

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BRAZIL

**ROADS PROGRAM FOR INTEGRATION AND LOGISTICS
CEARÁ IV-B**

(BR-L1363)

LOAN PROPOSAL

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3.	Monitoring and evaluation arrangements http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=37104824
4.	Environmental and social management report (ESMR) http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=37104769
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2.	Institutional capacity analysis of the State of Ceará Roads Department (DER/CE); profile and results of the Ceará I, II, III, and IV programs, and DER/CE maintenance policy and system http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=37104471
3.	Ceará III program environmental audit http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=37104469
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14. State of Ceará financial capacity analysis
<http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=37104709>
15. State of Ceará conservation report
[15. http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=38582445](http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=38582445)

ABBREVIATIONS

AWP	Annual work plan
CE	State of Ceará
DER/CE	Departamento Estadual de Rodovias do Ceará [State of Ceará Roads Department]
EIRR	Economic internal rate of return
GAIAM	Gerência de Análise de Impacto Ambiental [Environmental Impact Analysis Unit]
GCI-9	Ninth General Capital Increase, or Ninth General Increase in the Resources of the Inter-American Development Bank
GDP	Gross domestic product
HDI	Human development index
IPECE	Instituto de Pesquisa e Estrategia Económica do Ceará [Ceará Economic Research and Strategy Institute]
ISA	Instruções de serviço ambiental [environmental service instructions]
NPV	Net present value
OC	Ordinary Capital
PCA	Plano de controle ambiental [environmental management plan]
PDT	Plano Diretor do Transporte [Transportation Master Plan]
PELT	Plano Estadual de Logística e Transportes [State Logistics and Transportation Plan]
PEP	Program execution plan
PMU	Program management unit
RMF	Região Metropolitana de Fortaleza [Fortaleza Metropolitan Region]
SGA	Sistema de gestão ambiental [environmental management system]
SIGMA	Sistema de gerenciamento de manutenção [Maintenance management system]
TCE/CE	Tribunal de Contas do Estado do Ceará [State Audit Court of Ceará]
WAL	Weighted average life

PROJECT SUMMARY

BRAZIL ROADS PROGRAM FOR INTEGRATION AND LOGISTICS CEARÁ IV-B (BR-L1363)

Financial Terms and Conditions				
Borrower: State of Ceará (CE) Guarantor: Federative Republic of Brazil Executing agency: State of Ceará Roads Department (DER/CE)			Flexible Financing Facility*	
			Amortization period:	25 years
			Maximum WAL:	15.21 years**
			Disbursement period:	4 years
			Grace period:	5.5 years**
Source	Amount	%	Inspection and supervision fee:	***
IDB (Ordinary Capital)	US\$200,000,000	80%	Interest rate:	LIBOR
Local contribution	US\$52,058,033	20%	Credit fee:	***
Total	US\$252,058,033	100%	Currency of approval:	U.S. dollars from the Ordinary Capital (OC)
Project at a Glance				
Objective: The general objective of the Ceará IV program is to support the sustainable economic development of the State of Ceará, improving conditions for the integration of productive regions with regional consumer markets and export logistics nodes (ports and airports). The specific objectives of the Ceará IV-B program are to: (i) improve mobility, connectivity, and safety conditions on strategic road corridors for integration with productive hubs and other modes of transportation; (ii) partly eliminate the discontinuities in the paved road network, increasing its connectivity and efficiency; and (iii) improve institutional capacity for managing the freight logistics system.				
Special condition precedent to the first disbursement: The Bank's no objection to the subsidiary execution agreement between the State of Ceará (CE) and the State of Ceará Roads Department (DER/CE), establishing the conditions for the transfer and use of the loan proceeds, on the terms agreed upon with the Bank (see paragraph 3.1).				
Special execution conditions: (i) Within six months after contract signature, the borrower will provide evidence that: (a) the management firm has been engaged (see paragraph 3.2); and (b) the program's management support system and the integrated project management training plan have been implemented (see paragraph 2.2); and (ii) before the start of each work, the borrower will provide evidence that: (a) the works supervision services have been engaged (see paragraph 2.13); (b) the corresponding setup permit and other permits applicable to works execution have been duly obtained (see paragraph 2.7); (c) for works that so require, a specific resettlement plan has been drawn up in compliance with Operational Policy OP-710, and the construction area between the respective roadways of the subsegment has been released according to plan (see paragraph 2.7); (d) if Quilombola and/or indigenous communities are found to have been affected, mitigation and compensation measures have been developed in compliance with Operational Policy OP-765 (see paragraph 2.7).				
Special contractual condition: The time frame for the physical start of program works will be two and a half years.				
Exceptions to Bank policies: None.				
Project qualifies as: SEQ [] PTI [X] Sector [] Geographic [X] Headcount []				

* 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 weighing such requests.

** Both the weighted average life (WAL) and the grace period may be shorter, depending on the signature date of the loan contract.

*** 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 relevant policies.

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problem to be addressed, and rationale

- 1.1 **General.** The State of Ceará (CE), in Brazil's Northeast region, has an estimated 8.45 million (2010), representing 16% of the population of that region and 4.5% of the national total. Its gross domestic product (GDP) of US\$36 billion makes it the third-largest economy in the Northeast and twelfth among Brazil's 27 states. Ceará occupies an area of 148,920 km² and has significant population concentrations in urban areas (75%), particularly the Fortaleza Metropolitan Region (RMF), which accounts for 42% of the state's population and 66% of its overall wealth. The most important economic sector is services and commerce, mainly related to tourism (69% of GDP), followed by industry (25%) and agriculture (6%).¹ The latter is a comparatively small sector, but plays a key role as the economy's second-largest employer (31%).²
- 1.2 Economic growth in Ceará has outpaced national GDP over the past decade (5.7%, compared to 4.7%); but its per capita GDP of US\$4,430 (2010) is well below the national average of US\$9,510. The state also has sharp interregional inequalities.³
- 1.3 **Development strategy.** The main objectives of the state government's development plan include: (i) positioning the state as one of the main hubs for the freight exports produced in the Northeast region through major investments to improve and expand the transportation and logistics system⁴ (see paragraph 1.9), exploiting its geographic proximity to leading foreign markets such as the United States and Europe;⁵ and (ii) promoting development in the hinterland of the state to reduce socioeconomic disparities between regions. One of its key goals therefore is to reduce the logistics and transportation infrastructure deficiencies that create difficulties in connectivity between the productive regions ([see optional electronic link 10](#)), internal consumption areas, and export points. These shortcomings increase travel times and transportation costs, thereby undermining the

¹ *Estimativa do PIB Cearense em 2010 e seu Desempenho Setorial* [Estimate of Ceará's GDP in 2010, and its sector performance] (March 2011). Instituto de Pesquisa e Estratégia Econômica do Ceará [Ceará Economic Research and Strategy Institute] (IPECE).

² Agência de Desenvolvimento do Estado do Ceará [State of Ceará Development Agency] (ADECE).

³ The Fortaleza Metropolitan Region (RMF) has a per capita GDP of US\$6,808 (more than 50% above the state average), whereas the region with the lowest per capita GDP is Sertão de Inhauns with just US\$1,835, less than half the state average and only 20% of the national average.

⁴ According to the 2007 study by the National Science and Technology Development Council, a 10% reduction in travel time between the Northeast and the exterior would increase production by 14.3% in the mining sector and by 1.1% in agroindustry, as well as generate social welfare gains of 1.9%, and wage gains of 1.6%.

⁵ The port of Pecem in the RMF is seven days by sea from the East Coast of the United States, and nine days from the European port of Rotterdam. Domestically, its position between the North and Southeast of Brazil also encourages production flows and improves the terms of trade.

competitiveness of supply chains⁶ and hindering socioeconomic development. The poor quality of the road system in the Northeast is estimated to raise merchandise transportation costs in the region by an average of 26%.⁷

- 1.4 **Transportation logistics and infrastructure.** Ceará's rapid economic growth (see paragraph 1.2) over the last few years has been clearly reflected in a sharp increase in road traffic, mainly trucks. An analysis of two state highways (CE-060 and CE-293)⁸ shows that annual average traffic flows grew by 24% and 130%, respectively, between 2004 and 2011, and the proportion of trucks on the two roads rose by seven percentage points from 23% to 30% of vehicles.
- 1.5 **Road safety.** Linked to this substantial traffic growth, the number of fatal and nonfatal road accidents increased by 33% and 29%, respectively, between 2009 and 2010. According to figures published by the State of Ceará Transportation Department (DETRAN/CE), there were 26,525 road accidents in 2011, resulting in 12,214 injuries and 2,091 deaths. The 2010-2011 moving average accident rates of 10.4 deaths and 70.2 injuries per 10,000 vehicles were above the national average and those of many Latin American countries, and well above the averages in developed countries. Traffic accidents are estimated to cost Ceará more than US\$700 million per year.⁹
- 1.6 **Ceará's road system.** The road system, which transports 60% of goods circulating through the state, has a total length of 52,820 km,¹⁰ of which 2,500 km (5%) are federal highways, 11,760 km (22%) state roads, and 38,560 km (73%) municipal. The density of the paved road network in the state (0.06 km/km²) is well above the average for the Northeast region (0.034 km/km²), but below that of Brazil's more developed regions such as the Southeast and South (0.07 km/km²). Since the 1980s, the Ceará government has invested in improving the state road system,¹¹ and now 56% of roads are paved and 74% are in good condition as a result of a road management system covering the full project cycle. Funds invested in road maintenance have also risen significantly, from US\$30 million in 2006 to

⁶ A 2007 study by the United States Agency for International Development (USAID) estimated that logistics infrastructure problems in Ceará represent additional costs of more than US\$43 million per year (US\$76 million at 2011 prices) in the footwear, Brazil nut, shrimp, melon, garment, and cotton supply chains, for foreign trade alone, with over 27% related to over-the-road trucking ([see optional electronic link 12](#)).

⁷ Road survey conducted by the Confederação Nacional de Transporte [National Transportation Confederation] (CNT) in 2011. <http://pesquisarodovias.cnt.org.br/Relatorios/Boletim%20Pesquisa%20CNT%20de%20Rodovias%202011.pdf>

⁸ Surveys for preparation of the Transportation Master Plan (PDT), financed by the Ceará III program.

⁹ According to the methodology developed by the International Road Assessment Programme (IRAP), which estimates the average cost of serious injury and death at 17 and 70 times the value of per capita GDP, respectively.

¹⁰ *Ceará em Números 2010* [Ceará by the Numbers 2010], Ceará Economic Research and Strategy Institute (IPECE).

¹¹ Between 2007 and 2010, the State Government of Ceará invested about US\$700 million in road building and maintenance.

US\$70 million in 2011, representing average annual growth of 17%. Despite the investments of the last few years, however, problems with the road system still persist, such as: (i) the absence of paved connections between productive regions and the “backbone” or primary road system and other modes of transportation; (ii) a low service level on the main system of access to ports, airports, and railway lines, because the roads have design technical specifications unsuited to today’s traffic with more trucks (narrow roadways and unpaved shoulders), which contributes to a larger number of accidents; and (iii) segments of the road system that are reaching the end of their useful life and are in a state of disrepair.

- 1.7 **Institutional structure.** The State of Ceará Roads Department (DER/CE) ([see optional electronic link 2](#)) is an autonomous agency of the State Infrastructure Department (SEINFRA) with the following responsibilities: (i) prepare the state’s road plan; (ii) conduct studies and produce plans and designs for road building and maintenance; and (iii) build and maintain roads. The DER/CE was the executing agency of three previous Bank loan operations for the sector: the Ceará I, II, and III programs (see paragraph 1.11). Since the early 1990s, the state government, with Bank support, has strengthened the DER/CE’s planning and management capabilities by providing training for its technical staff and implementing the SIGMA maintenance management system, financed by the Ceará II program, and the Transportation Master Plan (PDT), now in preparation with financing from the Ceará III program.
- 1.8 **Other modes of transportation.** Although freight is transported mainly by road, other modes of transportation play a key role in the economy. The state has 1,200 km of railroad that moves about 1.7 million tons per year, linking the main productive regions and neighboring states with the port of Mucuripe. A major change in the transportation and logistics matrix is expected once the new Transnortheastern Railway¹² enters into operation, connecting seven of the northeastern states to their two main ports: Suape in Pernambuco and Pecem in Ceará. The state port system consists of Pecem,¹³ located 50 km from Fortaleza, which moves 3 million tons per year, and Mucuripe in the RMF, with 3.4 million tons and 70,000 twenty-foot equivalent units (TEUs) per year. The airport system consists of an international airport (Fortaleza), which handles 3.6 million passengers per year, and eight regional airports that play a key role in tourism activities.
- 1.9 **Ceará’s strategy.** As a result of its development strategy (see paragraph 1.3), between 2007 and 2010 the state government invested about US\$1 billion in

¹² The Transnortheastern Railway, or “Transnordestina,” currently in the construction phase, will have a total length of 1,730 km (530 km in Ceará) and transport 30 million tons per year.

¹³ Pecem is an important connection node with international trade, ranking first nationally in the movement of iron and steel products (23% of the national total), footwear (54%), and fruits (58%).

transportation and logistics infrastructure with major economic impact,¹⁴ and an additional US\$3.9 billion (14% of total public investments) is envisaged in the 2012-2015 Multiyear Plan, along with promotion of public-private partnerships. In terms of the road system, the state government's proposed investment plan¹⁵ consists of: (i) expansion of the capacity of the backbone road network giving access to the main logistics nodes, with the construction of the RMF beltway, and widening of the main highways; (ii) a gradual expansion of the paved road network giving access to the main productive regions and chief towns of municípios; and (iii) adequate maintenance of the existing network (paved and unpaved) by implementing a rigorous policy of state road maintenance through planning, financing, management, and monitoring practices at levels close to the system's maximum requirements ([see optional electronic link 7](#)). The investment plans are supported through institutional strengthening of the DER/CE with programmed activities encompassing the entire project cycle and integrated planning based on the PDT.¹⁶

- 1.10 **Relationship to the Bank's and the country's strategy.** The Bank's country strategy with Brazil 2012-2014 (document GN-2662-1) cites the following problems with the road system: (i) a high proportion of the road system in a fair to poor state of repair; (ii) bottlenecks in export corridors; (iii) atmospheric pollution; and (iv) high traffic accident rates. As a result, it identifies improving infrastructure conditions between the main areas of activity as a major focus of work for the next two decades, with a particular emphasis on subnational governments and improving the efficiency of road transportation. The program is aligned with the lending program priorities of the Ninth General Increase in the Resources of the Inter-American Development Bank (GCI-9) (document AB-2764), namely: (i) poverty reduction and equity enhancement, under the geographic criterion indicator; its geographic scope will extend to most of the state's municípios that, given the prevalence of rural poverty in northeastern Brazil, have human development indexes (HDI)¹⁷ below the state and country average ([see optional electronic link 8](#)); and (ii) support for regional cooperation and integration under the criterion of cross-country focus by improving access from the country's productive areas to export ports, as well the criterion of national subsidiarity by upgrading the technical standard of import corridors to support higher demand (document GN-2733). The program is also aligned with the GCI-9 sector priority of infrastructure for

¹⁴ According to a study by the Ceará Economic Research and Strategy Institute (IPECE), public infrastructure investment in Ceará between 2007 and 2010 generated impacts of around US\$3.5 billion on production and US\$2 billion in terms of value added in the state economy.

¹⁵ The state government expects to invest about US\$500 million in 2012-2013 alone in the road construction and rehabilitation program.

¹⁶ The PDT, financed by the Ceará III operation and now in preparation, includes an analysis of the demand for road transportation and prioritizes long-term investments for the state's highways.

¹⁷ The average HDI for the municípios targeted by the program is 0.624, below the average HDI for municípios statewide, which is 0.699, and well below the country's average HDI of 0.715 (UNDP 2010).

competitiveness and social welfare, in terms of paved road coverage (km/km²) and kilometers of interurban roads built or maintained/upgraded.

- 1.11 **The Bank's sector strategy.** The strategic partnership between the DER/CE and the Bank over the last 20 years has been crucial for the development of road management and for consolidating the main development hubs and their areas of influence. Under three Bank-financed programs, more than 1,700 km of state roads have been paved, and the system's state of maintenance has improved from 16% in good condition in 1990 to 74% in 2011. The Ceará I program (587/OC-BR) financed rehabilitation work on the backbone highway system, which was in a

Figure 1. Map of Ceará Programs



critical state, as well as institutional restructuring of the DER/CE to introduce road management based on investment planning. The Ceará II program (loan 1019/OC-BR) sought to ensure that all chief towns of the state's municípios have paved access from the backbone road network, and it financed development of the SIGMA road maintenance planning system. The Ceará III program (loan 2169/OC-BR) had the main objective of paving the roads connecting the state's main productive regions to the backbone network, and financing the PDT. The current Ceará IV-B program aims to raise the technical standard and service level of the main roads in the state's backbone network, to meet the growing demand fueled by the economic growth of the last few years, and to continue supporting the paving, rehabilitation, and comprehensive maintenance of the state road system. The Ceará IV program will also finance the State Logistics and Transportation Plan (PELT), strengthening the state government's capacity for long-term logistics planning that encompasses the road network, multimodal integration, logistics and transportation services, and dialogue with the private sector. Thus, in terms of lessons learned, the Bank's main value-added to the state government, applied to all projects under DER/CE coordination, has been the development of a project management system based on transparency, team involvement in project review procedures, and autonomy of the program coordinator in decision-making and regular monitoring of works. This has enabled DER/CE not only to step up the physical targets of programs but to make each program increasingly more complex and sustainable.

- 1.12 **Ceará IV program development strategy.** The Government of Brazil, acting through the External Financing Commission (COFIE), authorized the state government to prepare the Ceará IV program for an amount of up to

US\$756,175,000, including US\$600 million in external funding. To comply with the thresholds set in the Bank's programming with Brazil and the allocation of available resources for the following years, the financing will be provided through two loan operations: Ceará IV-A (BR-L1326) and Ceará IV-B (BR-L1363), as shown in Table 1 below:

Table 1. Development Stages of the Ceará IV Program

Program	Date	Cost (US\$)		
		Total	IDB	Local
Ceará IV-A (BR-L1326)	July 2013	504,116,667	400,000,000	104,116,667
Ceará IV-B (BR-L1363)	Dec. 2014*	252,058,333	200,000,000	52,058,333
Total		756,175,000	600,000,000	156,175,000

* Expected date of submission to the Bank's Board of Executive Directors.

- 1.13 Although the impacts and outcomes of the Ceará IV program, as identified in the state government's development plan, will only materialize fully once all of the planned investments are completed, each of the two operations, as multiple-works programs,¹⁸ are self-sustainable and will generate their own outcomes and outputs (see [Annex II](#)). Moreover, each operation will finance different works. The present operation is Ceará IV-B (loan BR-L1363).

B. Objectives, components, and costs

- 1.14 **Objectives.** The general objective of the Ceará IV program is to support the sustainable economic development of the State of Ceará, improving conditions for the integration of productive regions with regional consumer markets and export logistics nodes (ports and airports). The specific objectives of the Ceará IV-B program are to: (i) improve mobility, connectivity, and safety conditions on strategic road corridors for integration with productive hubs and other modes of transportation; (ii) partly eliminate the discontinuities in the paved road network, thereby increasing its connectivity and efficiency; and (iii) improve institutional capacity for managing the freight logistics system.
- 1.15 **Components.** The Ceará IV program overall (A and B) will finance the following: (i) rehabilitation of 1,090 km and paving of 601 km of highways; (ii) implementation of a pilot rehabilitation and results-based maintenance scheme on a segment of highway CE-060, which is a major road connecting the state's two largest cities, Fortaleza (to the north) and Crato (to the south) (see [optional electronic link 13](#)); and (iii) institutional strengthening of the DER/CE, including the development of a PELT¹⁹ (see [optional electronic link 9](#)), and implementation of

¹⁸ The representative sample corresponds to about 30% of the total program (BR-L1326 and BR-L1363).

¹⁹ The State Logistics and Transportation Plan (PELT) expands the Transportation Master Plan (PDT) (financed by the Ceará III program) by including planning for other transportation modes, transportation services, and the interface with the private sector.

the priority actions identified in the PDT and in the environmental management plan, both financed by the Ceará III program. The map contained in [optional electronic link 1](#) shows the location of the projects addressed in the previous Ceará I, II, and III programs and the segments proposed for the overall Ceará IV program.

- 1.16 Also financed will be technical, economic, and socioenvironmental studies, engineering designs, management activities, audits, monitoring and evaluation, all related to program execution. The present program, Ceará IV-B, will finance the following components specifically:

C. Ceará IV-B program (loan BR-L1363)

- 1.17 **Component 1. Engineering and administration (US\$2.2 million).** This component will finance the following subcomponents: (i) studies and designs, including the preparation of the necessary technical, economic, socioenvironmental, and geotechnical studies for the program works; (ii) program administration, evaluation, and monitoring, including the necessary program execution support and management activities to ensure successful program management and execution, as well as technical, operational, environmental, and social monitoring and evaluation activities; and (iii) financial audit, including the commissioning of independent external financial audits.
- 1.18 **Component 2. Civil works and works supervision (US\$249.7 million).** This component will improve and/or rehabilitate approximately 530 km of the state road system, including segments that require changes to their technical standard because of increased demand, and those in need of rehabilitation because they have reached the end of their useful life. It will also seek to reduce discontinuities in the network by paving approximately 191 km of roads (“missing links”), shortening distances and lowering transportation costs for certain regions with great productive potential.
- 1.19 The program will target 11 highway segments, selected using the SIGMA system, based on the needs identified by operational districts, coordination with strategies pursued by the state, and preliminary information and data from the PDT. In preparing this operation, the DER/CE identified a sample of rehabilitation and paving projects for which economic feasibility studies, engineering designs, and socioenvironmental analyses were done. This component will finance works implementation and supervision, to be contracted with private firms, along with socioenvironmental mitigation measures.
- 1.20 The rehabilitation and paving projects to be financed by the program include (i) differentiated treatment at urban junctions, such as traffic signals and other measures to reduce and control speeds; (ii) pedestrian crossings; (iii) bus stop shelters; (iv) sidewalks; and (v) an additional lane in one direction entering the urban area averaging 1.5 m wide and 2-3 km long for use by pedestrians and cyclists.

- 1.21 **Road safety.** In terms of road safety, the rehabilitation projects include: (i) update of the blackspots identified in the action plan to identify road safety blackspots, implemented with resources from the Ceará II program; and (ii) financing to correct the blackspots identified for the program roads.
- 1.22 **Eligibility criteria.** As this is a multiple-works program, each segment to be included in Component 2 must: (i) be part of the state road system and connect with state or federal roads of the same or higher technical standard; (ii) have economic viability studies, and an internal rate of return (IRR) of 12% or higher; (iii) have detailed engineering studies, including road safety; (iv) have a completed environmental analysis consistent with the works to be executed and in compliance with the Bank's environmental and social policies and safeguards, with environmental oversight plans, resettlement plans (if required, and in compliance with Operational Policy OP-710), and the environmental setup permit in compliance with applicable laws. The financing of projects that traverse restricted areas of maximum environmental protection or their buffer zones, or those located in environmentally sensitive areas, is not envisaged. Eligibility will also be subject to the Bank's prior no objection to the technical, economic, and socioenvironmental evaluations and the corresponding consultation processes, as specified in its policies and safeguards.
- 1.23 **Component 3. Institution-strengthening (US\$200,000).** This component will finance institutional training actions for the executing agency, such as seminars and workshops.
- 1.24 **Costs.** The Ceará IV-B program, with a total cost of US\$252,058,334, will be financed with US\$200 million from the Bank's Ordinary Capital (OC) and US\$52,058,334 of local counterpart funding (see Table 2). The time frame for the physical start of program works will be two and a half years.²⁰

²⁰ The average works execution time in the Ceará III program (BR-L1181) was 12 months.

Table 2. Ceará IV-B Program Costs and Financing

Components	Cost (US\$000s)		
	Total	IDB	Local
1. Engineering administration ²¹	2,200	1,700	500
Studies and designs	500	-	500
Program management, evaluation, and monitoring	1,500	1,500	-
Financial audit	200	200	-
2. Works and works supervision	249,658	198,120	51,538
Road paving	95,915	74,567	21,348
Road restoration/results-based maintenance	143,493	116,053	27,890
Works supervision	9,000	7,500	1,500
Expropriation and environmental compensation	800	-	800
3. Institution-strengthening	200	180	20
Total	252,058	200,000	52,058

- 1.25 **Disbursement schedule.** The loan proceeds will be disbursed over a four-year period, as shown in Table 3.

Table 3. Ceará IV-B Program Disbursement Schedule

Ceará IV-B - BR-L1363 (US\$000s)						
	2015	2016	2017	2018	Total	%
IDB	8,292	84,960	75,041	31,706	200,000	80%
Local	2,158	22,110	19,529	8,262	52,058	20%
Total	10,450	107,070	94,570	39,968	252,058	100%

D. Key results indicators

- 1.26 The proposed indicators and means of verification optimize the use of information available in Ceará, as well as information to be obtained during loan execution. The projects in the representative sample have a baseline, which will be supplemented during the technical studies for the remaining projects. The indicators (see [Annex II](#)) include: (i) impact: average share of foreign trade transactions (exports and imports) and annual volume of trade by the program's municípios; and (ii) outcome: travel time, vehicle operating costs, index of accessibility of paved roads, and road accident rate.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 This is a global multiple-works operation. The planned disbursement period is four years.

²¹ The Ceará IV-A program (BR-L1326) will be financing the following activities: "Studies and designs" and "Program management, evaluation, and monitoring".

B. Fiduciary risk

- 2.2 The institutional capacity of the State of Ceará Roads Department (DER/CE) was assessed using the Institutional Capacity Assessment System (ICAS), with the following results: (i) development level: satisfactory; and (ii) risk level: low. The DER/CE has sufficient capacity to implement the program, and will need strengthening to develop: (i) tools for management, records, control, and preparation of reports on activities and program resources; and (ii) a training plan for program coordination, management, and execution. As a special execution condition, within six months after contract signature, the borrower will provide evidence that the program management support system and the training plan for integrated project management have both been implemented. Training on procurement was provided during program preparation, and this will be expanded to encompass the Bank's policies at the launch workshop.

C. Environmental and social safeguard risks

- 2.3 The program was classified as category "B" under the Environment and Safeguards compliance Policy (Operational Policy OP-703). Accordingly, the following activities were conducted during program preparation: (i) an evaluation of works executed under the Ceará III program in terms of environmental issues ([see optional electronic link 3](#)); (ii) a field visit to all of the road segments targeted by the Ceará IV program; (iii) an environmental analysis of the entire representative sample of the Ceará IV program, including consultation and participation meetings in the main communities served by the road segments in question; and (iv) the program's environmental impact assessment, which is a requirement for obtaining the preliminary permit. Based on the outcomes of the previous Ceará I, II, and III programs,²² and the studies done for the Ceará IV sample projects, the planned rehabilitation and paving works are not expected to cause significant adverse impacts, since the physical works are small- to medium-scale and conventional from the engineering standpoint, and will be built on the existing right-of-way with no expropriations or impact on environmentally sensitive areas. The adverse impacts will occur mainly during works execution and will be associated with earth moving, operation of worker camps and asphalt plants, removal of vegetation at isolated points of the road segments, and an increase in traffic accidents. To guarantee the prevention and mitigation of the potential adverse socioenvironmental impacts, the DER/CE has an environmental management system in place for the program, applicable to all project phases, as described below.
- 2.4 The designs of the rehabilitation and paving works include measures to enhance the road-user-environment relationship, such as: (i) lateral widening of the road at stops, mainly near health and education centers; (ii) paving of small sections of secondary access roads where they connect to the main road; (iii) special road

²² No significant environmental liabilities were found in the environmental audit of 280 km of roads under the Ceará III program ([see optional electronic link 3](#)), as a result of effective socioenvironmental management by DER/CE.

- safety measures near schools, hospitals, and intersections in urban areas; (iv) broadening of the road's shoulder on a 2-km to 3-km stretch at the entry or exit of communities, to include an additional 1.5-meter-wide, paved, multiuse lane for pedestrians and cyclists; and (v) identification of critical environmental liabilities and road safety blackspots (see paragraph 1.21), and inclusion of the costs of correcting them in the works budgets. The consultant responsible for the designs will hold at least one consultation meeting in the project area.
- 2.5 Each road segment to be financed will have: (i) the environmental setup permit, as required under existing laws; and (ii) a specific environmental management plan (PCA) for the works on the segment. In addition, the DER/CE has environmental specifications that must also be met in works execution (environmental service instructions, or ISAs). The environmental impact assessment (EIA), the PCA for the segment, and the ISAs will form part of the bidding documents for the works, and the offeror must include a signed environmental and social commitment agreement in its technical and cost proposal, assuming responsibility for effective completion of the socioenvironmental measures specified in the cited documents, should it be awarded the contract. Both the contractor and the works supervision firm will include environmental technical specialists on their technical teams.
- 2.6 The environmental aspects of the program will be the responsibility of the Environmental Impact Analysis Unit (GAIAM) of the DER/CE's Engineering Department. The GAIAM has been receiving training since the first operation financed by the Bank. Its responsibilities include environmental licensing for DER/CE projects, supervision of environmental and social studies, and monthly environmental inspections of works, including the preparation of inspection reports sent to those responsible for works execution, to correct the problems identified. It is also in the final phase of developing the DER's Environmental Management System (SGA), financed by the Ceará III operation, which will develop the agency's environmental policy and management model and the corresponding environmental procedures manual with a view to obtaining ISO 14001 certification in the future.
- 2.7 As special execution conditions, before the start of each work the borrower will provide evidence that: (i) the corresponding setup permit and other permits applicable to works execution have been duly obtained; (ii) for works that so require, a specific resettlement plan has been developed in compliance with Operational Policy OP-710, and the construction area between the respective roadways of the subsegment has been released according to plan; and (iii) if Quilombola and/or indigenous communities are found to have been affected, mitigation and compensation measures have been developed in compliance with Operational Policy OP-765.

D. Other key issues and risks

- 2.8 **Analysis of the state's financial capacity.** In the period 2007-2011, the State of Ceará complied with the limits set in Brazil's Fiscal Responsibility Law, as shown by the data given in [optional electronic link 14](#) and in the following table:

Table 4. Indicators of Ceará's Financial Capacity

Legal limit and norm	Legal limit %	Limit Dec/07 %	Limit Dec/08 %	Limit Dec /09 %	Limit Dec /10 %	Limit Dec /11 %
Payroll expenditure/Net current income (NCI)	60.00	49.15	46.67	49.43	49.10	48.15
Internal and external credit operations/NCI	16.00	3.47	1.72	7.56	11.00	8.33
Credit operations for advances on budgetary revenue/NCI	7.00	0.00	0.00	0.00	0.00	0.00
Total guarantees granted/NCI	22.00	10.68	9.59	9.03	8.46	7.75
Debt service expenditure (interest, fees, and amortization)	11.50	9.79	8.21	9.21	5.08	4.43
Consolidated short-term debt/NCI	200.00	38.29	23.55	17.22	27.73	29.38

- 2.9 The state's revenue and expenditure in the period 2007-2011 were consistent with a process of generating primary surpluses, which at 2011 prices in millions of reais were: R\$1,322.13 in 2007; R\$1,160.59 in 2008; R\$222.59 in 2009; R\$1,228.27 in 2010; and R\$1,881.42 in 2011. Revenue and expenditure projections for the next 10 years show that, even with project implementation,²³ there will be no deficit in the state's accounts; and, with time, the primary surplus will be sufficient to make debt service payments.
- 2.10 **Economic viability.** The economic evaluation of this program was based on a cost-benefit analysis of each of the road projects in the representative sample ([see optional electronic link 4](#)), comparing costs and benefits, at efficiency prices, under conditions with and without the road works. The benefits of each individual project were estimated using an analytical methodology widely employed in road projects (consumer surpluses), quantifying both the generalized cost savings for transportation under normal traffic, both derived and generated, as well as the reduction in road maintenance costs. The HDM-4 model was used to calculate each project's return, considering the investment costs resulting from the engineering studies, including the costs of mitigating direct socioenvironmental impacts, vehicle operating costs, including time, and annual maintenance costs, defined for the conditions with and without the project.

²³ The analysis of the state's financial capacity took account of all of the external financing envisaged for the Ceará IV program (US\$600 million).

- 2.11 The analysis yielded economic internal rates of return (EIRRs) for each project in the range of 18.0% to 30.1%. Sensitivity analyses were performed, factoring in a 20% increase in the investment cost, a 20% reduction in benefits, and a combined 10% increase in investment cost and simultaneous 10% reduction in benefits. Under these variations, each project maintains an EIRR above the discount rate used (12%), confirming that the benefits are robust to less favorable scenarios. The following table summarizes the results of the cost-benefit and sensitivity analyses.
- 2.12 Other benefits were not quantified, such as tourism sector development in the service areas of each work, and savings in healthcare costs from fewer motor vehicle accidents.
- 2.13 **Execution risks.** The program's works have a low level of complexity. The DER/CE has long experience in executing similar works, as exemplified by the Ceará I, II, and III programs, and over the years has developed a detailed manual of technical and environmental control specifications that form an integral part of the bidding documents and aim to minimize construction risks. The program includes resources for contracting firms with long experience in the execution and supervision of road works of a similar scale and complexity. As a special execution condition, before the start of each work, the borrower will provide evidence that works supervision services have been engaged. Payments to contractors will be subject to the issuance of compliance certificates by the works supervision firms. As a result, the risks of cost overruns are considered low,²⁴ but if cost overruns do occur in this program, the state government will be consulted regarding the possibility of increasing the local contribution, either with local budget resources or other sources of financing. Although the scope of the program may change, the eligibility criteria adopted (see paragraph 1.22) ensure that all the works financed, and therefore the program as a whole, will remain economically viable with an IRR above 12%.
- 2.14 **Maintenance risks.** The state of repair of the road system under DER/CE jurisdiction is satisfactory, so maintenance risk is considered to be low. The procedures are described in detail in the annual maintenance report ([see optional electronic link 15](#)).²⁵

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Execution mechanism

- 3.1 The borrower will be the State of Ceará (CE), and the Federative Republic of Brazil will be the guarantor of the financial obligations arising from the loan contract. The program will be executed by the State of Ceará Roads Department (DER/CE), an

²⁴ In the Ceará III program, the average cost overrun of works was 8%, due mainly to the works monitoring procedures implemented by the program management unit (PMU).

²⁵ The DER/CE will be able to make improvements to its maintenance and preservation system after evaluating the outcomes of the results-based maintenance pilot planned under program BR-L1326.

agency organized and operating under public law with administrative, operational, financial, and legal autonomy, as well as its own separate assets, under the State Infrastructure Department (SEINFRA). The program will be implemented through the program management unit (PMU), which reports to the DER/CE Superintendency and is already up and running²⁶ with the necessary staff. The PMU will be responsible for managing and implementing all program activities, in accordance with the clauses of the loan contract. **The Bank's no objection to the subsidiary execution agreement between the State of Ceará and the DER/CE, establishing the conditions for the transfer and use of the loan proceeds, will be a special condition precedent to the first disbursement.**

- 3.2 The PMU will have the following specific functions: (i) prepare the program execution plan (PEP) and corresponding annual works plans (AWPs) ([see required electronic link 2](#)); (ii) prepare and update the procurement plans ([see required electronic link 1](#)); (iii) review bidding documentation for the procurement of services, goods, and works, in accordance with the Bank's procurement policies; (iv) monitor contracts; (v) prepare the technical documents for the projects; (vi) maintain accounting and financial records on the sources and uses of program funds, in accordance with the loan contract, and submit supporting documentation for expenditures; (vii) prepare financial statements and disbursement requests; (viii) monitor, supervise, and evaluate program execution; and (ix) monitor and supervise the program outcome, output, and other indicators. The PMU will receive technical, administrative, and financial support from a management firm to be engaged with program funds. As a special execution condition, no later than six months after contract signature, the borrower will provide evidence that the management firm has been engaged.
- 3.3 **Procurement.** Works, goods, and consulting services to be financed with the loan proceeds will be procured in accordance with the "Policies for the procurement of goods and works financed by the Inter-American Development Bank" (document GN-2349-9) and the "Policies for the selection and contracting of consultants financed by the Inter-American Development Bank" (document GN-2350-9), both of 2011.
- 3.4 **Disbursements.** The program will disburse resources under the advance of funds modality, reflecting the project's actual liquidity needs. The frequency of these advances will be determined on the basis of the program's financial programming. The DER/CE will periodically update its financial plan, estimating the resources needed to execute the program in accordance with its budget, work plan, and commitments undertaken. The Bank may make a new advance of funds when justification has been provided for at least 80% of all funds previously advanced. Supervision will be performed on an ex post basis.

²⁶ The PMU was established pursuant to Administrative Order 948/2008 of 23 July 2008 issued by the DER Superintendent; its staff were appointed under Administrative Order 949/2008, of the same date.

- 3.5 **Retroactive financing and recognition of expenditures.** The Bank may retroactively finance up to US\$10 million (roughly 4% of the total amount) as a charge against the loan proceeds, and recognize up to US\$15 million (approximately 6% of the total amount) as a charge against the local counterpart, in eligible expenditures incurred by the borrower prior the loan approval date for consulting studies and preliminary work in relation to land purchases and works execution, provided that such expenditures met requirements substantially analogous to those established in the loan contract. Such expenditures must have been incurred on or after 27 April 2012, but in no case more than 18 months before the loan approval date, in accordance with the terms of the Bank policy on recognition of expenditures, retroactive financing, and advance procurement (document GN-2259-1).

B. Summary of monitoring and evaluation measures

- 3.6 The monitoring and evaluation plan (see [required electronic link 3](#)), will accompany execution of the operation, according to the targets and progress indicators defined in the Results Matrix. The following instruments will be used: (i) the AWP, PEP, and procurement plan reports; (ii) six-monthly status reports, indicating progress made on each of the components and the program's overall performance, based on the Results Matrix; (iii) the project completion report (PCR), including the ex post economic evaluation; and (iv) financial statements audited by an independent audit firm acceptable to the Bank or by the State Audit Court of Ceará (TCE/CE). The Bank will monitor the program through inspection visits and administration missions. The monitoring and evaluation plan will be coordinated by the PMU, which will maintain effective systems for compiling periodic information on the program's physical and financial progress, with support from the management firm. The PMU will keep all information relevant to program execution accessible and up-to-date.

Development Effectiveness Matrix			
Summary			
I. Strategic Alignment			
1. IDB Strategic Development Objectives	Aligned		
Lending Program	i) Lending for poverty reduction and equity enhancement and ii) Lending to support regional cooperation and integration.		
Regional Development Goals	Paved road coverage (Km/Km ²).		
Bank Output Contribution (as defined in Results Framework of IDB-9)	Km of inter-urban roads build or maintained/upgraded.		
2. Country Strategy Development Objectives	Aligned		
Country Strategy Results Matrix	GN-2662-1	Expand and improve the quality and safety of state and federal road networks.	
Country Program Results Matrix	GN-2756	The intervention is included in the 2014 Country Program Document.	
Relevance of this project to country development challenges (If not aligned to country strategy or country program)			
II. Development Outcomes - Evaluability	Highly Evaluable	Weight	Maximum Score
	9.3		10
3. Evidence-based Assessment & Solution	10.0	33.33%	10
3.1 Program Diagnosis	3.0		
3.2 Proposed Interventions or Solutions	4.0		
3.3 Results Matrix Quality	3.0		
4. Ex ante Economic Analysis	10.0	33.33%	10
4.1 The program has an ERR/NPV, a Cost-Effectiveness Analysis or a General Economic Analysis	4.0		
4.2 Identified and Quantified Benefits	1.5		
4.3 Identified and Quantified Costs	1.5		
4.4 Reasonable Assumptions	1.5		
4.5 Sensitivity Analysis	1.5		
5. Monitoring and Evaluation	8.0	33.33%	10
5.1 Monitoring Mechanisms	2.5		
5.2 Evaluation Plan	5.5		
III. Risks & Mitigation Monitoring Matrix			
Overall risks rate = magnitude of risks*likelihood	Low		
Identified risks have been rated for magnitude and likelihood	Yes		
Mitigation measures have been identified for major risks	Yes		
Mitigation measures have indicators for tracking their implementation	Yes		
Environmental & social risk classification	B		
IV. IDB's Role - Additionality			
The project relies on the use of country systems			
Fiduciary (VPC/PDP Criteria)	Yes	Financial Management: i) Budget, ii) Accounting and Reporting, iii) External Control, and iv) Internal Audit.	
Non-Fiduciary			
The IDB's involvement promotes improvements of the intended beneficiaries and/or public sector entity in the following dimensions:			
Gender Equality			
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	Yes	The Monitoring and Evaluation Plan is based on an ex-post cost-benefit and a before-after comparison that should help identify and quantify the impact that the project has on improving the conditions of movement of vehicles, the travel time of users and safety.	

The main objective of the program is to contribute to the sustainable development of the Ceará State improving the integration conditions of the productive regions and regional consumers markets and the connection with the logistic export hubs (ports and airports). The specific objectives are 1) Improve mobility conditions, connectivity and safety of strategic corridors that integrate production poles and other transport modes; 2) Partially eliminate the existing discontinuities in the road network; 3) Improve sustainability of investments through a pilot program of maintenance by results; and 4) Improve the institutional capacity to manage the logistic infrastructure.

The results matrix presents the impact, outcome and product indicators related to the objectives and components of the program. Financing for the program Ceará IV is being provided through two separate operations (Programa Ceará IV-A-BR-L1326 and Programa Ceará IV-B-BR-L1363). In the case of this operation, product indicators presented in the matrix are SMART. Through the two operations, the program presents joint impact indicators and results indicators that are SMART. An economic analysis is presented for the entire program and for each operation. The monitoring and evaluation plan is based on an ex-post cost benefit analysis, and a before and after comparison, to identify and quantify the program's impacts on the network conditions, congestion levels and safety.

The risks currently identified in the risk matrix are reasonable and they include mitigation measures and related metrics to track their implementation.

RESULTS MATRIX

Program expected impact	The program contributes to increased competitiveness and, consequently, the sustainable economic and social development of the State of Ceará (CE).	
Impact indicators ¹	Baseline	Target (2017)
Average foreign trade transactions (exports and imports in current US\$) ² of municípios traversed by the program's road segments, as a share of total transactions of the municípios of the State of Ceará, excluding the município of Fortaleza.	11.41% (2011/2010 moving average, measured in 2012. Source: Ministry of Development, Industry, and Trade – Brazilian Trade Balance by Município http://www.mdic.gov.br/)	12.48% (2017/2016 moving average, measured in 2018. Source: Ministry of Development, Industry, and Trade – Brazilian Trade Balance by Município http://www.mdic.gov.br/)
Average fiscal value added (FVA) ³ of the municípios traversed by the program's road segments, as a share of the total FVA of the State of Ceará, excluding the município of Fortaleza.	29.16% (Year 2010, published in 2012; Source: State of Ceará Finance Department (SEFAZ/CE) http://www.sefaz.ce.gov.br/)	29.84% (Year 2015, published in 2017; Source: State of Ceará Finance Department (SEFAZ/CE) http://www.sefaz.ce.gov.br/)
Annual volume traded at Central de Abastecimento de Ceará S.A. (CEASA/CE) by the microregions that include municípios traversed by road segments to be paved under the program completing/interconnecting road arteries with the state's productive development hubs. ⁴	119,000 tons (2011/2010 moving average, measured in 2012. Source: CEASA/CE (Maracanaú) http://www.ceasa-ce.com.br/)	127,000 tons (2017/2016 moving average, measured in 2018. Source CEASA/CE (Maracanaú) http://www.ceasa-ce.com.br/)

1. These indicators are a way of measuring the impact that the investments will have in terms of upgrading and paving, as well as rehabilitation and maintenance of the road segments to be targeted under the program. The indicators are not directly linked to the project's objectives, but can be used to infer the contribution of those investments to the higher-order objectives of the current government strategies.
2. Improvement of the program beneficiary municípios as a share of the state's foreign trade transactions (exports and imports in current U.S. dollars) seeks to reflect the impact on competitiveness and regional/international integration of the local productive zones as a result of improvements in road system accessibility, efficiency, and safety, facilitating access to important logistical nodes for international trade (ports and airports).
3. The FVA represents the annual value of transactions involving the sale of goods and provision of interstate and intermunicipal transportation services in each município. As this indicator is based essentially on transportation services, improvements in the quality of the road system as a result of program implementation should cause it to rise. The value also reflects economic activity and, consequently, the município's potential to generate public revenue (the greater the município's economic activity, the higher its FVA and index of participation (IPM) in state revenue shareout, based on goods and services tax (ICMS) revenue intake).
4. Central de Abastecimento do Ceará S.A. (CEASA/CE) was inaugurated in 1972 in the município of Maracanaú, to centralize the bulking and distribution of fruits, vegetables, and grains. Over time, however, its activities have become more diversified, and today it is a multipurpose supply center with 1,679 registered producers, 268 resident firms, and 520 autonomous shippers. It receives more than 5,500 freight vehicles per month and generates 7,000 direct jobs. It is supplied by 184 municípios from the interior of the state and in turn supplies the metropolitan municípios.

Program expected outcomes	To improve accessibility, efficiency, and safety of the Ceará state road system through the rehabilitation, upgrade, and paving of road corridors that connect productive regions within Ceará and in neighboring states with local and regional consumer markets and with domestic and international trade logistics nodes. The program also seeks to enhance the sustainability of investments by introducing results-based contracts in the existing road maintenance system.											
Outcome indicators	Vehicle operating costs (VOC) on road segments to be paved by the program (US\$/vehicle–km)										Means of verification/Comments	
	Baseline					Target (2017)						
BR-L1326												
Segments: 1. Salitre–Border CE/PE 2. Massapê–Moraujo	Vehicle type	Sample segments				Vehicle type	Sample segments				Highway development and management (HDM-4). State of Ceará Roads Department (DER/CE) - Program Management Unit (PMU) (Special Projects Management Unit). Baseline date: 2013.	
		1	2	Average	1		2	Average				
		Automobile	0.49	0.47	0.48		Automobile	0.30	0.3	0.30		
		Bus	2.20	2.01	2.06		Bus	1.12	1.14	1.13		
		Light truck	0.66	0.61	0.62		Light truck	0.44	0.43	0.43		
		Medium truck	1.69	1.48	1.53		Medium truck	0.76	0.77	0.77		
		Heavy truck	2.79	2.31	2.43		Heavy truck	1.05	1.07	1.06		
		Articulated truck	5.40	4.49	4.72		Articulated truck	1.92	1.96	1.95		
		Fleet average	1.00	1.19			Fleet average	0.52	0.55			
Segments: 3. Groaíras–Cariré 4. Palhano–Jct CE-123 (Itaiçaba)	Vehicle type	Sample segments				Vehicle type	Sample segments				HDM-4. DER/CE - PMU (Special Projects Management Unit). Baseline date: 2013.	
		3	4	Average	3		4	Average				
		Automobile	0.48	0.47	0.47		Automobile	0.30	0.3	0.30		
		Bus	2.15	1.98	2.06		Bus	1.13	1.13	1.13		
		Light truck	0.65	0.57	0.61		Light truck	0.43	0.44	0.44		
		Medium truck	1.67	1.22	1.43		Medium truck	0.77	0.76	0.76		
		Heavy truck	2.76	1.64	2.16		Heavy truck	1.07	1.06	1.06		
		Articulated truck	5.34	3.06	4.12		Articulated truck	1.96	1.93	1.94		
		Fleet average	1.03	0.76			Fleet average	0.42	0.47			

Outcome indicators	Vehicle operating costs (VOC) on road segments to be rehabilitated by the program (US\$/vehicle-km)							Outcome indicators	
	Baseline				Target (2017)				
BR-L1326									
Segments: 5. Mombaça–Acopiara 6. Juazeiro do Norte– Caririaçu	Vehicle type	Sample segments			Vehicle type	Sample segments			HDM-4. DER/CE - PMU (Special Projects Management Unit). Baseline date: 2013.
		5	6	Average		5	6	Average	
	Automobile	0.33	0.34	0.33	Automobile	0.30	0.29	0.30	
	Bus	1.36	1.4	1.37	Bus	1.13	1.13	1.13	
	Light truck	0.47	0.47	0.47	Light truck	0.42	0.42	0.42	
	Medium truck	0.89	0.91	0.90	Medium truck	0.76	0.76	0.76	
	Heavy truck	1.24	1.26	1.25	Heavy truck	1.06	1.05	1.06	
	Articulated truck	2.33	2.37	2.34	Articulated truck	1.93	1.92	1.93	
	Fleet average	0.72	0.48		Fleet average	0.62	0.40		
Segment: 7. Acopiara–Catarina	Vehicle type	Sample segment		Vehicle type	Sample segment		HDM-4. DER/CE - PMU (Special Projects Management Unit). Baseline date: 2015.		
		7	Average		7	Average			
	Automobile	0.33	0.33	Automobile	0.29	0.29			
	Bus	1.35	1.35	Bus	1.12	1.12			
	Light truck	0.47	0.47	Light truck	0.42	0.42			
	Medium truck	0.89	0.89	Medium truck	0.76	0.76			
	Heavy truck	1.24	1.24	Heavy truck	1.05	1.05			
	Articulated truck	2.33	2.33	Articulated truck	1.92	1.92			
	Fleet average	0.58		Fleet average	0.49				
BR-L1363									
Segment: 8. Jct BR-222–Jct CE-366 (Varjota)	Vehicle type	Sample segment		Vehicle type	Sample segment		HDM-4. DER/CE - PMU (Special Projects Management Unit). Baseline date: 2016.		
		8	Average		8	Average			
	Automobile	0.33	0.33	Automobile	0.29	0.29			
	Bus	1.36	1.36	Bus	1.13	1.13			
	Light truck	0.47	0.47	Light truck	0.41	0.41			
	Medium truck	0.89	0.89	Medium truck	0.76	0.76			
	Heavy truck	1.24	1.24	Heavy truck	1.05	1.05			
	Articulated truck	2.33	2.33	Articulated truck	1.92	1.92			
	Fleet average	0.59		Fleet average	0.50				

Outcome indicators	Average travel time on segments to be paved by the program (minutes/vehicle-km)								Means of verification/Comments	
	Baseline				Target (2017)					
BR-L1326										
Segments: 1. Salitre–Border CE/PE 2. Massapê–Moraujo	Vehicle type	Sample segments				Vehicle type	Sample segments			Traffic study. HDM-4. DER/CE - PMU (Special Projects Management Unit). Baseline date: 2013.
		1	2	Average			1	2	Average	
	Automobile	1.59	1.57	1.58		Automobile	0.72	0.74	0.73	
	Bus	1.66	1.63	1.64		Bus	0.75	0.78	0.77	
	Light truck	1.59	1.61	1.60		Light truck	0.75	0.78	0.77	
	Medium truck	1.97	1.70	1.77		Medium truck	0.77	0.81	0.80	
	Heavy truck	3.00	1.73	2.05		Heavy truck	0.94	0.98	0.97	
	Articulated truck	4.88	2.17	2.85		Articulated truck	1.19	1.29	1.26	
	Fleet average	1.73	1.62			Fleet average	0.75	0.80		
	Segments: 3. Groaíras–Cariré 4. Palhano–Jct CE-123 (Itaíçaba)	Vehicle type	Sample segments				Vehicle type	Sample segments		
		3	4	Average			3	4	Average	
Automobile		1.58	1.57	1.57		Automobile	0.74	0.72	0.73	
Bus		1.58	1.58	1.58		Bus	0.78	0.75	0.76	
Light truck		1.59	1.57	1.58		Light truck	0.78	0.75	0.76	
Medium truck		1.60	1.58	1.59		Medium truck	0.81	0.77	0.79	
Heavy truck		1.63	1.60	1.61		Heavy truck	0.98	0.94	0.96	
Articulated truck		2.02	1.61	1.80		Articulated truck	1.30	1.19	1.24	
Fleet average		1.60	1.57			Fleet average	0.77	0.76		

Outcome indicators	Average travel time on segments to be rehabilitated by the program (minutes/vehicle-km)							Means of verification/Comments	
	Baseline				Target (2017)				
BR-L1326									
Segments: 5. Mombaça–Acopiara 6. Juazeiro do Norte– Caririaçu	Vehicle type	Sample segments			Vehicle type	Sample segments			Traffic study. HDM-4. DER/CE - PMU (Special Projects Management Unit). Baseline date: 2013.
		5	6	Average		5	6	Average	
	Automobile	0.82	0.84	0.83	Automobile	0.76	0.76	0.76	
	Bus	0.86	0.88	0.87	Bus	0.80	0.80	0.80	
	Light truck	0.86	0.89	0.87	Light truck	0.78	0.80	0.79	
	Medium truck	0.89	0.90	0.89	Medium truck	0.83	0.83	0.83	
	Heavy truck	1.04	1.00	1.03	Heavy truck	0.98	0.99	0.98	
	Articulated truck	1.38	1.40	1.39	Articulated truck	1.30	1.30	1.30	
	Fleet average	0.91	0.86		Fleet average	0.85	0.78		
Segment: 7. Acopiara–Catarina	Vehicle type	Sample segment		Vehicle type	Sample segment		Traffic study. HDM-4. DER/CE - PMU (Special Projects Management Unit). Baseline date: 2015.		
		7	Average		7	Average			
	Automobile	0.82	0.82	Automobile	0.76	0.76			
	Bus	0.86	0.86	Bus	0.80	0.80			
	Light truck	0.86	0.86	Light truck	0.86	0.86			
	Medium truck	0.88	0.88	Medium truck	0.88	0.88			
	Heavy truck	1.04	1.04	Heavy truck	1.04	1.04			
	Articulated truck	1.38	1.38	Articulated truck	1.38	1.38			
	Fleet average	0.85		Fleet average	0.82				
BR-L1363									
Segment: 8. Jct BR-222–Jct CE-366 (Varjota)	Vehicle type	Sample segment		Vehicle type	Sample segment		Traffic study. HDM-4. DER/CE - PMU (Special Projects Management Unit). Baseline date: 2016.		
		8	Average		8	Average			
	Automobile	0.83	0.83	Automobile	0.77	0.77			
	Bus	0.87	0.87	Bus	0.81	0.81			
	Light truck	0.87	0.87	Light truck	0.81	0.81			
	Medium truck	0.89	0.89	Medium truck	0.84	0.84			
	Heavy truck	1.05	1.05	Heavy truck	1.00	1.00			
	Articulated truck	1.38	1.38	Articulated truck	1.31	1.31			
	Fleet average	0.86		Fleet average	0.80				

Outcome indicators	Accessibility index of paved roads in the Ceará state road system (km of paved roads per 1,000 km² of area)		Means of verification/Comments
	Baseline	Target (2017)	
BR-L1326			
Density of paved state roads per 1,000 km² of area in the State of Ceará	6,607.94 km/148,825.6 km² /1,000 = 44.4 km/km²	(6,607.94 km + 410.88 km)/148,825.6 km² / 1,000 = 47.16 km/km²	DER/CE - PMU (Special Projects Management Unit). Baseline date: Year 2012. Km paved: http://portal.der.ce.gov.br/ Area: http://www.ceara.gov.br/index.php/ceara-em-numeros
BR-L1363			
Idem	44.4 km/km²	(7,018.82 km + 191.7 km)/148,825.6 km² / 1,000 = 48.45 km/km²	Idem

Outcome Indicators	Annual average daily traffic (AADT) on segments targeted by the program (vehicles/day)		Means of verification/Comments
	Baseline	Target (2017)	
BR-L1326			
AADT (vehicles/day)	1. Salitre–Border CE/PE: 283 (2013) 2. Massapê–Moraujo: 93 (2013) 3. Groaíras–Cariré: 119 (2013) 4. Palhano– Jct CE-123 (Itaiçaba): 77 (2013) 5. Mombaça–Acopiara: 1,089 (2013) 6. Juazeiro do Norte–Caririaçu: 943 (2013) 7. Acopiara–Catarina: 848 (2015)	1. Salitre–Border CE/PE: 370 2. Massapê–Moraujo: 396 3. Groaíras–Cariré: 442 4. Palhano–Jct CE-123 (Itaiçaba): 685 5. Mombaça–Acopiara: 1,255 6. Juazeiro do Norte–Caririaçu: 1,138 7. Acopiara-Catarina: 920	Traffic study. DER/CE - PMU
BR-L1363			
Idem	8. Jct BR-222–CE-366 (Varjota): 1,503 (2016)	8. Jct BR-222–Jct CE-366 (Varjota): 1,562	Idem

Outcome Indicators	International roughness index (IRI) on segments targeted by the program (m/km)		Means of verification/Comments
	Baseline	Target (2017)	
BR-L1326			
IRI (m/km)	1. Salitre–Border CE/PE: 12 (2013) 2. Massapê–Moraujo: 12 (2013) 3. Groaíras–Cariré: 12 (2013) 4. Palhano–Jct CE-123 (Itaiçaba): 12 (2013) 5. Mombaça–Acopiara: 7 (2013) 6. Juazeiro do Norte–Caririaçu: 943 (2013) 7. Acopiara–Catarina: 7 (2015) Results-based maintenance CE-060: 3.60 (2012)	1. Salitre–Border CE/PE: 3.28 2. Massapê–Moraujo: 3.37 3. Groaíras–Cariré: 3.36 4. Palhano–Jct CE-123 (Itaiçaba): 3.42 5. Mombaça–Acopiara: 2.82 6. Juazeiro do Norte–Caririaçu: 2.79 7. Acopiara–Catarina: 2.59 Results-based maintenance CE-060: 3.40	Specialized equipment (road roughness meter). DER/CE - PMU
BR-L1363			
Idem	8. Jct BR-222–CE-366 (Variota): 7 (2016)	8. Jct BR-222–Jct CE-366 (Variota): 2.60	Idem

Outcome Indicators	Number of traffic accident victims (fatalities/injuries) per 10,000 vehicles on the Ceará paved state road system (number of road accident victims/10,000 vehicles)		Means of verification/Comments
	Baseline	Target (2017)	
BR-L1326 / BR-L1363			
Number of accident victims reduced on the Ceará state road system (number of victims/10,000 vehicles)	<ul style="list-style-type: none">Deaths: 10.4 (2011/2010 moving average, measured in 2012)Injuries: 70.2 (2011/2010 moving average, measured in 2012)	<ul style="list-style-type: none">Deaths: 8.22 (2017/2016 moving average, measured in 2018)Injuries: 49.29 (2017/2016 moving average, measured in 2018)	DER/CE - PMU Source: DETRAN http://www.detran.ce.gov.br/site/arquivos/estatisticas/

Program expected outputs								
Component 1: Engineering and administration	(i) Studies and designs; (ii) project administration; (iii) project audit, monitoring, and evaluation.							
Output indicators	Base-line (2012)	2013	2014	2015	2016	2017	Cumulative target	Means of verification/Comments
BR-L1326								
Number of PMU support contracts for project management formalized.	1	0	0	0	0	0	1	Contract signed and service order issued (DER/CE – PMU)
Number of feasibility studies and engineering designs with environmental permit available and the IDB's no objection for the call for bids under the project.	Pave: 10 Rehab.: 3	Pave: 5 Rehab.: 4	Pave: 0 Rehab.: 6	Pave: 0 Rehab.: 0	Pave: 0 Rehab.: 2	Pave: 0 Rehab.: 0	Pave: 15 Rehab.: 15	Provisional acceptance certificate for consulting services (DER/CE – PMU)
Number of financial audit reports with the IDB's no objection.	0	1	1	1	1	1	5	Contractual clause fulfilled (DER/CE - PMU)
Number of project evaluation reports approved.	0	0	1	0	0	0	2	Midterm and final evaluation reports approved (DER/CE - PMU / IDB)
BR-L1363								
Number of PMU support contracts for project management formalized.	0	0	0	0	0	0	0	Contract signed and service order issued (DER/CE – PMU)
Number of feasibility studies and engineering designs with environmental permit available and the IDB's no objection for the call for bids under the project.	Pave: 0 Rehab: 1	Pave: 0 Rehab: 0	Pave: 4 Rehab: 0	Pave: 0 Rehab: 0	Pave: 0 Rehab: 11	Pave: 0 Rehab: 0	Pave: 4 Rehab: 12	Provisional acceptance certificate for consulting services (DER/CE – PMU)
Number of financial audit reports with the IDB's no objection.	0	0	1	1	1	1	4	Contractual clause fulfilled (DER/CE – PMU)
Number of project evaluation reports approved.	0	0	1	0	0	0	2	Midterm and final evaluation reports approved (DER/CE - PMU / IDB)

Component 2: Civil works		(i) Upgrading and paving works; (ii) rehabilitation works; and (iii) standards-based maintenance.						
Output indicators	Base-line (2012)	2013	2014	2015	2016	2017	Cumulative target	Means of verification/Comments
BR-L1326								
Km of the state road network upgraded and paved by the project.	0	158.3	252.7	0	0	0	411	Provisional acceptance certificate for works and respective environmental audit reports (DER/CE – PMU)
Km of the state road network rehabilitated by the project.	0	0	194.0	214.0	152.1	0	560.1	
Km of the state road network maintained by service levels under the project.	0	166.98	166.98	166.98	166.98	166.98	166.98	
Number of contracts formalized for technical supervision of works.	6	2	0	0	0	0	8	Contract signed and service order issued (DER/CE - PMU)
BR-L1363								
Km of the state road network upgraded and paved by the project.	0	0	0	191.6	0	0	191.6	Provisional acceptance certificate for works and respective environmental audit reports (DER/CE - PMU)
Km of the state road network rehabilitated by the project.	0	0	0	0	0	530.2	530.2	
Km of the state road network maintained by service levels under the project.	0	0	0	0	0	0	0	
Number of contracts formalized for technical supervision of works.	0	0	0	0	0	0	0	Contract signed and service order issued (DER/CE - PMU)

Component 3: Institution-strengthening		(i) Road Safety Action Plan; (ii) Transportation Logistics Master Plan.						
Output indicators	Baseline (2012)	2013	2014	2015	2016	2017	Cumulative target	Means of verification/Comments
BR-L1326								
Number of action plans to improve road safety on the state road system updated and implemented.	0	0	1	0	0	0	1	Provisional acceptance certificate for consulting services (DER/CE - PMU)
Number of transportation logistics master plans for the state of Ceará formulated and approved, including the development of information systems, the procurement of computer hardware, and training for DER/CE and SEINFRA staff.	0	0	0	1	0	0	1	Provisional acceptance certificate for consulting services (SEINFRA / DER/CE - PMU)

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Country: Brazil

Project name: BR-L1363, Roads Program for Integration and Logistics
Ceará IV-B

Executing agency: State of Ceará Roads Department (DER/CE)

Prepared by: Mónica Merlo and Carlos Lago (FMP/CBR)

I. EXECUTIVE SUMMARY

- 1.1 The fiduciary evaluation was based on the institutional capacity of the State of Ceará Roads Department (DER/CE), the risk analysis exercise, and meetings with key DER/CE staff. Account was also taken of the DER/CE's experience in implementing projects with the Bank. The DER/CE is currently concluding the third stage of the IDB-financed Roads Program and has a 20-year track record of working with the Bank (Ceará I: loans 587/OC-BR and 833/SF-BR; Ceará II: loan 1019/OC-BR; Ceará III: loan 2169/OC-BR). The country's financial management systems are adequate and reliable. In terms of country procurement systems, no country procurement modality is currently being used in loans financed by international lenders, since they do not incorporate all principles of international good practices reflected in the Bank's procurement policies and procedures.

II. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY

- 2.1 State Decree 30488 of 11 April 2011 establishes the organizational structure, disposition, and designations of DER/CE senior management, management, and oversight posts. The Program Management Unit (PMU), created in 2008, plans and implements the actions necessary for implementation of the Roads Program, currently under Ceará IV, and will continue with the actions of Ceará IV-B, supported by a specialized consulting firm.

III. FIDUCIARY RISK EVALUATION AND MITIGATION MEASURES

- 3.1 The evaluation of financial management using the Bank's assessment tool, the Institutional Capacity Assessment System (ICAS), indicates good performance of the executing agency's capacities and low risk. The specific fiduciary risks and corresponding mitigation measures are described in this Annex.
- 3.2 Considerations for the Special Provisions of the contracts:

- a. Program management will follow Bank policies for reporting, financial statements, and any other information required by the Bank.
- b. The exchange rate option will be determined during negotiation.
- c. The borrower will publish the procurement plan on the Bank's website or other system to be implemented by the Bank, and will update it at least every six months or as required by the Bank to reflect the actual needs for project execution and the progress achieved. It will be posted on the DER/CE website (www.der.ce.gov.br) and on the Bank's website (www.iadb.org) in the procurement section.

IV. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION

- 4.1 The fiduciary agreements and requirements for procurement establish the provisions applicable for the implementation of all project procurements.

A. Procurement execution

- 4.2 Procurements will be processed through the PMU, which plans to set up a special bidding committee for the project. Procurements for works, goods, and nonconsulting services will abide by the "Policies for the Procurement of Works and Goods Financed by the Inter-American Development Bank" (document GN-2349-9); and consultants will be selected and contracted in accordance with the "Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank" (document GN-2350-9).
- 4.3 **Procurements of works, goods, and nonconsulting services.** Contracts for works, goods, and nonconsulting services¹ generated under the project and subject to international competitive bidding (ICB) will be executed using the standard bidding documents (SBDs) issued by the Bank. Processes subject to national competitive bidding (NCB) will use country bidding documents agreed upon with (or satisfactory to) the Bank.
- 4.4 **Selection and contracting of consultants.** Contracts for consulting services generated under the project will be executed using the standard request for proposals (RFP) issued by the Bank.
- 4.5 **Selection of individual consultants.** Individual consultants will be selected on the basis of their qualifications to do the work, based on comparison of the qualifications of at least three candidates. When circumstances so require, notices may be published in the local or international press, to obtain résumés of qualified consultants.
- 4.6 **Retroactive financing and recognition of expenditures.** The Bank may retroactively finance up to US\$10 million (roughly 4% of the total amount) as a charge against the loan proceeds, and recognize up to US\$15 million (approximately 6% of the total amount) as a charge against the local counterpart,

¹ Under the Bank's procurement policies, nonconsulting services are treated as goods.

in eligible expenditures incurred by the borrower prior the loan approval date for consulting studies and preliminary work in relation to land purchases and works execution, provided that such expenditures met requirements substantially analogous to those established in the loan contract. Such expenditures must have been incurred on or after 27 April 2012, but in no case more than 18 months before the loan approval date, in accordance with the terms of the Bank policy on recognition of expenditures, retroactive financing, and advance procurement (document GN-2259-1).

- 4.7 **Direct contracting.** No direct contracting is envisaged.
- 4.8 **Procurement thresholds.** The threshold for use of ICB will be made available to the borrower or the executing agency, as the case may be, online at <http://www.iadb.org/procurement>. Below that threshold, the selection method will depend on the complexity and features of the procurement or contracting process, and will be indicated in the procurement plan approved by the Bank.
- 4.9 **Recurrent expenditures.** These comprise the operating and maintenance expenditures needed to implement the project during its useful life, including those relating to: utilities and communications, translations, office supplies, photocopies, mail, and other expenditures necessary for proper administration of the project, which are concentrated in the DER/CE. These expenditures will be financed out of the loan proceeds within the annual budget approved by the Bank, and will follow the DER/CE's administrative procedures, which will be reviewed by the Bank and accepted provided that they do not violate the fundamental principles of competition, efficiency, and economy.
- 4.10 Recurrent expenditures also include the costs of consultants engaged to assist during the useful life of the loan. However, operating costs do not include the remuneration of civil service employees.
- 4.11 **Domestic preference.** No margins of domestic preference will apply.

B. Initial procurement plan (PAI)

- 4.12 The proposal to date is attached. The version eventually agreed upon may be updated during project execution, according to circumstances ([required electronic link 2](#)).
- 4.13 **Procurement supervision.** All ICB, direct contracting, and consulting services selection with an estimated amount of more than US\$1 million will be subject to ex ante review. Considering the features of the project and the PMU's operational capacity, the rest of the processes will be subject to annual post review. The Bank may alter the form of review indicated in the procurement plan based on the annual audit reviews.
- 4.14 **Records and files.** Files will be kept at the offices of the PMU, under the appropriate security.

V. FINANCIAL MANAGEMENT

A. Programming and budget

- 5.1 The DER/CE will be responsible for program execution. The state government is now using the MAPP system for monitoring priority actions and projects to maintain budgetary control of all state activities, including those of the DER. The program's physical targets are monitored through the department's SIGDER management system, with monthly reports prepared by a small number of technical staff, which slows down the updating process.
- 5.2 Since 2012, the state government has been using an integrated results-based management system known as S2GPR, to control budgetary processes, financial reserves for procurements, pledges, contracting, expenditure recognition, payment authorizations, and accounting records and their adherence to the state's normal procedures, supported by country systems. For project execution, the DER/CE plans to hire a specialized firm to provide an integrated project management system. The project's accounting records by source of funds and account code, in accordance with the project cost category nomenclature, will be maintained by the S2GRP system. As part of the conditions precedent to eligibility for the Bank loan, the DER/CE will present the specific account codes to be used for program record-keeping, by cost category and source of funds, stated in U.S. dollars, as part of the administrative/financial accounting and internal control system to be used for project execution. As a special execution condition, no later than six months after contract signature, the borrower will present evidence of having engaged the program management support firm.

B. Disbursements and cash flow

- 5.3 Under the S2GPR system, each expenditure is recorded in the system and linked to budget line items. The respective payments are made through bank payment orders, with electronic transfers to the registered accounts of the contractors or vendors by the Finance Department, generated via this new system.
- 5.4 Loan disbursements will be paid into a specific account in the name of the project. The executing agency will provide specific bank details at the appropriate time. IDB disbursements will be made primarily by advances of funds, according to the project's cash flow projections for the following 120 days, and structured such that each remittance can be fully accounted for within 180 days after it is made. Requests for justification (accounting for payments) will be made in the SIGDER system with the specialized firm's involvement.
- 5.5 **External control and reports.** External audit functions are performed by the Tribunal de Contas do Estado do Ceará [State Audit Court of Ceará] (TCE/CE), and include sample reviews of state government procurement contracts, including those of the program but not covering the project in full. The project's financial statements will be audited by a firm of independent auditors acceptable to the Bank (eligibility level I) or by the TCE/CE. The audited financial statements as of

31 December of each year will be delivered to the Bank annually, within 120 days after the close of each calendar year, starting in the year in which loan disbursements begin, and will include interim visits, as well as a review of disbursement and procurement processes.

C. Financial supervision plan

- 5.6 The proposal to date is attached. The version eventually agreed upon may be updated during project execution, according to circumstances. (<http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=37158144>)

D. Execution arrangements

- 5.7 The organizational arrangements for project execution (organizational mechanism) will be identical to the one used in the previous program (Ceará III). The DER will execute the program through the PMU of the Office of the Superintendent of DER/CE.

E. Other financial management agreements and requirements

- 5.8 The executing agency will engage a specialized firm to support project management. An institutional capacity assessment was done using the ICAS tool, which produced the following results: (i) development level: satisfactory; and (ii) risk level: low. The DER has sufficient capacity to execute the program, but will need strengthening to develop: (i) tools for the management, recording, and control of program activities and resources, and for preparation of reports; and (ii) a training plan for program coordination, management, and execution. As a special execution condition, within six months after contract signature, the borrower will provide evidence that the program management support system and the specialized training plan for integrated project management have been implemented. A procurement training event was held during program preparation. This training will be repeated and expanded to include the Bank's operating policies and procedures during the launch workshop.