGOV), EPE, State Secretariat for Infrastructure and Logistics (*Secretaria de Estado de Infraestrutura e Logística*, SEILOG), State Agency for Management of Enterprises of Mato Grosso do Sul (*Agência Estadual de Gestão de Empreendimentos*, AGESUL), General Comptroller of the State of Mato Grosso do Sul (*Controladoria-Geral do Estado de Mato Grosso do Sul*, CGE), State's Secretary of Citizens *(Secretaria de Estado da Cidadania,* SEC), Mato Grosso do Sul Environment Institute (*Instituto de Meio Ambiente de Mato Grosso do Sul,* IMASUL) and State Traffic Department (*Departamento Estadual de Trânsito*, DETRAN).

D. Project Components

25. **Phase 4 consists of four components with an estimated value of US$350 million.** This includes US$200 million of IBRD financing; US$50 million of counterpart financing from the SMS, mainly dedicated to the development of CREMA; and an estimated US$100 million in PCM. A detailed cost table is shown below in Table 2. Map 1 in Annex 2 presents the selected interventions.

26. **Component 1. Design, rehabilitation and maintenance of selected roads through CREMA agreements** (US$334.205 million, of which US$184.5 million IBRD). This component covers the design, rehabilitation and maintenance of selected roads within the Borrower's territory through CREMA Agreements[38]. It aims to build adaptive capacity in SMS and includes targeted measures to ensure the resilience of the road network to the expected effects of climate change, in the highly vulnerable to climate events State. The paved roads selected under the Project are crucial for mobility and logistics in the targeted areas, given the predominance of unpaved roads. Without the Project, the roads, most of which are in poor to average condition, will continue deteriorating quickly due to climate-related events, notably infrastructure-damaging heavy rainfall. The rehabilitation works and resilience improvements will be designed to withstand the expected intensification of weather events. The preliminary design of the road interventions will provide a diagnostic of the roads' climate vulnerabilities and based upon an agreed prioritization, the basic designs of the resilience improvements will be prepared and incorporated in the CREMA contract, or "CREMA Agreement".
    a. **Subcomponent 1.1.** Proactive, safe, and resilient road asset management based on long-term (8-10 years) CREMA-DBM for state roads of selected SMS regions. Contracting and carrying out the design,

[38] "CREMA Agreements" means contracts for road design, rehabilitation and maintenance, including, as necessary, selected improvements to increase road capacity, enhance road safety conditions and climate resilience, as well as climate resilience management and response plans, to be entered into between the Borrower and private sector contractors whose remuneration is linked to performance-based criteria; CREMA Agreements may take the form of CREMA-DBM Agreements or CREMA-PPP Agreements.

rehabilitation and maintenance of selected State roads through CREMA-DBM Agreements[39]. This subcomponent consists of the implementation of long-term CREMAs covering 617.7 km of state roads in two regions prioritized by the Government of Mato Grosso do Sul. No exceptional improvements, such as by-passes or large duplications, are expected. Areas of intervention have been prioritized based on the following criteria: (i) the climate-resilient growth potential and inclusion challenge of the regions; (ii) limited biodiversity and environmental impact, avoiding regions close to the Pantanal; (iii) the current working arrangements of the AGESUL in terms of spatial and administrative organization. The CREMA will cover all the paved roads under two administrative regions of AGESUL. The targeted areas will avoid administrative regions where network segments are to be concessioned (predominantly in the regions of Costa Rica and Paranaíba), or for which prefeasibility studies for future concessions are underway (Maracaju, Campo Grande, Dourados).

The regions of Naviraí (7ª Residência regional de Naviraí, 160 km) and **Nova Andradina** (9ª Residência regional de Nova Andradina, 457.7 km) will be covered by CREMA contracts.[40] Almost 64 percent of the roads in those regions are in average to poor condition and are highly exposed to climate vulnerabilities. The roads that do not require rehabilitation will benefit from proactive maintenance, increasing its resilience to climate-related events, thus extending the lifespan of the infrastructure, with reduced GHG emissions from improved traffic flow. Besides they are meeting the above criteria, those regions are adjacent to each other, thus facilitating future expansion, and the targeted roads serve as access roads to the States of São Paulo and Paraná.

In addition to financing the CREMA, this subcomponent will finance the design (conceptual and basic) and monitoring of the works contracts as well as road safety and climate risk audits. Traffic vehicle load weighing and monitoring will be incorporated in the CREMA. Eventual control of traffic axle load will be coordinated with the AGESUL. The selected roads are shown in the maps in Annex 2. This subcomponent is to be implemented by EPE and AGESUL.

b. **Subcomponent 1.2.** Proactive safe and resilient road asset management based on long-term (10 to 35 years) CREMA - PPP for state roads structured as availability payment PPPs and covering road design, rehabilitation and maintenance. This subcomponent covers technical assistance (TA) in the structuring (including financial and economic aspects), and contracting and implementing, of CREMA-PPP Agreements[41] for the design, rehabilitation and maintenance of selected State roads. One PPP will be structured either with assistance from the IFC, under the oversight of the EPE or other structuring partner whether national or international. A logistics corridor serving agro-industrial production (especially cellulose) from the eastern region of SMS to the states of Minas Gerais and Goiás has been identified as a relevant candidate, covering an estimated length of 208.7 km, or about 52 percent of the existing corridor. The corridor serves a region with strong growth potential and is in poor condition. The 10 to 35-year PPP will include road safety and climate adaptation improvements as well as a limited increase in road capacity where required. Additional PPPs may also be structured to further expand the road network managed by

[39] "CREMA-DBM Agreements" means CREMA Agreements with a duration ranging from 8 to 10 years, structured following a design, build and maintain model to be carried out through public procurement.
[40] By implementing the model in two very different sizes, it is expected the results inform the ideal size model for future projects.
[41] "CREMA-PPP Agreements" means CREMA Agreements with a duration of 10 to 35 years, structured as availability payment PPPs.

CREMA, which will further increase private capital mobilization.[42] This subcomponent is to be implemented by EPE and AGESUL.

27. **Component 2. Institutional strengthening (US$6.55 million IBRD financing).** This component will consist of TA and studies, training, and the acquisition of goods to build the capacity of selected State agencies. Building on the MPA's MEL agenda, the component will strengthen the technical capacity of staff of EPE within SEGOV and the AGESUL through knowledge exchange and dedicated trainings, in both cases with respect to items a., b. and c. below. Additional specific strengthening will be delivered to staff of the following entities: IMASUL, DETRAN, and CGE, with respect to item a. below, SEILOG with respect to item b. below, and SEC with respect to item c. below:

a. Proactive, Safe and Resilient Road Asset management

The TA activities will support sustainable, safe and resilient road infrastructure management, including studies, the acquisition of goods and capacity building, in the following three areas: (i) ***road infrastructure management*** to improve management of the road asset, notably: updating the road database incorporating climate-relevant variables, and regular road and traffic conditions surveys across the State; establishing digital tools to improve environmental and social road monitoring; and supporting the State's PPP agenda to expand private sector management of the sector. In particular, the project will improve the scope and applicability of the *Estrada Viva* (Living Road) program[43] to protect wildlife by implementing digital surveying and mapping tools to better understand fauna movements and improve the design and construction of wildlife crossings (total estimated cost US$2.95 million). EPE, AGESUL and IMASUL will benefit from these activities; (ii) ***road climate resilience***, including diagnostics to better understand and mitigate the potential effects of climate change on roads, a vulnerability analysis of the state's road network, and diagnostics and tools to enhance the capacity of IMASUL to monitor the effects of climate change on the State's biomes (total estimated cost US$1.10 million); and (iii) ***road safety***, including a diagnostic of road safety; technical and policy advice to strengthen road safety management capacity of main institutional stakeholders, such as AGESUL and DETRAN; purchase of road safety equipment and/or services to strengthen enforcement (breathalyzers, fixed and mobile radar, drones, axle loads weighting scales); creation of a comprehensive road safety database; and other road safety consultancies and trainings (total estimated cost US$1.55 million). This subcomponent will be implemented by EPE, AGESUL, CGE, IMASUL and DETRAN.

b. Green Mobility and Logistics

The TA will inform the updating of the State Transport Logistics Plan (*Plano Estadual de Logística e Transportes*, PELT) and the incorporation of climate change considerations, including incentives for modal transfer, the introduction of programs to reduce transport-related emissions, and research for the adoption of cleaner vehicle adoption to use in specific corridors, among others.[44] SEILOG will benefit from the activities within this focus area (total estimated cost US$0.45 million). This subcomponent will be implemented by EPE, AGESUL, CGE and SEILOG.

c. Social inclusion and gender in the road

The TA will support the SEC to develop activities on: (i) ***gender inclusion and inclusion of minorities and people with disabilities.*** A Gender Action Plan will identify and define measures to address employment gaps of women and people with disabilities in the road transport sector; and a training and certification program for women will be developed to qualify women for medium and high-level

[42] The target value of additional capital investment in CREMA-PPPs is US$150 million, which would allow for additional PPPs to be structured for selected roads. The eastern portion of the State is characterized by the implementation of road concession models. In the 6th Region, four highways have already been granted (MS-306, MS-112, BR-158 and BR-436). In the 3rd Region, in turn, the bidding process is underway for the concession of a set of highways, consisting of the BR-262, MS-040, MS-338 and MS-395 highways.

[43] To mitigate traffic fatalities, the Government of the State of Mato Grosso do Sul, through AGESUL, developed the Estrada Viva program – Wildlife Needs Safe Passage, a permanent program for monitoring and implementing actions to reduce wildlife roadkill on the state highways of MS. For further references: https://www.estradaviva.ms.gov.br/

[44] The PELT is an instrument that guides long-term transport and logistics planning in the State, created in 2015 with support from the World Bank.

infrastructure sectors jobs (total estimated cost US$0.30 million); and (ii) ***citizen engagement and gender-based violence (GBV) activities*** will be implemented through communication platforms and training to reduce GBV risks near construction areas. This subcomponent will be implemented by EPE, AGESUL, CGE and SEC.

28. **Component 3. Resolution of road safety critical spots affecting the State's public schools (US$5.95 million IBRD financing).** This component will finance road safety and accessibility improvements to hazardous spots around selected State public schools. At least 30 critical and hazardous spots near 24 state schools are expected to be treated. Improvements will adopt climate-resilient designs, including culverts and drainage infrastructure to ensure it withstands the expected intensification of weather events (see Appendix 7). Selected schools have been prioritized by the State's Secretary of Education (*Secretaria de Estado de Educação de Mato Grosso do Sul,* SED) based on a large consultation process involving school principals and teachers. Activities supported by the Project are specially targeted at fostering active mobility among the school community (including students, teachers and parents) and improve energy efficiency around selected State public schools by improving lighting and incorporating traffic lights, and will include: (i) design of universal accessibility and road safety interventions such as access infrastructure with priority for pedestrians and cyclists, including elevated intersections, bike lanes, sidewalks, lighting, traffic lights and speed reduction measures; (ii) civil works that adopt climate-resilient designs at the critical and hazardous spots identified; and (iii) consultancy for works supervision and environmental and social (E&S) safeguards supervision. This subcomponent will be implemented by EPE, AGESUL and DETRAN.

29. **Component 4. Project management (US$2.795 million, of which US$2.5 million IBRD financing and US$0.295 million counterpart financing).** This component will provide the implementing agency EPE, with support to the implementation, management and coordination of the Project, including technical, financial, audit, procurement, monitoring and evaluation, social and environmental aspects. This subcomponent will be implemented by EPE.

Table 2: Project cost table for Phase 4.

Components and subcomponents	IBRD	Counterpart	PCM	Total
Component 1—Design, rehabilitation and maintenance of selected roads through CREMA agreements	**184.5**	**49.705**	**100**	**334.205**
Subcomponent 1.1—Proactive, safe, and resilient road asset management based on long-term (8-10 years) CREMA-DBM for state roads of selected SMS regions	139.5	8.20	-	147.7
Subcomponent 1.2— Proactive safe and resilient road asset management based on long-term (10-35 years) CREMA-PPP for state roads	45	41.505	100	186.505
Component 2— Institutional strengthening	**6.55**	**-**	**-**	**6.55**
Component 3— Resolution of road safety critical spots affecting state public schools	**5.95**	**-**	**-**	**5.95**
Component 4: Project Management	**2.5**	**0.295**	-	**2.795**
Front-end fee	*0.5*	-	-	*0.5*
TOTAL	200.00	50.00	100.00	350.00

Source: **EPE-MS and World Bank**. *Note:* CREMA = performance-based contract for rehabilitation and road maintenance; CREMA-DBM = 8- to 10-year design, build, and maintain contract developed through public procurement regulations; CREMA-PPP = 10- to 35-year contract developed as an availability payment public-private partnership; PCM = Private Capital Mobilization.

E. Role of Partners

30. **The MPA will enable intervention at scale, serving the ambition to change more than 30 years of road asset management practices to make a deeper impact.** The Phase 4 Project will support the EPE as it embarks on the ambitious program of contracting of 16 percent of the State's paved road network under a CREMA (DBM or PPP). In the specific case of the SMS, Phase 4 will also support building capacity and strengthening PPP regulation. The possibility of implementing cutting-edge instruments, such as for example the PPP guarantee funds, will be evaluated to accompany this ambitious agenda. In Brazil, the Bank's work has benefited from targeted support from the Global Road Safety Facility and the Global Facility for Disaster Reduction and Recovery (GFDRR). The Phase 4 Project will support more resilient road management while eliminating climate-related road infrastructure vulnerabilities and road safety hazards. In line with the Bank's recently adopted active mobility agenda, the Phase 4 Project will also introduce activities targeting vulnerable road users (cyclists, pedestrians) and universal accessibility with Global Facility for Decarbonization of Transport.

F. Lessons Learned and Reflected in the Project Design; Progress on Learning Agenda

31. **The MPA (and the present Phase 4) builds on lessons from the WB's long-term engagement in the road sector in Brazil as well as recent road transport operations in Brazil and other countries of the LAC region.**[45] First, the whole program hinges on the accumulated learning of 25 years of experience in fostering the implementation of CREMA in various Bank-financed operations. Backed by meaningful analytical work, the WB can help structure a program at the height of MPA ambitions. The MPA incorporates important lessons from recent Projects such as the Bahia Road Rehabilitation and Maintenance Project (P147272; PREMAR 2) which piloted the first CREMA-DBMs and CREMA-PPPs in Brazil (with support from the IFC as transaction advisor). It also builds on lessons from the recently closed Tocantins Integrated Sustainable Regional Development Project (P121495), narrowing the MPA's area of focus on a number of core objectives. It builds on recommendations from the 2019 Federal Network Climate Resilience assessment conducted in Brazil,[46] and from the ongoing climate vulnerability assessments for various states that are being implemented as part of the Green Mobility and Logistics for Sustainability and Resilience (P179908) advisory services. As part of those initiatives, with support from GFDRR, a novel climate resilience manual is being elaborated to strengthen resilience of road infrastructures (targeting both contractors and contracting authorities). Finally, the design of the road concessions and the CREMA-PPP model will be informed by the experience of the IFC Transaction Advisory team and the Bank's PPP unit.

32. **Core to the learning process is the MPA MEL.** The MEL is organized as a platform of knowledge that favors innovation and exchanges between the different participating states. It follows a model of networks of professionals and relies on key knowledge documents conceived for the Program such as guidelines for the preparation of technical specifications for CREMA, a manual for road safety and urban crossings, a manual for resilient road networks, and models of terms of reference (ToR) for the preparation of CREMA projects. This knowledge database is customized for the program and builds on cumulative experience in the country and outside. It will favor cutting-edge practices in the program and standardizations for effectiveness of implementation. The MEL will also rely on a series of specific training sessions and workshops organized on a bi-monthly basis, gathering staff from each state to build up

[45] Links to India Green National Highways Corridor Project and Support to Panama PPP Program Development for Recovery Project PADs. Link to the PPP project for Panamericana Road in Panamá https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=28028.

[46] World Bank. 2019. Improving Climate Resilience of Federal Road Network in Brazil. https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/ 585621562 945895470/improving-climate-resilience-of-federal-road-network-in-brazil.

knowledge (e.g., through active brainstorming on key questions such as long-term public contractual obligations crucial for the success of the program) and competence. Several such training sessions have already been organized in the past months. Others will be organized on themes such as: (i) presentation of the first pilots of PPP (BA-052) and CREMA-DBM experiences in Bahia; (ii) training on Highway Development and Management Model (Version 4) (HDM-4); (iii) training on methodologies for climate vulnerability and criticality assessments for roads; (iv) road safety interventions in urban areas, and performance indicators; (v) discussions on long-term financing of road asset management and road funds; (vi) knowledge exchanges on citizen engagement on rural roads; and (vii) discussions with States on CREMA guidelines and the ToRs for the CREMA projects. Road shows to familiarize the private sector to the context are also planned. The MEL will follow a dynamic and adaptive process where each participating state will actively contribute to knowledge creation and dissemination. It is being led by the Federal MoT and *Secretaria Especial do Programa de Parcerias de Investimentos* (Special Secretariat of International Partnerships), federal institutions overseeing the transport and PPP agendas at the national level. The Bank will act as a secretary in the preparation and implementation of the agenda.

33. **Mato Grosso do Sul, which experimented its first performance-based contract in 2012, sees the new CREMA approach as an opportunity to further expand its ambitious PPP Program.** Based upon the successful experience of the CREMA introduced under the WB-financed Mato Grosso do Sul State Road Transport Project (P118410), as well as its recent experiences with PPPs, the State has embraced the proposed strategy to delegate the management of its network to the private sector.

III. PROJECT IMPLEMENTATION

A. Institutional and Implementation Arrangements

34. **The SMS will be responsible for implementing Phase 4 of the MPA.** The EPE, a special regime unit within SEGOV, will be responsible for implementing all Phase 4 components and ensuring robust monitoring and evaluation of the Project and its indicators. A Project Coordination Unit (PCU) will be established within EPE with functions, resources and composition acceptable to the Bank, and will be the implementation and coordination unit. The PCU will be responsible for overall Project coordination, management and supervision, including monitoring and evaluation, procurement, financial management (accounting and disbursement procedures), and environmental and social aspects, and will be staffed no later than ninety days after the Effective Date. The PCU shall be staffed with comprehensive team of specialists including the following key staff: a Project coordinator, a procurement specialist, a financial management specialist, an environmental specialist and social specialist and a gender specialist

35. The execution of the works under components 1 and 3 will be overseen by AGESUL, but procurement will remain under EPE and financial management will remain under EPE/AGESUL. AGESUL will designate a Focal Point and maintain it throughout Project implementation. The Focal Point will be responsible for coordinating, liaising and reporting to the PCU on the implementation, monitoring, financial, environmental and social matters of the Project. Additionally, EPE will coordinate with SEGOV on the use of the FEGAP to guarantee the State's government's commitments, and on the possible creation of a private guarantee fund, for implementing the CREMA-PPP contracts under the Project, as provided by Law 5.829.

36. EPE will enter into (a) a Subsidiary Agreement with AGESUL for the implementation of each Part of the Project, (b) a Cooperation Agreement with IMASUL for the implementation of Part 2.1.(a) of the Project, (c) a Cooperation

Agreement with DETRAN for the implementation of Parts 2.1.(a) and 3 of the Project, and (d) a Cooperation Agreement with each of the Municipalities involved in Part 3 of the Project (acting on a standalone basis or through a consortium of municipalities) to cooperate on the resolution of hazardous spots affecting State public schools, and thereafter maintain said Cooperation Agreements throughout Project implementation. Each Cooperation Agreement will include, *inter alia,* (a) the responsibilities of AGESUL, IMASUL, DETRAN and the relevant Municipality(ies), as applicable, with respect to Project implementation, and (b) the obligation of AGESUL, IMASUL, DETRAN and the relevant Municipality(ies), as applicable, to carry out their respective activities under the Project.

B. Results Monitoring and Evaluation Arrangements

37. **EPE will be responsible for monitoring and evaluation.** EPE will prepare semiannual progress reports detailing Project implementation status; progress toward achieving results, as measured by Project indicators; and progress on the MEL agenda. The monitoring and evaluation and learning under Phase 4 will contribute to the Program's broader MEL agenda.

38. **A PCU will manage and consolidate information for monitoring and evaluation purposes.** The PCU will gather information from the EPE management reports, civil works supervision reports, project consultancies, beneficiary surveys and information provided by other stakeholders. The PCU will prepare and submit to the Bank the semiannual progress reports, including progress on the Results Framework (Annex 1). The PCU will also document the lessons learned and knowledge that was acquired from the MPA MEL agenda. The EPE, with support from the PCU and the Bank, will conduct the Phase 4 midterm review and Borrower completion report. The PCU will also support the participation of selected Government staff in MEL events and will report on synergies with other relevant projects being implemented in the State.

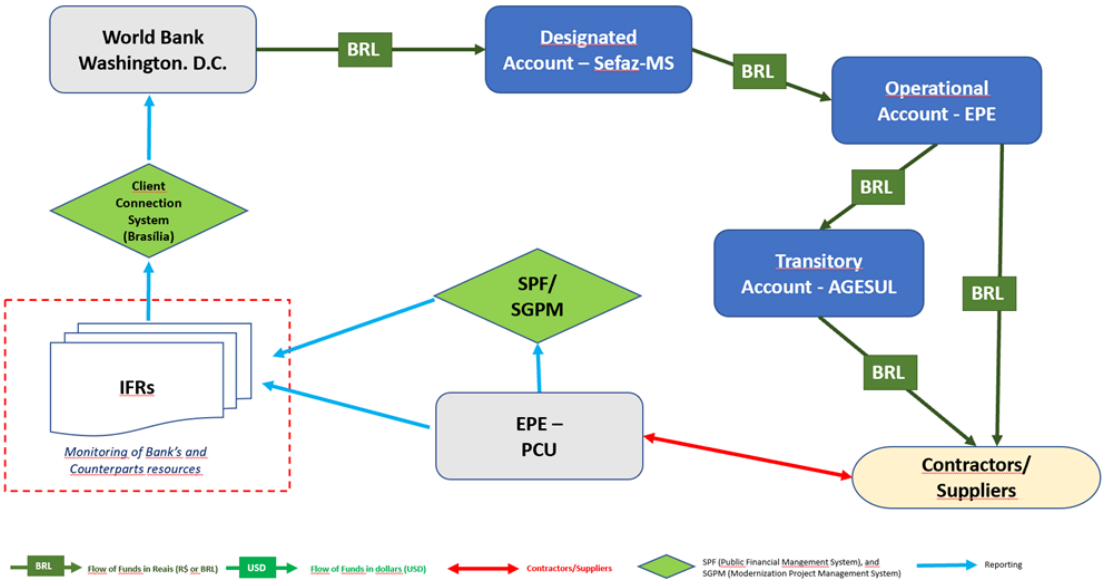
C. Disbursement Arrangements

39. **Disbursement Arrangements.** Funds will be disbursed per eligible expenditures incurred or to be incurred under the Project, following agreed financing percentages. The proposed funds flow and disbursement arrangements (see details below) are considered **Satisfactory.** The following disbursement methods may be used to withdraw funds: (a) reimbursement; (b) advance; and (c) direct payment, with the advance method being the primary disbursement method. Disbursements will be documented based on the Statement of Expenditures (SOE), which will be generated using the Modernization Projects Management System. The PCU will maintain the information required to compile the SOEs.

40. The Designated Account (DA) ceiling will be variable based on six-month forecasts, recalculated every three months. Direct payments will be documented by records (copy of the invoices). Eligible expenditures paid from the DA will be reported quarterly.

41. EPE will request that the Finance Secretariat (*Secretaria de Estado de Fazenda de Mato Grosso do Sul*) open in *Banco do Brasil*, located in Campo Grande: (a) a DA in the name of the SMS to receive Loan resources and disbursements in Reais from the Bank; (b) an Operational Account in *Reais* in the name of EPE, which will be used to process the payments for contracted suppliers (except for works – *obras*); and (c) a transitory account, in the name of AGESUL, to receive and pay for all Project works. The flow of funds between agencies is provided in the figure 1.

Figure 1. Phase 4 Funds flow



42. **Retroactive financing will be allowed** up to an aggregate amount not to exceed 20 percent of the Loan amount for expenditures made one year before the signing date of the Loan Agreement, in line with applicable Investment Project Financing (IPF) policies, following an E&S Audit, satisfactory to the Bank, showing that the pertinent obligations set forth in the Loan Agreement, as applicable to each Eligible Expenditure, have been complied with.

43. **The Loan will also have a four-month grace period after the closing date,** during which the WB will accept withdrawal applications relating to project transactions incurred before the closing date. The minimum application size for reimbursements and direct payments will be US$1,000,000.00 equivalent.

44. **Counterpart funds are earmarked in detail according to their sources and objectives,** to strengthen control of Project execution. The EPE team will be required to provide this information when requesting a funds transfer.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

Technical Analysis

45. **The Project will introduce long-term CREMAs at scale in the SMS to improve the management of the state road network, in line with the MPA objective.** The Project will cover about 826 km of the State roads (or 16 percent of the State paved road network) with an 8–10-year CREMA-DBM and a 10-to-35-year pilot CREMA-PPP. Contract specifications will follow the MPA Program guidelines. The guidelines define the organization of the works and services as follows: (a) initial recovery of the infrastructure functionalities starting at contract signature; (b) rehabilitation works wherever required after the initial recovery; (c) maintenance services after the initial recovery until the end of the contract; and (d) road safety and resilience improvement works. As per the Guidelines, the definition of initial

recovery and rehabilitation works as well as the nature of road maintenance services are decided by the contractors. Payments will be made upon achievement of outputs (concluded works and/or road conditions) based on achievement of predetermined performance standards. Deductions will be applied in case of nonachievement of the standards, based upon predefined scales. A matrix of risk allocation will establish the respective responsibilities incurred by each party to the contract, with the aim of maintaining a balanced risk allocation and allocating risks to the most capable party. Technical risks will typically be allocated to the contractor and exogenous risks to the public authority.

46. **In addition, the Project will pilot road safety improvements around at least 30 hazardous spots near 24 public State schools.** The interventions will aim at universal accessibility and road safety, such as access infrastructure that prioritizes pedestrians and cyclists (sidewalks and bike lanes), elevated intersections, safety lighting and traffic lights. Schools were prioritized by the SED, taking into account the opinion of school principals and teachers.

Economic Analysis

47. **An economic assessment was carried out using a socioeconomic Cost-Benefit Analysis.** The evaluation was based on a comparison of the respective costs and benefits with and without the Project, using the HDM-4 model. Benefits stem from cost reductions for road users, public savings from reduced costs and frequency of works and reduced number of road fatalities. The road safety analysis was carried out with the Road Safety Screening Assessment Tool (RSSAT) in a representative road section of the Project. The calculation of GHG emissions as a result of the Project, including the Social Price of Carbon, was also undertaken according to the World Bank Guidance.

48. **The Phase 4 Project shows robust economic justification.** The net present value (NPV) is US$516.1 million, calculated at a 12 percent discount rate, and the economic rate of return is 93 percent. This significantly exceeds the opportunity cost of capital, set at 12 percent.[47] These estimates were calculated based on an HDM-4 analysis for the two types of CREMAs (DBM and PPP)[48] to be implemented, totaling 826.4 km. The RSSAT was applied to assess the road safety impact of the proposed Project. The analysis used a representative road section—the rural section of MS-276—to obtain a project safety impact (PSI) score of 0.90, corresponding to a 13.1 percent reduction in road crash fatalities. Project benefits have been estimated based on: (a) vehicle operation cost reduction and travel time savings on the improved selected roads (NPV estimated at US$431.3 and US$21.5 million, respectively); (b) road safety benefits resulting from a reduction in road traffic fatalities and serious injuries (NPV estimated at US$50.8 million); and (c) negative gains from mildly increased CO_2 emissions (NPV estimated at US$0.19 million). These values are summarized in Appendix 1. The costs included in the analysis were: (a) the costs of feasibility studies, construction and supervision of works; and (b) costs of implementation, management and maintenance. The counterfactual (without Project) scenario reflected a do-minimum scenario. Additionally, the analysis compared lifecycle costs in the Project scenario against an alternative scenario reflecting the traditional reactive approach, in which road segments only receive minimal intervention until reaching a deterioration threshold, at which point they are reconstructed. Road agency cost savings amounted to 31 percent over a 20-year horizon, which is slightly conservative compared to the estimated savings in the State of Bahia, where long-term CREMA contracts vis-à-vis traditional procurement contracts achieved a 38 percent cost savings.[49] Project files contain the complete economic analysis report, including the analysis of road safety interventions and GHG emissions, as well as further details on the methodology followed, its main assumptions and the sensitivity analysis.

[47] A sensitivity analysis reveals that the results are robust compared with the risks associated with Project implementation, variations in the discount rate, and reductions in benefits, including VOC, time savings, and accident reduction.
[48] CREMA-DBM is formed by 18 road sections adding 617.7 km and CREMA-PPP are 2 sections adding 208.7 km
[49] Preservation versus reactive rehabilitation strategies: see Figure in Appendix 1.

49. **GHG accounting confirms that the Project's net emissions are limited and will not deter progress along the country's low-emissions development pathway.** The total absolute net change in emissions is negligible, estimated at a positive **4,605** tCO_2-eq, or an average of 242 tCO_2-eq for a 20-year evaluation period. This change is associated mainly with slightly higher flow speeds, made possible by consistently better road surface quality. The Project is expected to increase the average speed across the road network from 64.8 km/h in the baseline scenario to 66.4 km/h in the Project scenario, leading to marginal increases in fuel consumption and emissions.[50] Net GHG emissions estimates are conservative and do not consider effects such as increased fuel efficiency and fleet electrification over time. In absolute values, total emissions from motorized traffic in the selected road segments vary from 36,412 tCO_2-eq in the first year of the Project, to 63,802 tCO_2-eq at the end of the 20-year period, driven mainly by increased fuel consumption due to traffic growth. In summary, the analysis confirms that emissions associated with the Project do not substantially affect the country's low-carbon development trajectory and may in fact turn out to be negative, given the promising prospects of fleet decarbonization during the evaluation period. GHG accounting files are available in the Project files.

50. **Phase 4 is consistent with Brazil's Nationally Determined Contribution (NDC).** In the latest NDC submitted to the United Nations Framework Convention on Climate Change by October 2023, Brazil committed to reducing its emissions by 59 to 67 percent from the 2005 levels by 2035 and promised to prepare new climate change plans, including a national mitigation strategy, and updating the 2016 National Action Plan for adaptation, for which sixteen sectoral and thematic adaptation plans are being developed—one for transport. Phase 4 aligns with the revised NDC by reducing the carbon footprint of road construction, improving road management (linked to GHG emissions), and supporting policies and initiatives for green mobility and logistics. Regarding adaptation, the Program supports climate-resilient roads, including the design, construction, and maintenance and incorporates management response plans to climate risks. The operation is consistent with the recommendations of Brazil's Country Climate and Development Report for the decarbonization of logistics and proactive road maintenance.

51. **Phase 4 is aligned with the goals of the Paris Agreement on both mitigation and adaptation.**

52. **Assessment and reduction of mitigation risks**. The Phase 4 activities are either Universally Aligned (UA) with Paris Agreement mitigation goals or considered to be of low residual risk. The Project does not pose any inherent risks that would increase national GHG emissions or create carbon lock-ins. The following are considered UA and do not pose any inherent risks: (a) performance-based proactive road maintenance contracts (upgrading, rehabilitation and reconstruction), with improvements to resilience, road safety and accessibility without significant increases in traffic capacity (Component 1); (b) institutional strengthening, with a focus on climate resilience and environmental protection, infrastructure adaption, decarbonization of logistics, promotion of intramodality and social inclusion (Component 2); and (c) road safety and universal accessibility interventions around state schools (Component 3). Considering the absence of induced traffic flows, limited infrastructure expansion, and a strong focus on accessibility and nonmotorized, low-emission transport options, the residual mitigation risk is assessed as low.

53. **Assessment and reduction of adaptation risks: The Project is consistent with adaption policies; this phase effectively reduces climate risks, and its design seeks to enhance the climate resilience of the selected roads.** Overall, some Project areas are highly exposed to climate and disaster risks— forecasts indicate a significant increase in fire risk by 2040, especially in the northern and central regions of the State—including increasing occurrence of heat waves, often accompanied by a profound drop in air humidity, vegetation drying and forest fires, floods, and landslides, while other

[50] In comparison, for the States of Espírito Santo and Santa Catarina the average speeds were expected to increase from 62.7 kph to 74.8 kph and from 77 kph to 80.2 kph with the project respectively, while some segments had flow speeds as low as 30 kph, thus driving the bulk of fuel consumption savings.

areas are more moderately exposed to high temperature, drought, and water scarcity. In the regions of Naviraí and Nova Andradina, the exposure risk from the Project location is High, but the overall Project risk is Moderate considering the design of the physical and nonphysical components. In the regions with proposed Phase 4 interventions, roads are at risk from prolonged exposure to intense sunlight, which causes oxidation of the asphalt binder, making it more rigid and brittle and leading to the emergence of early cracks, with the interventions being designed to resist incremental precipitation and flooding, considering climate-resilient materials and construction techniques. Regarding Component 1 activities, the occurrence of natural hazards during the execution of the Project poses a moderate risk for the achievement of the Project's PDO. Here is where long-term road maintenance plays a pivotal role in climate resilience and adaptation as well-maintained roads are crucial for ensuring efficient and reliable transportation networks, in comparison with the current situation: amid limited routine maintenance, the cleaning of drainage and removal of vegetation are neglected for long periods. In the face of climate change, which will accelerate the deterioration of road infrastructure, PBCs are essential for responding to and recovering from increasingly intense and frequent extreme weather events. In November 2023, heavy rain eroded parts of the MS-473 road slopes in Nova Andradina, which will be rehabilitated and maintained as part of Phase 4. Properly maintained infrastructure is more likely to withstand such events, reducing disruptions to transportation systems and facilitating faster recovery. PBCs will enhance the resilience of both beneficiaries and road infrastructure in the selected roads, through the adoption of climate-resilient designs, by introducing climate disaster risk management response systems in the contracts (emergency plans)—measured as a key PDO indicator for the Program and the Project, and by using PBC climate resilience indicators (i.e., cleaning of drainage and removal of vegetation along culverts). Moreover, building capacity to enhance the network's climate resilience and preparedness plans to reduce climate risks are planned in Component 2. As a result, the residual project adaptation risk is low and can be considered aligned on adaptation.

54. **To reduce these inherent risks, the project incorporates the following adaptation measures:** Long-term CREMAs that incentivize proactive maintenance, addressing pavement fatigue and cracks and cleaning drainage areas, will increase the resilience of the infrastructure against the effects of climate change. Moreover, CREMAs will strengthen the infrastructure with customized climate-resilient solutions at its most critical spots and will include emergency and climate-resilient risk plans. Given the role of road transport in agriculture and agribusiness, these measures are critical for the livelihoods of rural populations. In addition, the Project will build capacity among the agencies and contractors for preparedness planning, involving comprehensive training and the development of early warning systems, emergency response protocols, and tailored disaster risk management strategies.

55. As a result of these proposed measures, the Project is assessed to have an Acceptable level of residual risk with respect to climate hazards.

B. Fiduciary

(i) Financial Management

56. **Financial Management (FM)**. **The Bank conducted a capacity assessment of EPE and AGESUL. The objective of the Financial Management Assessment (FMA)** is to determine whether EPE and AGESUL have acceptable FM arrangements to support project implementation, including planning and budgeting, accounting, internal controls, funds flow, financial reporting, and auditing. **The FMA concluded** that (i) the proposed FM arrangements are considered adequate as they are capable of correctly and completely recording all transactions and balances relating to the project; facilitate the preparation of regular, timely, and reliable financial statements; safeguard the project's assets; and are subject to auditing arrangements acceptable to the Bank; thus providing reasonable assurance that

the proceeds of the loan are used for the intended purposes; and (ii) **the residual FM risk associated with the Project is rated as Moderate**.

57. **The FMA identified the following risks to the achievement of the PDO:** (i) EPE's current staff has no experience in implementing Bank-financed projects on its own, which may result in implementation delays; (ii) there is not a designated FM Specialist for the project, which may lead to inadequate monitoring or delays in record keeping in the initial phases of the Project implementation; and (iii) the absence of an internal control area to support the project within EPE, which may lead to incorrect accounting entries. **The mitigation measures are** (i) the Bank will provide close support during project supervision, as well as capacity training to all staff throughout the Project's life; (ii) EPE will designate a FM Specialist for the Project by the Effective Date, and the appointment of the Administration and Finance Assistant (Individual Consultant) within ninety days of the signing of the legal agreement; and (iii) EPE will add an Internal Control Consultant to support EPE's accounting and financial processes.

(ii) Procurement

58. **Procurement will be carried out in compliance with the WB's Procurement Regulations for IPF Borrowers, dated September 2023.** Individual consultants will support the PCU in daily procurement-related activities, as needed. The PCU will be responsible for internal and external procurement procedures such as drafting and publishing bidding documents, receiving proposals and support the evaluation of proposals in coordination with the Bank's Project technical team. Training in the Bank's procurement regulations will be provided before implementation commences.

59. **The Project Procurement Strategy for Development (PPSD)** has been prepared. It defines the approach for high-value and/or high-risk procurement and sets the basis for the first 18-month procurement plan, which will be uploaded in the Systematic Tracking of Exchanges in Procurement (STEP) portal before Negotiations. Sustainable procurement and gender aspects are included in the plan.

C. Environmental, Social and Legal Operational Policies

60. **The Project is aligned with the State's efforts to mitigate the environmental and social impacts of the road sector.** Phase 4 follows Mato Grosso do Sul's State Climate Change Policy (State Law nº 4,555/14), which includes a specific chapter on sustainable transport policies, such as the definition of environmental performance standards for vehicles and the prioritization of monitoring pollutant emissions). The Project also follows the Mato Grosso do Sul Carbon Neutral State Plan (*PROCLIMA*, Decree 15.798/21, which has a crosscutting component on infrastructure and logistics for sustainable development). Moreover, it is aligned with the State's MS *Renovável* (sustainable) Program, which provides incentives for electric cars and ethanol; and with the Corredor Azul project (replacement of diesel trucks with natural gas, and replacement of diesel fuel with biomethane in vehicles and tractors). The Project will also seek ways to coordinate with the Estrada Viva MS State Program, which provides sustainable solutions to promote migratory movements of fauna and safe wildlife crossings.

61. **The environmental risk rating is Moderate.** Both positive and negative environmental impacts are expected from routine maintenance, road recovery works (Component 1 – CREMA works), and road safety interventions (Component 3). The anticipated negative impacts during the works include: (a) noise and air quality issues due to increased vehicle traffic and heavy machinery; (b) generation of solid and hazardous waste from construction activities; (c) soil erosion and compaction from soil removal and heavy machinery movement; (d) soil and water pollution from inadequate management of hazardous products and waste; and (e) construction site and traffic risks to workers and communities.

Additionally, while exceptional, limited expansion of the rights-of-way may be necessary to enhance road safety, climate resilience, or mobility adaptations. This could potentially lead to limited vegetation removal and habitat loss. Other potential negative impacts include the need for waste, borrow areas, and the implantation of temporary asphalt plants. On the positive side, periodic maintenance and rehabilitation activities will improve drainage functions and erosion control and reduce existing environmental liabilities and degraded areas. In summary, the potential adverse environmental impacts are site-specific, temporary, reversible and can be mitigated. The roads included in the Project are exempt from Environmental Operating License *(Licença Ambiental de Operação*) and have been issued an Electronic Environmental Declaration awarded to AGESUL.[51] Components 2 and 4 will have minimal negative direct environmental impacts, as they primarily involve TA and administrative activities.

62. **The social risk rating is Moderate.** The risks and impacts on human populations resulting from works under Component 1 are predictable, temporary and reversible. They tend to be of small magnitude and site specific. Potential impacts can be related to health and safety of workers and neighboring communities, road safety conditions, disturbances to neighborhoods during the works phase (dust, noise, obstacles to the movement of people and vehicles, temporary interruption of services and accesses), temporary induced labor influx (and its potential risks of community exposure to communicable diseases and increased numbers of Sexual Exploitation and Abuse /Sexual Harassment incidents), and while unlikely, the limited possibility of having to remove irregular invasions and occupations from the right-of-way under specific circumstances, such as when road safety becomes an issue. Routine and widely known operational and road safety measures, workers' Occupational Health and Safety measures, signage of working sites and communication with neighboring communities are deemed sufficient to avoid or minimize these risks. The roads included in Phase 4 do not cut through or intersect with indigenous lands and *quilombola* territories. The Borrower has extensive experience in carrying out similar works as well as well-established protocols to ensure the safety and health of workers and neighboring communities and to deal with irregular occupations of the rights-of-way in a consensual manner. Road safety works under Component 3 will be widely consulted with school communities (teachers, students, parents), and three Indigenous communities will be direct beneficiaries. Consultations will be carried out in a culturally appropriate and gender-sensitive manner. The downstream effects of the TA activities under Component 2 are expected to be largely positive for society, as they address issues related with social inclusion, gender inclusion and citizens' voice.

63. **The Phase 4 Project will facilitate citizen engagement.** Component 3, Road safety improvements, will involve comprehensive citizen engagement processes to ensure community voices are heard and considered throughout the Project. Consultations will be held with parents, teachers and students from participating schools to align the Project with their needs and identify critical safety concerns. Detailed records of these consultations will be maintained, and approval of road safety measures by meeting participants will serve as a key indicator of effective citizen engagement. Furthermore, citizen engagement is deeply entrenched in the CREMA contacts: a phone number to lodge comments and complaints will facilitate the identification of eventual defects in the road network. The share of complaints resolved in the agreed timeline will serve as a secondary indicator for citizen engagement. Moreover, contractors under Subcomponent 1.1 will perform random interviews with nearby residents, as per the Stakeholder Engagement Plan (disclosed on the EPE's website on November 28, 2024)[52], to collect feedback on work quality and the handling of social and environmental risks. The Environmental and Social Commitment Plan for this project was disclosed on the Bank's website on April 3, 2025. The Project will also use the website associated with the *Estrada Viva* program to pinpoint critical wildlife areas and collaborate with farmers to construct essential underground crossings in vegetated

[51] Under tag number 000015/2022.
[52] https://www.epe.segov.ms.gov.br/socioambiental-rodar-ms/

regions. Finally, dedicated and customized engagement activities with Indigenous communities will ensure that their needs and concerns are fully addressed and integrated into the planning and implementation of road safety measures.

64. **The Phase 4 Project will promote gender equity through five main pillars:**
    - **Certification and Employment Sustainability for Women in Technical Roles.** In collaboration with identified technical institutions, public agencies and engineering companies contracted, the Project will support on-the-job training and certification in advanced competencies relevant to engineering and construction for selected women. For engineers, the project will cover the costs of their CREA registration, enabling them to access the market and ensuring sustained employability;
    - **Certification and Employment Sustainability for Women in Operational Roles**. Immigrant women or those in vulnerable situations, primarily involved in operational positions will be mapped and offered training for equipment handling or national driver's license (*Carteira Nacional de Habilitação***,** CNH) acquisition.[53] Upon completion, they will receive a certification, enabling their potential integration into contractor teams during construction phases;
    - **Future Women Engineers in Universities and Schools**. Presentations and lectures in schools and universities, along with internship fairs at universities, will showcase role models in engineering, career possibilities, and internship opportunities;
    - **Awareness in Contractors.** Sessions will be offered to contractor teams to raise awareness of sexual violence and harassment, mitigating potential risks, alongside the presentation of the policy known as OPM; and
    - **Promote engagement with IP.** Public consultations will be conducted with Indigenous Peoples near the project's operations, accompanied by the distribution of informational booklets for contractor teams.

65. Moreover, the Project will provide funding to the Labor Foundation *(Fundação do Trabalho de Mato Grosso do Sul*)[54] to undertake actions that foster social inclusion through employment. The World Bank team has proposed financing the mapping of women survivors of GBV and will use this as one of the selection criteria for training and possible employability. Furthermore, contractors will be required to hold or obtain the *Selo Empresa Amiga da Mulher*[55] (Women-Friendly Company Seal), which includes the following requirements: (a) female representation; (b) affirmative actions; (c) combating harassment; (d) ensuring a safe working environment; (e) supporting women victims of violence; and (f) providing job opportunities for these women. Obtaining the seal will be a mandatory contractual condition.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Area OP 7.60	No

53 In the context of civil engineering, operational roles are focused on essential tasks that support the practical implementation of the project. These roles involve activities such as equipment handling (e.g., operating construction machinery like excavators, loaders or cranes) and logistics.
54 State-run public foundation dedicated to promoting employment, vocational training, and social inclusion programs in Mato Grosso do Sul. It focuses on supporting vulnerable groups through job placement and workforce development initiatives.
55 https://www.planalto.gov.br/ccivil_03/_ato2023-2026/2023/lei/l14682.htm

V. GRIEVANCE REDRESS SERVICES

66. **Grievance Redress.** Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the Bank'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 Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the GRS, visit http://www.worldbank.org/GRS. For information on how to submit complaints to the Bank's Accountability Mechanism, visit https://accountability.worldbank.org.

VI. KEY RISKS

67. **The overall risk of Phase 4 is assessed as Moderate, with no substantial or high risks identified for this project.**

Annex 1: RESULTS FRAMEWORK AND MONITORING

PDO Indicators by PDO Outcomes

Baseline	Closing Period
To improve access to sustainable, safe and resilient transport in the State of Mato Grosso do Sul	
Millions of people within SMS that would potentially benefit from improved access to sustainable transport infrastructure and services (Number)	
Jun/2024	Mar/2034
0	1.55
Reduction in annual road crash fatalities along targeted state road corridors in selected areas of the State of Mato Grosso do Sul (Number)	
Jun/2024	Mar/2034
23	21
Share of the paved state road networks in the State of Mato Grosso do Sul with Management Response Plans (MRP) to climate risks and natural disasters in place (Percentage)	
Jun/2024	Mar/2034
0	16
The total amount of money mobilized from private sector sources (Amount(USD))	
Jun/2024	Mar/2034
0	100,000,000

Intermediate Indicators by Components

Baseline	Closing Period
Proactive safe and resilient road asset management based on long-term (8–35 years) CREMA	
Length of Safe and Resilient state road corridors under PBCs (Kilometers)	
Jun/2024	Mar/2034
0	826.38
➢Length of safe and resilient state road corridors under CREMA-DBM (8 to 10 year contract with full rehabilitation) (Kilometers)	
Jun/2024	Mar/2034
0	617.69
Number of CREMA-PPP contracts structured in the SMS (Number)	

Jun/2024	Mar/2034
0	1
Millions of people that benefit from enhanced resilience to climate risks (Number)	
Jun/2024	Mar/2034
0	1.55
Hazardous spots for safety and resilience improved in selected state road corridors (Number)	
Jun/2024	Mar/2034
0	30
➢Hazardous spots for safety improved in selected state road corridors (Number)	
Jun/2024	Mar/2034
0	20
➢Hazardous spots for climate resilience improved in selected state road corridors (Number)	
Jun/2024	Mar/2034
0	10
Total value of Private Capital Enabling (Amount(USD))	
Jun/2024	Mar/2034
0	200,000,000
Average IRI in the State's paved network (Number)	
Jun/2024	Mar/2034
4.68	To be determined
➢Share of the State's paved network with an IRI < 3.5 (Percentage)	
Jun/2024	Mar/2034
10	To be determined
➢Share of the State's CREMA network with an IRI < 3.5 (Percentage)	
Jun/2024	Mar/2034
13.40	To be determined
Institutional strengthening	
Safe, sustainable and Resilient road asset management: Strategic Plan for Network Monitoring & Maintenance (Yes/No)	
Jun/2024	Mar/2034
No	Yes
Safe, sustainable and Resilient road asset management: PowerBI system for environmental, social and governance monitoring adopted (Yes/No)	
Jun/2024	Mar/2034
No	Yes
Safe, sustainable and Resilient road asset management: Design of a State's Action Plan (Strategy) for Road Safety (Yes/No)	

Jun/2024	Mar/2034
No	Yes
Safe, sustainable and Resilient road asset management: State roads assessed under iRAP methodology (Percentage)	
Jun/2024	Mar/2034
0	100
Safe, sustainable and Resilient road asset management: Fauna movement diagnostic to design fauna crossings (Yes/No)	
Jun/2024	Mar/2034
No	Yes
Social inclusion and gender: Women trained and certified in technical and operational jobs in road construction (Number)	
Jun/2024	Mar/2034
0	20
➢Social inclusion and gender: Women (GVB survivors) trained and certified in technical and operational jobs in road construction (Number)	
Jun/2024	Mar/2034
0	To be determined
Green Mobility and Logistics: Update of the PELT (Yes/No)	
Jun/2024	Mar/2034
No	Yes
Resolution of road safety critical spots affecting state public schools	
Road safety interventions to improve critical and hazardous spots for school accessibility along selected sections of state road corridors implemented (Number)	
Jun/2024	Mar/2034
0	24
School communities where population was consulted and is satisfied with the improvement of road safety and accessibility infrastructure (Number)	
Jun/2024	Mar/2034
0	24
➢- Level of satisfaction of population involved in the improvement of the road safety and accessibility infrastructure in the selected schools (Percentage)	
Jun/2024	Mar/2034
0	80
➢Level of satisfaction with the interventions in the selected schools of women (Percentage)	
Jun/2024	Mar/2034
0	80
Project Management	
Number of learning events in which MS participates of those done annually among Brazil Pro-Roads Program participants (Number)	
Jun/2024	Mar/2034
0	12

% of grievances in the GRM that are resolved in a satisfactory manner (Percentage)	
Jun/2024	Mar/2034
0	100
Social inclusion and gender: GBV training events to mitigate GBV/SEA risks in construction and logistics companies and schools along the selected roads (Number)	
Jun/2024	Dec/2032
0	8

Monitoring & Evaluation Plan: PDO Indicators by PDO Outcomes

Improve access to sustainable, safe, and resilient transport in the SMS	
PDO indicator (sustainable transport access): Millions of people that benefit from improved access to sustainable transport infrastructure and services in the State of Mato Grosso do Sul (Number, Millions).	
Description	Number of people who benefit from access to sustainable and reliable transport infrastructure in selected areas of the SMS. All the selected roads managed under PBCs will be counted as reliable and fiscally/environmentally sustainable infrastructure. Number in millions - to be refined during the first year of implementation.
Frequency	Each semester
Data source	*Escritório de Parcerias Estratégicas* (EPE)
Methodology for Data Collection	EPE will share this indicator with the Bank based on the beneficiaries that live close to the selected roads that will benefit from Project activities – starting from the baseline of "0" contracts today. This will be part of the semiannual reports. The final baseline and target will be calculated during the first year of implementation.
Responsibility for Data Collection	EPE
PDO indicator (safe transport access): Reduction in annual road crash fatalities along targeted state road corridors in the State of Mato Grosso do Sul (Number)	
Description	Change in the number of fatalities and serious injuries in selected Project roads. The target is to reduce by 10 percent to 21 fatalities per year.
Frequency	Each semester
Data source	EPE will report from its crash database system on the semiannual Project reports
Methodology for Data Collection	Gathering the previous semester's data on project road crashes and comparing the results with the baseline
Responsibility for Data Collection	EPE
PDO indicator (resilient transport access): Share of paved state road networks in the SMS with Management Response Plans (MRP) to climate risks and natural disasters in place (Percentage)	
Description	Share of the paved State Road network with MRP, which will be incorporated as part of the new CREMA-DBM and new CREMA-PPP contracts (from the baseline of 0 percent km to a target of 16 percent). This indicator will be updated during the first year.
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	EPE will share this indicator with the Bank based on their contracts with Management Response Plans (MRP) over the total of the State paved road network – starting from the baseline of "0" contracts today. This will be part of the semiannual reports.
Responsibility for Data Collection	EPE
PDO Level indicator (Private Capital Mobilization): The total amount of money mobilized from private sector sources (Amount (USD))	
Description	Amount of private sector capital mobilized through the CREMA-PPP, calculated in millions of dollars. The target is to raise USD 100 million
Frequency	Each semester
Data Source	EPE

Methodology for Data Collection	EPE to be responsible for sharing the amount of private finance raised by the winning bidders of each PPP associated with the project.
Responsibility for Data Collection	EPE

Monitoring & Evaluation Plan: Intermediate Results Indicators by Components

Proactive maintenance based on a long-term (8–25 years) CREMA model using PBCs	
Length of Safe and Resilient state road corridors under PBCs (Kilometers)	
Description	The total length of roads under the different PBC modalities: CREMA-DBM, Proactive Maintenance, and CREMA-PPP
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Number of kms of roads contracted
Responsibility for Data Collection	EPE
Length of safe and resilient state road corridors under CREMA-DBM (8 to 10 year contract with full rehabilitation) (Kilometers)	
Description	The total length of roads under CREMA-DBM in the SMS
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Number of kms of roads contracted
Responsibility for Data Collection	EPE
Number of CREMA-PPP contracts structured in the SMS (Number)	
Description	Number of CREMA-PPP models that have been structured in the SMS and granted concessions
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Number of CREMA-PPP contracts structured in the SMS
Responsibility for Data Collection	EPE
Hazardous spots for safety and resilience improved in selected State road corridors (Number)	
Description	Spots identified by the IRAP analysis, plus climate vulnerability areas
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Number of spots along the roads eliminated
Responsibility for Data Collection	EPE
Hazardous spots for safety improved in selected State road corridors (Number)	
Description	Spots identified by the IRAP analysis and road safety audits, consisting of road stretches with high occurrence of fatalities or accidents.

Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Number of spots along the roads eliminated. Interventions to improve hazardous spots include improved road design, barrier incorporation, improved signaling or lighting, among others.
Responsibility for Data Collection	EPE
Hazardous spots for climate resilience improved in selected State road corridors (Number)	
Description	Spots identified by climate resilience audits, consisting of road stretches with high occurrence of climate events that result in traffic disruptions
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Number of spots along the roads eliminated. Interventions to improve hazardous spots include improved road design, improved drainage capacity, incorporation of runoff elements, vegetation management near culverts, among others.
Responsibility for Data Collection	EPE
Total value of Private Capital Enabling (Amount (USD))	
Description	Values of Private Capital financing to be invested in the potential PPPs along selected State Road Corridors and on the CREMA–DBM
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Total amount of private investment in the CREMA-DBM or CREMA-PPP
Responsibility for Data Collection	EPE
Average IRI in the State's paved network	
Description	Average value of the IRI in the State's paved road network. Baseline and target will be updated during the first year, after AGESUL conducts a state-wide roads profile data collection.
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	EPE will share this indicator with the Bank after conducting the measurement over the State's paved road network.
Responsibility for Data Collection	EPE
Share of the State's paved network with an IRI < 3.5	
Description	Share of the paved State Road network with an IRI measurement below 3.5. Baseline and target will be updated during the first year, after AGESUL conducts a state-wide roads profile data collection.
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	EPE will estimate the percentage of the paved State Road network with an IRI measurement below 3.5.
Responsibility for Data Collection	EPE
Share of the State's CREMA network with an IRI < 3.5	

Description	Share of the paved State Road network under the new CREMA-DBM and new CREMA-PPP contracts with an IRI measurement below 3.5. Baseline and target will be updated during the first year, after AGESUL conducts a state-wide roads profile data collection.
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	EPE will estimate the percentage of the paved State Road network under CREMA contracts with an IRI measurement below 3.5.
Responsibility for Data Collection	EPE
Institutional strengthening	
Safe, sustainable and Resilient road asset management: Strategic Plan for Network Monitoring & Maintenance (Yes/No)	
Description	A strategic plan detailing the type of contracts that will be implemented over each part of the State Road Network—among DBM, PPP, or others—ensuring sustainability, safety, and resilience, and pushing the Maximizing Finance for Development (MFD) agenda with more PPPs. This will include climate-resilient features. A maintenance fund at State level shall be implemented to support the strategic plan.
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Plan developed (Y/N)
Responsibility for Data Collection	EPE
Safe, sustainable and Resilient road asset management: PowerBI system for environmental, social and governance monitoring adopted (Yes/No)	
Description	Tool developed and adopted for improving environmental, social and governance monitoring of the State Network
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Tool developed and adopted (Y/N)
Responsibility for Data Collection	EPE
Safe, sustainable and Resilient road asset management: Design of a State's Action Plan (Strategy) for Road Safety (Yes/No)	
Description	This indicator will track the design of a Road Safety Strategic Action Plan in the State
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Action Plan designed (Y/N)
Responsibility for Data Collection	EPE
Safe, sustainable and Resilient road asset management: State roads assessed under iRAP methodology (Percentage)	
Description	Share of the paved State Road network regularly assessed following the RAP methodology (from the baseline of 0 percent). This indicator will be updated during the first year.
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	EPE will share this indicator with the Bank based on their what percentage of the State paved network is inspected over the total of the State paved road network – starting from the baseline of "0" today. This will be part of the semiannual reports.

Responsibility for Data Collection	EPE
Safe, sustainable and Resilient road asset management: Fauna movement diagnostic to design fauna crossings (Yes/No)	
Description	A diagnostic of fauna movement in the area of *Bonito* through image analysis to better understand the location and occurrence of fauna crossings and enhance the design of fauna crossing infrastructure to reduce fauna runovers and support the *Estrada Viva* program
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Diagnostic on fauna movement completed (Y/N)
Responsibility for Data Collection	EPE
Social inclusion and gender: Women trained and certified in medium and high skilled jobs in road construction (Number)	
Description	This indicator will measure the number of women trained and certified in the construction and logistics companies participating in the Project. The baseline account for 0 women trained and the target is to reach to 20 women trained by project closing on the companies participating in the project.
Frequency	Annual
Data source	EPE
Methodology for Data Collection	Percentage of women trained in those companies
Responsibility for Data Collection	EPE
- Social inclusion and gender: Women (GVB survivors) trained and certified in technical and operational jobs in road construction (Number)	
Description	This indicator will measure the number of women who are GVB survivors trained and certified in the construction and logistics companies participating in the Project. The baseline account for 0 women trained. The target will be updated during the first year.
Frequency	Annual
Data source	EPE
Methodology for Data Collection	Percentage of women (GVB survivors) trained in those companies
Responsibility for Data Collection	EPE
Green Mobility and Logistics: Update of the PELT (Yes/No)	
Description	This indicator will track whether the studies to update the PELT are developed
Frequency	Annual
Data source	EPE
Methodology for Data Collection	Evaluation of the updated logistics plan documents and implementation reports.
Responsibility for Data Collection	EPE
Resolution of road safety critical spots affecting state public schools	
Road safety interventions to improve critical and hazardous spots for school accessibility along selected sections of state road corridors implemented (Number)	
Description	Number of Road safety interventions to improve critical and hazardous spots for school accessibility along selected sections of state road corridors implemented

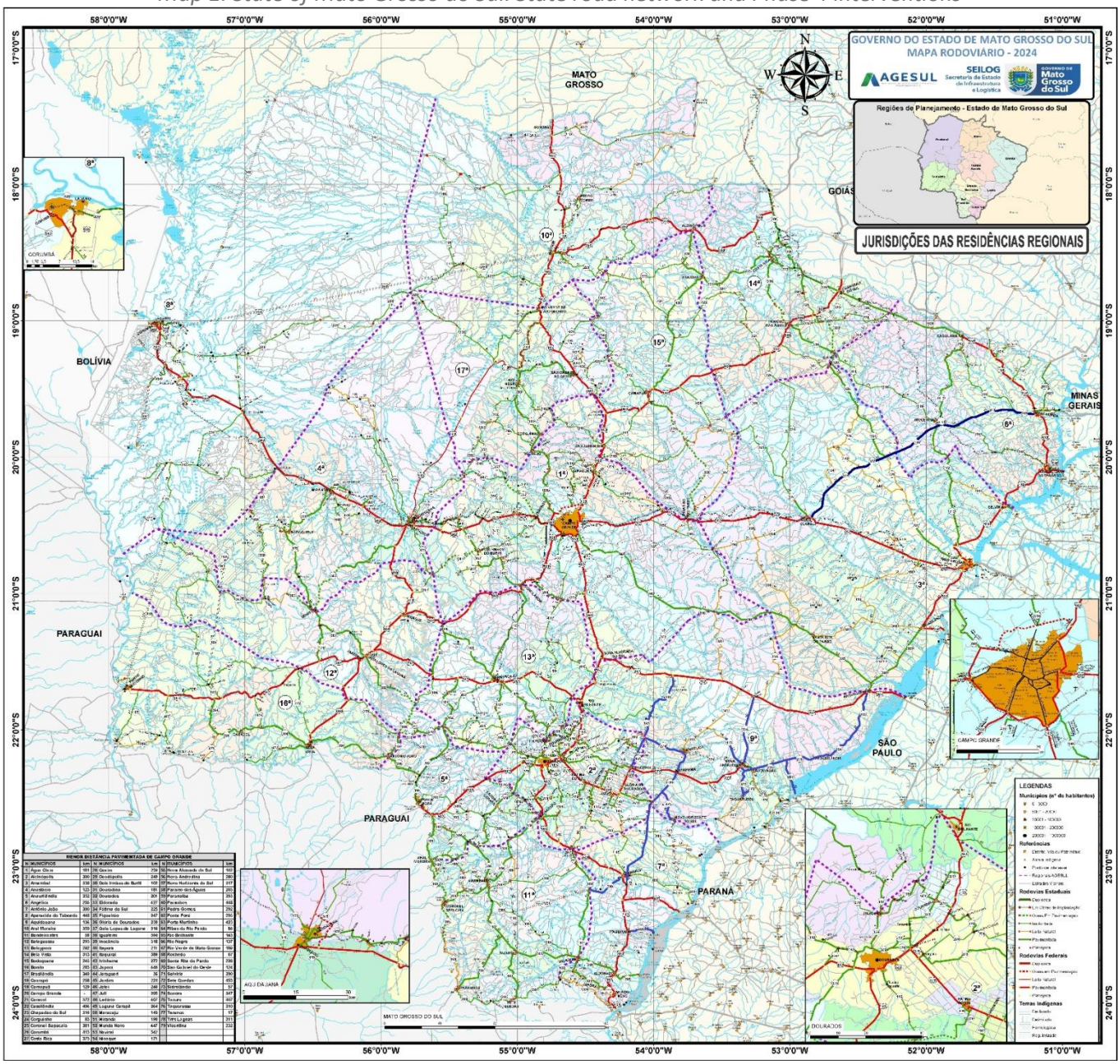
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Number of road safety interventions implemented
Responsibility for Data Collection	EPE
School communities where population was consulted and is satisfied with the improvement of road safety and accessibility infrastructure (Number)	
Description	The school communities will be selecting and prioritizing the safe active mobility interventions in the roads around the schools, as part of the public consultation. The follow-up survey will analyze their satisfaction with the selected interventions once the roads are improved. A consultancy will support EPE and the municipalities to improve the process for future selection process in other areas.
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Number of municipalities
Responsibility for Data Collection	EPE
Level of satisfaction of population involved in the improvement of the road safety and accessibility infrastructure in the selected schools (Percentage)	
Description	Measure the satisfaction levels that reflects the extent to which the community feels their opinions and needs were considered in the decision-making process
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Surveys will be conducted among the population involved in the selection and design/consultation process
Responsibility for Data Collection	EPE
Level of satisfaction with the interventions in the selected schools of women (Percentage)	
Description	Percentage of women who are satisfied and feel that their opinions and needs were considered in the decision-making process
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Surveys will be conducted among the population involved in the selection and design / consultation process.
Responsibility for Data Collection	EPE
Project management	
Number of learning events in which MS participates of those done annually among Brazil Pro-Roads Program participants (Number)	
Description	Events organized by the MoT and the World Bank in collaboration with other Stakeholders for the MEL Agenda
Frequency	Each semester
Data source	EPE and MoT
Methodology for Data Collection	Events organized by the MoT and the World Bank in collaboration with other Stakeholders for the MEL Agenda
Responsibility for Data	EPE and MoT

Collection	
% of grievances in the GRM that are resolved in a satisfactory manner (Percentage)	
Description	Percentage of queries and requests included in the GRM system of the Project which are satisfactorily solved after no more than 4 months
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Regularly checking the communities' and other GRM stakeholders' requests, and providing them with a satisfactory action or response if the action cannot be implemented
Responsibility for Data Collection	EPE
Social inclusion and gender: GBV training events to mitigate GBV/SEA risks in construction and logistics companies and schools along the selected roads (Number)	
Description	This indicator will measure the number of training and awareness campaigns done in schools, logistics, and construction companies to mitigate the risks of sexual harassment (SH) and gender-based violence (GBV) in those environments
Frequency	Each semester
Data source	EPE
Methodology for Data Collection	Events organized by the EPE and the contractors in collaboration with other stakeholders for ensuring awareness
Responsibility for Data Collection	EPE

Annex 2: Maps

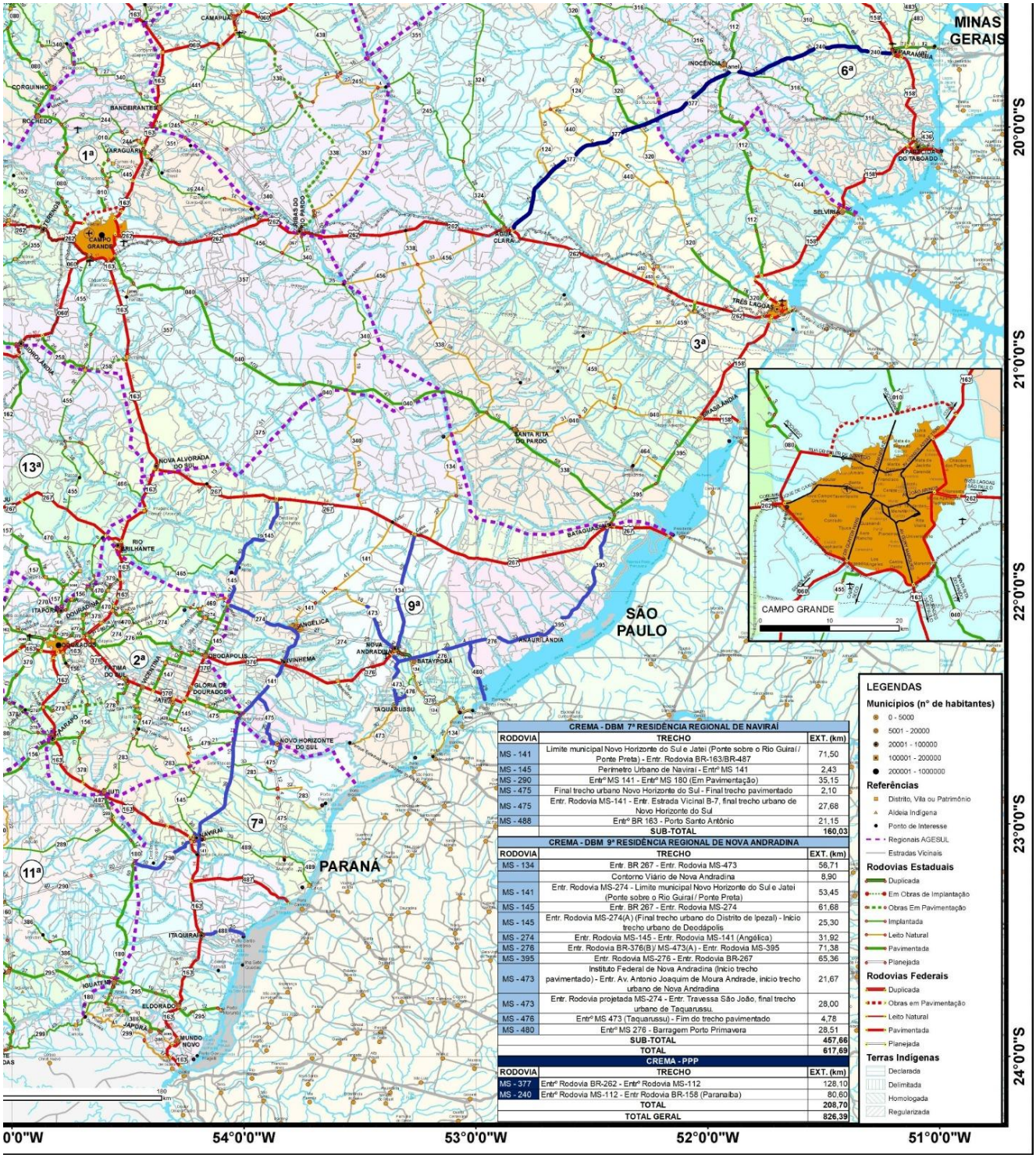
COUNTRY: Federative Republic of Brazil
Brazil Proactive, Safe, and Resilient Road Asset Management Program - State of Mato Grosso do Sul - Phase 4

Map 1: State of Mato Grosso do Sul. State road network and Phase 4 interventions



Source: EPE-MS

Map 2: Phase 4 interventions in the regions of Naviraí and Nova Andradina



CREMA - DBM 7ª RESIDÊNCIA REGIONAL DE NAVIRAÍ		
RODOVIA	TRECHO	EXT. (km)
MS - 141	Limite municipal Novo Horizonte do Sul e Jateí (Ponte sobre o Rio Guiraí / Ponte Preta) - Entr. Rodovia BR-163/BR-487	71,50
MS - 145	Perímetro Urbano de Naviraí - Entrº MS 141	2,43
MS - 290	Entrº MS 141 - Entrº MS 180 (Em Pavimentação)	35,15
MS - 475	Final trecho urbano Novo Horizonte do Sul - Final trecho pavimentado	2,10
MS - 475	Entr. Rodovia MS-141 - Entr. Estrada Vicinal B-7, final trecho urbano de Novo Horizonte do Sul	27,68
MS - 488	Entrº BR 163 - Porto Santo Antônio	21,15
	SUB-TOTAL	160,03

CREMA - DBM 9ª RESIDÊNCIA REGIONAL DE NOVA ANDRADINA		
RODOVIA	TRECHO	EXT. (km)
MS - 134	Entr. BR 267 - Entr. Rodovia MS-473	56,71
	Contorno Viário de Nova Andradina	8,90
MS - 141	Entr. Rodovia MS-274 - Limite municipal Novo Horizonte do Sul e Jateí (Ponte sobre o Rio Guiraí / Ponte Preta)	53,45
MS - 145	Entr. BR 267 - Entr. Rodovia MS-274	61,68
MS - 145	Entr. Rodovia MS-274(A) (Final trecho urbano do Distrito de Ipezal) - Início trecho urbano de Deodápolis	25,30
MS - 274	Entr. Rodovia MS-145 - Entr. Rodovia MS-141 (Angélica)	31,92
MS - 276	Entr. Rodovia BR-376(B)/ MS-473(A) - Entr. Rodovia MS-395	71,38
MS - 395	Entr. Rodovia MS-276 - Entr. Rodovia BR-267	65,36
MS - 473	Instituto Federal de Nova Andradina (Início trecho pavimentado) - Entr. Av. Antonio Joaquim de Moura Andrade, início trecho urbano de Nova Andradina	21,67
MS - 473	Entr. Rodovia projetada MS-274 - Entr. Travessa São João, final trecho urbano de Taquarussu.	28,00
MS - 476	Entrº MS 473 (Taquarussu) - Fim do trecho pavimentado	4,78
MS - 480	Entrº MS 276 - Barragem Porto Primavera	28,51
	SUB-TOTAL	457,66
	TOTAL	617,69

CREMA - PPP		
RODOVIA	TRECHO	EXT. (km)
MS - 377	Entrº Rodovia BR-262 - Entrº Rodovia MS-112	128,10
MS - 240	Entrº Rodovia MS-112 - Entr Rodovia BR-158 (Paranaíba)	80,60
	TOTAL	208,70
	TOTAL GERAL	826,39

Source: EPE-MS