Document of
The World Bank

**FOR OFFICIAL USE ONLY**

Report No: PAD1089

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$200 MILLION

TO THE

STATE OF BAHIA

WITH THE GUARANTEE OF THE FEDERATIVE REPUBLIC OF BRAZIL

FOR A

# BAHIA ROAD REHABILITATION AND MAINTENANCE PROJECT – 2ND PHASE

January 7, 2016

Transport and ICT Global Practice
Latin America and the Caribbean Region

## CURRENCY EQUIVALENTS

(Exchange Rate Effective December 3, 2015)

| | | |
|---|---|---|
| Currency Unit | = | Brazilian Real |
| BRL3.85 | = | US$1.00 |
| BRL 1.00 | = | US$0.26 |

## FISCAL YEAR

January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| AGERBA | State Regulatory Agency |
| CEL | SEINFRA/SIT's Executive Bidding commission (*Coordenação Executiva de Licitação)* |
| COCON | SEINFRA/SIT's Accounting Department (*Coordenação de Contabilidade)* |
| COFIN | SEINFRA/SIT's Finance Department (*Coordenação de Cont. Financeiro)* |
| CPS | Country Partnership Strategy |
| CREMA | Performance Based contracts for rehabilitation and road maintenance (*Contratos de reabilitação e manutenção*) |
| DA | Designated Account |
| DERBA | Ex-Bahia State Agengy for Transport Infrastructure (*Departamento de Infraestrutura de Transportes da Bahia*), extinct on Feb. 28, 2015 |
| DETRAN | State Transport Department (*Departamento de Trânsito)* |
| EIB | European Investment Bank |
| EMP | Environmental Management Plan |
| ESIA | Environmental and Social Impact Assessment |
| ESMF | Environmental and Social Management Framework |
| FA | Framework Agreement |
| FIOL | East-West Railway (*Ferrovia de Interligação Oeste – Leste)* |
| FIPLAN | State Budgetary and Accounting System |
| FM | Financial Management |
| FUNAI | Brazil's National Indian Foundation |
| GDP | Gross Domestic Product |
| GERAM | SEINFRA's environmental department (*Gerência Ambiental*) |
| GHG | greenhouse gas |
| GIS | geographic information system |
| HDM | Highway Development and Management Model |
| IBRD | International Bank for Reconstruction and Development |
| ICB | International Competitive Bidding |
| IDA | International Development Association |
| IEG | Independent Evaluation Group |
| IFC | International Finance Corporation |

| | |
|---|---|
| IFR | Interim Financial Report |
| IPHAN | National Institute for Protection of Historical and Archeological Sites |
| IPPF | Indigenous Peoples Planning Framework |
| iRAP | International Road Assessment Program |
| IRI | International Roughness Index |
| IRR | Internal Rate of Return |
| LDO | Budget Guideline Law (*Lei de Diretrizes Orçamentárias*) |
| LOA | Annual Budget Law (*Lei Orçamentária Anual)* |
| MCASP | Accounting Manual Applicable to the Public Sector |
| NBC | Brazilian National Accounting Rules |
| NBCASP | Brazilian National Accounting Standards |
| NCB | National Competitive Bidding |
| NGO | Non-governmental organization |
| NPV | Net Present Value |
| PBC | Performance-Based Contract |
| PDO | Project Development Objective |
| PGE | State General Attorney |
| POM | Project Operation Manual |
| PPATP | Territorial and Participatory Multiyear development plan (*Plano Pluri-Annual Territorial Participativo )* |
| PPP | Public-Private Partnership |
| RED | Roads Economic Decision Model |
| RFP | Fequest for Proposals |
| RPF | Resettlement Policy Framework |
| SEFAZ | Bahia State Secretariat of Finance, (*Secretaria da Fazenda)* |
| SEINFRA | Bahia State Secretariat of Infrastructure (*Secretaria de Infraestrutura*) |
| SEINFRA/SIT | SEINFRA's department for transport infrastructure (*Superintendencia de Infraestrutura de Transportes*), created on March 1st 2015 |
| SOE | Statement of Expenditures |
| SUPLOG | SEINFRA's department for Planning, Logistics, Transport and Intermodalism (*Superintendencia de Planejamento, Logística, Transporte e Intermodalismo*) |
| UCP | Project Coordination Unit (*Unidade de Coordenação de Projeto*) |
| WB | World Bank |

| | |
|---|---|
| Vice President: | Jorge Familiar |
| Country Director: | Martin Raiser |
| Senior Global Practice Director: | Pierre Guislain |
| Practice Manager: | Aurelio Menendez |
| Task Team Leader: | Gregoire F. Gauthier |

**BRAZIL**
**Bahia Road Rehabilitation and Maintenance Project – 2nd Phase**

**TABLE OF CONTENTS**

**PAD DATA SHEET**

*Brazil*

*Bahia Road Rehabilitation and Maintenance Project – 2nd Phase (P147272)*

**PROJECT APPRAISAL DOCUMENT**

*LATIN AMERICA AND CARIBBEAN*

*GTIDR*

Report No.: PAD1089

| **Basic Information** | | |
|---|---|---|
| Project ID | EA Category | Team Leader |
| P147272 | B - Partial Assessment | Gregoire Francois Gauthier |
| Lending Instrument | Fragile and/or Capacity Constraints [ ] | |
| Investment Project Financing | Financial Intermediaries [ ] | |
| | Series of Projects [ ] | |
| Project Implementation Start Date | Project Implementation End Date | |
| 1-Jul-2016 | 30-June-2022 | |
| Expected Effectiveness Date | Expected Closing Date | |
| 01-June-2016 | 30-June-2022 | |
| Joint IFC | | |
| No | | |

| Practice Manager | Senior Director | Country Director | Regional Vice President |
|---|---|---|---|
| Aurelio Menendez | Pierre Guislain | Martin Raiser | Jorge Familiar |

| | | | |
|---|---|---|---|
| Borrower: State of Bahia | | | |
| Responsible Agency: Infrastructure Secretariat of State of Bahia | | | |
| Contact: | Marcus Cavalcanti | Title: | Infrastructure Secretary |
| Telephone No.: | 55-71-3115-2106 | Email: | gasec@seinfra.ba.gov.br |

| **Project Financing Data(in USD Million)** | | | | | |
|---|---|---|---|---|---|
| [ X ] | Loan | [ ] | IDA Grant | [ ] | Guarantee |
| [ ] | Credit | [ ] | Grant | [ ] | Other |

| | | | |
|---|---|---|---|
| Total Project Cost: | 300.00 | Total Bank Financing: | 200.00 |
| Financing Gap: | 0.00 | | |

| **Financing Source** | **Amount** |
|---|---|

| | |
|---|---|
| Borrower | 100.00 |
| International Bank for Reconstruction and Development | 200.00 |
| Total | 300.00 |

**Expected Disbursements (in USD Million)**

| Fiscal Year | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | | |
|---|---|---|---|---|---|---|---|---|---|
| Annual | 0 | 5 | 20 | 40 | 80 | 45 | 10 | | |
| Cumulative | 0 | 5 | 25 | 65 | 145 | 190 | 200 | | |

## Institutional Data

**Practice Area**

Transport & TI

**Cross Cutting Topics**

[ ] Climate Change
[ ] Fragile, Conflict & Violence
[ ] Gender
[ ] Jobs
[ X ] Public Private Partnership

**Sectors / Climate Change**

Sector (Maximum 5 and total % must equal 100)

| Major Sector | Sector | % | Adaptation Co-benefits % | Mitigation Co-benefits % |
|---|---|---|---|---|
| Transportation | Rural and Inter-Urban Roads and Highways | 80 | | |
| Transportation | General transportation sector | 20 | | |
| Total | | 100 | | |

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

**Themes**

Theme (Maximum 5 and total % must equal 100)

| Major theme | Theme | % |
|---|---|---|
| Trade and integration | Export development and competitiveness | 60 |
| Trade and integration | Regional integration | 20 |
| Rural development | Rural services and infrastructure | 20 |
| Total | | 100 |

| **Proposed Development Objective(s)** | |
|---|---|
| The Project Development Objective is to enhance, in a sustainable fashion, road accessibility and safety in selected regions of the State of Bahia's territory. | |
| **Components** | |
| **Component Name** | **Cost (USD Millions)** |
| Component 1: Institutional Strengthening | 18.00 |
| Component 2: Performance-based State Highway Rehabilitation and Maintenance | 199.50 |
| Component 3: Feeder Road Improvement | 50.00 |
| Component 4: Road Safety | 15.00 |
| Component 5: Project Management | 4.00 |
| Unallocated | 13.00 |
| Front End Fee | 0.50 |

| **Systematic Operation Risk-Rating Tool (SORT)** | |
|---|---|
| **Risk Category** | **Rating** |
| 1. Political and Governance | Low |
| 2. Macroeconomic | Moderate |
| 3. Sector Strategies and Policies | Moderate |
| 4. Technical Design of Project or Program | Moderate |
| 5. Institutional Capacity for Implementation and Sustainability | Moderate |
| 6. Fiduciary | Moderate |
| 7. Environment and Social | Low |
| 8. Stakeholders | Low |
| **OVERALL** | Moderate |

| **Compliance** | | |
|---|---|---|
| **Policy** | | |
| Does the project depart from the CAS in content or in other significant respects? | Yes [ ] | No [ X ] |
| Does the project require any waivers of Bank policies? | Yes [ ] | No [ X ] |
| Have these been approved by Bank management? | Yes [ ] | No [ X ] |
| Is approval for any policy waiver sought from the Board? | Yes [ ] | No [ X ] |
| Does the project meet the Regional criteria for readiness for implementation? | Yes [X] | No [ ] |

| **Safeguard Policies Triggered by the Project** | **Yes** | **No** |
|---|---|---|
| Environmental Assessment OP/BP 4.01 | X | |

| | | |
|---|---|---|
| Natural Habitats OP/BP 4.04 | X | |
| Forests OP/BP 4.36 | | X |
| Pest Management OP 4.09 | X | |
| Physical Cultural Resources OP/BP 4.11 | X | |
| Indigenous Peoples OP/BP 4.10 | X | |
| Involuntary Resettlement OP/BP 4.12 | X | |
| Safety of Dams OP/BP 4.37 | | X |
| Projects on International Waterways OP/BP 7.50 | | X |
| Projects in Disputed Areas OP/BP 7.60 | | X |

| **Gender Tag** | |
|---|---|
| Gender analysis and/or consultations on gender-related issues | Yes |
| Specific actions to address the distinct needs of women and girls, or men and boys, or positive impacts on gender gaps | No |
| Mechanisms to facilitate monitoring and/or evaluation of gender impacts | Yes |

**Legal Covenants**

| **Name** | **Recurrent** | **Due Date** | **Frequency** |
|---|---|---|---|
| Institutional Arrangements, Schedule 2, Section I-A. (1) | **X** | | |

**Description of Covenants**

The Borrower shall maintain, throughout the implementation of the Project, a Project coordination unit within SEINFRA (UCP), headed by a Project coordinator, with a structure, functions and responsibilities acceptable to the Bank, including, *inter alia*: (i) the responsibility of the overall implementation and coordination of the Project, including the fiduciary activities; and (ii) the provision of technical cooperation and support to each Participating Entity during the carrying out of the activities under the Project.

| **Name** | **Recurrent** | **Due Date** | **Frequency** |
|---|---|---|---|
| Institutional Arrangements, Schedule 2, Section I-A. (1) | **X** | | |

No later than three (3) months from the Effective Date, the Borrower shall have SIT fully staffed with personnel with experience and qualifications satisfactory to the Bank, as described in Operational Manual.

| **Name** | **Recurrent** | **Due Date** | **Frequency** |
|---|---|---|---|
| Institutional Arrangements, Schedule 2, Section I-B. (2) | **X** | | |

No later than six (6) months from the Effective Date, the Borrower, through SEINFRA, shall enter into a cooperation agreement (the Cooperation Agreement), satisfactory to the Bank, for the implementation of Part 4 of the Project, with DETRAN, the Borrower's Public Security Secretariat and the Borrower's Health Secretariat, setting forth the manner in which said entities will participate in the implementation of the respective Part of the Project.

| Name | Recurrent | Due Date | Frequency |
|---|---|---|---|
| Institutional Arrangements, Schedule 2, Section I-E. (2) | X | | |

Prior to the approval by the Bank of any given Municipal Road Subproject under Part 3 of the Project, the Borrower, through SEINFRA, shall furnish to the Bank, an application containing the following information and documentation with respect to such Municipal Road Subproject: (a) the priority list of the municipal road sections to be included in such Municipal Road Subproject, including the minutes of the public discussions held for its preparation, signed by the participants or their representatives; (b) a copy of the Municipal Technical Cooperation Agreement; and (c) such other information as the Bank shall reasonably request.

| Name | Recurrent | Due Date | Frequency |
|---|---|---|---|
| Institutional Arrangements, Schedule 2, Section I-F. (4) | X | | |

The Borrower shall ensure that the contractors for civil works under the Project include the obligation of the relevant contractor to comply with and implement the relevant ESMF, RPF, environmental management plan or land acquisition plan, as applicable to such civil works commissioned or carried out pursuant to said contract.

**Conditions**

| Source Of Fund | Name | Type |
|---|---|---|
| | | |

**Description of Condition**

## Team Composition

**Bank Staff**

| Name | Title | Specialization | Unit |
|---|---|---|---|
| Gregoire Francois Gauthier | Sr. Transport. Engr. | Team Lead | GTIDR |
| Eric R. Lancelot | Sr. Transport. Engr. | Sr. Transport. Engr. | GTIDR |
| Satoshi Ogita | Transport Specialist | Transport Specialist | GTIDR |
| Borja Castro Lancharro | Operations Analyst | Operations Analyst | GTIDR |
| Steven Farji Weiss | E T Consultant | E T Consultant | GTIDR |
| Hanayo Taguchi | Program Assistant | Program Assistant | GTIDR |
| Catarina Isabel Portelo | Senior Counsel | Legal | LEGLE |

| | | | |
|---|---|---|---|
| Marcio Cerqueira Batitucci | E T Consultant | E T Consultant | GENDR |
| Jason Jacques Paiement | Social Development Specialist | Social Development Specialist | GSURR |
| Frederico Rabello | Senior Procurement Specialist | Senior Procurement Specialist | GGODR |
| Eduardo Franca De Souza | Financial Management Specialist | Financial Management Specialist | GGODR |
| Tatiana de Abreu | Finance Officer | Disbursement | WFALN |

**Non-Bank Staff**

| Name | Title | City |
|---|---|---|
| Soames Job | Road Safety Consultant | Australia |
| Marcilio Neves | Road Engineer | Belo Horizonte |
| Fernando Silva | Sr. Engineer | Goiania |

**Locations**

| Country | First Administrative Division | Location | Planned | Actual | Comments |
|---|---|---|---|---|---|
| Brazil | State of Bahia | State of Bahia | | X | |

# I. STRATEGIC CONTEXT

## A. Country and State Context

1. Over the past two decades, Brazil has made significant advances in economic management, poverty reduction, and social indicators. Growth in employment and labor income, as well as in the implementation of targeted social assistance programs have contributed to a reduction in the share of Brazilians living below the extreme poverty line of R$70 a month from 9.9 percent in 2001 to 4.0 percent in 2013, as well as a reduction in inequality as reflected in a drop in the Gini coefficient from 0.59 to 0.53 over the same period.

2. Bahia is the largest state in the Brazilian northeast. The state's Gross Domestic Product (GDP) is the largest among the nine states in the northeastern region and the sixth among the 27 states in Brazil. In 2013, it reached US$95 billion, representing 28 percent of the regional GDP and 3.8 percent of the national GDP. Bahia also has the largest population in the Northeast and the fourth in the country. Its population is estimated to have reached 15.1 million inhabitants in 2014, corresponding to 26.9 percent of the northeastern population and 7.5 percent of Brazil's population.

3. In the past decade, Bahia has improved its economic performance and achieved a remarkable track record in reducing poverty and boosting shared prosperity. Between 2002 and 2012, average household per capita income in Bahia grew at an annual rate of 4.8 percent, well above the national average of 3.3 percent. As a result, moderate and extreme poverty declined sharply between 2002 and 2013, dropping from 44.3 percent to 16.5 percent, and from 17.2 percent to 6.9 percent, respectively. Moreover, the income of the bottom 40 percent increased rapidly at 6.9 percent annually (1.9 percentage points higher than the growth rate of the average income), increasing their share in total income from 8 to 11 percent in 2012. Income inequality fell as well, with the Gini coefficient falling from 0.6 to 0.55 during this period.

4. Nonetheless, Bahia still lags behind national averages, and it continues to be the state with the largest absolute number of poor and extreme poor in the country. In 2013, Bahia registered a per capita GDP of US$6,300, which was well below the national per capita GDP of US$12,270. Indeed, Bahia's per capita GDP ranks twenty-second in the country. Bahia's moderate poverty rate is almost twice the national rate (8.9 percent) and its extreme poverty rate is 73 percent higher than the national rate (4.0 percent). Large population and relatively higher poverty rates make Bahia the state with the largest population below the moderate poverty line in the country at 2.4 million in 2013.[1]

## B. Sectoral and Institutional Context

5. **Road transport in the State economy.** Road infrastructure is critical to Bahia's economy. Trucks move more than 90 percent of all goods in Bahia, and the agriculture and industry sectors represented in 2013 about 35 percent of Bahia's GDP and a third of its jobs. Overreliance on road transport entails high logistic costs, jeopardizing the state's economic productivity, and results in the generation of important negative externalities, such as local and

[1] Calculations by GPVDR, World Bank, using PNAD data from Instituto Brasileiro de Geografia e Estatistica (IBGE)

global air pollution (in 2013, transport was the major consumer of energy in Bahia, representing 35 percent of the total), vehicle crashes, road fatalities, and congestion in cities. Improving road transport in a safer, more sustainable, and better integrated fashion from local areas to markets and gateways is key to the state's development agenda. It is also part of the upcoming *Plano Pluri-Anual* 2016-2019, which is focused on economic and social development and on supporting underserved poorer areas.

6. **State highway network.** Bahia's state paved highway network is about 11,000 km. The network condition has significantly improved over the past six years, with the rehabilitation of about 3,700 km (about a third of the total) between 2008 and 2013. This resulted partly from a substantial funding increase to the road sector (which almost doubled from 2008 to 2013, reaching about US$225 million equivalent in 2013), and partly due to the successful outcome of the Bank-supported *State Integrated Highway Management Project* (P095460), (closed in September 2013), which introduced performance-based road management. Nevertheless, only 38 percent of Bahia's State paved network is in good condition[2] today, which actually matches the country's average, but is well below that of the best performing states (São Paulo, 78 percent; Rio de Janeiro, 61 percent).

7. To address this issue, Bahia has identified an ambitious investment program for highway rehabilitation and maintenance. The "Bahia Highway Program" will cover about 4,200 km of the main State network, with an investment of approximately US$520 million over the next five to six years. The objective of this program is to bring the State road infrastructure up to a condition of good repair; the program will rely heavily on road performance-based management as the new model for road asset management. The proposed Project will build on the results achieved under the previous Bank project, to support the second phase of the State Highway program.

8. **Rural roads network.** Bahia includes about 120,000 km of rural municipal roads that feed the state's main highway network. This capillary network serves the State's remote areas, and links small and poorer communities to markets and social services. These rural roads are key for farmers to get their production to markets and consumers. Feeder roads are usually low volume roads, but some, for instance in western Bahia, bear heavy truck traffic, considerably damaging the road surface during the harvest season of crops like soybean and cotton. Typically, these are unsealed roads with reduced geometric conditions and with poor or no drainage structures, and they receive virtually no maintenance.

9. **Road safety.** The human and economic toll on roads is a critical issue in Bahia. From 2007 to 2013, accidents and fatalities have increased by 45 percent and 21 percent respectively just on State roads. It is estimated that about 3,500 people died on Bahia's roads last year, and this number is certainly an underestimation because traffic-related deaths in urban areas are not recorded in a consistent manner. Bahia's fatality rate is 24.8 per 100,000 people, which is above the Brazil average (22.9) and well above better-performing countries in the region (for example, Chile, 12.3).

[2] *Highway Condition Survey* – Confederação Nacional do Transporte, 2014

### C. Higher Level Objectives to which the Project Contributes

10. The proposed Project objectives are fully in line with the Brazil Country Partnership Strategy (CPS) 2012-2015.[3] Specifically, the Project would support the CPS's third strategic objective: *Promote regional economic development through strategic investments and policies*. By supporting more efficient and safer transport, the Project would contribute to strengthening the State's role in Brazil's agribusiness industry. In particular, the rehabilitation of highway corridors would contribute to reducing transport costs for key primary goods produced in the state's landlocked regions and beyond in the neighboring states of Tocantins, Píaui, and Góias. Moreover, by stimulating investment and facilitating inter-regional trade, the Project would contribute to regional development, alleviating the existing economic isolation and potentially enhancing productivity levels for industry and agriculture.

## II. PROJECT DEVELOPMENT OBJECTIVES

### A. PDO

11. The Project Development Objective (PDO) is to enhance, in a sustainable fashion, road accessibility and safety in selected regions of the State of Bahia's territory.

### B. Project Beneficiaries

12. Direct beneficiaries from the highway rehabilitation components (Components 2 and 4) are local road users and international freight truckers. Project highways have an annual average daily traffic ranging from 900 to 4,000 vehicles. It is estimated that, based on average trip distances, about 60,000 people would benefit daily from the proposed highway improvements.

13. Project beneficiaries from rural road improvement (Component 3) include the 62 targeted municipalities which cover about 12 percent of the State area and include about 1.1 million people (7.5 percent of the State population). Municipalities are vast, and rural road improvement would address only a fraction of municipal roads. It is estimated that about 250,000 people would benefit directly from the Project. Most of the beneficiaries belong to the poorest fringe of the population; these municipalities being substantially poorer than the Bahia average, excluding Salvador. The Project would enhance the effects of synergies with the areas of focus of the *Bahia Sustainable Rural Development Project* (P147157), which is expected to benefit approximately 100,000 family farmers, informal economy entrepreneurs, land reform settlers, and indigenous and *quilombola*[4] communities.

[3] The World Bank Group's Country Partnership Strategy (2012-2015), Report #63731-BR, discussed by the Executive Directors on November 1st, 2011.

[4] *Quilombolas* are descendants of Afro-Brazilian slaves who escaped from slave plantations and who have historically suffered legal, social, and economic discrimination, and thus continue to exhibit higher poverty and lower human development indicators.

### C. PDO Level Results Indicators

14. The key results indicators are: (see Results Framework in Annex 1)

a. Percentage of the State paved road network under performance-based rehabilitation and maintenance contracts: performance-based road management would contribute to the sustainability of the road sector in Bahia.

b. Share of rural population with access to an all-season road: this indicator would capture the improvement of accessibility in targeted rural areas (62 municipalities).

c. Reduction in fatalities and serious injuries on selected road safety corridors.

## III. PROJECT DESCRIPTION

### A. Project Components

15. The Project is a US$300 million operation financed by a US$200 million International Bank for Reconstruction and Development (IBRD) loan and US$100 million of counterpart funds. It includes five components (see Annex 2 for detailed descriptions of components).

**Component 1 – Institutional Strengthening (US$18.0 million)**

16. This component supports the sustainability strand of the PDO. It includes five subcomponents, described below, to improve sustainability aspects.

17. *Subcomponent 1.1: New options for road financing.* This subcomponent would carry out studies on: (i) setting-up a self-standing road maintenance fund; (ii) exploring possibilities for private sector financing of transport infrastructure; and (iii) exploring opportunities of land-value capture stemming from the valorization of transport infrastructure public right-of-way.

18. *Subcomponent 1.2: Road Asset Management.* This subcomponent would include: (i) operationalizing the Bahia State Secretariat of Infrastructure's Department for Transport Infrastructure (SEINFRA/SIT) Pavement Management System, including conducting surveys of the pavement condition and traffic of Bahia's highways; (ii) designing and building automatic traffic counting stations; (iii) designing and operationalizing a state-wide automatic weighing system for heavy vehicles; (iv) implanting a state-wide kilometric mark-points system, for more precise location of traffic crashes and other events; (v) geo-referencing Bahia's right-of-way asset; and (vi) setting up a database of Bahia's geological conditions and of potential quarries for road construction and rehabilitation.

19. *Subcomponent 1.3: Road administration efficiency*. This subcomponent would provide support for the setting-up and operationalization of SEINFRA/SIT, including: (i) defining its mission, monitoring framework, processes, and required resources; (ii) providing training and capacity building for SEINFRA/SIT technical and administrative staff; and (iii) supporting Project implementation in specific areas, specifically on road safety, socio-environmental management, and engineering.

20. *Subcomponent 1.4: Logistics planning.* This subcomponent would provide support for carrying out studies and surveys to: (i) update Bahia's transport and logistics master plan; (ii) promote railway transport in Bahia; (iii) identify maritime port development opportunities in

Bahia; (iv) analyze the Borrower's waterway development; and (v) plan urban logistics and mobility in the Itabuna-Ilheus conurbation.

21. *Subcomponent 1.5: Transport investment impact assessment.* This subcomponent would carry out surveys and studies to assess the impact of transport infrastructure investment in Bahia, including: (i) establishing a tool to inform the decision-making process for transport infrastructure investment; (ii) setting up an appraisal model aiming at quantifying the wider impact of transport investments and policies in Bahia; (iii) defining the methodology and undertaking the impact evaluation of local roads improvement on rural communities focused on the rural areas addressed through Component 3 of the Project; and (iv) carrying out yearly road-user surveys to obtain citizen feedback on the condition and services of Borrower's highways.

**Component 2 – Performance-based State Highway Rehabilitation and Maintenance (US$199.5 million)**

22. This component supports the sustainability and road safety dimensions of the PDO.

23. *Subcomponent 2.1:* This subcomponent includes rehabilitation and maintenance work through performance-based contracts for rehabilitation and road maintenance (CREMA) on about 1,685 kilometers of identified sections of Bahia's paved highways, including road rehabilitation and maintenance.

24. *Subcomponent 2.2:* This subcomponent includes rehabilitation and maintenance works through CREMA-PPP (Public-Private Partnership) or CREMA contracts on about 685 km of identified sections of the Borrower's paved highways, including, road rehabilitation and maintenance.

25. Five-year CREMA contracts typically include: (i) a six-month initial road recuperation; (ii) a two-year period for pavement, drainage, and road equipment rehabilitation; and (iii) a two- to three-year routine maintenance period. Spot infrastructure improvement for road safety would be streamlined in the CREMA contracts. The "CREMA-PPP" contract (s) would have a ten- to twelve-year term and would focus on BA-052, BA-160 and BA-432 State highways. It would include similar types of works and services as are included in CREMA contracts. Subcomponent 2.2 would be fully financed out of counterpart financing. The State of Bahia has made an important commitment to this new kind of contractual instrument, a first in Brazil, as a hybrid between CREMA and concession contracts. The primary implementation risks in this component stem from the novelty of the "CREMA-PPP". The Infrastructure Secretariat has contracted with the International Finance Corporation (IFC) to help in structuring the contract and in defining the detailed specifications.

**Component 3 – Feeder Road Improvement (US$50.0 million)**

26. This component supports the accessibility dimension of the PDO. It would provide support to improve road accessibility in Bahia through the carrying out of works to eliminate about 900 critical spots on selected municipal rural roads in 62 Selected Municipalities (the Municipal Road Subprojects), including, among other things: (i) improving the drainage of the platform, including the replacement of existing unsafe wood bridges with concrete standardized bridges; (ii) constructing and/or reconstructing culverts and longitudinal drainage; and (iii) constructing fords and eliminating quagmires.

27. This component complements the interventions on Bahia's main highway network. Typically under municipal jurisdictions, rural roads carry low traffic but play a key role in rural

mobility, particularly for small farmers. Removing critical points would enable selected roads to be all-season roads. Roads would be identified through a citizen engagement process at municipal level in the following intermunicipal consortia: *Consórcio Portal do Sertão, Consórcio do Sisal, Consórcio do Vale de Paramirim,* and *Consórcio da Bacia do Jacuipe.*

**Component 4 – Road Safety (US$15.0 million)**

28. This component supports the road safety dimension of the PDO, through institutional strengthening and road safety corridors.

29. *Subcomponent 4.1: Institutional strengthening.* This subcomponent would provide support to improve road safety in Bahia, including, among others: (i) defining Bahia's road safety strategy; (ii) providing training and capacity building to SEINFRA/SIT on road safety; (iii) creating a traffic accident database for Bahia; and (iv) supporting the creation of a Lead Committee for Road Safety in the State.

30. *Subcomponent 4.2: Road safety corridors*. This subcomponent would provide support for establishing two Road Safety Corridors, and for carrying out the following interventions on those corridors: (i) carrying out small-scale work and providing materials for road safety infrastructure improvement; (ii) providing and maintaining equipment for traffic law enforcement, including non-lethal equipment for crash reporting, and for speed and drink-driving enforcement; (iii) carrying out communication campaigns for road safety; and (iv) providing training of road police officers for monitoring, reporting, and disseminating road safety results on the Road Safety Corridors.

31. Improving road safety is a complex task and requires a strong top-level political commitment. Within the United Nations Decade of Action for road safety, the State of Bahia has shown a strong commitment to the road safety agenda, in particular the creation of a Lead Committee for Road Safety. A cross-department task-force, headed by SEINFRA, would be created. This task force, which would lay the basis for the work of the Lead Committee, would initially work on State road safety strategy and the traffic accident database. The task force would coordinate the actions of key State agencies involved in road safety.

**Component 5– Project Management (US$4.0 million)**

32. This component supports Project management and coordination. The component would finance the Project Coordination Unit consulting and operating costs for Project monitoring, supervision, and evaluation, including audits. This component would also finance the operating costs required for Project implementation related to the other project components.

## B. Project Financing

33. The lending instrument is an Investment Project Financing instrument. This instrument was deemed appropriate to this proposed Project, as it supports identified investments under the second phase of the Bahia Highway Program.

34. Table 3.1 (on next page) presents the cost and financing details for the project.

Table 3.1: Project Financing

| Project Components | | Project cost (US$ million) | IBRD Financing (US$ million) | Counterpart Financing (US$ million) |
|---|---|---|---|---|
| Component 1: Institutional Strengthening | | 18.0 | 18.0 | 0.0 |
| Component 2: Highway Rehab. and Maintenance | | 199.5 | 99.5 | 100.0 |
| Component 3: Feeder Road Improvement | | 50.0 | 50.0 | 0.0 |
| Component 4: Road Safety | | 15.0 | 15.0 | 0.0 |
| Component 5: Project management | | 4.0 | 4.0 | 0.0 |
| Unallocated | | 13.0 | 13.0 | |
| **Total Costs(*)** | Total Project Costs | 299.5 | 199.5 | 100.0 |
| | Front-End Fee | 0.5 | 0.5 | |
| **Total Financing Required** | | 300.0 | 200.0 | 100.0 |

(*) Costs include 10% contingencies.

35. The State of Bahia is seeking other sources of international financing for the Bahia Highway Program.[5] A possible European Investment Bank loan of US$200 million equivalent to the State of Bahia has been discussed in parallel. As of November 2015, the State of Bahia has submitted a *Carta Consulta* to the federal government for this possible EIB loan, which would finance performance-based State highway rehabilitation and maintenance, feeder road improvement, and road safety activities.

36. Should this European Investment Bank (EIB) financing be approved, Table 3.2 shows the financing breakdown of the program: along the same components, the EIB financing would scale-up the IBRD and counterpart financings.

Table 3.2: Program Component Financing

| Project Components | | Program cost (US$ m) | IBRD (US$ m) | EIB (US$ m) | Counterpart (US$ m) |
|---|---|---|---|---|---|
| Comp. 1: Institutional Strengthening | | **18.0** | 18.0 | 0.0 | 0.0 |
| Comp. 2: Highway Rehab. and Maint. | | **369.5** | 99.5 | 150.0 | 120.0 |
| Comp. 3: Feeder Road Improvement | | **80.0** | 50.0 | 30.0 | 0.0 |
| Comp. 4: Road Safety | | **35.0** | 15.0 | 20.0 | 0.0 |
| Comp. 5: Project Management | | **4.0** | 4.0 | 0.0 | 0.0 |
| Unallocated | | 13.0 | 13.0 | 0.0 | 0.0 |
| **Total Costs(*)** | Total Project Costs | **519.5** | 199.5 | 200.0 | 120.0 |
| | Front-End Fee | **0.5** | 0.5 | - | - |
| **Total Financing Required** | | **520.0** | 200.0 | 200.0 | 120.0 |

[5] See Para. 8.

### C. Lessons Learned and Reflected in the Project Design

37. **Enhance the CREMA model.** The Implementation Completion Report of the previous *Bahia Integrated State Highway Management Project* (P095460)[6] indicated that the CREMA model can be improved. CREMA technical specifications as well as supervision modalities have been enhanced to factor in the lessons learned, resulting, for instance, in better balancing of the share of contract payments devoted to routine maintenance versus rehabilitation activities. Furthermore, private contractors have also progressively learned to better manage performance-based contracts, and the CREMA model was adapted to this increased private sector awareness. Finally, the CREMA-PPP contract is a continuation of the CREMA concept, pushing further for commitments to increased private sector involvement in road infrastructure management.

38. **Have local investment decided at the local level.** A key lesson learned from the on-going *Tocantins Integrated Sustainable Regional Development Project* (P121495) is that the selection of roads to be improved should be based on citizen engagement at the local level. Direct participation of the population in the development agenda and infrastructure investment has proven to raise local empowerment and to increase accountability. The proposed project would adopt similar implementation procedures for Component 3 (Feeder roads).

39. **Develop a road safety awareness raising agenda.** Evaluative evidence captured in the World Bank Group's Independent Evaluation Group (IEG)'s report *Making Roads Safer*[7] identifies the benefits of a comprehensive and systematic approach to raising road safety awareness and to developing a strong road safety agenda. IEG also recommends having this agenda championed at the senior political level. The proposed Project was designed to establish a high level of this political involvement.

## IV. IMPLEMENTATION

### A. Institutional and Implementation Arrangements

40. The project would be executed by SEINFRA, with two departments in charge of project implementation: (i) the Transport infrastructure department (SEINFRA/ SIT) is responsible for all infrastructure related-activities; and (ii) the Planning, Logistics, Transport, and Intermodalism department (*Superintendência de Planejamento, Logística de Transportes e Intermodalismo*, SUPLOG) is in charge of, all logistics, multimodal planning, and evaluation of institutional strengthening activities. SEINFRA/SIT is a new entity, resulting from the integration of the former Road Agency (DERBA) within SEINFRA (State law no. 21.007/2014). SEINFRA/SIT continues to exercise the project implementation functions that had been undertaken by DERBA. SEINFRA will implement the project in accordance with the conditions of the Loan Agreement, the project design and monitoring guidelines, and the indicators included in the PAD and thePOM.

[6] Closed in September 2013.
[7] *Making Roads Safer – Learning from the World Bank's Experience* – IEG, World Bank, 2014

41. A Project Coordination Unit (*Unidade de Coordenação de Projeto*, UCP) has been created within SEINFRA, reporting to the Infrastructure Secretary. This unit would be in charge of the overall project management and implementation, including coordination with other State and federal agencies, monitoring and evaluation, and reporting to the Bank. Because SEINFRA/SIT will bear most of the burden of project execution, a dedicated coordinator will support the head of this department in coordinating activities internally.

42. While SEINFRA is the lead implementing agency, other State entities would contribute to project implementation including: (i) the State Secretariat of Finance (SEFAZ) and the State Regulatory Agency (AGERBA, which is under the Secretariat of Infrastructure) would be involved in the CREMA-PPP preparation and supervision; and (ii) while SEINFRA would implement all road safety activities, a strong coordination would be required with other state agencies, including the Health Secretariat, the Transport Department (DETRAN), and the Public Security Secretariat. These entities would provide inputs and guidance to SEINFRA in the technical definition of the activities, as well as helping SEINFRA supervise road safety activities. A Cooperation Agreement would be signed by the Secretariat of Infrastructure and the entities participating in road safety activity implementation. In particular, an inter-agency task-force, headed by the Infrastructure Secretary, would be created for coordination purposes on road safety activities.

### B. Results Monitoring and Evaluation

43. SEINFRA, through UCP, would be responsible for project monitoring and evaluation. As detailed in Annex1, most monitoring and evaluation data is expected to be produced by SEINFRA/SIT. Proposed indicators are surveyed on a regular basis by SEINFRA/SIT (for example, pavement roughness). The number of direct beneficiaries, disaggregated by gender, would be identified through the "Share of rural population with access to an all-season road" document, known as the *Rural Access Index*. Monitoring and evaluation under the previous *Integrated State Highway Management Project* (P095460) was rated as satisfactory and SEINFRA is expected to continue to carry out project monitoring and evaluation in a satisfactory manner.

44. In addition, as part of the institutional strengthening activities, a project impact evaluation would be undertaken, specifically on Component 3 (feeder roads). The objective of this impact evaluation is to quantify the benefits for the targeted areas of improving rural accessibility. Further details are provided in Annex 6. In these targeted areas, the combined connectivity benefits from the proposed project, along with the benefits from the *Bahia Sustainable Rural Development Project* (P147157), are expected to yield significant outcomes. The rural development project also contemplates undergoing an impact evaluation.

### C. Sustainability

45. The project is designed to ensure effective and sustainable management of the State highway and municipal road network. Using five-year performance-based rehabilitation and maintenance contracts *per se*, would foster sustainability; and using the ten- to twelve-year CREMA-PPP pushes the concept even further in order to guarantee that the key State infrastructure is adequately maintained in the long run. Likewise, the use of concrete bridges

(included in Component 3) ensures greater sustainability (and less maintenance) compared to current wooden bridges.

46. The entire institutional strengthening component is designed to enhance the sustainability of the proposed project investments, including: (i) financial sustainability, through exploring road funding options and targeting more efficient public expenditures in the road sector (planning and contracting modalities); (ii) institutional sustainability, through continuing to improve SEINFRA/SIT's modernization and capacity building; and (iii) transport policy sustainability, through providing logistics planning and transport investment impact evaluation.

## V. KEY RISKS

### A. Overall Risk rating and Explanation of Key Risks

47. The overall risk rating of project implementation is Moderate.

48. Macroeconomic risks are rated Moderate. They stem mostly from continued low growth and the increasingly difficult fiscal position of the Federal as well as the State governments in Brazil. In 2014 the overall budget deficit (Federal, State and Municipal governments) increased to 6.7 percent of GDP. Both the Federal and the subnational governments on aggregate produced small primary deficits, compared to surpluses in previous years. As a consequence, public debt increased to 63.4 percent of GDP (gross concept). However most of this debt is internal and reserves remain high at US$ 364 billion, providing a significant buffer against external vulnerabilities.

49. The Sector strategies and policies risks are rated Moderate. Overall, developing and maintaining infrastructure is high on the State agenda, and the project is aligned with these strategies. However, a comprehensive road safety agenda is weaker and needs to be further developed at the State level, which is responsible for the Moderate rating.

50. Risks related to the project technical design are rated Moderate. The design and implementation of the CREMA-PPP contract, the first of its kind in Brazil, may pose some challenges. The feeder road and road safety components are more difficult to implement because of the higher number of stakeholders they involve. This fact, as well as the CREMA-PPP innovation, are the reasons for the Moderate rating. Support of IFC to the State of Bahia on the PPP-CREMA contract design would help mitigating this risk.

51. Institutional capacity to deal with implementation and sustainability risks are rated Moderate. The recent reorganization of the State administration, including the former Road Agency, may trigger delays at the onset of project implementation. The institutional strengthening component and the assignment of a strong UCP would mitigate this risk.

52. Fiduciary risks are rated Moderate. Main risks include: (i) delayed or unsuccessful procurement processes; and (ii) delayed payments for contractors, which would undermine the performance-based mechanisms. The enforcement of Bank fiduciary policies and the close implementation support from the World Bank team would primarily mitigate these risks.

## VI. APPRAISAL SUMMARY

### A. Economic Analysis

53. Public sector financing is appropriate for the proposed project because targeted State highways and rural roads have medium-to-low volumes of traffic, and also because it is not appropriate to introduce private financing through tolling. While the CREMA-PPP contract (subcomponent 2.2) could promote further private sector involvement in road rehabilitation and maintenance through a longer term contract, no private financing is expected at this stage.

54. The World Bank's added value would be to increase the efficiency of the investment through providing important technical advice on implementation and management of the project, building on past Bank experiences in Brazil and other countries, particularly in the following areas: (i) CREMA and CREMA-PPP; (ii) road safety; (iii) spot improvement of rural roads with participatory planning; and (iv) institutional capacity enhancement for the road agency.

55. At the project level, an economic appraisal of the investments, which included Component 2 (highway rehabilitation), Component 3 (feeder roads improvement), and Component 4 (road safety), was carried out leading to estimates of the project net worth resulting from the investment. The Highway Development and Management Model (HDM4) was used for the highway investment, whereas the Roads Economic Decision Model (RED) was used for the low-traffic feeder roads.

56. Over an appraisal period of 20 years, the Net Present Value (NPV), at a 12 percent discount rate, and the related Internal Rate of Return (IRR) of the investments are summarized in the Table 6.1 below.

Table 6.1: NPV and IRR by Component

| | **Net Present Value @12% R$ (million)** | **Economic Internal Rate of Return** |
|---|---|---|
| Component 2 | 776.8 | 38.4% |
| Component 3 | 26.3 | 17.8% |
| Component 4 | 91.4 | 28.7% |
| **TOTAL** | **894.5** | **36.8%** |

57. Sensitivity analysis demonstrates that the project remains economically viable with work costs increasing by 15 percent and with traffic simultaneously reduced by 15 percent. Details on these evaluations are provided in Annex 5.

58. In addition, an assessment of the Program impact in terms of $CO_2$ emissions (as a proxy to greenhouse gases) was undertaken, focusing on Component 2, *State highway rehabilitation.* The study assessed: (i) $CO_2$ emitted from the construction phase (primarily, emissions from the production of the inputs and fuel consumption for the work),[8] and (ii) vehicle emissions on project sections. The project's impact was defined as the difference in emissions between a reference scenario (the "Reference" scenario is the same as is described in the economic

[8] Routine maintenance works are excluded from the analysis

appraisal), and the project scenario. The assessment concluded that there was a net reduction in $CO_2$ emissions of about 264 thousand tons of $CO_2$ on the 2,370 km of highway under the project over a twenty-year period. At the Program level, including 34 sections for a total extension of about 4,228 km of highways, the net reduction in $CO_2$ emissions was 472 thousand t-$CO_2$. The detailed methodology can be found in Annex 5.

## B. Technical

59. The focus of State paved highway rehabilitation on key road corridors in Bahia and the northwestern region of Brazil was based on their importance to the network, as evidenced by their levels of traffic – with typical Average Annual Daily Traffic ranging from 2,000 to 5,000 vehicles depending on sections, including 20 to 30 percent involving trucks, as well as on the initial condition of their pavement. The CREMA model proposed for this project builds on and improves the previous CREMA experience in Bahia. This model had been effective in Bahia and elsewhere in Brazil, bundling initial rehabilitation and subsequent routine maintenance over five years.

60. The feeder roads which would benefit from the project would be selected during implementation as part of a citizen-engagement mechanism. Processing steps have been detailed in a Consultation Manual for Feeder Roads (*Manual de Consultas para Vicinais*), included in the POM. Likewise, an Engineering Manual for Feeder Roads (*Manual de Engenharia para Vicinais*) was prepared, and includes the technical specifications and designs of the types of eligible work. The principle underpinning the Engineering Manual is to build both standardized low-cost and standardized low-maintenance structures (small bridges, culverts, and so forth – see Annex 2 for more details).

61. Road safety activities were the subject of both the institutional capacity review and the infrastructure assessment of the two road safety corridors. These technical assessments were financed by a Global Road Safety Facility grant, and a road safety workshop would be organized in Salvador in early 2016 to discuss the results. These studies are part of the POM.

62. Road works technical management (design, supervision, commissioning), both on State highways and municipal roads, would be carried out by SEINFRA/SIT. Based on previous experience, SEINFRA/SIT has the capacity to implement these works.

## C. Financial Management

63. Financial management (FM) assessment for the project was conducted between August 2014 and January 2015 to determine whether the implementing agency, SEINFRA, had acceptable financial management and disbursement arrangements in place to adequately control, manage, account for, and report on the use of project funds.

64. The primary fiduciary responsibilities for the project would be carried out by UCP, with the support of SEINFRA/SIT, and would include: (i) preparing and obtaining approval of project financial management arrangements; (ii) coordinating and supervising project implementation; (iii) submitting disbursement requests and documentation of expenditures (SOEs/SSs) to the Bank; (iv) preparing and submitting project Interim financial reports (IFRs) to the Bank; (v) preparing and providing all financial documentation and project reports requested by external

auditors and Bank staff; and (vi) preparing, updating, and ensuring that all project activities are in compliance with the POM.

65. The POM documents these project processes and serves as an important source for outlining the steps to be followed during project implementation. It contains detailed procedures and guidelines for disbursements, approvals, commitments and payments, accounting, and IFRs. The UCP within SEINFRA would be supported as needed by external consultants. Based on this assessment, the overall FM arrangements as set out for this project are assessed as Satisfactory.

## D. Procurement

66. Procurement activities for the project would be carried out by UCP and SEINFRA's bidding commission (*Comissão Executiva de Licitação* – CEL). The former DERBA previously procured and implemented a substantial number of road projects, including consulting and equipment supply contracts, on a regular basis using state and external funding, and over the last 10 years, DERBA satisfactorily implemented two Inter-American Development Bank -financed and one IBRD road projects. The new *Coordenação Executiva de Licitação* within SEINFRA is staffed with five members. One of them has worked in the previous DERBA's bidding commission and is very experienced in procurement issues, and he would be aided by the filing system and the physical resources of the DERBA-CEL.

67. SEINFRA-CEL would be responsible for processing all procurement cases, including civil work, goods, and consulting and non-consulting services under the project. The UCP, with the support of the implementing entities, would be in charge of preparing all procurement documentation up to the contract award, including: technical specifications, terms of reference, budgets, short lists, bidding documents and Request for Proposals (RFP), evaluation reports, and any other required documents. These implementing entities include: (i) units within SEINFRA/SIT (for example, design department, construction department, logistics department), and (ii) SEINFRA's SUPLOG. The UCP, among other responsibilities, would act as liaison between these implementing entities and SEINFRA/SIT and CEL. The POM details the procurement processes under the project.

68. Procurement for the project would be carried out in accordance with the following documents: (i) World Bank's "Guidelines: Procurement under IBRD Loans and IDA (International Development Association of the World Bank) Credits" dated January 2011 and revised in July 2014; (ii) "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011 and revised in July 2014; and (iii) the provisions stipulated in the Legal Agreement (including anti-corruption guidelines). A Procurement Plan showing the different procurement methods or consultant selection methods, the need for prequalification, the estimated costs, the prior review requirements, and the time frame was agreed upon during preparation between the Borrower and the Bank and would be updated at least annually, or as required, to reflect the actual project implementation needs. Template bidding documents for International Competitive Bidding, National Competitive Bidding and Request for Proposal documents, and so forth, are included in the POM.

## E. Social (including Safeguards)

69. The proposed project's objective of enhancing the accessibility and safety of State highway and feeder roads in the poorer regions of Bahia is a priority among potential

beneficiaries. The investments in roads are also well aligned with a number of the State's most pressing challenges, namely reducing poverty and regional disparities and enhancing environmental sustainability. For these reasons, the overwhelming majority of the proposed project's social impacts are expected to be positive.

70. In light of these recognized opportunities and risks, an integrated Environmental and Social Impact Assessment (ESIA) of the proposed project activities was prepared by the State of Bahia and approved by the World Bank. This ESIA was designed and conducted in close consultation with a broad range of stakeholders, including local residents and municipal authorities, private sector producers and commercial interests, public service providers, nongovernmental organizations , and so forth. Because the selection of municipal roads to be improved is based on citizen engagement at the local level, the project is also expected to contribute to local empowerment and increased accountability.

71. With regards to social safeguards, the project is not expected to require any land acquisition. However, since the exact location and design specifications for most of the proposed road works would only be determined during project implementation, the Involuntary Resettlement policy (OP 4.12) was triggered and a Resettlement Policy Framework (RPF) has been prepared by the State of Bahia and approved by the World Bank. This Framework clarifies applicable resettlement principles, organizational arrangements, screening procedures, and design criteria to be applied to subprojects prepared during implementation.

72. The Indigenous People policy (OP 4.10) was triggered. The ESIA identified 41 indigenous and *quilombola* communities within the area of influence (10 km radius) of the pre-selected roads to be rehabilitated under Component 2. The Borrower has prepared an Indigenous Peoples Planning Framework consistent with OP 4.10 for the interested communities. Key elements of this Plan, approved by the World Bank, include measures to ensure free, prior, and informed consultations to design appropriate social and economic benefits for these communities. Given that the 62 municipalities eligible for Component 3 work include much of the northern, eastern, and central parts of the state, several of the state's estimated 11,000 indigenous peoples and hundreds of *quilombola* communities may potentially benefit. The IPPF would assist the executing agencies in determining whether indigenous peoples or *quilombola* communities are present in the project area, and if so, to ensure that the interested communities support the proposed activities as well as any additional measures required to maximize their culturally appropriate benefits and to avoid potentially adverse effects.

73. The Safeguards instruments were disclosed on SEINFRA's website (www.infraestrutura.ba.gov.br) on April 10, 2015, prior to the public consultations held in Salvador (BA) on April 17, 2015. During this consultation, the environmental and social management instruments of the project were discussed, including the principles and procedures for dealing with the interventions that may interfere with indigenous peoples and/or cause adverse impacts related to involuntary resettlement; consultation feedback has been integrated in the final versions of the instruments. A revised version of the instruments was approved by the World Bank and disclosed on the World Bank's and SEINFRA's websites on January 5, 2016[9].

[9] Another public consultation, on a first version of the Environmental and Social Impact Assessment had been held on January 21, 2015. These two consultations, in January and April 2015, involved about 45 and 55 people respectively.

74. In terms of grievance and redress mechanisms, the IPPF stipulates establishing an accessible complaint and communication procedure, adapted to the project specificities, for the potentially affected indigenous people and *quilombolas*.

## F. Environment (including Safeguards)

75. The project environmental assessment category is B. The project does not entail any potential large scale, significant, or irreversible negative impacts. It supports a number of investments rehabilitating existing road infrastructure, and would also finance the suppression of critical points on rural municipal roads. This work would primarily include construction and repair of small bridges, quagmire removal, construction and repair of culverts, and provision of adequate drainage to ensure all-season access, while also making improvements for traffic safety. The environmental impact resulting from the work is therefore expected to be relatively minor and primarily related to the execution of the civil works.

76. While most direct negative environmental impacts from the project are expected to be limited in time and localized near the civil works sites, there are some potential positive environmental impacts that can be experienced, such as the suppression of critical points on rural municipal roads that can contribute to decreasing erosion problems. Furthermore, the recovery of paved State roads also allows the rehabilitation of drainage devices that are critical to prevent erosion that can undermine the stability of the road, also affecting streams and rivers it crosses.

77. In accordance with the OP 4.01 Environmental Assessment mandatory safeguard policy, the Borrower addressed safeguard policy issues by conducting an ESIA, outlining a set of guidelines, procedures, and criteria to be used to ensure that the proposed activities would not cause any potential large-scale, significant, or irreversible negative environmental and social impacts. The Terms of Reference of this study were approved by the Bank. The State of Bahia also prepared an Environmental and Social Management Framework (ESMF) to outline the set of guidelines to be used for the suppression of critical points on rural municipal roads. An Environmental Management Plan (EMP) for works identified at appraisal was prepared that specifies guidelines and procedures to be followed by the construction contractors. Compliance with the practices outlined in the POM would be a contractual obligation of the contractors.

78. The proposed project triggers the following environmental safeguard policies: Environmental Assessment (OP 4.01), Natural Habitats (OP 4.04), due to the nature of proposed investments; Physical Cultural Resources (OP 4.11), on a precautionary basis; and Pest Management (OP 4.09), regarding proposed investments under Component 2, since vegetation clearing during road maintenance operations could sporadically involve the use of herbicides and chemical products.

79. The ESIA addresses all the safeguard requirements and includes provisions to regenerate and reforest degraded areas and deal with “chance finds" during works, as needed. The POM and Specifications for contractors would explicitly prohibit the use of pesticides and herbicides for works and services financed by the project.

80. In terms of grievance and redress mechanisms, the EMP stipulates establishing on-site, through a 0800 phone number and through SEINFRA’s complaint and communication canal (www.ouvidoria.ba.gov.br) a complaint and communication procedure, adapted to the context of the proposed project.

## G. World Bank Grievance Redress

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

## Annex 1: Results Framework and Monitoring

## Country: Brazil

## Project Name: Bahia Road Rehabilitation and Maintenance Project - 2nd Phase

## Results Framework

### Project Development Objectives

PDO Statement

The Project Development Objective is to enhance, in a sustainable fashion, road accessibility and safety in selected regions of the State of Bahia's territory.

| These results are at | Project Level |
|---|---|

### Project Development Objective Indicators

| Indicator Name | Baseline | Target Values | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | YR1 | YR2 | YR3 | YR4 | YR5 | YR6 | End Target |
| 1. State paved road network under performance-based rehabilitation and maintenance contracts (percentage) | 3% | 3% | 10% | 15% | 25% | 25% | 25% | 25% |
| 2. Share of rural population with access to an all-season road (percentage) - (core) | 45% | | | | 50% | | | 60% |
| 3. Reduction in fatalities and serious injuries on the selected road safety corridors (percentage) | 0% | 0% | 0% | 15% | 30% | 30% | 30% | 30% |

| **Intermediate Results Indicators** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Indicator Name | Baseline | Target Values | | | | | | |
| | | YR1 | YR2 | YR3 | YR4 | YR5 | YR6 | End Target |
| **Component 1 – Institutional strengthening** | | | | | | | | |
| 4. Establishment of the State Infrastructure Road Fund | Fund created but not operational | Action Plan prepared | Road Fund documentation sent to the State assembly | Road fund established and working | | | | Road fund established and working |
| 5. Operationalization of SEINFRA/SIT's Pavement Management System | System installed a pilot phase | | System operational | Investment plan ready | Investment plan updated | Investment plan updated | Investment plan updated | System operational |
| 6. Establishment of a business model for SEINFRA/SIT | Draft "regimento interno" approved | " | SEINFRA/SIT structuring document approved | Minimum of 3,000 staff-days of relevant training | SEINFRA/SIT KPIs available on SEINFRA's website | SEINFRA/SIT KPIs available on SEINFRA's website | SEINFRA/SIT KPIs available on SEINFRA's website | New business model implemented |
| 7. Number of yearly meetings conducted by the State Logistic Committee | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 8. Establishment of an appraisal tool to inform decision-making for transport infrastructure investments | Tool not available | | | | Tool availabl | | | Tool available |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | e | | | |
| **Component 2 – CREMA** | | | | | | | | |
| 9. Cumulated km of highway rehabilitated, Rural (kilometers) – (core) | 0 | 0 | 500 | 1,000 | 2,000 | 2,370 | 2,370 | 2,370 |
| 10. Roads in good and fair condition as a share of total classified roads (percentage) - (core) | 70% | | | | 75% | | | 80% |
| **Component 3 – Feeder roads** | | | | | | | | |
| 11. Cumulated number of critical spots eliminated | 0 | 0 | 0 | 200 | 400 | 700 | 900 | 900 |
| 12. Cumulated number of municipalities where citizens engaged in road investment definition and prioritization | 0 | 0 | 6 | 20 | 40 | 62 | | |
| **Component 4 – Road safety** | | | | | | | | |
| 13. Establishment of a State Committee for road safety | No Committee | | | Committee established | | | | Committee established |
| 14. Elimination of physical critical spots for road safety on the selected corridors (percentage) | 0% | | 50% | 90% | | | | 100% |
| 15. Operationalization of traffic accident database | No integrated database | | Database installed | | Database in operation | | | Database in operation |

## Indicator Description

### Project Development Objective Indicators

| Indicator Name | Description (indicator definition etc.) | Frequency | Data Source / Methodology | Responsibility for Data Collection |
|---|---|---|---|---|
| 1. State paved road network under performance-based rehabilitation and maintenance contracts (percentage) | Share of the State paved road network under performance-based rehabilitation and maintenance contracts, including CREMA, PPP, CREMA-PPP (about 3,500 km) and concessions (about 320 km). At appraisal, the extension of the State paved road network is 10,900 km. | Yearly | Project progress report | SEINFRA/SIT |
| 2. Share of rural population with access to an all-season road (percentage) - (core) | Percentage of rural people in the project area Component 3) who live within 2 km of an all-season road. Paved roads and feeder roads with bridges and drainage systems rehabilitated are considered all-season roads.<br>The value is calculated by dividing the absolute number of rural people with access to an all-season road by the total rural population in all the municipalities included in the project. The baseline value is obtained, in a given municipality, by dividing rural population in the area within 2 km of any paved (est. 590,000 in 2014) road by the total rural population (est. 1,315,000 in 2014). | Midterm and final year | Analysis with Geographical Information System (GIS) | SEINFRA/SIT |
| 3. Reduction in fatalities and serious injuries on the selected road safety corridors (percentage) | Percentage of reduction in numbers of annual fatalities on the two selected road safety corridors of Component 4. The base value (denominator) is the number of fatalities and serious injuries in 2013 in the selected | Yearly | Traffic accident statistics | SEINFRA/SIT |

| | | | | |
|---|---|---|---|---|
| | corridors (total: 50 fatalities and serious injuries). This indicator is based on DERBA's statistics, which only considers fatalities occurring at the location of the accident[10]. Target values are derived from iRAP estimates for other road safety improvement projects in Brazil. | | | |

**Intermediate Results Indicators**

| Indicator Name | Description (indicator definition etc.) | Frequency | Data Source / Methodology | Responsibility for Data Collection |
|---|---|---|---|---|
| **Component 1** | | | | |
| 4. Establishment of Infrastructure Fund | - "Action plan prepared": study (technical, financial, legal) establishing options for the road fund available<br>- "Infrastructure fund documentation sent to the State assembly": only Bahia's State assembly can decide on the creation of the road fund. The documentation would include, among other things, the legal documents creating the Road fund.<br>- "Infrastructure Fund established and working": evidenced by its annual activity report, showing at least 2/3 of the funds dedicated to road rehabilitation and maintenance. | Yearly | Relevant documentation | SEINFRA |
| 5. Operationalization of SEINFRA/SIT's | Pavement management planning and investment plan updated on a yearly basis. The investment plan would | Yearly starting year 2 | Project Progress Report | SEINFRA/SIT |

[10] These baselines were derived from the existing crash database within DERBA/DLO; the on-going road safety institutional capacity assessment showed that all fatalities / serious injuries were not necessarily recorded. Improving the Integrated traffic accident database (Indicator #15) may actually lead to recording more crashes, and interfere with this indicator evaluation. A corrective methodology will be defined.

| | | | | |
|---|---|---|---|---|
| Pavement Management System | include the highway rehabilitation and investment needs, assessed with the updated Pavement Management System, for the upcoming year. | | | |
| 6. Establishment of a business model for SEINFRA/SIT | - SEINFRA/SIT structuring document approved by a Resolution from the Infrastructure Secretary, with the structuring document including: vision for SIT, objectives and monitoring/evaluation framework (including Key Performance Indicators), administrative structure, workflow processes, human resources requirements, budget requirements, transition time-line, and process.<br>- Staff-days training: relevant capacity building for SEINFRA staff would accompany SEINFRA's modernization. Target value to be reached *by* year 3. | Yearly | Project Progress Report | SEINFRA |
| 7. Number of yearly meetings conducted by the State Logistic Committee | Number of meetings conducted by the State Logistics Committee which has been set-up in the State of Bahia. The Committee is expected to meet and discuss various logistics issues such as the state logistics and transport plan. This Committee was created on February 12, 2012, and is a platform to discuss transversal logistics issue among the various public and private stakeholders in Bahia. Most activities carried out under the logistics strand of the institutional strengthening component would feed the Committee's works. | Yearly | Meeting minutes | SEINFRA |
| 8. Establishment of an appraisal tool to inform decision-making for transport infrastructure investments | The State of Bahia would use this tool, or methodology, to analyze the benefits and costs of transport infrastructure development projects. | Mid-Term | Tool documentation | SEINFRA |

| | | | | |
|---|---|---|---|---|
| **Component 2** | | | | |
| 9. Roads rehabilitated, rural (kilometers) (cumulated) – (core) | Extension of rehabilitated State paved roads. The value is cumulated during the project period. | Yearly | Project Progress Report | SEINFRA/SIT |
| 10. Roads in good or fair condition as a share of total classified roads (percentage) - (core) | A road section would be considered in a "good or fair condition" if the measurement of the average + ½ standard deviation of its International Resources Index (IRI) is below 4.0. At Appraisal, the total extension of the State paved road network is 10,900 km. | Midterm and final year | Road pavement condition survey | SEINFRA/SIT |
| **Component 3** | | | | |
| 11. Cumulated number of critical spots eliminated | Critical spots include: bridge construction, drainage construction, spot improvement of the rolling surface. At Appraisal, the end target is estimated based on (i) the Bahia costs of typical works, and (ii) the distribution of typical works observed ex post in the Tocantins sustainable rural development project (P060573). | Yearly | Project monitoring report | SEINFRA/SIT |
| 12. Cumulated number of municipalities where citizens engaged in road investment definition and prioritization | The selection of the local roads to be improved would be based on a participatory mechanism in each one of the 62 targeted municipalities. Documented by the Minutes of each "Consulta pública".<br>Disaggregated men and women's participation would be monitored. | Yearly | Project monitoring report | SEINFRA |
| **Component 4** | | | | |
| 13. Establishment of a State Committee for Road Safety | Creation of a specific institution in charge of defining the State's strategy for road safety, defining the action plan to reach the strategy's objectives, and coordinating and monitoring progress. This institution would be | Yearly | Project implementation reports | SEINFRA |

| | | | | |
|---|---|---|---|---|
| | initially based on existing structures and is expected to progressively take on further importance, as road safety awareness increases in Bahia. | | | |
| 14. Elimination of physical critical spots for road safety on the selected road safety corridors (percentage) | Critical spots for road safety may include: intersection improvement, signaling improvement, infrastructure modification to improve visibility, guardrails and shoulder installation, installation of fixed equipment to curb and control speed, and so forth. At appraisal, initial technical studies identified 15 worksets on the two corridors. | Yearly | Project monitoring report | SEINFRA/SIT |
| 15. Operationalization of integrated traffic accident database | This database would record the road crash characteristics on the Bahia State highways, and integrate existing databases managed by SEINFRA, hospitals, the Secretariat of Health, traffic law enforcement agencies, and DETRAN. This database would include upgraded management processes, and ultimately would provide comprehensive data to inform the State road safety strategy, including on gender-related characteristics. | Yearly | Project monitoring report | SEINFRA/SIT |

## Annex 2: Detailed Project Description

## Brazil: Bahia Road Rehabilitation and Maintenance Project - 2nd Phase

1. The project would support the State of Bahia in spurring sustainable development in Bahia through a US$ 300 million operation supported by a US$200 million IBRD loan. The project is designed to enhance the condition and the safety of State highways and feeder roads in some of the State's poorest and most remote areas.

2. This project objective underpins the broader goal of spurring sustainable development in those regions through: (i) strengthening State institutions and processes in the road and transport sector, aiming at the sustainability of the proposed investments; (ii) improving the condition of the main State highway network; (iii) improving accessibility of rural communities from local feeder roads to the State and Federal highway network; and (iv) contributing to the building of a road safety agenda in the State through road safety corridors, and to the building of institutions for road safety. The project includes the following components.

**Component 1 – Institutional strengthening (Estimated cost US$18 million, 100 percent financed out of the IBRD loan)**[11]

3. **Subcomponent 1.1: New options for road financing.** This subcomponent would carry out studies on: (i) setting-up a self-standing road maintenance fund; (ii) exploring possibilities for private sector financing of transport infrastructure, either through Public-Private Partnerships or other mechanisms; and (iii) exploring opportunities of land-value capture stemming from the valorization of transport infrastructure public rights-of-way.

4. **Subcomponent 1.2: Road Asset Management**. This subcomponent builds on the previous *Integrated State Highway Management Project* (P095460) under which the Road Agency began developing a Pavement Management System that aimed at optimizing the allocation of public resources where they matter most. This subcomponent includes: (i) operationalizing the SEINFRA/SIT's Pavement Management System, including conducting surveys of the Bahia's highway pavement condition and traffic; (ii) designing and building automatic traffic counting stations; (iii) designing and operationalizing a statewide automatic weighing system for heavy vehicles; (iv) implanting a statewide kilometric mark points system, for more precise location of traffic crashes and other events; (v) geo-referencing Bahia's right-of-way assets; and (vi) setting up a database of the Bahia's geological conditions and of potential quarries for road construction and rehabilitation. This database would help public clients as well as private consultancies and entrepreneurs to better assess the geological risks from civil construction.

5. **Subcomponent 1.3**: **Road administration efficiency.** The former State Road Agency, DERBA, was eliminated on Feb. 28, 2015. At the same time, a new department was created within SEINFRA to take care of roads: the *Superintendência de Infraestrutura de Transporte* (SEINFRA/SIT). As created, SEINFRA/SIT basically involved the transfer of DERBA within SEINFRA. This subcomponent would help the State of Bahia in shaping this new department into an effective administration, geared towards its upcoming challenges. Resuming the

[11] All cost estimates in this section include contingencies.

administration modernization agenda initiated under the previous *Integrated State Highway Management Project* (P095460), this subcomponent would provide support for the setting-up and operationalization of SEINFRA/SIT, including: (i) defining its mission, and monitoring its framework, processes, and required resources; (ii) training and capacity-building for SEINFRA/SIT technical and administrative staff; and (iii) supporting project implementation in specific areas, specifically on road safety, socio-environmental management, and engineering.

6. **Subcomponent 1.4: Logistics planning**. As in the case of the previous subcomponents, Subcomponent 1.4 expands and deepens the works carried out under the previous *Integrated State Highway Management Project* (P095460) in the various dimensions of logistics at the planning level, fostering "green freight" and intermodality. This subcomponent would provide support for carrying out studies and surveys to: (i) update Bahia's transport and logistics master plan (carrying out yearly surveys to feed and update the master plan model and periodically reassessing transport and logistics policies); (ii) promote railway transport in Bahia, including: a) exploring how to maximize opportunities at the State level from the new East-West railway (*Ferrovia de Interligação Oeste – Leste*, FIOL) that the federal government is currently building in Bahia; and (b) studying how to rationalize the cargo railway network in the state; (iii) identify maritime port development opportunities in Bahia; (iv) analyze the Bahia's waterway development, in particular within the São Francisco framework; and (v) plan urban logistics and mobility in the Itabuna-Ilheus conurbation, factoring in the on-going Ilheus port extension.

7. **Subcomponent 1.5: Transport investment impact assessment**. This subcomponent aims at evaluating the impact of transport investment and policy on socio-economic growth and poverty reduction in Bahia. This subcomponent would provide support to carry out surveys and studies to assess the impact of transport infrastructure investment in Bahia including: (i) establishing a tool to inform the decision-making process for transport infrastructure investment; (ii) setting up an appraisal model aiming at quantifying the wider impact of transport investments and policies in Bahia; (iii) defining the methodology and undertaking the impact evaluation of local roads improvement on rural communities focused on the rural areas addressed through Component 3 of the project; and (iv) carrying out yearly road-users surveys to obtain citizen feedback on the Bahia's highways condition and services.

8. Component 1 would finance works, goods, consulting, training, and non-consulting services.

**Component 2 – Performance-based paved State highway rehabilitation and maintenance (Estimated cost US$199.5 million, including US$99.5 million from the IBRD loan)**

9. This component supports the sustainability and road safety dimensions of the PDO. It aims at consolidating the performance-based road management in Bahia for further road asset sustainability, while undertaking specific infrastructure investments to improve road safety. Component 2 would finance the rehabilitation and maintenance of about 2,370 km of selected Bahia State highways, under two kinds of modalities: (i) traditional five-year performance-based contracts (CREMA), in an improved version of the previous road project; and (ii) a new "CREMA-PPP" modality, through a ten- to twelve-year performance-based road management contract. Like Component 1, this component also builds on the success of the previous *Integrated State Highway Management Project* (P095460), improving on and developing the CREMA model.

10. Table 2.1 recaps the State highway sections included in the Bahia Highway Program, totaling about 4,228 km; some sections (marked with *) had been already managed through CREMA contracts, financed out of the previous *Integrated State Highway Management Project* (P095460), providing continuity in highway management. The program is divided in two clusters, Cluster A and Cluster B, the former including higher priority roads than the latter.

Table 2.1: Summary of Bahia Highway Program for Clusters A and B.

***Cluster A***

| Corridor | Highway | From | Via | To | Km |
|---|---|---|---|---|---|
| A1* | BA-052 | BR-116 | Irecê | Xique - Xique | 459.07 |
| A2* | BA-148/152/156 | Brumado | Paramirim | BR-242 | 371.61 |
| A3* | BA-160 | BA-052(Xique-Xique) | Ent. Gentio do Ouro | Barra | 86,49 |
| A4 | BA-161 | BR-242 | Estreito | Barra | 148.18 |
| A5* | BA-172 | BR-242 (Javi) | Santa Maria da Vitoria | Jaborandi | 210.51 |
| A6 | BA-210 | BR-110-Paulo Afonso | Curaça | Juazeiro | 371.66 |
| A7 | BA-225 | Formosa do Rio Preto | | Coaceral | 77.24 |
| A8* | BA-262/263 | Brumado | Vitória da Conquista | Itambé | 178.55 |
| A9 | BA-148/432 | BA-052 (Irecê) | Segredo | BR-242 | 139.07 |
| A10 | BA-459/460 | BR-242(Luis Eduardo Magalhães) | Placas | BR-242 (Anel da Soja) | 202.93 |
| A11 | BA-463 | São Desidério | Sitio Grande | BR-020 (Roda Velha) | 125.20 |
| **TOTAL** | | | | | **2,370.51** |

***Cluster B***

| Corridor | Highway | From | Via | To | Km |
|---|---|---|---|---|---|
| B1* | BA-001/046 | Bom Despacho | Nazaré | Santo Antonio Jesus | 90.10 |
| B2 | BA-001 | Nazaré | Valença | Ilheus | 233.50 |
| B3 | BA-046/245 | Milagres | Iaçu – Marcionílio Souza | Itaete – Junction BA142 | 186.80 |
| B4 | BA-046/233 | Ipira | Itaberaba | Iaçu | 106.79 |
| B5 | BA-048 | BR-101 | Amargosa | BR116 | 80.90 |
| B6 | BA-130 | Junction BA-052-Macajuba | Rui Barbosa | BR242 (Zuca) | 80.74 |
| B7 | BA-130 /262/263 | Itambe | Itapetinga | Floresta Azul | 135.80 |
| B8 | BA-142 | Entr.BR-242-Andarai) | Mucugê – Barra da | Tanhaçu-Junction BR407(Sussuarana) | 243.00 |

| | | | | | |
|---|---|---|---|---|---|
| | | | Estiva | | |
| B9 | BA-148 | Entr.BR-242-Boninal | Piatã - Abaira | Rio de Contas-Livramento | 212.90 |
| B10 | BA-160 | Ibotirama | Paratinga | Lapa | 137.30 |
| B11 | BA-210 | Juazeiro | Piçarrão | Sento Sé | 192.70 |
| B12 | BA-290 | Itanhem-Medeiros Neto | Teixeira de Freitas | Alcobaça | 156.76 |
| **TOTAL** | | | | | **1,857.28** |

11. **Subcomponent 2.1: CREMA.** This subcomponent includes the rehabilitation and maintenance work accomplished under CREMA Contracts of about 1,685 kilometers of identified sections of the Borrower's paved highways, including road rehabilitation and maintenance. These 1,685 km would be selected out of the Bahia Highway Program.

12. The State of Bahia set priorities for the corridors based on the following criteria: (i) socioeconomic importance (agribusiness, interurban mobility), for instance recognizing that the West of Bahia is an important zone of soybean production; (ii) areas where the poverty level is high, for example the *Sertão* area; (iii) areas where the *Bahia Sustainable Rural Development Project* (P147157) intervenes, such as the Irecê basin, in order to provide complementarity between this proposed transport project and the rural development project; (iv) highway sections included in the previous Integrated *State Highway Management Project* (P095460), so as to provide road maintenance continuity; and (v), of particular importance, highways which most required rehabilitation.

13. CREMA work contracts include: (i) a 6-month initial road recuperation, aiming at bringing back minimal functionality to pavements (pothole patching, crack sealing, signaling); (ii) a two-year rehabilitation period, consisting of pavement and shoulder resurfacing and reconstruction; (iii) a two- to three-year routine maintenance period, aiming at preserving and maintaining the roads and their rights-of way. The primary CREMA contract specificities are: (i) medium-term contracts, including asset routine maintenance, turning the private contractor into a delegated manager of the road right of way; (ii) globalized prices, not unit prices, for rehabilitation payments, shifting some responsibility onto the private contractor; and (iii) performance-based payments for routine maintenance.

14. Rehabilitation works primarily include, as necessary: (i) pavement rehabilitation solutions, ranging from local repairs, slurry seal, reshaping and overlay with surface treatment or asphalt concrete, to complete reconstruction; (ii) shoulder rehabilitation or surfacing to protect the shoulder surfaces from erosion; and (iii) repairing and upgrading of superficial and profound drainage systems; (iv) repairing bridge equipment; and (v) undertaking horizontal and vertical signalization. Up to 10 percent of contract values would focus on specific investments for road safety, for example, improvement of the design of dangerous road junctions, improvement to median and lateral guardrails, and construction of shoulders when deemed necessary, for instance on road sections with some non-motorized traffic. Routine maintenance includes: (i) pavement and shoulder maintenance and repairs, such as crack sealing, pothole patching, edge break repairing; (ii) drainage cleaning; (iii) right-of-way clearing; and (iv) signalization maintenance.

15. At Appraisal, pre-design and costing analysis was carried out, and the engineering projects were bid out in January 2015. With modest levels of traffic and good support platform, pavement rehabilitation solutions involve mainly: (i) micro-surfacing on about 75 percent of the sections; (ii) cape seal and surface treatment on about 15 percent of the sections; and (iii) asphalt concrete on about 10 percent of the sections. As needed, sub-base and base reinforcement or construction are included. Rehabilitation and maintenance works would remain on the existing right-of-way.

16. Engineering design work and technical supervision are contracted out to consultancies. A separate consultancy would help SEINFRA/SIT monitoring of compliance of environmental and social safeguards. Overall contract management would be carried out by SEINFRA/SIT: (i) specific monitoring units (*escritórios de fiscalização*) to be created within SEINFRA/SIT for highway rehabilitation works,[12] and (ii) and through its regional offices (21 *Residências* covering the State of Bahia), for routine maintenance work. Both report to the central Maintenance and Construction Department (*Diretoria da Construção e da Manutenção*, DCM). The Quality cluster (*Núcleo de Qualidade*), directly reporting to the Infrastructure superintendent, would review all engineering designs and, during works and would carry out bimonthly audits of the quality of the works.

17. **Subcomponent 2.2: "CREMA-PPP"**. This subcomponent includes the rehabilitation and maintenance work performed under CREMA-PPP Contracts or CREMA Contracts on about 685 km of identified sections of the Borrower's paved highways, including road rehabilitation and maintenance. Table 2.2 below recaps prioritized highway sections for the CREMA-PPP contract.

Table 2.2: Highway Maintenance under the CREMA-PPP Contract

| Corridor | Highway | From | Via | To | Km |
|---|---|---|---|---|---|
| A1 | BA-052 | BR-116 | Irecê | Xique - Xique | 459.07 |
| A3 | BA-160 | BA-052(Xique - Xique) | Gentio do Ouro | Barra | 86.49 |
| A9 | BA-148/432 | BA-052 (Irecê) | Segredo | Junction BR-242 | 139.07 |
| **TOTAL** | | | | | **684.63** |

18. These corridors were selected based on the following factors: (i) this set of roads is of high economic and logistics importance for the State. BA-052 is known as the "bean route" (*estrada do feijão*) providing the Salvador metropolitan area with primary necessity food, as well as being, together with BR-242, one of the State's major export corridors towards the Port of Salvador maritime gateway; and (ii) these highways are well known to the Road Agency.[13] Good knowledge of road traffic along with good functional and structural pavement conditions on

[12] As well as municipal roads works (Component 3) and specific road safety works (Component 4)

[13] This corridor benefited from rehabilitation and maintenance from previous IFI-financed projects: (i) the Integrated State Highway Management Project (P095460), between 2007 and 2013, financed the CREMA rehabilitation and maintenance of BA-052 and BA-160 (Porto Feliz – Xique Xique – Barra), as well as BA-148/432. (ii) During the time period 2000-2006, the Inter-American Development Bank financed the rehabilitation of BA-052 (junction with BR-116 to Porto Feliz).

these highways are expected to mitigate risks stemming from implementing this new proposed road asset management modality.

19. The idea of the CREMA-PPP is to extend the CREMA performance-based concept for a longer term, 10 to 12 years. The CREMA-PPP would then be an "intermediate" contract between five-year CREMAs, contracted out in Brazil as civil works following the national procurement law (law no. 8.666/93), and it also would be a typical thirty-year road concession contract, contracted out in Brazil based on the concession law (law no. 8.987, Feb. 13, 1995). Fully financed out of the State of Bahia counterpart financing, this CREMA-PPP contract would be contracted out based on the Brazil PPP law (law no. 11.079, Dec. 30, 2004). Road maintenance and rehabilitation concepts in CREMA-PPP would remain the same as in CREMAs and in brownfield concessions, with performance-based maintenance and payments based on targeted level of service, with the private contractor being the delegated infrastructure manager. The main benefits expected from this hybrid model include: (i) increased private sector responsibility, and transfer of construction and operations risks onto the private sector, with a longer-term commitments than with CREMA; (ii) more involvement of the private sector in road routine maintenance, where past studies have shown that most CREMA benefits are derived from; (iii) less risk - both traffic and operational - for the private contractor, with a shorter contract period; and (iv) further involvement of medium-size civil construction companies which are not able to take up a thirty-year concession contract.

20. Current Average Annual Daily Traffic on BA-052 / BA-160 / BA-148 / BA-432 ranges between 1,500 and 5,000, and tolling is not considered viable at this stage. SEINFRA has contracted with the IFC to help in structuring the contract and in defining its detailed specifications. Contract supervision would be carried out by the State regulation agency (*Agência de Regulação dos Serviços Públicos de Energia, Transportes e Comunicação da Bahia*, AGERBA), with support from SEINFRA. AGERBA already monitors two State roads concessions, but this contract would be the first PPP for roads in Bahia.

21. Component 2 would finance works and consulting services.

**Component 3 – Feeder Road Improvement (Estimated cost: US$50 million, 100 percent financed by the IBRD loan)**

22. This component supports the accessibility dimension of the PDO. This component would provide support to improve road accessibility in Bahia, through the carrying out of works for the elimination of about 900 critical spots on selected municipal rural roads in 62 Selected Municipalities (the Municipal Road Subprojects) including, among other things: (i) improving the drainage of the platform, including the replacement of existing unsafe wood bridges with concrete standardized bridges; (ii) constructing and/or reconstructing of culverts and longitudinal drainage; and (iii) constructing fords and eliminating quagmires.

23. Complementing the interventions on Bahia's main highway network, this component would focus on municipal rural roads that are formed but unsealed. While carrying low traffic (50-100 vehicles per day), they nevertheless play a key role in connecting rural scattered population to local main cities (*Prefeituras municipais*) and their social services. These rural roads are also critical for small farmers to be able to get their products out to markets. Spot improvements would enable these roads to be trafficable all year long with works primarily aimed at improving the drainage of the platform. The typology of these works includes: (i)

reconstruction of bridges and transforming rapidly deteriorating wood bridges into more sustainable standardized concrete bridges, up to 30 m of extension. The bridges would be fully standardized, with extensions ranging from 5m to 30m. Local contractors would build bridges abutments and piers, while concrete beams production would be centralized, and transported to the sites. (ii) construction/reconstruction of standardized culverts; (iii) construction/reconstruction of longitudinal drainage; (iv) construction of fords, wherever this kind of structure is most appropriate; (v) spot wearing surface graveling, primarily in steep slopes zones where some targeted projects areas are in hilly environments; and (vi) grading of the wearing course. No systematic graveling and sealing is considered. The POM describes the standardized works technical specifications, and includes the Terms of Reference for the consultancies and construction companies.

24. Local roads in 62 municipalities would benefit from this component. These municipalities were selected based on the following criteria: (i) poorest areas of the State; (ii) areas where the *Bahia Sustainable Rural Development Project* (P147157) is involved and where rural road investments are expected to scale up the benefits of the rural development project investments; (iii) areas served by one of the highway corridors to be rehabilitated and maintained under Component 2 (the farm to markets approach); and (iv) municipalities pertaining to intermunicipal consortia (*Consórcios intermunicipais*). The map in Annex 7 presents the targeted Intermunicipal consortia: *Consórcio Portal do Sertão*, *Consórcio do Sisal*, *Consórcio do Vale de Paramirim*, and *Consórcio da Bacia do Jacuipe*. The POM includes a methodological note describing the full rationale for selecting these 62 municipalities.

25. The Component 3 budget would be allocated to each municipality, pursuant to the formula below:

$$\mathbf{Q = F + (33.3\% \times P + 33.3\% \times A + 33.3\% \times H) * (T-F \times M)/M}$$

Where:

- *Q* is the amount potentially allocated to each municipality (in US$);
- F is the constant factor, the minimum financing amount allocated to each municipality (US$150,000);
- P is the standardized population of the municipality (number of inhabitants in each municipality divided by the average number of inhabitants in a municipality in the project area);
- A is the standardized area of the municipality (area in each municipality divided by the average area of a municipality in the project area);
- H is 1 / standardized IDFM in municipalities (where *Índice FIRJAN de Desenvolvimento Municipal* (IDFM) is a proxy of poverty conditions – a similar index to the Human Development Index, adopted at the municipal-level);
- T is the total financing available for Component 3 (US$50 million);
- M is the number of municipalities benefitting from Component 3 (62).

26. This formula allows for a balanced allocation per municipality, factoring in the level of poverty of each municipality, its size, and its population. In addition, a fixed term has been introduced, so that even small municipalities significantly benefit from the component, and a

ceiling was set to prevent the biggest and most populated municipalities from draining out too much of the budget allocation.

27. The local roads would be selected during project implementation, based on a citizen engagement process at the municipal level whereby the local population decides which local roads matter most for their daily and specific (gender) needs. In broad lines, the implementation process would be the following (the POM fully describes the consultation process):

- **Phase 1**: Phase 1 involves the discussion of a "development agenda" at the intermunicipal consortium level, which would set the principle medium-term development priorities. This development agenda would be the basis for the road selection, in the next phase, at the municipal level, and would be contained in the SEPLAN-led pluriannual participatory territorial plan (*Plano Pluri Annual Territorial Participativo*, PPATP) – see Box 2.1 below. They contribute to fostering empowerment of rural populations in the management of the municipality.
- **Phase 2**: Phase 2 involves the selection of the local roads, based on citizen engagement in each municipality. The population of each municipality would be invited to a half-day public consultation in the *Prefeitura municipal*, and would prioritize the local roads to be improved, aiming at supporting the municipal development agenda. Prioritization would be decided by a vote among the participants to the consultation. SEINFRA would present the program and moderate the discussion.
- **Phase 3**: Phase 3 involves the execution of the engineering designs, and related costing, for the prioritized roads.
- **Phase 4**: Phase 4 involves feedback to the municipality, at the mayor's level, providing information on what was possible to do within the allocated budget.
- P**hase** 5: Phase 5 involves works execution.

**Box 2.1 – Bahia's pluriannual participatory territorial plans (PPA-TP)**

PPA-TPs are decision-making planning tools, expressing the planning orientation from the municipalities and exclusively tied to municipalities. Unlike the State *Plano Plurianual Participativo*, PPA-TPs have no legal dimension but constitute reference documents for the medium-term development of municipalities. When approved, such PPA-TPs trigger eligibility for federal government funding to implement the plan, under a federal strategy to incentivize municipalities to join forces when tackling development challenges. PPA-TPs are indeed utilized at an intermunicipal level by intermunicipal consortiums (*Consórcios intermunicipais*). Bahia includes a total of 32 intermunicipal consortiums, out of which nine have initiated or even finished their PPA-TPs; the four intermunicipal consortiums targeted by Component 3 are included in this list. Intermunicipal consortiums benefit from methodological and technical support from the State of Bahia Planning Secretariat to prepare their PPA-TPs. A typical PPA-TP includes: (i) definition of strategic orientations, in some cases with some monitoring and evaluation framework; (ii) definition of thematic areas for development, (iii) for each thematic area, definition of actions to be completed within the PPA-TP horizon, which is typically 3 to 5 years; and (iv) in some cases, budget estimates to carry out these actions.

28. Prior to the approval by the Bank of any given local road improvement works, SEINFRA shall furnish to the Bank an application containing the following information and documentation, plus any such information that the Bank shall reasonably request:

- The priority list of the local road sections selected in selected Municipality, including the minutes of the public discussions held for its preparation, signed by the participants or their representatives;
- The signed agreement between SEINFRA and the relevant intermunicipal consortium detailing the commitments of each party to carry out the Municipal Road Subproject, including among other things: (i) delegation of responsibilities for the State to carry out the works in a municipal jurisdiction; (ii) commitments of the Municipality/Consortium to undertake socio-environmental duties related to the work (for example Indigenous Peoples and/or Resettlement Plans, if relevant), and to provide for subsequent road routine maintenance; (iii) financing of the Municipal Road Project.

29. Project engineering design would be carried out by consultants once the roads have been prioritized at the municipal level, and designs would be tendered following agreed-upon Terms of Reference that are included in thePOM. Technical specifications for the work would be based on agreed-upon standard specifications for critical spots elimination. Private consultancies would be hired to help SEINFRA/SIT in carrying out the technical and administrative work supervision. SEINFRA/SIT would also contract out independent social and environmental supervision. Infrastructure works would be contracted out to small- and medium-size local construction companies (bundling per geographic zones), although only one firm would build the bridge concrete beams and put them in place. Similar processes for local roads improvement have been successfully implemented in the on-going *Tocantins Sustainable Integrated Regional Development Project* (P121495), as described in Box 2.2 below.

**Box 2.2 - Prioritization Strategy for municipal roads – Experience in Tocantins**

The Tocantins Integrated Sustainable Regional Development project (P121495) successfully carried out a participatory process to determine which roads would be improved. Public consultations took place in 67 municipalities, development agendas were prepared with the assistance of the Planning Secretariat, and prioritized roads were established, with guidance from the Infrastructure Secretariat. There was no elite capture of roads since the Government and Secretariat were monitoring the process, and the fact that the envisioned mechanisms ensured wide participation from the populations. Given that limited financing was allocated to each municipality, not all prioritized roads were addressed. Usually the highest 2 to 4 prioritized roads were included in the program. Data on satisfaction with this approach is still being collected under an ongoing impact evaluation (as part of the previous project and ongoing at project preparation). However preliminary results indicate full satisfaction with the process and overall satisfaction with the execution of works.

30. Intermunicipal consortia (*Consórcios intermunicipais*) would play an important role in routine maintenance of local roads once the improvement works are completed. All 62 selected municipalities belong to four intermunicipal consortia. Intermunicipal consortia are independent legal entities to which municipalities can delegate some of their responsibilities (for example,

solid waste management). In spite of disparities among consortia, they usually have more technical capacity than individual municipalities. For coordination purposes among municipalities, the relevant intermunicipal consortium would oversee the local roads selection process, and intermunicipal consortia and municipalities would define the modalities for local road routine maintenance.

31. Component 3 would finance works, goods, and consulting and non-consulting services.

**Component 4 – Road Safety (Estimated cost US$15 million, 100 percent financed out of the IBRD loan)**

32. This component supports the road safety dimension of the PDO. It would finance two kinds of activities: institutional strengthening for road safety, and road safety corridors.

33. *Subcomponent 4.1: Institutional strengthening.* This subcomponent would provide support to improve road safety in Bahia, including, among others: (i) defining Bahia's road safety strategy; (ii) providing training and capacity building to SEINFRA/SIT on road safety; (iii) creating a traffic accident database for Bahia; and (iv) supporting the creation of a Lead Committee for Road Safety in the State.

34. The estimated cost of this subcomponent is US$5.5 million. The State road safety strategy would define objectives, a result framework, and main policy orientations. Training and capacity building on road safety would primarily be addressed to SEINFRA/SIT's Logistics Department (*Diretoria de Logistica*), which is currently in charge of road safety within SEINFRA, and would include international experts as well as local consultants. The State traffic accident database would aim at providing both senior levels of government and the public at large with a monitoring and evaluation framework for road safety. By integrating the various existing databases in the State and improving the database existing in SEINFRA/SIT, this database would record road safety crashes on state roads with a sufficient level of detail to understand the reasons for crashes. The component would not only finance the software which would host the database, but also the transfer of the existing data and the input and output protocols to be shared among the various road safety stakeholders. Tight coordination among agencies and the police, as well as training, would be required with regard to crash reporting. Finally, the Bahia Lead Committee for Road safety would be an inter-agency coordination and decision-making entity on road safety. The component would finance consultancies to help the State of Bahia design the structure most fitting for the State needs, underpinned by international best practices, and also create sustainable funding mechanisms for road safety in Bahia.

35. In order to carry out this subcomponent, SEINFRA would need to coordinate with other State agencies. Key State agencies involved in road safety in Bahia involve: (i) The State Transport Department (DETRAN); (ii) The State Military Road Police (*Polícia Militar Rodoviária Estadual*), through the Public Security secretariat; and (iii) the State Department of Health (*Secretaria de Saúde*). A cross-department task-force, headed by SEINFRA, would be created. This task-force would primarily work on the State road safety strategy and the traffic accident database features and implementation modalities. This task-force would prefigure the future Lead Committee for road safety.

36. *Subcomponent 4.2: Road safety corridors*. This subcomponent would provide support for establishing two Road Safety Corridors, and for carrying out the following interventions on those

corridors: (i) carrying out small-scale works and goods for road safety infrastructure improvement; (ii) providing and maintaining equipment for traffic law enforcement, including non-lethal equipment for crash reporting, and speed and drink-driving enforcement; (iii) carrying out communication campaigns for road safety; and (iv) providing training of road police officers for monitoring, reporting, and disseminating road safety results on the Road Safety Corridors.

37. The estimated cost of the Road safety corridors is US$9.5 million. Identified corridors are:

**BA502**: approximately 53 km from the southernmost intersection with the BR101 through S*ão* Felix and Cachoeira to the ring-road of Feira de Santana; and **BR420** (federal road managed by the State): about 49 km, from the intersection with BR324 to the intersection with BA502.

38. The main criterion used to prioritize these corridors was, within the State highway network, their high level of fatalities and severe injuries: 166 and 76 dead and severely injured people respectively per 100 km on BA502 and BR420 in 2013. The POM includes a full report on the highway selection. These two corridors are mostly interurban and face speeding challenges.

39. As part of this holistic approach towards road safety on the corridors, Subcomponent 4.2 would finance the following four levels of interventions: (i) Spot improvement infrastructure for road safety, including, where relevant, among other things,: intersection improvement, modification of curves with poor visibility, construction of paved shoulders where non-motorized mobility is an issue, village entry-points treatment, closing open roundabouts, speed humps and other equipment, guardrails in crash-prone locations, and horizontal and vertical signaling. The subcomponent would finance the design, small works and goods; (ii) Strict traffic law enforcement: speed and drunk-driving control, carried out by the State police, since most of the road safety problems in Bahia are about providing the right incentives for drivers to change their behavior. The subcomponent would finance mobile speed cameras and Blood Alcohol Content blitzes, and seek a commitment from the State police to use this equipment, in particular along the road safety corridors; (iii) Communication campaigns on road safety, primarily aimed at making road users and local communities aware of the strict traffic law enforcement program. The component would finance on-site and aired media campaigns, during project implementation; and (iv) Monitoring and reporting on injuries and fatalities on these corridors through the traffic database to be set-up. The component would finance the purchase of small equipment and the training of Police officers on how to report traffic crashes, and how to enforce road safety. The component would also finance the regular dissemination of road safety actions and results in the three corridors.

40. During preparation, road safety audits[14] identified the work interventions to be carried out. The costing of these works is only preliminary at this stage, and detailed designs would be carried out as part of project implementation. The indicative investment cost breakdown for the road safety corridors is presented in table 2.3 below, per typology of intervention:

Table 2.3: Breakdown of Road Safety Investment Costs

[14] Included in the POM

| | Indicative Cost (US$ M) |
|---|---|
| Spot infrastructure improvement | 6.0 |
| Traffic laws enforcement | 2.0 |
| Communication and advertising | 1.0 |
| Monitoring and reporting | 0.5 |
| **TOTAL** | **9.5** |

41. SEINFRA/SIT would primarily implement this component through its Logistics department (*Diretoria de Logistica*).The State Military Road Police (*Polícia Rodoviaria Militar Estadual*) would carry out the traffic law enforcement on the road safety corridors, as well as on other State highways. SEINFRA and the State Military Road Police, through the Public Security secretariat, are bound by a cooperation agreement whereby SEINFRA provides the police with non-lethal traffic law enforcement equipment (for example cars, speed cameras, and so forth) and the police would carry out traffic law enforcement and provide reports to SEINFRA/SIT's accident database. For the selected corridors, SEINFRA would keep the relevant municipalities informed of the activities and results. While infrastructure intervention in the component would only be designed to be performed on State roads, in cases where interventions interfere with municipal roads (such as a highway going through a village), State-Municipal agreements would be signed.

42. Component 4 would finance works, goods, training, and consulting and non-consulting services.

**Component 5– Project Management (US$4.0 million, 100 percent financed out of the IBRD loan)**

43. This component supports project management and coordination. The component would finance the Project Coordination Unit consulting and operating costs for project monitoring, supervision, and evaluation, including audits. This component would also finance the operating costs required for project implementation related to other project components.

44. Component 5 would finance consulting services, training, and operating costs.

## Annex 3: Implementation Arrangements

## BRAZIL – Bahia Road Rehabilitation and Maintenance Project - 2nd Phase

### Overall Implementation Arrangements

1. The State of Bahia (represented by its Secretary of Infrastructure, SEINFRA) would be the Borrower, and the loan Guarantor would be the Federative Republic of Brazil. SEINFRA would be the executing agency and would implement the project in accordance with the conditions of the Loan Agreement, the project design, and implementation procedures included in the Project Appraisal Document and the POM.

2. In addition to SEINFRA, other State entities that would be involved in project implementation include:

- **Finance Secretariat** (*Secretaria da Fazenda*, SEFAZ). Besides its usual fiduciary-related functions, the Finance Secretariat, through its Public-Private Partnership unit, would provide support to the Infrastructure secretariat to prepare and bid CREMA-PPP contracts (Subcomponent 2.2).
- **Planning Secretariat** (*Secretaria de Planejamento*, SEPLAN). Besides its usual budgetary-related functions, the Planning secretariat, through its Economic studies superintendence (*Superintendência de Estudos Econômicos*, SEI), would contribute to implementing the project result framework.
- **State Regulation Agency for Transport and Energy Public Services** (AGERBA). This entity, which supervises all the PPP and concession contracts of the State, would also supervise the CREMA-PPP contract (Subcomponent 2.2).
- **Other entities for road safety activities** would be involved in Component 4 implementation, including: DETRAN); the Public security Secretariat (*Secretaria de Segurança Pública*); and the Health Secretariat (*Secretaria de Saúde*). These entities would be part of the cross-sectoral road safety task-force on road safety, headed by SEINFRA.

3. Cooperation agreements would formalize the respective duties of SEINFRA and third-parties for project implementation:

- **For Component 3 (feeder roads**): Municipal Technical Cooperation Agreements between SEINFRA and the Intermunicipal consortia;
- **For Component 4 (road safety)**: cooperation agreement between SEINFRA, DETRAN, the Public Security Secretariat, and the Health Secretariat.

4. The State of Bahia has a good track record of satisfactorily implementing Bank-financed projects, and three Bank projects are presently under execution: the *Bahia Inclusion and Economic Development DPL* (P126351, IP: S); *the Integrated Health and Water Management SWAP* (P095171, IP: MS); and the recently-approved *Bahia Sustainable Rural Development Project* (P147157). Furthermore, SEINFRA and DERBA (the previous Road Agency, now fully integrated within the Infrastructure Secretariat) both have a good track record in implementing externally-financed road projects, as shown by their satisfactory implementation of the *Bahia*

*Integrated State Highway Management Project* (P095460)[15] and of the *Programa de Integração dos Corredores Rodoviários do Estado*,[16] co-financed by the Inter-American Development Bank.

**Project Coordination Unit and implementing departments within SEINFRA**

5. SEINFRA has created a Project Coordination Unit (UCP), reporting directly to the Infrastructure Secretary. The unit's functions would be: (i) to carry out the project management, including the relationship with the Bank, (ii) to ensure that the project is implemented in accordance with the provisions of the legal documents; (iii) to ensure that project activities are conducted in a timely fashion, by identifying such issues early in the project and proposing ways to resolve them, and (iv) to coordinate all technical, fiduciary, and safeguards activities related to project implementation.

6. Specific responsibilities of UCP include:

**a) Project management**

- Interact with the Bank and coordinate with other implementing entities involved in project implementation.
- Monitor project implementation, including the financial and physical progress of project activities, and deadlines.
- Prepare and submit to the Bank, at the agreed deadlines, project information and project management reports in accordance with the format established in the POM.
- Maintain the POM and keep it updated and available.

**b) Financial management and disbursements**

- Prepare the annual budgetary request for project funding and submit it to the Infrastructure Secretary.
- Carry out, with the support of SEINFRA/SIT's accounting department, the financial management of the project, including preparing the project's financial statements and reports.
- Maintain the project's administrative and fiduciary information and keep the data updated and available.
- Ensure payments are made for the contracts financed under the project through SEINFRA/SIT's financial and accounting departments (COFIN - *Coordenação de Cont. Financeiro* and COCON - *Coordenação de Contabilidade*).
- Prepare and submit disbursement requests to the Bank.

**c) Procurement and contract execution**

- Coordinate with and supervise SEINFRA/SIT's units and the above-listed State entities involved in project implementation regarding the preparation of the estimated budgets for all contracts, technical parts of bidding documents, and request for proposals.
- Prepare bidding documents, requests for proposals, and bid and proposal evaluation reports.

[15] Financed by the Bank during 2006-2013.
[16] Closed in 2006.

- Provide liaison with the State General Attorney (*Procuradoria Geral do Estado*, PGE) to speed up the approval of the procurement documents subject to the PGE's review.
- Provide liaison with the Bank, prepare and submit the request of No Objections of procurement documents, and alert the Bank on any procurement-related issues.
- Assist the CEL with respect to any requests for clarification submitted by bidders on bidding documents and on request for proposals.
- Ensure the execution by SEINFRA's central bidding commission (CEL) of the formalistic steps of the bidding processes, such as the publication of bids and expressions of interest, the conduct of bid opening sessions, the announcement of the opening of the bid record, and the responses to bidders' requests for clarifications.
- Prepare, update and monitor implementation of the procurement plan.
- Supervise the implementing entities in charge of contracts execution.
- Organize the cost and quality audit of the works financed by the project.

7. Within SEINFRA and besides UCP, two departments would be more specifically in charge of project implementation. The Transport Logistics department (*Superintendência de Planejamento, Logistica de Transporte e Intermodalismo*, SUPLOG) would implement a few of the institutional strengthening activities. Most implementation duties would rely on SEINFRA/SIT. SEINFRA/SIT is a new entity, resulting from the integration of the former Road Agency (DERBA) within SEINFRA (State law no. 21.007/2014); SEINFRA/SIT continues with the attribution of the previous DERBA regarding project implementation. Various implementing entities within SEINFRA/SIT would be involved in project implementation: the design department (*Diretoria de Projetos e Estudos*, DPE); the construction department (*Diretoria da Construção e da Manutenção*, DCM); the Logistics department, in charge of road management and road safety (*Diretoria de Logistica*, DLO); and the Environment department *(Gerência Ambiental, GERAM).*

**Specific implementation arrangements within SEINFRA/SIT**

8. Given the importance of SEINFRA/SIT in project implementation, SEINFRA/SIT's superintendent would be supported by an engineer who would be fully dedicated to the project and who would be in charge of coordinating and supervising the project activities within this department. This engineer, who would report directly to SEINFRA/SIT's superintendent, would work in close relationship with UCP.

9. **Technical**. For Components 2 and 3, under the UCP supervision and control, SEINFRA/SIT's Project and Studies Department (*Diretoria de Projetos e Estudos*, DPE), would review the engineering designs and cost estimates prepared by the contracted-out engineering companies. SEINFRA/SIT's logistics department (*Diretoria de Logistica*, DLO), currently in charge of the road safety agenda within SEINFRA/SIT, would lead the preparation and supervision of Component 4 (road safety) activities. For all components, SEINFRA/SIT's Construction and Maintenance Department (*Diretoria de Construção e Manutenção*, DCM) would carry out civil works supervision, with the support of specific and locally-based supervisions entities (*Escritórios de fiscalização*) and contracted-out consultancies for technical

and socio-environmental supervision. As part of quality assurance, a quality group (*Núcleo de qualidade*) would be created and would carry out bimonthly quality audits of the works.

10. For institutional strengthening activities, SEINFRA/SIT's technical departments, as well as SEINFRA's Transport Logistics department, would: (i) prepare Terms of Reference; (ii) provide technical input for bidding documents; and (iii) review the reports and studies produced by consultants, including clearance for UCP to authorize payments.

11. **Fiduciary**. UCP would have the overall fiduciary responsibility of project implementation, with the support of other SEINFRA's entities.

12. Procurement and contract management activities, with the regular support of UCP, would be undertaken in the following way: (i) the "beneficiaries"[17] would prepare the TORs and/or specifications, estimated budgets, shortlisting, bidding documents, and requests for proposals, and they would participate in the evaluation of the bids, contract awards and contract negotiations; (ii) SEINFRA/SIT's bidding commission (CEL) would carry out the formalistic aspect of all procurement processes (issuance of the bidding documents, advertising, and bid opening); (iii) the respective contracts would be signed by SEINFRA/SIT; (iv) the beneficiaries would be responsible for contract execution (including certification of bills); (v) payments would be made by SEINFRA/SIT, once authorized by the beneficiaries; and (vi) monitoring of the achievement of intermediate outcomes and progress reporting to UCP would be done by each beneficiary.

13. Financial management would be undertaken by SEINFRA/SIT's Administrative and Financial Coordination unit (COFIN), which is in charge of payment and budget execution, under the coordination of UCP.

14. **Safeguards**. SEINFRA's environmental unit (*GERAM*), would monitor and implement the project's environmental and social safeguards systems. Contracted-out consultancies, focusing specifically on environmental and social works supervision, would help GERAM monitor and report on safeguards compliance. Although the current institutional capacity of GERAM is sufficient for managing the limited expected social and environmental impacts and risks of the project, SEINFRA has agreed to strengthen the unit as part of Component 1 activities, *Institutional strengthening*.

15. **Grievance Redress Mechanism**. The project would rely on the Grievances Redress Mechanisms of Bahia. As part of its transparency policy, the State has a centralized complaint system (*Ouvidoria*), accessible at: http://www.ouvidoriageral.ba.gov.br/ or through the 0800-284-0111 toll-free phone number. In addition, the Infrastructure Secretariat has a specific complaint system that is accessible through its website: http://www.seinfra.ba.gov.br/. Project roadworks signs would refer to these systems.

**Financial Management**

16. Financial management (FM) assessments for the project were conducted in August 2014 at the State Transport Infrastructure Agency (DERBA), and in March 2015 at the newly-created SEINFRA/SIT. The objective of the assessment was to determine whether the entity

[17] "Beneficiaries" include the entities described in paragraph 7 of this Annex.

implementing the project fiduciary duties, SEINFRA/SIT, had acceptable FM and disbursement arrangements in place to adequately control, manage, account for, and report on the use of project funds.[18] Based on this assessment, the overall FM arrangements as set out for this project was designated as Satisfactory. FM control risk was assessed as Moderate.

17. The proposed financial management systems are based largely on those established under a previous Bank-financed project whose performance has been satisfactory. The overall conclusion of the assessment is that the financial management arrangements as set out for this project are considered adequate.

18. ***Implementing Agency*** (Staffing and institutional arrangements): While UCP would have the overall financial management responsibility of project implementation, SEINFRA/SIT would undertake the primary fiduciary tasks for project execution. These responsibilities would be carried out by SEINFRA/SIT's financial department. The UCP fiduciary responsibilities include: (i) preparing and obtaining approval of project FM arrangements; (ii) coordinating and supervising project implementation, including safeguards; (iii) submitting disbursement requests and documentation of expenditures to the World Bank (SOEs); (iv) preparing and submitting project Interim financial reports (IFRs) to the Bank; (v) preparing and providing all financial documentation and project reports requested by external auditors and Bank staff; and (vi) preparing, updating and ensuring that all project executors follow the Project Operating Manual.

19. ***Staffing***: SEINFRA/SIT is staffed and operational and can support the project. The Financial Management team is composed of qualified professionals. However, due to the turnover of staff, they have only a general understanding of Bank policies and procedures, thus additional training would be required. The team has the education levels, experience, and knowledge of processes to adequately perform these functions. Yet, additional staff may be required and contracted after Loan Effectiveness to strengthen its capacity. In particular, this project would require the nomination of a dedicated qualified financial management specialist charged with overseeing all FM-related activities for this project.

20. ***Budgeting, Accounting and FM Systems***: The state of Bahia follows both the Brazilian Accounting Rules (NBC), Law 4320/64, that established certain high level accounting principles, and the Accounting Manual Applicable to the Public Sector (MCASP) issued under Law 10180 of February 6, 2001, and Decree 3589 of September 6, 2001. The project would also be required to follow the first set of national accounting standards applicable to the public sector (NBCASP) and the revised Accounting Manual Applicable to the Public Sector (MCASP) issued under *Portaria* STN 467 of August 6, 2009 and updated in 2013.

21. The budget cycle includes planning and implementation of all government activities, which are to be reflected in the PPA, LDO, and LOA. The FIPLAN system is used by all state institutions (including SEINFRA/SIT) that receive and transfer government funds. SEINFRA/SIT has in place adequate internal control procedures, is properly staffed, and has the capacity to make disbursements through conventional Statement of Expenditure (SOE) procedures, and to produce good quality Interim Unaudited Financial Reports (IFRs).

[18] In accordance with OP/BP 10.00 and the Financial Management Practice Manual (issued by the Financial Management Sector Board in March 1, 2010).

22. ***Accounting and maintenance of accounting records***: SEINFRA/SIT uses two different, and not fully integrated, systems: (1) FIPLAN, is the State of Bahia's budgetary and accounting tool, and is used to record the project's expenditures and to make relevant payments in accordance with the annual budget law. This is because the project is a cost center (*Unidade Gestora*) within the system. (2) SGF is SEINFRA/SIT's own financial management system and is the basis for the preparation of SOEs/IFRs and project financial statements, and for monitoring of physical progress and contract management. SGF does not communicate directly with FIPLAN, therefore financial data would need to be periodically and manually reconciled between the two systems. Despite the risk of human error, these systems have been evaluated and monitored under other Bank projects, and are considered reliable and secure. SEINFRA/SIT's IT department is working to fully integrate both systems by the end of 2015. The Finance Secretariat-SEFAZ has the responsibility to maintain the State's accounting records, including those of the project. SEINFRA/SIT has a financing unit subordinate to SEFAZ and responsible for making the respective payments within the limits of the authority provided by the annual budget law.

23. ***Internal Controls and Internal Audit***: The internal control environment of the project is considered adequate. All transaction processing is performed through SEINFRA/SIT's institutions, processes, and systems that provide for segregation of duties, supervision, quality control reviews, reconciliations, and independent external audits. Process flows appear to be clear and well understood by SEINFRA/SIT's personnel. All project budgeting and accounting transactions would be recorded through the public state accounting system (FIPLAN). All payments would follow the official commitment (*empenho*), verification (*liquidação*) and payment (*pagamento*) routine. All project costs are recorded according to the Federal and State Chart of Accounts, which enables a comparison and reconciliation with the project's own records, recorded in SGF, and used by DERBA for recording project transactions, financial reporting, and budget execution. The system is an integrated online system, used by SEINFRA/SIT.

**Disbursements and Flow of funds**

24. The proposed funds flow and disbursement arrangements would be streamlined within the project to facilitate execution, avoid unnecessary incremental operational arrangements, and rely as much as possible on existing country systems. (See the Flow of Funds diagram in Figure C.1). All payments would be made by SEFAZ using the FIPLAN system, upon instructions from UCP, once payment obligations have been incurred, verified, and properly documented. To make payments, the State system requires that funds be committed by source, making possible the tracking of loan disbursements to project expenditures.

25. The disbursement of project funds would be processed in accordance with normal Bank procedures, and as stipulated in the Loan Agreement and the Disbursement Letter. Funds would be disbursed in respect of eligible expenditures incurred or to be incurred under the project and would be disbursed in accordance with agreed-upon percentages. The primary disbursement method would be advances. The UCP would request such advances to be made in US Dollars (USD) up to a maximum amount of US$5,000,000, a ceiling which may be increased during implementation depending on project needs. In this case, the loan funds would flow from the Loan Account to a segregated Designated Account denominated in US Dollars and maintained at the *Banco do Brasil* in the name of the Finance Secretariat (SEFAZ) identifying the project.

After UCP approval, the Finance Secretariat would make payments to providers of goods, services, training, and works incurred by the project using the State FIPLAN system.

26. Besides advances, disbursement methods of reimbursements and direct payments would also be available. The documentation of the uses of Advances and Reimbursement requests would be made through Statements of Expenditures (SOEs) with records (copy of invoices and/or receipts), if required. Direct payments would be documented by Records. The Minimum Value of Applications for Direct Payment and Reimbursement is US$1,000,000 equivalent, with the exception of the Retroactive Financing Application for withdrawal, which would has no Minimum Value.

27. The project disbursement deadline date (final date on which the Bank would accept applications for withdrawal from the Borrower or documentation on the use of loan proceeds already advanced by the Bank) would be four months after the Loan Closing Date. This "Grace Period" is granted in order to permit the orderly project completion and closure of the Loan Account via the submission of applications and supporting documentation for expenditures incurred on or before the Closing Date. Project expenditures would be reported after they are approved by the UCP and fully documented, ensuring that the loan proceeds were exclusively used for eligible expenditures.

28. Table 3.1 below presents the Loan categories of expenditures.

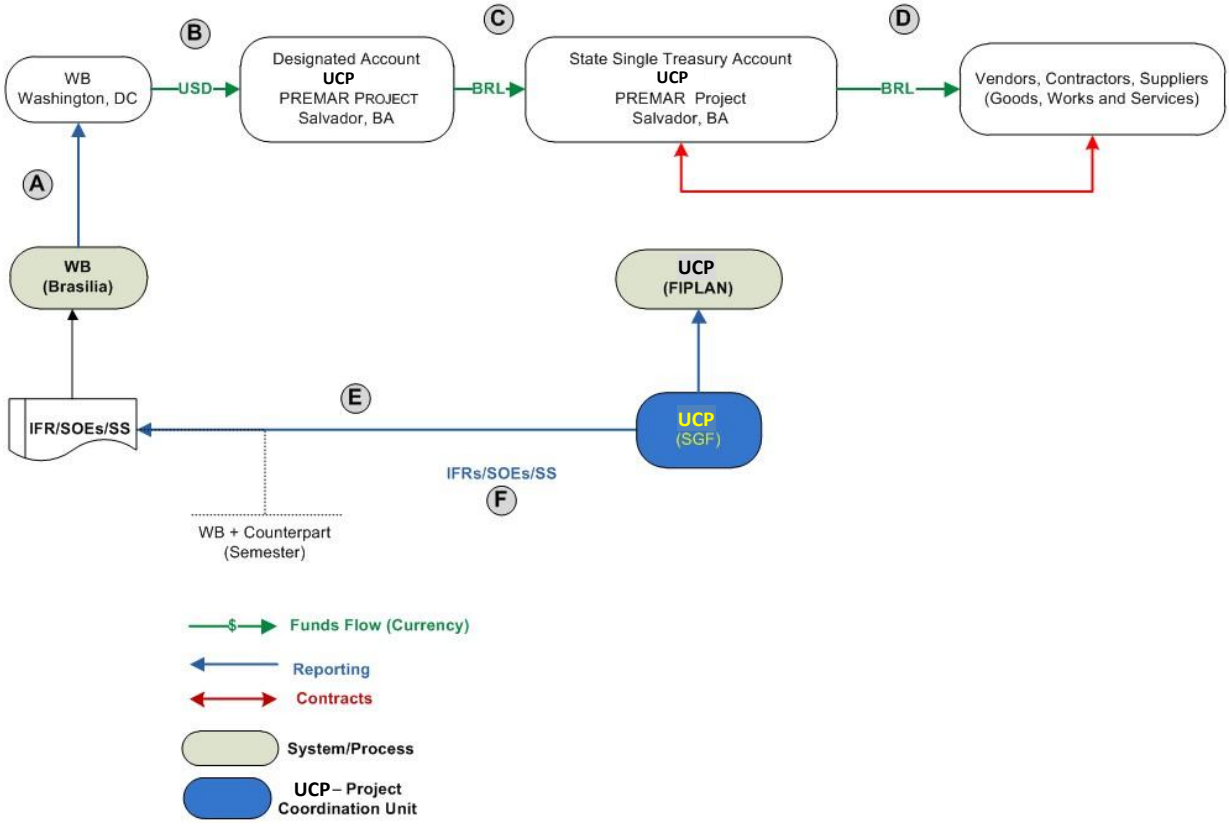
Table 3.1: Loan Allocations by Category of Services

| **Category** | **Amount of the Loan Allocated (US Dollars)** | **Percentage of Expenditures to be financed (inclusive of Taxes)** |
|---|---|---|
| (1) Works, goods, consulting and non-consulting services and training for Component 1 of the project | 18,000,000 | 100% |
| (2) Works and consulting services for Sub-Component 2.1 of the project | 99,500,000 | 100% |
| (3) Works, goods, consulting and non-consulting services for Component 3 of the project | 50,000,000 | 100% |
| (4) Works, goods, consulting and non-consulting services and training for Component 4 of the project | 15,000,000 | 100% |
| (5) Consulting services, training, and operating costs for Component 5 of the project | 4,000,000 | 100% |
| (6) Unallocated | 13,000,000 | |

| Category | Amount of the Loan Allocated (US Dollars) | Percentage of Expenditures to be financed (inclusive of Taxes) |
|---|---|---|
| (7) Front-end Fee | 500,000 | Amount payable pursuant to Section 2.03 of the Loan Agreement in accordance with Section 2.07 (b) of the General Conditions |
| **TOTAL AMOUNT** | **200,000,000** | |

29. Figure 3.1 below presents the project flow of funds.

**Figure 3.1: Project Flow of Funds**




(a) The primary Bank disbursement method would be Advances. SEINFRA would open a single, segregated Designated Account (DA) in its name, in Banco do Brasil, to receive loan funds in USD, and would send Withdrawal Applications to the Bank together with SOEs with Records accounting for advances from the Bank.

(b) World Bank advances funds into Designated Account (DA).

(c) From the DA, funds would be converted to Brazilian Reais (BRL) and transferred to the state's single treasury account, in Salvador. The single treasury account would have a sub-account exclusively for the project, with SEINFRA/SIT being responsible for managing this account through FIPLAN.

(d) Direct payment would be made to providers or contractors (observing the Bank's FM and Procurement Guidelines).

(e) IFRs, SOEs and Records are formatted and sent to World Bank by UCP.

**Retroactive financing and advance contracting**

30. **Retroactive financing**: Withdrawals up to an aggregate amount not to exceed US$40,000,000 equivalent may be made for payments made within one year prior to the Signing Date of the Loan Agreement for Eligible Expenditures.

31. ***Financial Reporting***: UCP, with the support of the financial coordinator, would ensure the timely production of semester IFRs. These IFRs would be produced from the SGF system and would consolidate the project's financial data for all components. Accordingly, the format and content of the IFRs, to be agreed on with the borrower. would cover the following items:

- IFR 1A - Sources and Uses of Funds (by disbursement category, showing the Bank's share in the financing of expenditures, and reflecting cumulative amounts (project to-date, year-to-date, and for the period), and actual versus budgeted expenditures, including a variance analysis; and
- IFR 1B - Uses of Funds by Project Activity or Component, cumulative (project-to-date; year-to-date; and for the period) actual versus budgeted expenditures, including a variance analysis.

32. ***External Auditing*:** Annual project financial statements would be audited by the State's Supreme Audit Institution, TCE-BA (*Tribunal de Contas do Estado da Bahia*), in accordance with acceptable auditing standards and in line with IFAC's norms and guidance, which is acceptable to the Bank. The external audit would be conducted under Terms of Reference acceptable to the Bank. Auditors would be required to issue a single opinion on the project's financial statements. Auditors would also have to produce a management letter, where relevant internal control weaknesses would be identified, which would contribute to the strengthening of the control environment. The auditor's report would be submitted to the Bank no later than six months after the closing of the Borrower's fiscal year.

33. ***Supervision Plan*:** The scope of project supervision would review the implementation of FM arrangements and FM performance, identify corrective actions, if necessary, and monitor fiduciary risk. It would take place annually and include (i) reviewing of semester IFRs; (ii) reviewing of the auditors' reports and follow-up of any issues raised by auditors in the management letter, as appropriate; (iii) participation in project supervision; and (iv) updating the financial management rating in the Implementation Status Report (ISR).

**Procurement**

34. Procurement for the project would be carried out in accordance with both the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011 and revised in July 2014, and the "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011, and revised in July 2014, in addition to the provisions stipulated in the Legal Agreement. A Procurement Plan showing the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame were agreed to during negotiations between the Borrower and the Bank and would be updated at least annually, or as required, to reflect the actual project implementation needs and improvements in institutional capacity.

35. The UCP and SEINFRA/SIT's CEL would be responsible for the procurement of works, goods, and consulting and non-consulting services under the project. CEL would be in charge of the formalistic aspect of the procurement processes, and it would publish the invitations for bids and the Request for Expression of Interest (EOIs), conduct bid openings, and sign minutes of bid openings. The UCP and the other units involved in project implementation would be responsible for preparation of all procurement documentation up to the contract award (short lists, bid documents and RFP, evaluation reports, negotiation minutes, and any other required documents) and for updating and monitoring the procurement plan. The UCP would act as liaison between the other implementing entities, and would monitor and ensure the quality and timely delivery of the procurement processes.

Procurement Methods

36. **International Competitive Bidding (ICB).** All works estimated to cost US$25,000,000 or more per contract, and non-consultant services and goods estimated to cost US$5,000,000 or more per contract, would be procured under contracts awarded on the basis of ICB procedures. Standard Bidding Documents would be used for all ICB contracts and these shall be prior reviewed by the Bank. ICB would be used for the procurement of several packages of CREMA work contracts and road safety equipment.

37. **National Competitive Bidding (NCB).** All work estimated to cost less than the equivalent of US$25,000,000 per contract, and goods and non-consultant services estimated to cost less than the equivalent of US$5,000,000 per contract, may be procured under contracts awarded on the basis of NCB procedures and bidding documents acceptable to and agreed by the Bank. For goods and non-consulting services estimated to cost less than US$5,000,000 per contract, the procurement method known as *pregão eletrônico* under Law 10,520/02 would be acceptable if agreed to in the procurement plan, but also subject to the additional procedure that the bidding documents shall be acceptable to the Bank. For road works subprojects (Component 3) estimated under the ICB threshold, Framework Agreements (FA) are expected to be established. Contracting feeder road works through FA is expected to speed up the implementation of the component, in view of the fact that the agreements establishing unit prices can be initiated without the full completion of subproject designs.

38. **Shopping**. Goods and non-consultant services estimated to cost less than US$100,000 equivalent per contract and works estimated to cost less than US$ 200,000 may be procured on the basis of shopping procedures.

39. **Direct contracting**. Goods, non-consultant services, and works may exceptionally be procured on a direct contracting basis under conditions set forth in the Bank's procurement guidelines.

40. **Selection of Consultants**. The majority of the consulting services, such as for road rehabilitation design and supervision, the transport and logistics master plan, and a socio economic assessment of transport investments, would be procured under Quality and Cost Based Selection (QCBS) procedures. The Quality-Based Selection (QBS) procedure can be adopted if the services are complex or highly specialized as defined in the Guidelines for Selection and Employment of Consultants, which also define the conditions for selections through Least Cost Selection (LCS), Fixed Budget-based Selection (FBS), and Consultants' Qualification-based Selection (CQS) procedures. In exceptional cases, Single Source Selection (SSS) may be appropriate, if properly justified.

41. Short lists of consultants for services estimated to cost less than US$1,500,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Guidelines for Selection and Employment of Consultants. Individual consultants would be selected in accordance with the procedures described in Section 5 of the Guidelines.

Advertising

42. Requests for expression of interests for consultant contracts expected to cost US$300,000 or more, and all ICB (for goods, non-consulting services, and works) would be advertised in the online publication United Nations Development Business (UNDB). In addition, all requests for expression of interest for consulting services estimated under US$ 300,000, and all invitations for bids under NCB, should be advertised in the Official Gazette of the State of Bahia, as well as in appropriate newspapers with national circulation or on a free access electronic portal.

World Bank Reviews

43. The prior review thresholds for the project are assigned in the procurement plan, determined in accordance with the procurement risk assigned to the project. The procurement risk would be revised during implementation, based on the results of the supervision missions, and can be revised accordingly.

44. In addition to the prior review supervision to be carried out from World Bank offices, at least one annual procurement post-review mission would be carried out during project implementation.

Reporting Requirements

45. Each semester during project implementation, SEINFRA through its UCP, would submit a progress report which would include procurement monitoring tables. Such tables would include the expected and actual timelines of the various steps related to the procurement of each contract included under the project.

Procurement Plan

46. SEINFRA's UCP would consolidate the procurement needs into one project procurement plan. This Procurement Plan for the first 18 months of project implementation would provide the basis for the procurement methods and was agreed on during negotiations between SEINFRA and the World Bank. It would be available in the project's database and on the World Bank's external website. The Procurement Plan would be updated at least annually or as required to reflect the actual project implementation needs.

Assessment of procurement capacity.

47. An assessment of the capacity of the UCP and CEL was carried out between May 2014 and March 2015. The assessment reviewed their organizational structures and capacity for implementing the project, and the main findings are as follows.

48. The assessment conducted in 2014 showed that DERBA was equipped with long-experienced staff. From 2006 to 2013, DERBA-CEL carried out about 500 bidding processes, called *concorrências*, for works, and consulting and non-consulting processes, for a total value of US$1 billion, representing 80 percent of the bidding processes successfully completed. DERBA-CEL's staff was fully familiar with the Bank's procurement procedures. It worked expeditiously,

spending on average no more than 45 days in each of the procurement processes from advertising to contract award. It had an efficient filing system with space and resources to operate satisfactorily. When, in March 2015, DERBA was absorbed within SEINFRA, DERBA-CEL was eliminated and replaced by a new bidding commission (SEINFRA-CEL). This new CEL was staffed under Decree Nº 062, March 12, 2015, with 5 members, one of them who had extensive procurement experience by having been part of the DERBA-CEL. It is expected that the new SEINFRA-CEL would maintain the good procurement track record of the previous DERBA-CEL, and would be able to smoothly handle the procurement processes of this project.

49. As in the previous Bank-financed project, a UCP has been set up within SEINFRA because this arrangement operated adequately in the previous operation. For handling the above activities, the UCP (as established in the SEINFRA's Decree 052 of March, 02, 2015) is staffed with a full time coordinator, a financial management specialist, a senior procurement specialist, and a feeder roads monitoring specialist. In addition, the UCP would hire additional procurement specialists, as well as technical staff, after the loan's signature, and when procurement demands increases require strengthening of the UCP procurement capacity.

50. SEINFRA/SIT maintains a procurement database (stemming from DERBA), which is able to provide key information for each bidding process, such as the bidder's name, number and value of the bids, estimated value of the contract, winner's firm, and value of the awarded contract. This procurement management system also permits assessing how the processes are being handled internally by each of the different departments.

51. All bidding processes carried out by SEINFRA should be reviewed and cleared by the State General Attorney (PGE). This additional step may lead to delays in the bidding processes. To ensure that the project procurement processes are executed in a timely fashion, the PGE agreed to handle the project processes on a priority basis and to nominate a single lawyer, trained on the Bank's procurement systems, for the review of all the procurement processes under this project.

52. Specific mitigating measures have already been taken during project preparation, including: (i) the Bank procurement specialist has worked closely with ex-DERBA (now SEINFRA/SIT) in the preparation of key requests for proposal documents; and (ii) SEINFRA/SIT's staff attended the Bank's procurement training.

53. Suggested mitigation measures taken during the project implementation are: (i) the Bank would provide specific training to SEINFRA/SIT's and PGE's staff on how to develop terms of reference and consulting budgets, and how to prepare evaluation reports; (ii) SEINFRA/SIT's procurement management system, and the civil works unit prices database, would both be enhanced; (iii) individual consultants would be hired, as needed, to help in preparing more complex terms of reference; and (iv) the Bank's team would systematically pre-review the most complex procurement cases, and would provide hands-on support as required.

54. The initial overall project risk for procurement is assessed as Moderate for the following reasons: (i) UCP is not yet fully equipped with the required staff; (ii) the PGE, if measures are not taken, might delay the procurement processes; (iii) some implementing entities (for example GERAM) have shown difficulties in preparing the Terms of Reference within a short time frame; and (iv) if the civil works cost database is not updated, unrealistic budgets might lead to unsuccessful bidding and contract cost overruns.

**Environmental and Social (including safeguards)**

55. The project does not entail any potential large scale, significant, or irreversible negative socio-environmental impact. It has statewide relevance in improving the effectiveness of road transport, as it supports a number key highway rehabilitation and maintenance activities, and it also finances the suppression of critical points on rural municipal roads. Rural road investment would primarily include quagmire suppression and constructing small bridges, and culverts, and providing adequate drainage to ensure all-season access, with improvements in traffic safety. As a key benefit, the project is expected to contribute to increased economic production, notably in agriculture, as a result of improved accessibility, and to increased productivity, as a result of lower costs of transport.

56. While most direct negative socio-environmental impacts from the project are expected to be limited in time and localized near the civil works sites, potential positive impacts can be experienced, as the corrections of critical points on rural municipal roads helps to decrease erosion problems, and may also provide some water accumulation for use during periods of drought. Where the dry climate prevails (which occurs in much of the territory of Bahia State), rains occur in a short period of the year and are very concentrated (large volume of water in a short time). It was observed that some existing structures on dirt roads can serve as bridges and, at the same time, allow the accumulation of water in small ponds, which can then be used during part of the dry season. Also of great relevance is the fact that the proposed works on dirt roads would benefit the rural population which has problems of access to schools, health facilities, and other services, since those roads do not allow traffic throughout the year.

57. For Component 2 (State highway rehabilitation and maintenance), the interventions would contribute to improve interstate connectivity and safer road transport, with a goal of reducing overall logistics costs. They would improve access to industrial plants, schools, and health facilities in several regions of the State, primarily *Sertão* and western Bahia. All the proposed interventions are on existing State or municipal roads, and include neither construction of new highways, nor paving existing unsealed roads. Furthermore, the rehabilitation of paved state roads also allows the rehabilitation of drainage, which is critical to the durability of the road pavement and to prevention of erosion that can undermine the stability of the road and impact streams and rivers. The primary potential adverse impact is expected during the construction period, but is limited in time and scope. For Component 3 (rural roads improvement), some works may occur in sensitive environmental and social contexts, but the participatory mechanisms envisioned in the decision process for investments at the municipal level are expected to contribute to addressing these issues. The interventions on municipal roads would primarily improve access to local markets from farms and rural areas, and access to basic social services, in several small cities of the State. The consultation process would also contribute to empowering residents at the local level, as well as in inter-municipal consortiums.

58. The project environmental assessment category is B – Partial assessment. The Safeguards instruments were disclosed on SEINFRA's website (www.seinfra.ba.gov.br) on April 10 2015, prior to the public consultations, held on April 17 2015. A revised version of the instruments was approved by the World Bank and disclosed on both the World Bank's and SEINFRA's websites on January 5, 2016.

**Environmental Safeguards**

59. Abiding by OP 4.01 *Environmental Assessment*, the Borrower addressed safeguard policy issues by conducting an ESIA from which the ESMF has been prepared to outline the set of guidelines, procedures, and criteria to be used for screening activities, and to ensure that such activities would not cause any potential large scale, significant or irreversible negative environmental and social impacts. An EMP for the rehabilitation of road works identified at appraisal was prepared in accordance with the ESMF.

60. In order to effectively minimize or mitigate potential adverse impacts, the Environmental and Social Impact Assessment developed screening procedures, mandatory Action Plans and institutional strengthening measures. The ESIA identified for each component the type of interventions expected, including a description of technical issues (design, project, dimensions, and needs), and provided an environmental screening. Two different types of interventions have been identified, one for Component 2 (State highway rehabilitation and maintenance) and one for Component 3 (rural roads improvement).

61. The most commonly expected negative impacts would arise from the construction phase under Components 2 and 3, which includes works interventions mostly within the rights of way and associated sites of existing roads not having openings of new roads. Impacts from these interventions are expected to be limited, transitory, and of short duration. The ESMF and EMPs specify the guidelines and procedures for construction contractors to be incorporated in the bidding documents for civil works, covering aspects such as location of construction camps, clearance of vegetation, noise control, traffic control, safety signaling, and disposal of construction debris and waste material, among others. Compliance with the practices outlined in the POM would be a contractual obligation of the contractors.

62. The main objectives of the ESIA were threefold: i) assess the potential environmental and social impacts of the proposed project-supported activities; ii) design appropriate instruments to maximize project benefits and to minimize, mitigate, or compensate for any adverse impacts that may result from or be associated with the proposed project activities; and iii) recommend capacity building measures for the state agencies implementing the project to effectively use these environmental and social impact management frameworks.

63. The Natural Habitats policy safeguard (OP 4.04) was triggered, the ESIA addressed the safeguard requirements, and an EMP for the rehabilitation road works identified at appraisal was prepared which includes provisions to regenerate and reforest degraded areas as needed. For Component 3, for which specific sites of critical points suppression would still have to be defined, an Environmental Management framework was proposed to outline the set of procedures to be used, and to ensure that such activities would not cause any potential large scale, significant, or irreversible negative environmental impacts.

64. Although negative impacts on physical cultural resources are not expected during project implementation, the OP 4.11 was triggered regarding possible "chance findings". The project’s civil works would normally be located within the existing right-of-ways of road sections, and the Environmental Management Framework includes provisions to address any such findings which may arise during implementation. To deal with them, Brazil has a well-developed legislative and normative framework, which is under the oversight of the National Institute for Protection of Historical and Archeological Sites (IPHAN). The "chance findings" procedures would also be part of the Works Environmental Manual.

65. The OP 4.09 Pest Management was triggered regarding proposed investment under Component 2, primarily because vegetation clearing under road maintenance could sporadically involve the use of pesticides or chemical products (theoretically, such case should not occur as it is specifically prohibited for works and services financed by the project). A Pest Management Framework was prepared by the Borrower in a satisfactory manner.

66. The triggering of OP 4.36 Forests is not necessary. In accordance with OP/BP 4.01, the project's ESIA assessed the potential impact of the project on forests and on the rights and welfare of local communities, and the final findings showed that the project would not directly involve forest management or activities in forest areas.

**Social Safeguards**

67. The project's development objective of sustainably enhancing the condition and safety of state highway and feeder roads in the poorer regions of Bahia is a popular priority among potential beneficiaries. The proposed investments in roads are also well aligned with a number of the state's most pressing challenges, namely reducing poverty and regional disparities and enhancing environmental sustainability. For these reasons, the overwhelming majority of the proposed project's social impacts are expected to be positive.

68. Nonetheless, several of the proposed activities are socially complex and would operate in sensitive social contexts. For instance, support for feeder roads would require considerable public consultations to reach decisions regarding priority investments. For municipal feeder roads, approval of road improvement activities would be subject to presentation of evidence of stakeholders' participation in the definition of the priority road sections and related improvement activities. In light of these recognized opportunities and risks, an ESIA of the proposed project activities was designed and conducted in close consultation with a range of stakeholders, including local residents and municipal authorities, private sector producers, public service providers, NGOs , and so forth.

69. To reinforce and sustain these positive impacts, the Terms of Reference for the Environmental and Social Impact Assessment included social communication, community participation, redress of grievances, and environmental education activities that would be implemented across the State. The nature and scope of these impacts would be measured through gender- and ethnicity-disaggregated monitoring and evaluation mechanisms. SEINFRA/SIT would support implementation of a Citizen Engagement (CE) framework. The outcomes of mainstreaming CE activities would be monitored and reported on a systematic and consistent basis.

70. With regards to social safeguards, the project is not expected to require any land acquisition. However, because the exact location and design specifications for many of the proposed road works would only be determined during project implementation, a Resettlement Policy Framework (RPF) was prepared which clarifies resettlement principles, organizational arrangements, and screening and design criteria to be applied to subprojects prepared during project implementation. The RPF is an integral product of the ESIA process, and as such was reviewed during public consultations in April 2015.

71. The ESIA identified 41 indigenous and *quilombola* communities within the area of influence (10km radius) of the pre-selected roads to be rehabilitated under Component 2. The

Borrower has prepared an Indigenous Peoples Planning Framework consistent with OP 4.10 for the interested communities. Key elements of this Plan include measures to ensure free, prior, and informed consultations in order to design appropriate social and economic benefits for these communities. In view of the fact that the 62 municipalities eligible for Component 3 include much of the northern, eastern and central parts of the state, several of the state's estimated 11,000 indigenous peoples and hundreds of *quilombola* communities may potentially benefit from the project. The IPPF would assist the executing agencies in determining whether indigenous peoples or *quilombola* communities are present in the project area, and if so, to ensure that the interested communities support the proposed activities as well as any additional measures required to maximize their culturally appropriate benefits and to avoid potentially adverse effects.

72. Other safeguards policies are not applicable, including: OP 4.37, *Safety of Dams;* OP 7.50, *Projects on International Waterways;* and OP 7.60, *Projects in Disputed Areas.*

**Monitoring & Evaluation**

73. UCP, within SEINFRA, would have the overall responsibility for monitoring and evaluating project outcomes and satisfactory project implementation, including for safeguards. Limited additional costs would be required for the project monitoring and evaluation, with most indicators either resulting from standard supervision processes (such as for works) or from particular technical assistance provided for the project.

74. UCP would report to the Bank on a biannual basis. Reporting would include, among other things, information on project outcome indicators, project intermediate outcome indicators, procurement planning, contract management (including financial and physical progress), and safeguards compliance. The agreed report template is included in the POM.

75. Based on the *Integrated State Highway Management Project* (P095460) experience,[19] the track records are good for both -the former DERBA and SEINFRA in terms of monitoring and evaluation. However, this proposed project is substantially more complex because it involves both local roads and road safety activities, which requires enhanced coordination at SEINFRA's level, as well specific surveys, to provide estimates of some indicators that would affect the Result Framework.

76. Finally, beyond the Result Framework, SEINFRA envisages introducing a project impact evaluation to identify the socioeconomic benefits of the project at the household level. These activities would be based on household surveys of potential beneficiaries from the investments under Component 3 (feeder roads improvements). This impact analysis would contribute to enriching the assessment of perceived long-term impacts of the regional development initiatives and municipal road investments, combined with activities carried out by the *Bahia sustainable rural development project* (P147157). Subcomponent 1.5 includes several other initiatives on project appraisal and impact evaluation.

[19] Closed in Sept. 2013.

## Annex 4: Implementation Support Plan

## Brazil: Bahia Road Rehabilitation and Maintenance Project - 2nd Phase

### Strategy and Approach for Implementation Support

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

2. There has been a continuous partnership between the Bank and the State of Bahia in the transport sector in the past. Notably, SEINFRA and the ex-State Transport Agency (DERBA) have been directly involved in a recently completed and satisfactorily performed operation.[20] The approach for implementation support fits a Borrower who already knows and has experienced the Bank's policies and procedures.

3. ***Technical***. As often with technical assistance, Component 1 activities (institutional strengthening) are expected to require significant implementation support both from a technical standpoint (complex topics) and from a procurement standpoint (many quality and cost-based selection processes). Component 2 activities (State highways performance-based rehabilitation and maintenance) are not expected to require qualitatively more implementation support than in the previous operation: the typology of works is similar and works are not located in sensitive areas. Yet, the primary implementation risk in Component 2 stems from its size, and this ambitious rehabilitation program requires streamlined implementation procedures within SEINFRA/SIT that exist but that would need close Bank monitoring during implementation. In addition, the CREMA-PPP contract, the first of its kind in Brazil, would need close technical support in its design. Component 3 (feeder roads improvement) would require the most implementation support at the beginning. The activities are low-risk and not complex, but this component requires good organization and management to get started and be run effectively. Finally, Component 4 (road safety) is expected to require a substantial technical and policy implementation support: political and social awareness must be built, and its issues are complex and involve substantial inter-agency coordination.

4. **Financial Management**. SEINFRA/SIT (previously DERBA) has adequate experience with the Bank's financial management requirements from the previous loan. Nevertheless, the Bank team would provide further financial management training to UCP staff. The supervision would review the project's financial management system, including but not limited to accounting, reporting, and internal controls.

5. **Procurement**. SEINFRA/SIT (previously DERBA, the former Road Agency) has adequate experience and skills regarding the Bank's procurement processes, as demonstrated by the previous loan's good track record. However, SEINFRA's bidding commission is new and has little experience with Bank procurement procedures, although one very experienced prior member of DERBA's bidding commission would be integrated into SEINFRA-CEL. This new team would benefit from the prior DERBA experience, filing system, and physical structure. In

[20] Integrated State Highway Management Project (P095460), US$100 million loan, closed in Sept. 2013.

addition to the standard ex-ante and ex post procurement reviews, the implementation support strategy for procurement consists in making sure that the procurement capacity for project implementations is fully maintained. This includes early identification of quantitative and qualitative bottlenecks in SEINFRA's procurement commission, capacity building, and as necessary, Bank hands-on procurement support and external consultant support.

6. **Environmental and Social Safeguards**. The staff from SEINFRA's environmental unit (GERAM) is familiar with the Bank's environmental policies. Additionally, the results of the Environmental and Social Impact Assessment are being discussed internally within SEINFRA. This impact assessment shows that, overall, the project's adverse social and environmental impacts are expected to be limited. Yet, the safeguards team within SEINFRA is small and includes some people close to retirement, although, in March 2015, GERAM's team was being strengthened with younger staffers. In addition, there is no social specialist *per se* on the team. Thus, the implementation support strategy consists of contracting out with specialized environmental and social works supervision companies, as well as strengthening GERAM's internal capacity with training and consultant support.

**Bank Implementation Support Plan**

7. In view of the fact that the project includes new components such as road safety and rural road improvement, the level of technical support needed for implementation is considered substantial on the technical side, moderate on the fiduciary side, and moderate on the environmental and social sides. The World Bank team would conduct at least semiannual supervision missions, desk reviews, and field visits to follow-up on project implementation. Detailed inputs from the World Bank team are outlined below.

8. **Technical**. Experts in transport, environmental management, and road safety on the World Bank team would: (i) engage in and orient, based on known national and international best practices, the technical and institutional dialogue; (ii) advise on the design of activities envisaged in their respective sub-components to support the technical assistance, including the preparation of terms of reference, and of budget and procurement processes for specific studies; (iii) participate in project supervision and field visits to advance the dialogue with SEINFRA and to review progress; and (iv) engage with SEINFRA to create and further knowledge transfer and guidance.

9. **Fiduciary**. Financial management and procurement specialists would conduct annual reviews of the project's fiduciary implementation, review reports, verify compliance with agreed fiduciary procedures, identify potential capacity gaps, including staffing, and evaluate the adequacy of documentation and record-keeping arrangements and systems. Training has been provided by the Bank's financial management and procurement specialists during preparation and would continue during project execution. Continuous support would be made available by the World Bank when needed.

10. **Environmental and Social Safeguards**. The environmental and social specialists on the task team would monitor and evaluate the effectiveness of implementation of the agreed upon Environmental and Social Plans and Frameworks (and other documents as needed). The environmental and social supervision consultants would provide pertinent information on the handling of social and environmental questions. Continuous support would be made available by

the World Bank when identified or as required by the client. During implementation, the task team would: (i) supervise the implementation of the agreed upon Environmental and Social Plans and Frameworks as triggered by the project; (ii) address concerns from SEINFRA or other stakeholders on safeguards policies; and (iii) employ or cause to be employed environmental and social consultants to further support UCP, as needed. Training of counterparts on World Bank safeguard policies would also be carried out on a regular basis.

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

Table 4.1: Human Resource Requirements

| Skills Needed | Number of Staff Weeks | Number of Trips | Comments |
|---|---|---|---|
| Task Team Leader | 12 SW in first year, then 10 SW annually | Semiannual mission, field visit as required | Staff, Washington based |
| Support technical team (Transport Specialist, ETC and/or STC) | 24 SW in first year, then 20 SW annually | Semiannual mission, field visit as required | Partially country office based |
| Procurement specialist | 4 SW in first year, then 3 SW annually | Semi Annual mission | Staff, Country office based |
| Financial management specialist | 3 SW in first year, then 2 SW annually | Semi Annual mission | Staff, Country office based |
| Environmental Specialists | 5 SW in first year, then 4 SW annually | Annual mission field visit as required | Staff/ETC, Country office based |
| Social Specialist | 5 SW in first year, then 4 SW annually | Annual mission field visit as required | Staff, Washington based |
| Highway Engineer | 6 SW in first year, then 3 SW annually | Semi Annual mission field visit as required | Consultant, Country office based |
| Road Safety Specialists | 8 SW in first year, then 4 SW annually | 2 missions | International consultant |
| Infrastructure financing specialist | 1 SW in first year, then 0.5 SW annually | 1 mission | Staff, Washington based |
| Logistics Specialist | 1 SW in first year, then 1 SW annually | 1 missions | International consultant |
| Impact evaluation specialist | 2 SW in first year, then 1 SW annually | 3 missions | Staff/ETC, Washington based |

## Annex 5: Economic Appraisal and $CO_2$ Emission Analysis

## Brazil: Bahia Road Rehabilitation and Maintenance Project - 2nd Phase

1. This annex summarizes the economic appraisal and $CO_2$ emission analysis of the project's three physical components, namely: Component 2, *Performance-based State Highway Rehabilitation and Maintenance;* Component 3, *Local Road Improvement;* and Component 4, *Road Safety.* These three components account for 92 percent of the project investments.

### Economic Evaluation

2. **Performance-based State Highway Rehabilitation and Maintenance.** Under this component, the evaluation using the Highway Development and Management Model (HDM-4) assessed streams of saving on road user costs and rehabilitation and maintenance costs (as compared to a reference or without-project scenario) in road works over 20 years. Road user costs consisted of: (i) vehicle operating costs such as fuels and damage to vehicles' bodies and parts due to vibration during drive; and (ii) travel time of passengers and freights, which is converted into monetary terms. The analysis was conducted on the State road sections described in Annex 2, for a total of about 2,370 km (Component 2).[21]

3. The basic parameters of the model, including existing pavement conditions, traffic volumes, and unit costs of vehicle operation, were obtained mostly through field surveys and desk reviews. Types and costs of rehabilitation works for each section are identified in the preliminary designs prepared by the previous DERBA. The following two scenarios were simulated: (i) a Project Scenario, which involved rehabilitation in the first two years, routine maintenance for the entire period, and additional rehabilitation works when the International Roughness Index (IRI) goes beyond 4; and (ii) a Reference Scenario (or base scenario, which involved light rehabilitation when the IRI reaches 9, and routine maintenance throughout the entire period.

4. The net benefits of the project are estimated as a reduction in the costs of road works and vehicle operations as compared to the reference scenario. Over 20 years, the Net Present Value (NPV), at a 12 percent discount rate, and the related Internal Rate of Return (IRR) of the investments in this component, are respectively estimated as R$777 million and 38.4 percent.

5. **Local Road Improvement.** Under this component, among the benefits that are expected to accrue from these investments is a reduction in vehicle operation costs road users from having to travel a longer alternative way due to impassability of shorter routes during the rainy season. Since specific locations of interventions would be identified during the public consultation and engineering design process, the analysis focuses on 11 rural roads connecting small settlements with municipal centers in 6 sample municipalities.

6. The key assumptions are the following: (i) in the reference (base) scenario, the selected roads (shortest routes) from a small settlement to go to the municipal center are impassable on

[21] While the economic evaluation was conducted for the all road sections listed with a total extension of 2,370km, the result was adjusted to the road extension of 1,900km which the Project will finance.

heavy rainy days, and travelers need to take alternative routes, which are 53 percent longer in average distance according to the detailed maps. The average number of heavy rainy days is 30 per year during a 4-month rainy season; (ii) in the with-project scenario, the shortest routes are passable all year; (iii) traffic volumes of motor vehicles (excluding motorbikes) are estimated at 151 per day by applying the formula of traffic volume and local population developed by SEINFRA; (iv) parameters on vehicle operation costs are the same as the HDM-4 model for CREMA established above; and (v) the total extension of rehabilitated rural roads for all 62 municipalities is 3,100 km, which was estimated by the unit cost per km of the rural road component of the Bank's Tocantins project (P060573).

7. The Roads Economic Decision Model (RED) was applied to run the economic analysis. The NPV at a 12 percent discount rate and the related IRR of the investments over 20 years are respectively estimated as R$26.3 million and 17.8 percent.

8. **Road Safety**: The economic evaluation of the road safety interventions considers cost-benefit viabilities of (i) works interventions on the two selected corridors, and (ii) road safety countermeasures on roads under the performance-based state highway rehabilitation and maintenance (CREMA) component, for which 10 percent of the component's investments would be dedicated.

9. The benefits related to road safety stem from a reduction in economic losses associated with road accidents due to road safety countermeasures on the two selected corridors and on the CREMA sections with the total extension of 2,370 km. The evaluation considers economic losses from deaths and serious injuries. The baseline is based on statistics in the one-year period from November 2012 to October 2013, which were specifically 58 deaths and 148 serious injuries. The annual increase in accidents of 3 percent is assumed to correspond to the increase in traffic volume used for the economic evaluation of the CREMA component. The unit values of economic loss for death and serious injury are estimated at R$1,188,880 and R$270,220 respectively according to the International Road Assessment Program (iRAP) study in Sao Paulo in 2012.[22] The project's physical and institutional interventions are assumed to reduce the number of deaths and serious injuries by 18 percent, which is half of the value used in the economic evaluation for the iRAP study in Sao Paulo, considering that all of the countermeasures recommended by the iRAP study would not be implemented due to cost constraints. The benefits are calculated as a saving in costs compared to the reference case.

10. Based on the above assumptions, over 20 years, the NPV at a 12 percent discount rate and the IRR of the investments in this component are respectively estimated as R$91.4 million and 28.7 percent.

11. **Overall project economic benefits.** Table 5.1 below recaps the overall project benefits, summing up the results obtained for Components 2, 3 and 4.

Table 5.1: NPV and IRR

| | **Net Present Value @12% R$ (million)** | **Economic Internal Rate of Return** |
|---|---|---|
| Component 2 | 776.8 | 38.4% |

[22] International Road Assessment Program (iRAP), Sao Paulo State Technical Report, 2012

| | | |
|---|---|---|
| Component 3 | 26.3 | 17.8% |
| Component 4 | 91.4 | 28.7% |
| **TOTAL** | **894.5** | **36.8%** |

12. Sensitivity analysis was undertaken with the following three cases: (i) increase of work costs by 15 percent; (ii) reduction of traffic volume by 15 percent; and (iii) both of (i) and (ii) combined. Even the worst case of (iii) demonstrates the project remains economically viable with a NPV of R$567 million and an IRR of 29.9 percent. (See Table 5.2 below)

Table 5.2: NPV and IRR for Works Costs and Traffic

| | **Net Present Value @12% R$ (million)** | **Economic Internal Rate of Return** |
|---|---|---|
| Works Costs +15% | 838.5 | 33.5% |
| Traffic –15% | 573.4 | 32.4% |
| Works Costs +15%& Traffic –15% | 567.5 | 29.9% |

13. At the Bahia Highway Program level,[23] including the project above and an additional 1,858 km of State highways rehabilitation and maintenance, and road safety interventions, the NPV and IRR of the investment are R$1,619 million and 39.3 percent respectively. All highway corridors present independently IRRs above 12 percent.

**$CO_2$ Emission Analysis**

14. The Greenhouse gases accounting evaluation was conducted to assess the impact of the project on $CO_2$ emission. The analysis focuses on Component 2, the project's State highway rehabilitation component for the total extension of 2,370 km. The assessment period is 20 years, the same as the period for the economic appraisal, and takes into consideration methodological challenges on $CO_2$ emission assessment in the transport sector including: (i) difficulties in definition of project boundaries and reference (base) scenario to specify the project's contributions in $CO_2$ emission; and (ii) the unavailability of data and information, particularly related to civil works. This analysis was limited to the following scopes: (i) $CO_2$ emissions of material productions and fuel consumptions required for rehabilitation works;[24] and (ii) vehicle emissions on roads under the project. The project's impact on emissions was defined as the difference in emission between project and reference scenarios which are generally the same as the ones envisaged for the economic evaluation.

15. *Construction Phase*: Emissions under the State highway rehabilitation component are twofold (i) emissions from the production of raw materials required for the works, mainly cement and asphalt, and (ii) emissions from the consumption of diesel required for the use of equipment and transportation of such equipment and materials. The analysis included: (i) the types of roadworks in each road defined in the preliminary designs; and (ii) the quantities of each material and fuel consumptions for each type of works based on the standard bill of quantities of

[23] Covering about 4,228 km of State highway rehabilitation and maintenance – see PAD main text, paragraph 8.
[24] Routine maintenance works are excluded from the analysis.

the Bahia's Road Agency. The $CO_2$ emissions from roadworks in the project and reference (base) scenarios are estimated at 41.4 thousand t-$CO_2$ and 54.8 thousand t-$CO_2$ respectively, resulting in reduction in emission of 13.4 thousand t-$CO_2$ by the project.

16. *Operation Phase*: Vehicle emissions are calculated by the HDM-4 simulation together with the economic evaluation. In the HDM-4 model, $CO_2$ emission is calculated through the following steps: (i) average vehicle speed is estimated based on road conditions, traffic level, and vehicle characteristics; and (ii) $CO_2$ emission from vehicles is obtained through the formula as a function of vehicle speed, which is defined in the HDM-4. The total emissions in the project and reference scenarios are 15.7 million t-$CO_2$ and 16.0 million t-$CO_2$ respectively over 20 years, resulting in an emission reduction of 0.3 million t-$CO_2$, as compared with the reference scenario.

*17. Conclusion:* Based on the above analysis, the analysis concluded that the net reduction in $CO_2$ emission of the project is 264 thousand t-$CO_2$ over the evaluation period of 20 years. At a program level, the net reduction is 472 thousand t-$CO_2$.

## Annex 6: Poverty Analysis

## Brazil: Bahia Road Rehabilitation and Maintenance Project - 2nd Phase

1. This Annex presents key demographic and socioeconomic trends in Brazil and in the State of Bahia. The section then discusses how the project would contribute to the Bank's goals of reducing poverty and boosting shared prosperity of the bottom 40 percent of the population through its direct impact on accessibility to markets, jobs, and other basic services such as health care and education. With the exception of one case,[25] evidence in Brazil on the likely distributive impacts of transport projects on the poor and on the bottom 40 percent of the income distribution is particularly scarce. Accordingly, this project would attempt to fill in this gap with comprehensive impact assessments for both the highway rehabilitation and feeder road improvement components. These assessments would track several macro- and micro-level variables of interest, including select welfare indicators for low-income and other marginalized groups. The Annex ends by presenting the methodological framework that would guide this analysis.

### Poverty profile and Socio-economic analysis of the State of Bahia

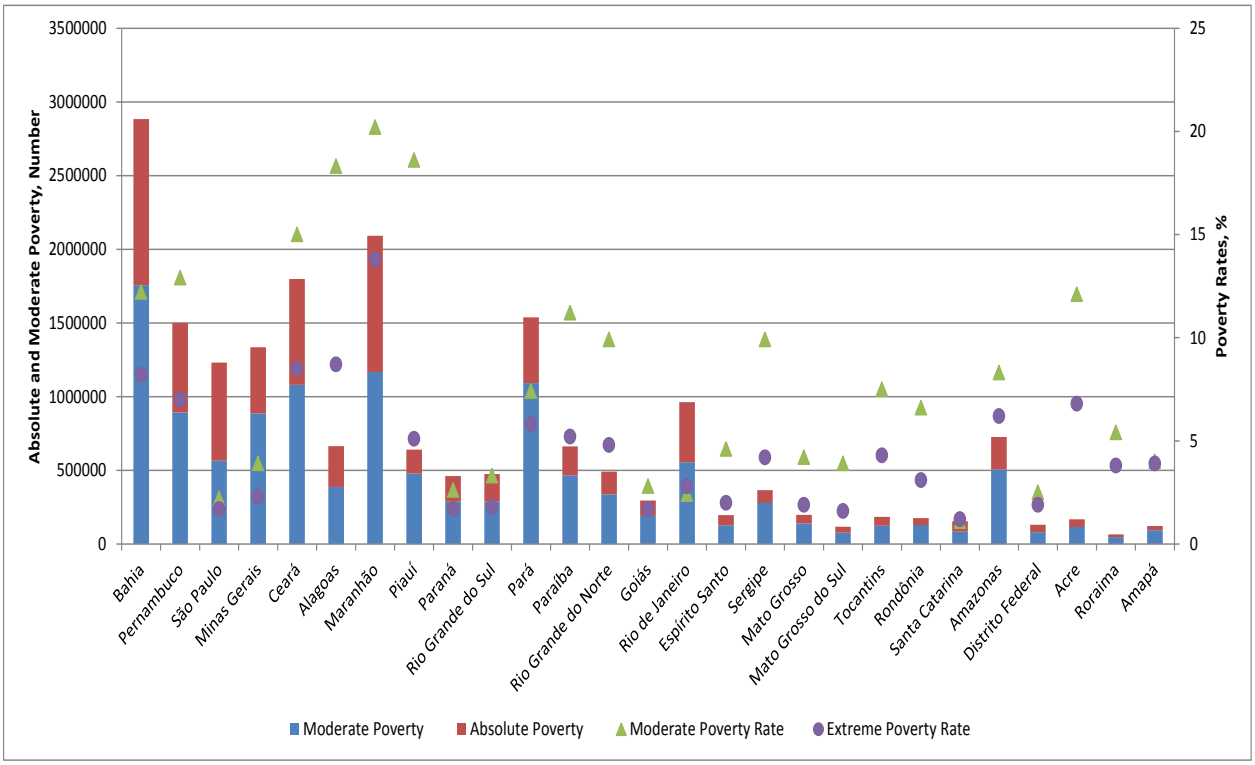
2. Over the last two decades, Brazil has made significant progress in terms of economic management, poverty reduction, and social indicators. Growth in employment and labor incomes, as well as the implementation of targeted social assistance programs, such as *Bolsa Família*, have contributed to a reduction in the share of Brazilians living below the extreme poverty line of R$70 a month from 9.9 percent in 2001 to 4.0 percent in 2013, as well as a reduction in inequality as reflected in a drop in the Gini coefficient from 0.59 to 0.53 over the same period.

3. These socioeconomic achievements have been noticeable across all of the states located in Brazil's North and Northeast regions, which have historically faced relatively high levels of poverty in comparison to the rest of the country. In the last decade, Bahia improved its economic performance and achieved a remarkable track record in reducing poverty and boosting shared prosperity. Between 2002 and 2012, average household per capita income in Bahia grew at an annual rate of 4.8 percent, well above the national average of 3.3 percent. As a result, moderate and extreme poverty declined sharply in the same period, dropping from 44.3 percent to 16.5 percent and from 17.2 percent to 6.9 percent, respectively. Indeed, poverty has fallen more rapidly in those states with the highest incidences – including Bahia – in the 2001-2012 period. Moreover, the income of the bottom 40 percent increased rapidly at 6.9 percent annually (1.9 percentage points higher than the growth rate of the average income), increasing their share in total income from 8 to 11 percent in 2012.

4. The chart in Table 6.1 compares absolute and moderate poverty in Bahia to the other Brazil States.

[25] Tocantins Sustainable Integrated Regional Development Project (P121495)

Table 6.1: Absolute and Moderate Poverty across Brazil, 2012




*Source:* PNAD 2012, World Bank

5. Notwithstanding these achievements, Bahia is still the State with the largest absolute number of extreme poor in Brazil. While over half a million people were lifted out of poverty in a six year period, as of 2013, 1.12 million inhabitants lived in absolute poverty and 2.4 million were considered moderately poor.[26] About 60 percent of the population in the State receives conditional cash transfers from the Federal *Bolsa Família* program. Illustrating the vulnerability of a large segment of the State's population, about 47 percent of the State's population was considered food insecure in 2009. Table 6.2 shows the evolution of poverty in Bahia, from 2001 to 2012.

[26] Although Brazil does not have an official poverty line, in recent years, the R$70 and R$140 per capita per month have been used to identify the absolute and moderate poor respectively. These income levels correspond to the administrative poverty lines defined for the *Bolsa Familia* program and the *Brasil Sem Miseria* plan.

Table 6.2: Evolution of Poverty in Bahia 2001-2012

| BAHIA | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2011 | 2012 |
| Extreme Poverty Rate (R$70/month) | 19.9% | 17.2% | 18.6% | 14.0% | 13.1% | 11.0% | 9.8% | 9.7% | 9.1% | 9.3% | 7.7% |
| Moderate Poverty Rate (R$140/month) | 45.3% | 44.3% | 45.7% | 40.1% | 37.2% | 32.4% | 30.4% | 27.1% | 24.7% | 22.4% | 18.5% |
| Vulnerable Rate (R$140/Month-R$291/month) | 23.6% | 24.3% | 24.7% | 27.4% | 26.4% | 26.4% | 27.3% | 26.2% | 26.1% | 21.5% | 24.1% |
| Middle Class Rate (>R$291/month) | 31.1% | 31.3% | 29.6% | 32.5% | 36.4% | 41.2% | 42.3% | 46.7% | 49.2% | 56.1% | 57.5% |
| Population Living in Moderate Poverty | 6,205,443 | 6,136,787 | 6,393,088 | 5,662,728 | 5,292,545 | 4,652,074 | 4,399,111 | 3,946,086 | 3,628,412 | 3,335,790 | 2,766,660 |
| Population Living in Extreme Poverty | 2,723,453 | 2,379,077 | 2,604,440 | 1,978,231 | 1,861,298 | 1,585,425 | 1,425,505 | 1,421,464 | 1,344,045 | 1,380,363 | 1,150,312 |
| **Regional Income Definitions** | | | | | | | | | | | |
| Global Extreme Poverty Rate ($1.25 PPP/day) | 20.0% | 18.4% | 18.9% | 14.4% | 12.6% | 10.9% | 9.6% | 9.5% | 9.0% | 9.2% | 7.3% |
| Extreme Poverty Rate ($2.50 PPP/day) | 46.9% | 45.2% | 46.1% | 41.1% | 37.6% | 32.4% | 31.4% | 27.3% | 24.9% | 22.6% | 18.8% |
| Moderate Poverty Rate ($4.00 PPP/day) | 65.3% | 64.7% | 65.5% | 61.8% | 58.6% | 53.8% | 51.4% | 47.0% | 44.3% | 39.4% | 36.8% |
| Vulnerable Rate ($4 PPP/day-$10 PPP/day) | 24.4% | 24.5% | 24.0% | 27.3% | 29.6% | 31.9% | 34.2% | 36.1% | 36.3% | 39.7% | 38.4% |
| Middle Class Rate ($10 PPP/day-$50 PPP/day) | 9.4% | 9.9% | 9.5% | 10.1% | 10.9% | 13.2% | 13.3% | 15.3% | 17.7% | 19.2% | 22.8% |
| Population Living in Extreme Poverty | 6,428,382 | 6,252,390 | 6,442,594 | 5,800,034 | 5,352,406 | 4,655,628 | 4,547,403 | 3,981,320 | 3,650,628 | 3,370,780 | 2,813,725 |
| Population Living in Moderate Poverty | 8,947,906 | 8,949,623 | 9,160,298 | 8,724,220 | 8,341,098 | 7,728,105 | 7,435,805 | 6,855,737 | 6,512,699 | 5,861,472 | 5,518,008 |
| | | | | | | | | | | | |
| **Total State Population*** | 13,699,234 | 13,841,454 | 13,978,205 | 14,109,170 | 14,235,163 | 14,358,234 | 14,473,675 | 14,583,693 | 14,689,017 | 14,884,785 | 14,976,636 |
| Share of Urban population | 68.0% | 66.6% | 66.9% | 67.6% | 66.9% | 67.6% | 67.9% | 69.1% | 69.5% | 73.4% | 74.2% |
| Share of Rural Population | 32.0% | 33.4% | 33.1% | 32.4% | 33.1% | 32.4% | 32.1% | 30.9% | 30.5% | 26.6% | 25.8% |
| **Gini** coefficient | 0.60 | 0.59 | 0.59 | 0.56 | 0.55 | 0.56 | 0.55 | 0.56 | 0.56 | 0.55 | 0.55 |

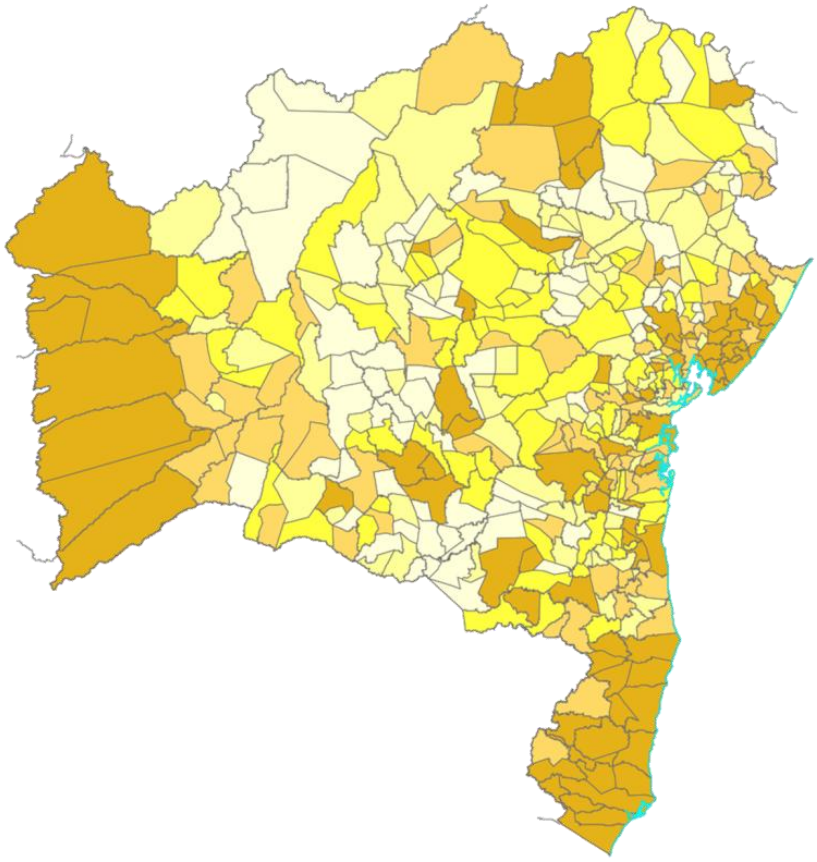
*Source:* PNAD 2012, World Bank 2014.

6. Regional disparities persist, and access to basic services remains limited in some of the more remote rural areas. During the last decade, growth was geographically concentrated, benefiting the more prosperous coastal municipalities. As such, though Bahia's GDP has grown more rapidly than Brazil's in the 2000s, most of Bahia's poorest municipalities, especially in the semi-arid landlocked zone, did not grow as fast. Map 6.1 on the next page shows regional disparities among Bahia's municipalities (the darker areas are the richest ones).

7. Although about 55 percent of Bahia's GDP is generated around the metropolitan region of Salvador, only 25 percent of the population live in the city. Indeed, at 74 percent, Bahia has a relatively low urbanization ratio, compared to the national average of 85 percent. Most of Bahia's 417 municipalities are poor, especially in the semi-arid zone. Although the State is divided into 26 regions (*Territórios de Identidade*), they can be grouped in three larger regions: *Litoral* (eastern most part along the Atlantic), *Semi-Árido* (center), and *Cerrado* (western for the most part). The Semi- Árido region, spanning 68.7 percent of the territory, is the poorest and least developed region of the State.

8. Some population groups are disproportionately represented among the poor. Women, Afro-descendants, indigenous people, and rural population are in a substantially worse situation than other groups. The incidence of moderate and extreme poverty in households led by women is 10 percent higher than those led by men; poverty among Afro-descendants is 35 percent higher than among whites; and poverty among the indigenous population is 67 percent higher than is observed for the white population. Consequently, while Afro-descendants and indigenous population correspond to 76.5 percent of the state's population, they represent 79 percent of the Bahia poor, 84 percent of the extreme poor, and 85 percent of the bottom 40 percent. The rural-urban comparison is particularly bad since poverty in rural areas is more than double that of urban poverty. Women, especially those living in rural areas, are highly vulnerable to gender-based violence, and Afro-descendants, especially the youth, are the main victims of crime and violence.

**Map 6.1: Bahia – GDP/capita at municipal level, 2010**



*Source:* Plano Estadual de Logistica e Transporte, 2012

9. Economic infrastructure also tends to be concentrated in the main urban centers, while the outer-peripheral sub-regions of the State suffer from significant connectivity and accessibility problems which hinder sustainable and inclusive growth. Transport logistics constraints to getting more products from the landlocked areas to ports or to markets have affected the growth in some sectors such as soybeans, cotton, and others. Poor connectivity not only affects the rural economy and the productivity of small scale farmers in key sectors, but it also affects the poorest and more vulnerable groups, who not surprisingly tend to reside in the more remote sub-regions of the State. As a result, improved transport infrastructure could bring about significant impacts on agriculture, employment generation, industry, health, the education sector, poverty alleviation, and shared prosperity.

**Expected project contribution to twin goals**

10. The transport economics literature increasingly recognizes that road investments can have a positive, though largely indirect, effect on poverty in both rural and urban areas. Among infrastructure, roads are considered of first interest to reduce poverty due to the widely accepted consensus that transport infrastructure has a significant, positive, and substantial impact on economic growth and poverty as it enhances the connectivity of isolated and remote areas. By

providing mobility and connectivity in the underserved areas, transport can play a catalytic role in economic development.

11. In this respect, the project is intended to have three broad sets of outcomes. First, through the rehabilitation of selected highway corridors, the project would reinforce the inland infrastructure, significantly reducing transport costs for key primary goods produced in the landlocked regions and beyond in the States of Tocantins, Piauí, and Goiás. From a regional perspective, the project is expected to result in greater gains in trade, specialization, efficiency, and competitiveness. Moreover, by stimulating investment and facilitating inter-regional trade, the project may contribute to the local development of the regions through which it passes, alleviating the existing economic isolation and potentially enhancing productivity levels for industry and agriculture.

12. Second, the project would contribute to poverty reduction and income equality through increased access as follows: (i) access to inputs and output markets; (ii) access to labor opportunities; and (iii) access to education and health services. The rehabilitation of feeder and local roads would improve villagers' access to market opportunities and the net prices they can obtain for inputs and outputs. Similarly, good connections to nearby towns would also enable villagers to commute to jobs in those locations, while also influencing firms to relocate to previously unreachable areas where there is a sufficiently large labor pool. Moreover, roads are critical for obtaining access for rural households who were previously deprived of access to health, education, and other public services. Consequently, in addition to potentially enhancing efficiency, competitiveness, agglomeration, and specialization, the project can have largely pro-poor outcomes.

13. Third, the project would have important synergies with the Bahia Rural Development Project, therefore positively affecting over 100,000 family farmers and economy entrepreneurs located in the catchment area of both projects. By improving accessibility for small rural producers the project would help in developing their integration into productive value chains, enabling the acquisition of cheaper and better inputs and technologies for farming, and improving the information flows, all of which ultimately enables them to better respond to market opportunities. Low-cost, road-based transport would then become a critical instrument for farmers to reach markets, retain more of the delivered price of their goods, and ultimately boost their incomes.

**Framework of analysis, data collection, and methodology**

14. Despite the recognized benefits of rural transport projects in terms of equity and efficiency, it has been difficult to demonstrate quantitatively how transport projects positively improve welfare, human development, and labor market outcomes. Although it is widely assumed that an investment in roads, such as the ones proposed, reduces poverty, there has been little systematic analysis or evidence of the ways in which transport, particularly strategic highway corridors that cover large areas of a state or a region, can actually affect the poor or the bottom 40 percent.

15. Under Component 1.5, the loan would finance an impact evaluation to empirically articulate the benefits of the planned road rehabilitation works (both artery and local roads) at the State, municipal, community, and household levels. The objectives of this activity are fourfold: (i) to simulate some agglomeration and productivity effects that improved trade linkages and

supply chains can bring about to the State's economy; (ii) to assess how the project investments have contributed to the twin goals of ending extreme poverty and boosting shared prosperity; (iii) to provide guidance on how the proposed interventions can interact with investments in other sectors where the Bank is already present, such as agriculture, in an attempt to optimize the impact on the bottom forty percent, and to foster improved social equity and inclusion, particularly in the more socioeconomically depressed areas in Bahia; and (iv), to push the knowledge frontier on how to maximize the impact of transport infrastructure investment.16.

The impact analysis would consist of two activities: (i) an ex ante macro-economic analysis; and (ii) an impact evaluation of project outcomes.

16. **Macro-economic Analysis**: This activity would provide an analytical foundation for the indirect benefits of the main state highways that are subject to rehabilitation and capacity expansion. The study would examine economy-wide impacts of the investments in the State highways, which are normally not captured by project level cost-benefit analysis. Selected economic indicators, such as job creation, economic growth, total factor productivity, and inter-regional trade, would be analyzed. The study would provide an evidence based contribution to the nexus between large infrastructure projects and regional development.

17. **Impact Evaluation:** The second analytical activity would consist of an ex post micro-level socioeconomic evaluation assessing the impact of improving the feeder road network on a number of transportation-related and welfare indicators. Analyzing the impact of the improvement of road infrastructure once the investment has been completed requires a careful causal investigation. The completion of the investment is likely to correlate with changes on social and economic conditions. Hence, an appropriate ex post impact analysis should identify to what extent economic and social variation was caused specifically by the project.

## Annex 7: Map

## Brazil: Bahia Road Rehabilitation and Maintenance Project - 2nd Phase