

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

**BRAZIL**

**MARACANAÚ TRANSPORTATION AND URBAN LOGISTICS PROGRAM**

**(BR-L1445)**

**LOAN PROPOSAL**

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19.	<a href="#">Financial and budgetary validation for the municipality of Maracanaú</a>

## **ABBREVIATIONS**

CO <sub>2</sub>	Carbon dioxide
ESA	Environmental and Social Analysis
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMR	Environmental and Social Management Report
FMP	Metropolitan passenger rail system
IBGE	Instituto Brasileiro de Geografia e Estatística [Brazilian Geography and Statistics Institute]
ICAS	Institutional Capacity Assessment System
PELT	State Logistics and Transportation Plan
PMU	Program management unit
SEFIN	Secretaria de Gestão, Orçamento e Finanças [State Management, Budget, and Finance Department]
SEINFRA	Secretaria da Infraestrutura do Estado do Ceará [State Infrastructure Department]
SIAFI	Integrated financial management system

## PROJECT SUMMARY

### BRAZIL MARACANAÚ TRANSPORTATION AND URBAN LOGISTICS PROGRAM (BR-L1445)

Financial Terms and Conditions				
<b>Borrower:</b> Municipality of Maracanaú			<b>Flexible Financing Facility<sup>(a)</sup></b>	
			<b>Amortization period:</b>	25 years
<b>Executing agency:</b> Municipality of Maracanaú, acting through the State Infrastructure Department (SEINFRA)			<b>Disbursement period:</b>	5 years
			<b>Grace period</b>	5.5 years <sup>(b)</sup>
<b>Guarantor:</b> Federative Republic of Brazil			<b>Interest rate:</b>	LIBOR-based
			<b>Credit fee:</b>	(c)
Source	Amount (US\$)	%	<b>Inspection fee:</b>	(c)
<b>IDB (Ordinary Capital):</b>	31,784,500	50	<b>Original weighted average life:</b>	15.25 years <sup>(d)</sup>
			<b>Approval currency:</b>	U.S. dollars from the Ordinary Capital
<b>Local:</b>	31,784,500	50		
<b>Total:</b>	63,569,000	100		
Project at a Glance				
<b>Project objective/description:</b>				
The objective of the program is to help improve the productivity of the municipality of Maracanaú and to mitigate the negative impacts of climate change by providing an efficient, sustainable infrastructure. The specific objectives are as follows: (i) to shorten travel times and reduce operating costs for cargo and passenger transportation by upgrading the road infrastructure and improving its connections with the regional road network; (ii) to reduce greenhouse gas emissions by establishing dedicated lanes for public transportation; and (iii) to support the institutional strengthening of the municipality.				
<b>Special contractual conditions precedent to the first loan disbursement:</b>				
(i) demonstrate to the Bank that the program management unit (PMU) has been established and its core team appointed, under the terms previously agreed upon with the Bank; and (ii) present to the Bank the shortlist for the selection of the consulting firm that will support the PMU during program execution (paragraph 3.6).				
<b>Special contractual execution conditions:</b> See special contractual execution conditions in Section IV of Annex III (Fiduciary Agreements and Requirements) and in Annex B, legal requirements related to environmental, social, health and safety issues, of the Environmental and Social Management Report.				
<b>Exceptions to Bank policies:</b> None				
Strategic Alignment				
Challenges: <sup>(e)</sup>	SI	<input type="checkbox"/>	PI	<input checked="" type="checkbox"/>
			EI	<input type="checkbox"/>
Crosscutting themes: <sup>(f)</sup>	GD	<input type="checkbox"/>	CC	<input checked="" type="checkbox"/>
			IC	<input type="checkbox"/>

<sup>(a)</sup> Under the terms of the Flexible Financing Facility (document FN-655-1), the borrower has the option of requesting changes to the amortization schedule, as well as currency and interest rate conversions. The Bank will take operational and risk management considerations into account when reviewing such requests.

<sup>(b)</sup> Under the flexible repayment options of the Flexible Financing Facility, changes to the grace period are permitted provided that they do not entail any extension of the original weighted average life of the loan or the last payment date as documented in the loan contract.

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

<sup>(d)</sup> The original weighted average life of the loan may be shorter, depending on the effective signature date of the loan contract.

<sup>(e)</sup> SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

<sup>(f)</sup> GD (Gender Equality and Diversity); CC (Climate Change and Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).

## I. DESCRIPTION AND RESULTS MONITORING

### A. Background, problem addressed, and rationale

- 1.1 **Economic situation in the Northeast Region.** Brazil's Northeast Region is one of the poorest and least developed regions in the country.<sup>1</sup> This region has major competitiveness gaps that are evidenced by the few industrial jobs that exist and the low participation of businesses in international markets<sup>2</sup> (regional exports account for only 8% of the national total).<sup>3</sup> A study by the Brazilian National Confederation of Industry<sup>4</sup> identified as the main limiting factor to the growth of Brazil's economy (including the Northeast) the poor quality of its transportation and logistics infrastructure. This results in high costs that hinder entry into the global economy for its predominant economic sectors, as well as intra- and interregional integration. The Northeast's most relevant production sectors for international trade (chemical and petrochemical, 10%; minerals, 14%; agriculture, 19%, and automotive, 3% of total exports)<sup>5</sup> are heavy users of infrastructure and logistics services, due to the volume of cargo transported and the distance to the ports and distribution hubs for exports ([optional electronic link 10](#)).
- 1.2 **Significance of the state of Ceará and the municipality of Maracanaú.** The state of Ceará is one of the three states with the biggest potential to grow the region's economy. In this context, the municipality of Maracanaú is fundamentally important as one of the 13 municipalities that make up the Metropolitan Region of Fortaleza,<sup>6</sup> capital of the state of Ceará. The municipality of Maracanaú plays a major role in the state's economy, with a gross domestic product (GDP) of US\$2,539,656,000,<sup>7</sup> the third largest in the state. The industrial sector accounts for 52% of its GDP, while the service and agricultural sectors respectively account for 47% and 1%.

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<sup>1</sup> Brazilian Geography and Statistics Institute (IBGE) (2013) - Gini coefficient: Northeast (0.509), North (0.484), South (0.458), Southeast (0.483), and Central-West (0.519); national average (0.501).

<sup>2</sup> IDB. Methodology to Analyze and Quantify the Impacts of Congestion on Supply Chains in Latin American Cities.

<sup>3</sup> Ministry of Industry, Foreign Trade, and Services (2015). *Produtividade no Brasil: desempenho e determinantes*.

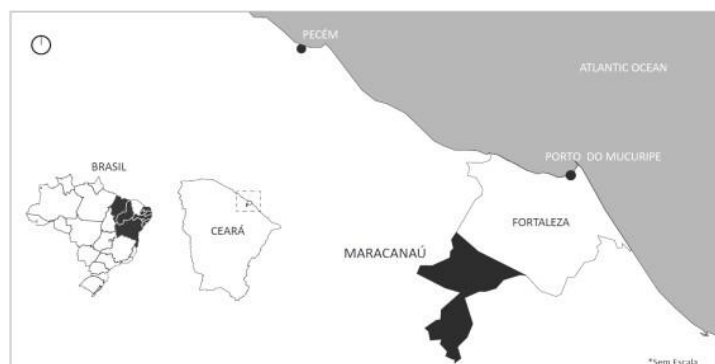
<sup>4</sup> Confederação Nacional da Indústria - *Indústria brasileira: da perda de competitividade à recuperação?* (2015).

<sup>5</sup> *Matriz de insumo-produto do nordeste e estados: Metodologia e resultados*. Banco do Nordeste (2010).

<sup>6</sup> <http://www.observatoriodasmetropoles.net/>.

<sup>7</sup> IBGE (data from 2014).

**Map 1. Location of the municipality of Maracanaú**



- 1.3 The municipality of Maracanaú and its transportation infrastructure.** The economic development of the municipality of Maracanaú is driven by its strategic location, with its proximity to the airport, major highways, and international ports—an advantage that has benefitted its economy. In addition, Maracanaú benefits from the presence of four major regional transportation networks: (i) the metropolitan passenger rail system (FMP), which crosses the north and south of the municipality and connects the urban areas of Maracanaú and Fortaleza (the capital of the state of Ceará, which is the location of many job opportunities and service activities); (ii) CE-060, a highway that crosses the state from north to south and passes through the eastern part of Maracanaú, has average daily traffic of 15,000 vehicles, of which 12% are trucks; (iii) CE-065, a highway that crosses the state from north to south and passes through the western part of Maracanaú, has average daily traffic of 12,000 vehicles, of which 7% are trucks; and (iv) the metropolitan beltway, with a total planned length of almost 32 kilometers, of which 85% was already expanded and the remaining 15% pending expansion is in the northern part of Maracanaú. One of the main functions of the metropolitan beltway (which coincides with BR-020) is serving the heavy-truck traffic that arrives in Fortaleza and has destinations that include the seaport of Pecém.<sup>8</sup> This port, which was inaugurated in 2002, is the point of origin for 60% of ocean/river exports from Ceará. This is the Brazilian port terminal with the shortest time-in-transit between Brazil and its main trading partners<sup>9</sup> and is ranked as the sixth largest terminal in cargo volume transported in containers using the cabotage modality.<sup>10</sup> In addition, the Fortaleza International Airport is located 14 kilometers from Maracanaú<sup>11</sup> ([optional electronic link 11](#) and [optional electronic link 12](#)).
- 1.4** These transportation networks facilitated the implementation in Maracanaú's territory of the state's largest Industrial District, with an area of nearly 13.3 square kilometers (21% of the urban area), divided into three zones (Industrial District-1,

<sup>8</sup> *Plano Mestre do Terminal Portuário do Pecém* – [Ceará Portos \(4/26/2017\)](#).

<sup>9</sup> [Secretaria de Portos da Presidência da República \[Ministry of Ports of the President's Office\]. Plano Mestre.](#)

<sup>10</sup> Agência Nacional de Transportes Aquaviários [National Water Transportation Agency]. *Desempenho do setor aquaviário 2016*.

<sup>11</sup> *O impacto dos custos logísticos em setores selecionados do comércio exterior cearense*. April 2007.

Industrial District-2, and Industrial District-3).<sup>1213</sup> Almost 200 companies<sup>14</sup> are located in these zones, and they are mainly involved in consumer goods (including textiles and food) and distribution (machine tools and chemicals). In the past 10 years, these Industrial Districts have seen a growth rate in formal jobs<sup>15</sup> that has only been surpassed in the region by that of the capital, Fortaleza ([optional electronic link 13](#)).

- 1.5 **Impact of Industrial Districts on Maracanaú's housing and transportation.** The implementation of Industrial Districts resulted in a new socioeconomic dynamic for the municipality. The municipality of Maracanaú has a population of 217,922 inhabitants living on 106.65 square kilometers—60% of which is comprised of urban areas where 99% of the population lives. Its urban housing structure is characterized by compact, scattered housing clusters with a demographic density of 1,960 inhabitants per square kilometer, in addition to large industrial zones.<sup>16</sup> In the past, Maracanaú was mostly residential. A large proportion of its population worked in service and production jobs in the capital, Fortaleza. This occupancy structure resulted in a local urban road infrastructure that was poorly developed and with low capacity, with few road networks to support an urban dynamic and a lack of suitable connections to the main regional transportation networks.
- 1.6 However, after the Industrial Districts were set up, Maracanaú became a hub for significant economic activities that have overloaded the local road infrastructure (for reasons that include heavy vehicles passing through urban roads). This applies to both internal cargo transportation between the three Industrial Districts as well as connections between those districts and the transportation networks. As a result, there has been a significant increase in municipal congestion levels and travel times for both cargo and passengers.
- 1.7 In the past few years and because of its economic growth, Maracanaú has seen a 14% year-on-year increase in vehicle density, above the rates for the capital and the national average. The municipality of Maracanaú has 57,000 vehicles registered, which account for a vehicle density of 380 vehicles/1,000 inhabitants. In comparison, for Fortaleza the rate is 327 vehicles/1,000 inhabitants and the national average is 360 vehicles/1,000 inhabitants ([optional electronic link 11](#)).
- 1.8 In addition to the FMP, which runs through the municipality and transports 23,300 passengers per day, there is a public transportation system using buses, which provides two types of service: metropolitan and local. Metropolitan buses operate on 16 routes, with 120 vehicles transporting almost 1 million passengers per month. The local bus system features 4 routes, operating 30 vehicles with an average age of 4.5 years. Its monthly passenger demand is 311,000 and its equivalent passenger per kilometer index is 2.09, below the one for Fortaleza, 2.35 ([optional electronic link 14](#)).

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<sup>12</sup> Industrial Districts are areas or regions established for industrial companies, which may or may not receive government incentives to set up their facilities. Serviço Brasileiro de Apoio às Micro e Pequenas Empresas [Brazilian Micro and Small Enterprises' Support Service] (2013).

<sup>13</sup> IDB. [Methodology to Analyze and Quantify the Impacts of Congestion on Supply Chains in Latin American Cities](#).

<sup>14</sup> Ministry of Industry, Foreign Trade, and Services <http://www.mdic.gov.br/>.

<sup>15</sup> *Cadastro Geral de Empregados e Desempregados*. Brazilian Ministry of Labor.

<sup>16</sup> <http://fortaleza2040.fortaleza.ce.gov.br> (26/4/2017).



- 1.9 **Urban issues.** In general, the increased economic activity has strongly impacted the number of vehicles and travel demand in Maracanaú, contributing to low speeds and high congestion in its transportation system. This has had adverse impacts on travel times and costs, as well as increasing fuel consumption and emissions due to the low travel speeds. The low average speed (25.9 kilometers/hour) has a direct impact on the mobility and productivity of Maracanaú.<sup>17</sup> As a comparison, the designed speed for the roads analyzed, in free-flow situations, is 60 kilometers/hour. These low speeds impact average travel times for cars, buses, and trucks (16, 29, and 21 minutes, respectively) and increase operating costs (US\$376 million per year) due to higher fuel consumption. The low capacity of roads impacts individual transportation as well as cargo and mass transit.
- 1.10 **Public transportation issues.** The metropolitan (buses and FMP) and local (buses) services that make up the mass transit system in Maracanaú are independent and their routes often overlap. However, there is no infrastructure that integrates these services. Metrofor, the company that operates the FMP system, estimates that the five stations in Maracanaú are underused. For example, the Alto Alegre station serves an average of 240 passengers/day. This station is north of Manoel Moreira Lima Avenue, the main mass transit corridor used by a majority of the city's bus routes.
- 1.11 In addition, buses compete with the general traffic (paragraph 1.7) for space on the local road network, and as a result the system has a low average operating speed. On some of the most congested local roads, the average speed for mass transit during peak hours is below 10 kilometers/hour (Manoel Moreira Lima Avenue). This has a negative impact on the quality of life of mass transit users and mainly on the low-income population, who usually live in outlying urban areas and depend on the transportation system and the efficiency of municipal economic activities.
- 1.12 In terms of transportation, Maracanaú's main problems are: (i) the shortcomings and lack of continuity of the road infrastructure, which is unsuitable for local traffic-flow patterns; (ii) the lack of connections between the local road network and the regional network, which would enable the efficient operation of the merchandise system; and (iii) the lack of operating priority for mass transit over general traffic, which results in low operating speeds and high operating costs for the local system. These problems negatively affect Maracanaú's productivity. The companies in the Industrial Districts are mainly manufacturers (paragraph 1.4) that require an efficient transportation network for inputs and products. Road congestion increases logistics costs and decreases the competitiveness of local products.
- 1.13 **Institutional capacity of the sector.** Maracanaú's unregulated growth is mainly a result of poor institutional capacity for planning and management. The municipality needs to update framework documents for transportation planning as well as mobility plans, logistics and cargo transportation plans, and a strategic plan to improve public transportation. The State Infrastructure Department (SEINFRA) has institutional weaknesses that include a lack of planning tools, teams for field work, and computerized systems to monitor Maracanaú's investment plan. Because services are divided and independent, the operation of the transportation systems

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<sup>17</sup> For the city of São Paulo, Fundação Getúlio Vargas estimated that the annual cost of losses caused by increased travel times and traffic congestion was US\$30 million.

(mass transit and cargo) lacks funding and is inadequate, making it even harder to connect with the Metropolitan Region of Fortaleza and implement measures that could help decrease the high cost of services.

- 1.14 **Opportunities with the private sector.** One of the challenges that cities currently face is managing, promoting, and generating resources to invest in the infrastructure needed to provide basic services to a growing urban population. The successful management of a city will greatly depend on its ability to generate revenue, attract private investment, and channel part of those resources to finance the infrastructure. Because of the presence of several industries in Maracanaú (paragraph 1.5), there is an opportunity for the municipality's public and private sectors to work together. A study developed by the Bank<sup>18</sup> concluded that effective long-term management of an investment plan would create an opportunity for measures that involve the private sector in a public-private partnership. This would align with guidelines set forth by the federal government<sup>18</sup> to support subnational Brazilian entities.
- 1.15 **Strategy of the municipality of Maracanaú.** Maracanaú has a Master Plan (Law 1,945/2012) and an Urban Mobility Plan that are under review.<sup>19</sup> These plans established the priorities for making municipal investments in the transportation system. At the regional level, there is a State Logistics and Transportation Plan (PELT) from 2014 ([optional electronic link 17](#)) to optimize the state's road network by improving the main development road networks of the state of Ceará and the municipality of Maracanaú. One of its features is the establishment of Industrial Districts in Maracanaú.
- 1.16 **Proposed interventions.** This program proposes to improve the road network by expanding its capacity and implementing the following projects: (i) widening, paving, and rehabilitating local roads, as well as improving the conditions of infrastructure and connections to access the state and federal networks; and (ii) increasing the efficiency of the mass transit system by establishing dedicated bus lanes using existing routes, to prioritize the operation of mass transit.
- 1.17 The program will also help build the municipality of Maracanaú's institutional capacity by developing a logistics plan and implementing planning tools, as well as measures to address climate change. In addition, it will support the municipality of Maracanaú to ensure that its administrative entities are properly trained to promote working with the private sector.
- 1.18 **Expected impacts.** The proposed road connections play a role in internal connectivity, increasing accessibility to consumer centers and highways for cargo, and accordingly to ports and the airport. They also improve conditions for mass transit users. Moreover, shortening travel times and reducing operating costs will improve logistics conditions to facilitate the municipality's economic growth. Improving local road conditions, connectivity, and operating conditions of the mass transit system in Maracanaú will help mitigate traffic congestion problems on local roads. The result will be reduced emissions of pollutants and carbon dioxide (CO<sub>2</sub>).

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<sup>18</sup> *Programa de Parcerias de Investimentos* [Brazilian Investment Partnership Program] - <http://www.projeto crescer.gov.br/sobre-o-programa>.

<sup>19</sup> Internal information from SEINFRA.

- 1.19 The beneficiaries of the proposed interventions include mass transit users and users of the municipal road transportation system and the cargo transportation system. The direct beneficiaries include the users of the road network being targeted for the operation. There are currently nearly 8,000 trips per day on these road segments, of which 93% are private cars and the remaining 7% are trucks and buses. The indirect beneficiaries include the remaining users of the municipal public transportation system (paragraph 1.8) and the companies located in the Industrial Districts (paragraph 1.4).
- 1.20 **The literature shows a correlation between interventions in the transportation network and productivity.** According to Fedderke and Bogetić (2009),<sup>20</sup> interventions related to infrastructure, such as interurban roads, facilitate investment or act as a multiplier, decreasing production costs and providing access to new markets. Therefore, they create new production, trade, and economic opportunities for various agents. Chalermpong (2004)<sup>21</sup> estimated the impact on job creation that an interurban road (Century Freeway) would have near Los Angeles. The study concluded that the areas near the intervention (distances of less than one mile) and those not targeted differed by between 129% and 215%, indicating that the road project had a positive impact on productivity.
- 1.21 **Empirical evidence shows a relationship between public transportation interventions and reduced greenhouse gas emissions.** Using a bus rapid transit system, the city of Guangzhou, China is expected to decrease its CO<sub>2</sub> emissions by 86,000 tons per year. Emissions of CO<sub>2</sub> per person/trip have decreased by 31.5% (UN Habitat, 2012;<sup>22</sup> Suzuki et al., 2013).<sup>23</sup> In Bogotá, after operating for two years, the TransMilenio achieved a reduction in CO<sub>2</sub> emissions equivalent to 82,128 tons (CO<sub>2</sub> equivalent per vehicle kilometer). Emissions decreased 53.4% in this city (United Nations Framework Convention on Climate Change, 2013).<sup>24</sup>
- 1.22 **Impact of similar projects in Brazil.** In 2006, the city of Fortaleza implemented the Urban Transportation Program of Fortaleza, with financing from the IDB (1572/OC-BR). The program's objectives included improving public transportation, shortening travel times, improving road safety, and reducing pollution. The project financed interventions for the road network and the mass transit system. According to the Project Completion Report, this program optimized transportation in the targeted corridors, reducing operating costs by 10% and decreasing average travel times during peak hours from 56 minutes to 43 minutes on the Antonio Bezerra / Centro route and from 100 minutes to 76 minutes on the Antonio Bezerra / Papicu route.

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<sup>20</sup> Fedderke, J. W., and Ž. Bogetić. "Infrastructure and Growth in South Africa : Direct and Indirect Productivity Impacts of 19 Infrastructure Measures." *World Development* 37.9 (2009): 1522-1539.

<sup>21</sup> Chalermpong, Saksith. "Empirical Study of Economic Spillovers of Interstate 105 in Los Angeles County." *Transportation Research Record: Journal of the Transportation Research Board*, No. 1864 (2004): 94-102.

<sup>22</sup> UN Habitat. (2012). *State of Latin American and Caribbean cities: Towards a new urban transition*. Nairobi: UN Habitat.

<sup>23</sup> Suzuki, H., Cervero, R., and Iuchi, K. (2013). *Transforming Cities with Transit*. Washington, D.C.: World Bank.

<sup>24</sup> United Nations Framework Convention on Climate Change (2013). *Clean Development Mechanism, monitoring report*.

- 1.23 **The Bank's involvement in the sector.** The IDB has played an instrumental role in the development of the Metropolitan Region of Fortaleza and the state of Ceará. In this context, Maracanaú is located in a region that is benefitting from several Bank-financed operations: (i) the Roads Program for Integration and Logistics Ceará IV-A and Ceará IV-B (BR-L1326, 2964/OC-BR and BR-L1363, 3395/OC-BR),<sup>25</sup> which financed the development of PELT in 2014, will be the basis to develop Maracanaú's logistics plan; (ii) the Fortaleza Urban Transportation Program (BR-L1333, 3289/OC-BR), which financed the preparation of an urban mobility plan, will be the basis for transportation studies in Maracanaú jointly with PELT; and (iii) the Program for the Expansion and Improvement of Specialized Health Care in the State of Ceará II (BR-L1408, 3703/OC-BR), which includes plans for a metropolitan hospital in Maracanaú and highlights the need to improve the municipal road infrastructure and expand its capacity and connections in order to serve the hospital. The knowledge and lessons learned from Bank operations in the region, as well as experience in other Brazilian states (Blumenau, São Bernardo, and Santo André) and Latin American countries such as Uruguay, Colombia, Guatemala, Paraguay, and Peru, are important inputs for program design and through coordinated and integrated actions between programs and the exchange of experiences contribute to increasing its benefits. In turn, this operation will contribute to strengthening and supporting the programs mentioned.
- 1.24 **Strategic alignment.** The program is consistent with the Update to the Institutional Strategy (UIS) 2010-2020 (document AB-3008). It is also aligned with the development challenge of productivity and innovation, by improving urban infrastructure and its connectivity with regional road corridors, increasing the operating efficiency of mass transit, and decreasing overall congestion and operating costs. In addition, the program will contribute to the Corporate Results Framework (CRF) 2016-2019 (document GN-2727-6) through the indicator: kilometers of roads built or upgraded, or urban roads rehabilitated.
- 1.25 The operation is also aligned with the crosscutting theme of climate change and environmental sustainability, by improving the efficiency of public transportation; reducing greenhouse gas emissions; reviewing and upgrading drainage designs for program works to mitigate damage to infrastructure during extreme rainfall events; and building the capacity of the municipality of Maracanaú on the issue. Approximately 18.25% of the operation's resources will be invested in climate change mitigation and adaptation activities, according to the methodology of the Joint Report on Multilateral Development Banks' Climate Finance.<sup>26</sup> These resources contribute to the IDB Group's target of increasing financing for climate change projects to 30% of all approvals by the end of 2020 ([optional electronic link 16](#)).
- 1.26 **Gender additionality.** To take into account gender considerations, such as additionality and contribution to the program, the program will establish a baseline divided by gender. This will make it possible to perform a realistic diagnostic assessment of the situation in Maracanaú, with relevant variables such as: (i) change in the number of women employed in mass transit jobs; (ii) increase in

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<sup>25</sup> These programs are marked as "satisfactory" in the project monitoring reports (PMR) system.

<sup>26</sup> <https://publications.iadb.org/handle/11319/7807>.

system use due to implementation of road and personal safety infrastructure; and (iii) improvement in women's perceptions about the system's safety and comfort, which will help measure the impact of future projects.

- 1.27 **Alignment with the IDB country strategy.** The program is consistent with the IDB country strategy with Brazil 2016-2018 (document GN-2850), which defines the strategic objective of expanding and reforming the transport and logistics infrastructure. This operation seeks to improve the transportation system based on a more efficient infrastructure and to improve the mobility of passengers and goods. In addition, the program is included in the 2017 Operational Program Report (document GN-2884).
- 1.28 **Alignment with the infrastructure strategy.** The program is also consistent with the IDB Infrastructure Strategy: Sustainable Infrastructure for Competitiveness and Inclusive Growth (document GN-2710-5), specifically with the strategic principle of planning, building, and maintaining infrastructure for the delivery of quality services that promote sustainable and inclusive growth. This program will support operational improvements for mass transit through the implementation of dedicated bus corridors.
- 1.29 **Consistency with the transportation sector framework.** The program is aligned with the Transportation Sector Framework Document (document GN-2740-7), which proposes as a general target for Latin America and the Caribbean to have accessible, efficient, inclusive, sustainable, and safe transportation systems that reduce poverty and improve quality of life and economic development. This operation is consistent with the strategic area of urban transportation and the crosscutting topic of sustainable transportation.

**B. Objectives, components, and cost**

- 1.30 The objective of the program is to help improve the productivity of the municipality of Maracanaú and to mitigate the negative impacts of climate change by providing an efficient, sustainable infrastructure. The specific objectives are as follows: (i) to shorten travel times and reduce operating costs for cargo and passenger transportation by upgrading the road infrastructure and improving its connections with the regional road network; (ii) to reduce greenhouse gas emissions by establishing dedicated lanes for public transportation; (iii) to support the institutional strengthening of the municipality. The program will finance the following components:
- 1.31 **Component 1. Engineering (US\$2.5 million).** This component will finance: (i) technical, socioenvironmental, and economic studies and engineering projects, including road safety aspects, climate change studies, and complementary socioenvironmental studies required for compliance with the current legal framework and the Bank's policies and safeguards; and (ii) technical support to prepare terms of reference, conduct reviews, and monitor projects.
- 1.32 **Component 2. Works and works supervision (US\$53.6 million).** This component will finance: (i) works to pave existing roads; (ii) works to rehabilitate existing roads; (iii) works to widen existing roads; (iv) infrastructure works to establish dedicated lanes for public transportation; and (v) technical and socioenvironmental supervision of works. Five projects have already been identified for the program's representative sample, totaling approximately US\$21.5 million (paragraph 2.2).

**Map 2. Industrial District in the municipality of Maracanaú**



- 1.33 **Component 3. Institutional strengthening (US\$3.5 million).** This component will finance: (i) support for the development of planning tools, including a strategic plan for cargo logistics for the municipality of Maracanaú; (ii) an update of the mobility plan for Maracanaú; (iii) strengthening actions for the municipality related to management and operation of the mass transit system; (iv) climate change mitigation and adaptation and environmental management actions; and (v) a strategic plan to promote fiscal management measures aimed at attracting private investment to Maracanaú.
- 1.34 This component includes resources to prepare an action plan for climate change mitigation and adaptation; conduct an analysis of climate risks and vulnerability maps to support the strategic plan for logistics and cargo; and an update to the mobility plan. It also takes into account technical, economic, and socioenvironmental aspects of engineering projects and the implementation of urban mobility and logistics works.
- 1.35 **Component 4. Environmental mitigation and compensation (US\$1 million).** This component will finance environmental mitigation and compensation activities<sup>27</sup> needed for effective program execution, related to the impacts of the execution of engineering works and environmental monitoring of the program.
- 1.36 **Program administration (US\$3 million).** In addition to the components, financing will be provided for administration support and management activities, program execution and the costs of financial and accounting audits and monitoring and evaluation of the program.

<sup>27</sup> Complementary environmental compensation actions (e.g., plan for managing and monitoring protected areas) described and in accordance with Law 9,985/2000 and specified in the facility permits. There is no deliverable associated with this component.

- 1.37 **Cost.** The program will have a total cost of US\$63.569 million, of which US\$31.78 million will be financed by the IDB from Ordinary Capital resources and US\$31.78 million from local counterpart funds.

**Table 1. Summary of program costs (US\$ millions)**

Categories	Bank	Local	Total	%
<b>Component 1. Engineering</b>	<b>2,500</b>	-	<b>2,500</b>	<b>3.9%</b>
Studies and projects	2,500	-	2,500	3.9%
<b>Component 2. Works and works supervision</b>	<b>23,304.5</b>	<b>30,264.5</b>	<b>53,569</b>	<b>84.3%</b>
Road and infrastructure works	20,804.5	30,264.5	51,069	80.4%
Works supervision	2,500	-	2,500	3.9%
<b>Component 3. Institutional strengthening</b>	<b>3,500</b>	-	<b>3,500</b>	<b>5.5%</b>
Institutional strengthening	3,500	-	3,500	5.5%
<b>Component 4. Environmental mitigation and compensation</b>	-	<b>1,000</b>	<b>1,000</b>	<b>1.6%</b>
Environmental compensation	-	1,000	1,000	1.6%
<b>Program administration</b>	<b>2,480</b>	<b>520</b>	<b>3,000</b>	<b>4.7%</b>
Program administration	1,880	520	2,400	3.8%
Monitoring and evaluation	350	-	350	0.5%
Accounting and financial audits	250	-	250	0.4%
<b>Total</b>	<b>31,784.5</b>	<b>31,784.5</b>	<b>63,569</b>	<b>100.0%</b>

### C. Key results indicators

- 1.38 The Results Matrix (Annex II) contains outcome and output indicators and the indicators included in the Monitoring and Evaluation Plan ([required electronic link 2](#)) as well as the methodology, timelines, and parties responsible for monitoring and evaluation of those indicators. The following are some of the indicators: (i) average travel time for private vehicles; (ii) average travel time for buses; (iii) average travel time for trucks; (iv) travel time for mass transit along Manoel Moreira Lima Avenue; (v) operating costs for private vehicles; and (vi) average CO2 emissions (annual).
- 1.39 **Economic viability.** Based on an economic assessment, the individual projects included in the program can be classified into two groups: (i) road works; and (ii) infrastructure works, consisting of establishing a dedicated mass transit corridor. The Economic Viability Report ([optional electronic link 6](#)) includes the criteria and methodologies to quantify the benefits during the useful life being considered and for the investments to be made, as well as the economic costs of these investments. The following table contains the economic return indicators that were calculated using a discount rate of 12%: cost-benefit ratio, net present value, and internal rate of return. The review of each project was supplemented with a sensitivity analysis, which verified its robustness.

**Table 2. Summary of economic evaluation results (US\$)**

Economic viability	Net present value (US\$)	Cost-benefit ratio	Internal rate of return
	298,634,133	2.87	33.03%
<b>Sensitivity analysis</b>			
25% increase in cost	258,609,910	2.29	27.54%
25% decrease in benefits	183,951,377	2.15	26.08%
12.5% increase in cost and 12.5% decrease in benefits	221,280,643	2.23	26.89%



- 1.40 **Institutional and financial viability.** An assessment of the institutional capacity of the municipality of Maracanaú was conducted using the Institutional Capacity Assessment System (ICAS) methodology ([optional electronic link 18](#)) and a financial validation evaluation. The assessment showed that the municipality of Maracanaú has low institutional capacity for execution and requires strengthening of specific capacities, as well as a structure to support program management. Therefore, a program management unit (PMU) will be appointed, and this unit will retain a consulting firm to support and strengthen the staff of SEINFRA by providing knowledge transfer (paragraph 3.3). The financial analysis of the annual balances for the period from 2012 to 2016 shows that the municipality of Maracanaú had a positive primary balance and the capacity to cover its loan obligations ([optional electronic link 19](#)).

## II. FINANCING STRUCTURE AND MAIN RISKS

### A. Financing instruments

- 2.1 The program will be financed with a US\$31.78 million, multiple-works investment loan from the Bank's Ordinary Capital, under the Flexible Financing Facility (document FN-655-1). This operation will finance several independent projects, based on eligibility criteria, and include a representative sample of approximately US\$21.5 million (33% of the total program amount).
- 2.2 The projects in the representative sample are works located throughout the city that will be used to expand the program's new segments. Those projects are: (i) widening and paving of Manoel Moreira Lima Avenue; (ii) rehabilitation of Parque Oeste road; (iii) widening of Parque Sul road; (iv) paving of Senador Pompeu road; and (v) rehabilitation of Senador Virgilio Tavora road. The sample was selected based on Maracanaú's Urban Mobility Plan and Master Plan. Other projects to be financed will have to meet the eligibility criteria set forth in paragraph 2.3. The deadline for the physical start of the works will be four years and the disbursement period will be five years. Both periods will begin once the loan contract is signed. Table 3 includes a preliminary disbursement schedule.

**Table 3. Disbursement schedule (US\$ millions)**

Source of financing	Year 1	Year 2	Year 3	Year 4	Year 5	Total
IDB	6,020	8,713	5,538	6,667	4,845	31,784
Municipality of Maracanaú	2,857	7,015	7,727	7,168	7,018	31,784
<b>Annual total</b>	<b>8,876</b>	<b>15,728</b>	<b>13,265</b>	<b>13,835</b>	<b>11,863</b>	<b>63,569</b>
<b>%</b>	<b>14.1</b>	<b>24.7</b>	<b>21.0</b>	<b>21.8</b>	<b>18.4</b>	<b>100.0</b>

- 2.3 **Eligibility criteria.** Since this is a multiple-works program, in addition to the projects in the representative sample, the program may finance other projects, which have to meet the following eligibility criteria: (i) fulfill the technical and socioenvironmental criteria established in the program's Environmental and Social Management Framework (ESMF) ([optional electronic link 8](#)); (ii) have economic viability studies and an internal rate of return of 12% or more with detailed engineering studies;<sup>28</sup>

<sup>28</sup> That is, have an economic internal rate of return that demonstrates the economic viability of the work.



(iii) have an environmental and social analysis and a consultation process that comply with the IDB's policies and safeguards, the ESMF, and the Environment and Safeguards Compliance Policy (Operational Policy OP-703), as well as an environmental license in advance of the work that complies with current legislation; and (iv) not have an environmental and social impact that would classify it as a category "A" operation in accordance with the Bank's Environment and Safeguards Compliance Policy (Operational Policy OP-703). The possible eligibility of these projects will require the Bank's prior no objection regarding technical, economic, and socioenvironmental evaluations and relevant consultation processes, according to the provisions of its policies and safeguards.

## **B. Environmental and social risks**

- 2.4 **Socioenvironmental aspects.** According to the Environment and Safeguards Compliance Policy (document GN-2208-20 and Operational Policy OP-703), the operation has been classified as a category "B" operation, since it presents medium risks. This is because the potential negative impacts and environmental risks of the works will be localized and short-term, and the mitigation measures are viable and the executing agency is familiar with them. The evaluation of socioenvironmental aspects was based on an Environmental and Social Analysis (ESA) ([optional electronic link 8](#)) of the representative sample of 30% the operation's works. The first risk is the absence of suitable measures to mitigate environmental impacts. To address this issue, an Environmental and Social Management Report (ESMR) will be prepared for the program, with measures to mitigate those impacts. Other risks may include:
- 2.5 **Construction stage of the works.** The risks are as follows: (i) a temporary, localized increase in emissions of particulate matter, nitrogen oxides, and CO<sub>2</sub>, and in noise and vibration levels due to the use of heavy machinery and a temporary increase in traffic; (ii) an increase in erosion due to soil removal and movement, and soil compaction; (iii) possible soil, surface water, and ground water pollution due to spills of fuel and other hazardous substances; (iv) a temporary increase in traffic and delays in local public transportation services; (v) temporary interruptions in basic services, personal accidents because of the lack of signage in the area surrounding the works, emission of noxious odors, and proliferation of disease vectors; and (vi) impact on permanent preservation areas such as streams and lakes. **Operation stage of the works.** The risks are as follows: (i) traffic accidents due to the lack of proper signage; (ii) accidents involving pedestrians and cyclists due to the lack of road signage and education; (iii) deterioration of road and sidewalk surfaces due to inadequate maintenance; and (iv) lack of job opportunities for women and lack of programs that promote appropriate behavior toward women using public transportation. The program sample confirmed that there were no situations that required involuntary resettlement, direct impact or displacement of economic activities, or land expropriations.
- 2.6 Environmental mitigation actions are planned in the ESMR and the ESMF. Some of the most relevant programs they include are as follows: (i) a communication and social participation program, with a complaints and claims mechanism, which will establish a communications channel between SEINFRA and the community that is directly impacted by this operation, including workers as part of the labor force; (ii) an environmental works control program, which establishes environmental guidelines

and procedures to execute this operation's works; (iii) an environmental education program, which includes environmental education activities on the transportation sector to raise awareness among the population about the maintenance of this operation's works; and (iv) a hazardous cargo transportation program, since the operation's works will be located in an Industrial District and it is important to ensure that specific safety measures to transport hazardous cargo into and out of the various factories located in this area are implemented.

- 2.7 Two public consultations were conducted for this operation. The first consultation was held on 5 July and the second on 10 August 2017. The objective was to encourage community members who will be impacted directly by the operation's sample works to get involved, as well as the population who will be impacted by future works. Some of the relevant issues that participants brought up included the possible duplication of the program in other neighborhoods that border the Industrial District to improve viability conditions and the implementation of proper signage to make people aware of detours and prevent accidents during works construction. SEINFRA representatives addressed all these concerns and comments. Using information from the ESA and the ESMR, they also informed attendees that the program will generate many of the improvements that the community demands. Members of impacted communities, authorities, businesspeople, and students were specifically invited to attend the public consultations. Invitations were also published on the city hall's website. In addition, the ESA report was made available for downloading. There was strong participation from members of the community, mainly those who are part of the process to donate rights-of-way. They were encouraged to speak up and express their concerns about this legalization process.
- 2.8 The public consultation process for the program's representative sample followed the community consultation and participation plan. The same consultation processes used for the sample will be followed for the rest of the program. As far as risks and negative impacts related to gender during this stage, there could be a lack of job opportunities for women, a lack of programs to promote appropriate behavior toward women using public transportation, violence, and a lack of safety on the streets. The special contractual conditions of execution regarding the environment are included in Annex B of the ESMR ([required electronic link 3](#)).

### **C. Fiduciary risks**

- 2.9 An institutional capacity assessment of the executing agency was performed (paragraph 1.40), as well as an analysis of program risks. These assessments showed that there is low institutional capacity and a medium level of risk for management of the program's activities. The following fiduciary risks have been identified: (i) delays in execution and noncompliance with the Bank's standards due to a lack of knowledge of its procurement and financial management policies and procedures; and (ii) gaps in monitoring and supervision of the investments.
- 2.10 To mitigate the risks involved in program execution, the following actions are being proposed: (i) establishing a PMU that reports directly to the director of SEINFRA; (ii) appointing a full-time coordinator and key staff for the PMU from among the permanent employees of SEINFRA or of the State Management, Budget, and Finance Department (SEFIN), who will be exclusively dedicated to the program; (iii) providing training and ongoing support from the IDB to the executing agency team to ensure compliance with fiduciary management policies; (iv) preparing a

process flowchart that includes responsibilities and deadlines; (v) verifying that there is a computerized management system to support execution and produce the reports that the Bank requires; (vi) providing training on planning tools for investment programs; (vii) retaining a consulting firm to provide support during program execution, with professional technical staff and resources to meet the PMU's requests, to enable this unit to fulfill its technical and program management duties; and (viii) establishing a special bid committee for the program, with the participation of members of the municipality of Maracanaú's permanent bid committee. The fiduciary and supervisory activities of SEINFRA and SEFIN will be strengthened with loan proceeds.

#### **D. Other project risks**

- 2.11 In addition, the following medium risks were identified. Development: (i) precision level of the technical studies necessary for works execution, and miscalculation of the cost of works and environmental and social measures; and (ii) limitations in allocating resources to maintain and operate Component 2 interventions. Public management and governance: (i) low management capacity of the public administration and limitations in the coordination of the entities involved in program execution; and (ii) ineffectiveness and inefficiency in program execution because of a lack of definition and fragmentation of responsibilities; lack of knowledge of the execution model and the policies, standards, and operating procedures to execute program activities; outdated lines of responsibility and duties (direction, authority, and communications). Fiscal sustainability: (i) increase in the costs associated with inflation and currency fluctuations; and (ii) Brazil's economic contraction, which may impact municipal revenues and, therefore, its ability to repay the loan. Monitoring and accountability: inadequate monitoring of investments.
- 2.12 Mitigation measures are as follows. Development: (i) retain a consulting firm to support the PMU; and (ii) ensure a commitment from the borrower to implement the measures necessary for works financed with program proceeds to be maintained in accordance with generally accepted technical standards. The borrower will submit to the Bank on an annual basis (during the first quarter) and up to three years after the last disbursement a maintenance plan for program works. The scope of this plan will be added to the terms of reference for works supervision. Public management and governance: (i) have the PMU report to the director of SEINFRA, who has more technical knowledge of the municipality of Maracanaú, and direct access to the mayor and the government secretary. The PMU's coordinator will be a career technical specialist from the municipal government and be exclusively dedicated to the program; (ii) establish and structure the PMU through a legal instrument that details its responsibilities and procedures. Fiscal sustainability: (i) systematically monitor the program's pari-passu arrangements and provide support for the allocation of resources by the municipal government. If needed, a supplementary budget may be requested; and (ii) the National Treasury will analyze the municipality's borrowing capacity prior to the authorization of the loan ([optional electronic link 19](#)). Monitoring and accountability: retain a consulting firm to support program execution; and as a special condition precedent to the first loan disbursement, the municipality will submit evidence that it has implemented a physical-financial support system that the PMU will use for program execution, which will be approved by the Bank's team. Adoption of this system will be a condition

precedent to disbursement so that it is ready at the start of the operation and can be used throughout execution.

- 2.13 **Sustainability.** The borrower commits to implementing the measures necessary for works financed by the program to be maintained in accordance with accepted technical standards. It will also submit to the Bank, during the first quarter of each year and for up to three years after the last disbursement, a report and a maintenance plan. If the inspections conducted by the Bank, or the reports it receives, show that the maintenance is inadequate, the borrower will take the necessary measures to correct the shortcomings. The activities to guarantee the program's sustainability include: (i) environmental education campaigns in the communities involved; (ii) public hearings, workshops, and community engagement activities during works execution; (iii) preparation of an operation and maintenance plan for the works; (iv) action to increase municipal revenues; and (v) the institutional strengthening of the government departments involved.

### III. IMPLEMENTATION AND MANAGEMENT PLAN

#### A. Summary of implementation arrangements

- 3.1 The borrower will be the municipality of Maracanaú, which will also be the program's executing agency through SEINFRA. The guarantor for the borrower's financial obligations will be the Federative Republic of Brazil.
- 3.2 **Execution mechanism.** The executing agency will execute the program through the PMU, which will be established by decree. The PMU will report to SEINFRA and be responsible for program execution. It will also be responsible before the Bank as the interlocutor with the municipality of Maracanaú and other agencies participating in the program. The executing agency will be responsible for the coordination, execution, evaluation, monitoring, and fulfillment of the agreed-upon deadlines and targets for the program, as well as for the bidding and contracting for works, goods, and services. The program will use the country's systems for budgeting, treasury, reports, external control, and internal audits.
- 3.3 The PMU's main functions will be to: (i) coordinate, manage, and supervise program execution, based on the loan contract; (ii) coordinate, monitor, and supervise implementation of the ESMP/ESMR; (iii) monitor the project preparation and approval process; (iv) prepare and submit to the Bank the Annual Work Plan and the Procurement Plan, as well as other plans and operational documents; (v) monitor the fulfillment of service contracts and works included in the program; (vi) monitor the fulfillment of technical cooperation and other agreements signed for program execution; (vii) prepare and submit to the Bank the rendering of accounts and the disbursement requests; (viii) monitor the fulfillment of service and works contracts; (ix) promote the execution and monitor the results of institutional strengthening actions; (x) maintain proper financial and accounting records; and (xi) prepare and submit to the Bank the reports specified in the loan contract.
- 3.4 The PMU will consist of a team composed mostly of officials from SEINFRA. The PMU's general coordinator and technical director will be exclusively dedicated to the program. In addition, it will have support from a consulting firm to manage the program's administrative-financial, socioenvironmental, and accounting aspects. The executing agency will also contract individual consultants to help with program

execution. The transfer of knowledge from the consulting firm to the PMU team will be included in the terms of reference when the firm is retained.

- 3.5 The executing agency will retain firms to supervise and control the quality of program works financed by the loan. It will be responsible for the maintenance of program works at levels that are appropriate and satisfactory to the Bank.
- 3.6 Other government departments in Maracanaú and municipal agencies that are involved in program execution will provide technical support to the executing agency, in accordance with their legal powers, for the preparation of studies, projects, and bidding processes during program execution. Each of these bodies will designate an employee to be responsible before the executing agency for coordination of program activities. Therefore, technical cooperation agreements may be executed between SEINFRA and the other municipal administration bodies involved in the program. These agreements will establish each entity's responsibilities and powers. **The contractual conditions precedent to the first disbursement of loan proceeds are as follows: (i) evidence that the PMU has been established and its core team appointed, under the terms previously agreed upon with the Bank; and (ii) presentation of the shortlist for the selection of the consulting firm that will support the PMU during program execution.** The first condition is considered essential in guaranteeing to the Bank that the executing agency will be ready with a suitable team to begin program execution. The second condition is based on the importance of retaining a firm that will support the executing agency during program execution.
- 3.7 **Fiduciary agreements and requirements.** The fiduciary agreements and requirements reflect the guidelines for financial management and procurement to be applied for program execution. These agreements and requirements have been based on an analysis of the fiduciary context of the country and the executing agency; an institutional assessment of the executing agency; a risk analysis; and meetings with counterparts in SEINFRA, SEFIN, and the city attorney's office. The special contractual fiduciary conditions of execution are established in Section IV of Annex III.
- 3.8 **Audited financial statements.** The financial statements will be audited by an independent audit firm acceptable to the Bank, which will conduct a level 1 audit. Contracting of the firm and the terms of reference included in the contract will follow Bank guidelines and procedures.
- 3.9 **Procurement plan.** This plan contains the details of the program's procurement processes, which will follow the Policies for the Procurement of Works and Goods Financed by the IDB (document GN-2349-9) and the Policies for the Selection and Contracting of Consultants Financed by the IDB (document GN-2350-9). The plan includes: (i) the contracts for works, goods, and consulting services required for program execution; (ii) the proposed methods for the contracting of goods and for the selection of consultants; and (iii) the procedures that the Bank follows to review procurement processes. The borrower will update the Procurement Plan annually, or according to the program's needs. Any proposed change to the Procurement Plan will be presented to the Bank for approval.
- 3.10 **Procurement of works, goods, and services.** These procurements and the contracting of consulting services will be conducted pursuant to the Policies for the

Procurement of Works and Goods Financed by the IDB and the Policies for the Selection and Contracting of Consultants Financed by the IDB (documents GN-2349-9 and GN-2350-9, respectively). The procurement of works, goods, and services is defined in the Procurement Plan and will follow the Fiduciary Agreements and Requirements (Annex III).

- 3.11 **Disbursements and advances of funds.** Disbursements made using the advance of funds modality will be based on the operation's actual liquidity needs. Therefore, the municipality of Maracanaú will request advances through the PMU by submitting a disbursement request along with a financial plan that reflects the need for funds for the planned period. Through the PMU, the executing agency will submit to the Bank an initial financial plan that will contain a disbursement schedule for the entire execution period. That initial plan will be used to prepare a schedule for the first quarter of execution (90 days) and for the first advance of funds. For future advances, it will be necessary to render accounts for at least 80% of the funds received and to submit a new financial plan for the applicable period, in accordance with the Financial Management Guidelines for IDB-financed Projects (document OP-273-6).
- 3.12 **Recognition of expenditures.** Pursuant to the Bank's Operational Policy on Recognition of Expenditures, Retroactive Financing, and Advance Procurement (document GN-2259-1/Operational Policy OP-507), the Bank may recognize, as part of the local contribution, up to US\$5.1 million (16% of the local contribution), for eligible expenditures incurred by the borrower prior to the loan approval date for the contracting of works, engineering services, studies, systems, and other eligible expenditures, provided that they satisfied requirements substantially analogous to those established in the loan contract. Such expenditures will have been incurred on or after 27 April 2017 (project profile approval date), but in no case may they include expenditures made more than 18 months prior to the loan approval date by the Bank's Board of Executive Directors. There are no plans for retroactive financing from the Bank.
- 3.13 **Monitoring and evaluation.** The Monitoring and Evaluation Plan lists the indicators for the Results Matrix, as well as the methodology, timelines, and parties responsible for monitoring and evaluation of those indicators. Monitoring will take place periodically, on a semiannual basis and with the executing agency's team ([required electronic link 2](#)).
- 3.14 The program will be evaluated twice by external evaluators. First, there will be a midterm evaluation after 36 months of program execution or after 50% of loan proceeds have been disbursed. Second, there will be a final evaluation and an ex post economic evaluation after 90% of the program's loan proceeds have been disbursed.

Development Effectiveness Matrix		
Summary		
I. Corporate and Country Priorities		
1. IDB Development Objectives	Yes	
Development Challenges & Cross-cutting Themes	-Productivity and Innovation -Climate Change and Environmental Sustainability	
Country Development Results Indicators	-Roads built or upgraded (km)* -Urban rail and bus mass transit systems built or upgraded (km)*	
2. Country Development Objectives		
Country Strategy Results Matrix	GN-2850	Expand and reform the transportation and logistics infrastructure.
Country Program Results Matrix	GN-2884	The intervention is included in the 2017 Operational Program.
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		
II. Development Outcomes - Evaluability		
3. Evidence-based Assessment & Solution	Evaluable	
3.1 Program Diagnosis	7.4	
3.2 Proposed Interventions or Solutions	2.4	
3.3 Results Matrix Quality	2.4	
3.3 Results Matrix Quality	2.6	
4. Ex ante Economic Analysis	8.5	
4.1 The program has an ERR/NPV, a Cost-Effectiveness Analysis or a General Economic Analysis	4.0	
4.2 Identified and Quantified Benefits	1.5	
4.3 Identified and Quantified Costs	1.5	
4.4 Reasonable Assumptions	1.5	
4.5 Sensitivity Analysis	0.0	
5. Monitoring and Evaluation	6.0	
5.1 Monitoring Mechanisms	2.5	
5.2 Evaluation Plan	3.5	
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood	Medium	
Identified risks have been rated for magnitude and likelihood	Yes	
Mitigation measures have been identified for major risks	Yes	
Mitigation measures have indicators for tracking their implementation	Yes	
Environmental & social risk classification	B	
IV. IDB's Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)	Yes	Financial Management: Budget, Treasury, Accounting and Reporting, External Control, Internal Audit.
Non-Fiduciary		
The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions:		
Gender Equality	Yes	The project will finance a baseline measurement on women's perception of safety and comfort in public transportation.
Labor		
Environment		
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project		
The ex-post impact evaluation of the project will produce evidence to close knowledge gaps in the sector that were identified in the project document and/or in the evaluation plan		

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

The main objective of the program is to improve the productivity of the Municipality of Maracanaú (MM) and to mitigate the negative impacts of climate change through the provision of efficient and sustainable infrastructure. The specific objectives of the operation are: (i) to reduce travel times and operating costs of freight and passengers, by adapting the road infrastructure and improving its connections with the regional road network; and (ii) to reduce greenhouse gas emissions through the adaptation of roads dedicated to public transport. The program will also support the institutional improvement of the MM, through the development of a logistical plan and the implementation of planning tools, as well as climate change actions. The program will also support the MM so that administrative bodies are properly trained to promote work with private firms.

The project diagnosis identifies the main problems and its causal factors. However, for some of these factors, the empirical evidence and quantification is missing. In addition, there is a lack of empirical evidence based on causal studies to justify the effectiveness of the interventions proposed regarding the expected impacts and results. The results matrix has a clear vertical logic, and most of the indicators are SMART and contain means of verification.

The economic analysis is complete and the results suggest that the project is economically viable under various sensitivity scenarios. However, a more detailed justification on the probability of occurrence of the sensitivity scenarios is missing.

The monitoring and evaluation plan includes an ex-post economic analysis. Given that this method has been extensively used in the sector, it is not expected that the evaluation of this project will help reduce knowledge gaps.



## RESULTS MATRIX

<b>Program objectives</b>	<b>Program objective/description:</b> The objective of the program is to help improve the productivity of Maracanaú and to mitigate the negative impacts of climate change by providing an efficient, sustainable infrastructure. The specific objectives are as follows: (i) to shorten travel times and reduce operating costs for cargo and passenger transportation by upgrading the road infrastructure and improving its connections with the regional road network; and (ii) to reduce greenhouse gas emissions by establishing dedicated lanes for public transportation.
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### EXPECTED OUTCOMES

Indicators	Measurement unit	Baseline	Baseline year	Final target	Means of verification	Comments
<b>Expected outcome 1: Shorten average travel times</b>						
Average travel time for private vehicles	Minutes	15.9	2017	9.3	Field survey. Semiannual monitoring report – PMU.	
Average travel time for buses	Minutes	28.7	2017	16.4	Field survey. Semiannual monitoring report – PMU.	
Average travel time for trucks	Minutes	20.7	2017	12.0	Field survey. Semiannual monitoring report – PMU.	
<b>Expected outcome 2: Increase average speed for mass transit on Manoel Moreira Lima Avenue</b>						
Average travel time for mass transit along Manoel Moreira Lima Avenue (bus corridor)	Minutes	19.9	2016	8.6	Field survey. Semiannual monitoring report – PMU.	Bus-direction (South/North direction)
<b>Outcome expected 3: Reduce operating costs</b>						
Operating costs for private vehicles in Maracanaú	US\$ million	375.9	2017	335.4	Ex ante and ex post economic evaluation report. Project Completion Report.	
<b>Outcome expected 4: Reduce carbon dioxide emissions</b>						
Average carbon dioxide emissions (annual)	Tons	6,210	2017	5,387	Project Completion Report – PMU.	



OUTPUTS

Indicators	Measurement unit	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Final target <sup>1</sup>	Means of verification	Comments
<b>Component 1. Engineering</b>											
Detailed engineering designs for the main roads, prepared	Project	0	2017	-	6	-	-	-	6	Approved detailed designs. Semiannual monitoring report - PMU	Manoel Moreira Lima Avenue; Senador Pompeu Avenue; Central da Pajuçara Avenue; Parque Sul Avenue; Parque Oeste Avenue; Senador Virgílio Távora Avenue.
Works project to establish a bus corridor, completed	Project	0	2017	-	1	-	-	-	1	Approved detailed designs. Semiannual monitoring report - PMU	
<b>Component 2. Works and works supervision</b>											
Roads paved	Kilometers	0	2017	-	-	3	3	1.5	7.5	Works acceptance certificates. Semiannual report – PMU.	Senador Pompeu Avenue, Zacarias Brasil Avenue. Road.
Roads widened	Kilometers	0	2017	-	2	2	2	2.5	8.5	Works acceptance certificates. Semiannual report – PMU.	Parque Sul Avenue, Central da Pajuçara Avenue.
Roads rehabilitated	Kilometers	0	2017	-	2	2	2	2.5	8.5	Works acceptance certificates. Semiannual report – PMU.	Parque Norte Avenue, Senador Virgilio Tavora Avenue, Parque Oeste Avenue.
Mass transit road established	Kilometers	0	2017	-	-	-	2	1.87	3.87	Works acceptance certificates. Semiannual report – PMU.	Interventions on Manoel Moreira Lima Avenue
<b>Component 3. Institutional strengthening</b>											
Transportation operating units, strengthened	Operating units	3	2017	1	1	1	-	-	3	Management report from institutions - Semiannual monitoring report – PMU.	

<sup>1</sup> The matrix will be updated as new projects are identified for financing under the multiple works program.

Indicators	Measurement unit	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Final target <sup>1</sup>	Means of verification	Comments
Plan for logistics and cargo for the municipality of Maracanaú, prepared	Plan	0	2017	-	-	1	-	-	1	Approved plan. Semiannual monitoring report – PMU.	
Urban mobility plan, updated	Plan	0	2017	-	1	-	-	-	1	Enacted law or decree. Semiannual monitoring report - PMU.	
Action plan to develop a low-carbon economy, prepared	Plan	0	2017	-	-	1	-	-	1	Approved plan. Semiannual monitoring report – PMU.	
Municipal plan to reduce climate change risks, prepared	Plan	0	2017	-	-	-	-	1	1	Approved plan. Semiannual monitoring report – PMU.	
Strategic plan to promote fiscal measures aimed at attracting new companies	Plan	0	2017	-	-	-	-	1	1	Approved plan. Semiannual monitoring report – PMU.	
Baseline measurement of women's perceptions about safety and comfort in public transportation	Measurement	0	2017	-	-	1	-	-	-	Approved measurement. Semiannual monitoring report – PMU.	

## **FIDUCIARY AGREEMENTS AND REQUIREMENTS**

**Country:** Brazil  
**Project number:** BR-L1445  
**Name:** Maracanaú Transportation and Urban Logistics Program  
**Executing agency:** Municipality of Maracanaú  
**Prepared by:** Karina Díaz (VPC/FMP) and Santiago Schneider (VPC/FMP)

### **I. EXECUTIVE SUMMARY**

- 1.1 The program's institutional assessment for fiduciary management was based on: (i) the country's current fiduciary context; (ii) the results of the evaluation of the main fiduciary risks; and (iii) the Institutional Capacity Assessment System (ICAS) analysis, validated through interviews and reviews of supporting documentation.
- 1.2 Brazil has robust national fiduciary systems that allow for good management of administrative, financial, control, and procurement processes and that comply with the principles of transparency, economy, and efficiency. Therefore, the Bank's fiduciary strategy for Brazil aims to use the country's fiduciary systems in a progressive, sustainable manner.
- 1.3 The municipality, through its State Infrastructure Department (SEINFRA), has the legal capacity to execute the program. To fulfill its duties, it will have administrative support (for procurement and financial matters) from the State Management, Budget, and Finance Department (SEFIN).

### **II. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY**

- 2.1 The organizational structure of SEINFRA comprises three levels, namely, strategic, tactical, and operational. The director is responsible for strategic duties. Tactical duties are performed by the leaders of special projects, works and administration, and finance, each in coordination with operations. This structure is not formally established. SEINFRA has a staff of 213, of whom 11% are competitively hired employees, a large majority through third-party contracts.
- 2.2 SEFIN, through its procurement coordinator, is responsible for municipal procurement processes and contracting of works for which the main client is SEINFRA. Procurement processes are handled by a permanent bid committee. SEINFRA is responsible for the selection, contracting, and monitoring of transportation works in the municipality. During the past four years, SEINFRA, with administrative support from SEFIN, conducted 151 works-procurement processes, all based on local regulations, with an average contract amount of less than US\$1 million. The municipality's investment level depends on its revenue collection; therefore, investments are made based on demand. The municipality of Maracanaú

does not have experience managing programs financed by multilateral organizations and has a large number of third-party employees. All bids are published on the Municipal Audit Office's website, as well as on a transparency portal.

- 2.3 A budget and financial management system that integrates budgeting, accounting, and treasury activities is used for the municipality's administrative activities. This system, known as the integrated financial management system (SIAFI), is administered by SEFIN and is a support system based on the Clipper platform. A backup process is performed daily, creating a backup copy that is held by the financial staff, since an online version of the system is not available yet.
- 2.4 For planning and organizing program activities, the municipal institutions use and are guided by the following national management support tools: (i) a multiyear government action plan; (ii) a multiyear plan, which establishes the guidelines, goals, and targets of the public administration; (iii) the Budget Procedures Act, which steers government budgets; (iv) the Annual Budget Act, which estimates and sets public administration expenditures for the current fiscal year; and (v) the Fiscal Accountability Act, which establishes public administration spending limits.
- 2.5 The Municipal Comptroller's Office is part of SEFIN. Its duties include exercising internal control over the municipal administration; reviewing and signing agreements, contracts, and terms of cooperation; and authorizing the planning and settlement of expenditures for municipal bodies and agencies.
- 2.6 External control of the executive branch is performed by the Municipal Audit Office, which evaluates and issues preliminary opinions about the annual statements provided by the mayors of the state of Ceará.

### **III. FIDUCIARY RISK EVALUATION AND MITIGATION ACTIONS**

- 3.1 An ICAS analysis of the executing agency's institutional capacity was performed, as well as an analysis of program risks. In addition, there were meetings with various teams from SEINFRA and SEFIN. The results showed that there is low institutional capacity and a medium level of risk for the management of program activities.
- 3.2 The following fiduciary risks were identified: (i) delays in execution and noncompliance with the Bank's standards due to a lack of knowledge of its procurement and financial management policies and procedures; and (ii) gaps in monitoring and supervision of the investments.
- 3.3 To mitigate these two risks involved in program execution, the following mitigation actions are being proposed: (i) establishing a program management unit (PMU) that reports directly to the director of SEINFRA, with specific financial and procurement duties; (ii) appointing a full-time coordinator and key staff for the PMU from among the permanent employees of SEINFRA or SEFIN, who will be exclusively dedicated to the program; (iii) providing training and ongoing support from the IDB to the executing agency team to ensure compliance with the Bank's fiduciary management policies; (iv) preparing a process flowchart that includes responsibilities and deadlines; (v) verifying that there is a computerized management system to support execution and produce the reports that the Bank requires; (vi) providing training on planning tools for investment programs; (vii) retaining a consulting firm to provide support during program execution, with professional technical staff and resources to

meet the PMU's requests, to enable this unit to fulfill its technical and program management duties; and (viii) establishing a special bid committee for the program, with the participation of members of Maracanaú's permanent bid committee. The fiduciary and supervisory activities of SEINFRA and SEFIN will be strengthened with loan proceeds.

#### **IV. CONSIDERATIONS FOR THE SPECIAL PROVISIONS OF THE CONTRACT**

- 4.1 The **special contractual fiduciary conditions** of execution are as follows:
- 4.2 Within a maximum of six months after the loan contract is signed, the municipality will submit evidence showing: (i) the implementation of a management system that produces financial reports according to the Bank's requirements, taking into account the provisions of paragraph 2.3 of this annex; and (ii) the establishment of a special bid committee for the program, which is essential to mitigate the risk of delays in execution and to be able to carry out, exclusively and with the necessary experience, the bidding processes for the work financed by the Bank.
- 4.3 Exchange rate: The inbound exchange rate will be used for converting proceeds disbursed by the Bank, and the exchange rate in effect on the day prior to date of presentation to the Bank will be used for the reimbursement of expenditures and recognition against the local counterpart contribution.

#### **V. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION**

- 5.1 The fiduciary agreements and requirements for procurement establish the provisions to be applied to all procurements planned under the operation that will be financed with Bank funds.

##### **A. Procurement execution**

- 5.2 **Procurement of works, goods, and nonconsulting services.** Contracts for works, goods, and nonconsulting services arising under the program and subject to international competitive bidding (ICB) will be executed using the standard bidding documents issued by the Bank. Bidding processes subject to national competitive bidding (NCB) will be executed using national bidding documents agreed upon with the Bank (or satisfactory to the Bank if they have not been agreed upon by that time).
- 5.3 **Selection and contracting of consultants.** Consulting service contracts arising under the program will be executed using the standard request for proposals issued by the Bank. The program's sector specialist is responsible for reviewing the terms of reference for the contracting of consulting services.
- 5.4 **Use of the country procurement system.** The country procurement (sub)system approved by the Bank, which publishes opportunities online, will be used to procure off-the-shelf goods for up to US\$5 million. Any system or subsystem approved subsequently will be applicable to the operation. The Procurement Plan and its updates will indicate which contracts will be executed through approved country systems.
- 5.5 **Recognition of expenditures.** Pursuant to the Bank's Operational Policy on Recognition of Expenditures, Retroactive Financing, and Advance Procurement (document GN-2259-1/Operational Policy OP-507), the Bank may recognize, as part

of the local contribution, up to US\$5.1 million (16% of the local contribution), for eligible expenditures incurred by the borrower prior to the loan approval date for contracting works, engineering services, studies, systems, and other eligible expenditures, provided that they satisfied requirements substantially analogous to those established in the loan contract. Such expenditures will have been incurred on or after 27 April 2017 (project profile approval date), but in no case may they include expenditures made more than 18 months prior to the loan approval date by the Bank's Board of Executive Directors. There are no plans for retroactive financing from the Bank.

5.6 **Direct contracting.** There are no plans for direct contracting.

**Table 1. Thresholds for international bidding and the international shortlist (US\$ thousands)**

Method	ICB works	ICB goods and nonconsulting services	Shortlist of international consultants
Threshold	US\$25 million	US\$5 million	US\$1 million

## B. Main procurement processes

**Table 2. Example of main procurement processes**

Activity	Procurement method	Estimated date of bid/invitation	Estimated amount (US\$)
<b>Works</b>			
Firms			
Support for program management	International shortlist (QCBS)	June 2017	

\* See [Procurement Plan](#) 18 months.

## C. Procurement supervision

5.7 Procurements will be supervised on an ex post basis except in cases in which ex ante supervision is warranted. When procurements are made through the country system, supervision will also be performed through this system.

5.8 The supervision method will be determined for each selection process. Ex post reviews will be performed every 12 months in accordance with the program supervision plan. Ex post review reports will include at least one physical inspection visit, selected from among the procurements subject to ex post review.

**Table 3. Example of procurement supervision**

Thresholds for ex post review		
Works	Goods	Consulting services
N/A	Shopping	Under US\$1 million

5.9 **Records and files.** Records will be maintained in the offices of [XX], under the corresponding secure conditions.

## **VI. FINANCIAL MANAGEMENT AGREEMENTS AND REQUIREMENTS**

### **A. Programming and budget**

- 6.1 SEINFRA, through the PMU, will be responsible for planning for the execution of activities as envisaged in the program execution plan, in the budgets, and in the annual work plans. It will coordinate planning directly with SEFIN, which is responsible for the municipality's planning activities. The budget allocated to program activities will be approved under the Municipal Budget Act. SEFIN uses planning tools such as a multiyear plan and the Annual Budget Act. The budget for program activities will be included in the Annual Budget Act.
- 6.2 The PMU will ensure that the funds for the program—from the Bank and the local contribution—are included in the annual budgets to enable execution to keep pace with operational programming. Program resources will be used to implement the agency's budget. These budget funds will be recorded in the SIAFI system during the year of execution as an external source. The Annual Budget Act will include the funds necessary for execution for both the external loan and the local counterpart contribution.

### **B. Accounting and information systems**

- 6.3 The municipality of Maracanaú uses the SIAFI accounting information system, which integrates budgeting, accounting, and treasury activities. Use of this system is compulsory for all municipal public agencies. SIAFI allows for efficient, centralized management of the municipality's finances.
- 6.4 As far as the loan operation, all budgetary, accounting, and financial information will be recorded in the SIAFI system. Currently, SIAFI does not automatically produce program reports in dollars by investment category and source of financing, as required by the IDB. Therefore, within a maximum of six months after the loan contract is signed, the municipality will submit evidence showing that a management and financial system has been implemented that will automatically monitor program activities and generate the financial reports that the Bank requires.

### **C. Disbursements and cash flow**

- 6.5 The program will use Maracanaú's cash management system. Expenditures will be subject to a budgetary and financial execution process and will be duly recorded in the SIAFI system. IDB funds that are used for program expenditures will be administered through a bank account used exclusively for the program that will enable the loan proceeds to be identified independently. This includes deposits and payments.
- 6.6 Disbursements will be made in U.S. dollars in the form of advances. The Bank will make disbursements based on actual liquidity needs, for a maximum period of 90 days. At least 80% of the funds disbursed in advance have to be justified before the Bank processes another advance of funds.
- 6.7 Expenditures considered ineligible by the Bank will be repaid from the local contribution or from other sources, as determined by the Bank, depending on the nature of the ineligibility.

#### **D. Internal control and internal audit**

- 6.8 The Municipal Comptroller's Office, which is overseen by SEFIN, exercises internal control of SEINFRA. This office oversees and audits all spending processes, oversees internal control activities, and monitors municipal financial activities. The Comptroller's Office also reviews and signs agreements, contracts, and terms of cooperation, and authorizes the planning and settlement of expenditures for municipal bodies and agencies.
- 6.9 External control of the executive branch is performed by the Municipal Audit Office, which evaluates and issues preliminary opinions about the annual statements provided by the mayors of the state of Ceará.
- 6.10 This office evaluates results in terms of the effectiveness and efficiency of the management of finances, budgets, accounting, assets, and operations by the agencies under its jurisdiction, as well as compliance with established constitutional and administrative principles. It is also responsible for supervising the implementation of programs, projects, and activities, and the movement of budgetary and extra-budgetary resources, including special funds and funds with a book value.

#### **E. External control and reporting**

- 6.11 The program financial statements and eligibility of expenditures will be audited annually by an independent audit firm acceptable to the Bank, which will conduct a level 1 audit. Contracting of the firm and the applicable terms of reference will follow IDB guidelines and procedures. The Municipal Audit Office is not currently eligible to perform audits of programs financed with IDB funds.
- 6.12 In accordance with the Financial Management Guidelines for IDB-financed Projects (document OP-273-6), the auditor will submit a report on the eligibility of program expenditures and will perform field inspections, which are additional to the Bank's actions and reviews. Audited financial statements for the program will be submitted to the Bank no later than 120 days after the close of each financial year for the executing agency, in accordance with procedures and terms of reference agreed upon in advance with the Bank.

#### **F. Supervision plan**

- 6.13 The supervision plan may be amended during program execution to reflect the levels of risk or in the event that additional controls are deemed necessary by the Bank.

**Table 4. Example supervision plan**

Supervisory activity	Supervision plan			
	Nature and scope	Frequency	Responsible party	
			Bank	Executing agency
Financial	Ex post review of disbursements and procurements	Annual	Fiduciary team	PMU - External auditor
	Annual audits	Annual	Fiduciary team	PMU - External auditor
	Review of disbursement requests	Periodic	Fiduciary team	
	Supervision visits	Annual	Sector specialist and fiduciary team	



## **VII. EXECUTION MECHANISM**

- 7.1 The Municipality of Maracanaú, through SEINFRA, will be the program's executing agency. A PMU will be established within SEINFRA and will be responsible jointly with the Bank for the preparation, management, and support of program activities. The PMU will report directly to the director of SEINFRA and will have coordinators in charge of socioenvironmental, infrastructure, administrative, and financial aspects. It will also have an advisor for procurement processes. A consulting firm will provide support staff for program execution. There will be close coordination with the special bid committee and with SEFIN.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-\_\_\_\_/17

Brazil. Loan \_\_\_\_/OC-BR to the Municipality of Maracanaú  
Maracanaú Transportation and Urban Logistics Program

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Municipality of Maracanaú, as Borrower, and with the Federative Republic of Brazil, as Guarantor, for the purpose of granting the former a financing to cooperate in the execution of the Maracanaú Transportation and Urban Logistics Program. Such financing will be for an amount of up to US\$31,784,500 from the Ordinary Capital resources of the Bank, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on \_\_\_\_ 2017)