PUBLIC
SIMULTANEOUS DISCLOSURE

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BRAZIL

ESPÍRITO SANTO LOGISTICS EFFICIENCY PROGRAM

(BR-L1524)

LOAN PROPOSAL

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CONTENTS

ANNEXES	
Annex I	Summary Development Effectiveness Matrix
Annex II	Results Matrix
Annex III	Fiduciary Agreements and Requirements

REQUIRED LINKS	
1.	Multiyear execution plan and annual work plan
2.	Monitoring and evaluation plan
3.	Environmental and social management report
4.	Procurement plan

OPTIONAL LINKS	
1.	Program economic analysis
2.	Program abstract
3.	Urban integration annex
4.	Gender annex
5.	Innovative technologies annex
6.	Adaptation to climate change analysis
7.	Road safety annex
8.	Logistics and Transportation Strategic Plan for Espírito Santo
9.	Roads master plan
10.	Road maintenance report
11.	Economic integration annex
12.	COFIEX Resolution 07/0133
13.	Prioritization methodology for selecting functional rehabilitation projects
14.	Inclusion and diversity annex
15.	Environmental and social studies
16.	Espírito Santo financial data
17.	Itemized cost table

ABBREVIATIONS

COFIEX	Comissão de Financiamentos Externos [External Financing Committee]
DER-ES	Departamento de Estradas de Rodagem do Estado do Espírito Santo [Roads Department of the State of Espírito Santo]
ICB	International competitive bidding
ICAS	Institutional Capacity Assessment System
LIBOR	London Interbank Offered Rate
NCB	National competitive bidding
PELTES	Logistics and Transportation Strategic Plan for Espírito Santo
PMU	Program management unit
QCBS	Quality- and cost-based selection

PROGRAM SUMMARY

BRAZIL
ESPÍRITO SANTO LOGISTICS EFFICIENCY PROGRAM
(BR-L1524)

<table>
<tr><th colspan="6">Financial Terms and Conditions</th></tr>
<tr><td colspan="3">Borrower:</td><td colspan="3">Flexible Financing Facility[a]</td></tr>
<tr><td colspan="3">State of Espírito Santo</td><td colspan="2" rowspan="2">Amortization period:</td><td rowspan="2">23 years</td></tr>
<tr><td colspan="3">Guarantor:</td></tr>
<tr><td colspan="3">Federative Republic of Brazil</td><td colspan="2">Disbursement period:</td><td>6 years</td></tr>
<tr><td colspan="3">Roads Department of the State of Espírito Santo (DER-ES)</td><td colspan="2">Grace period:</td><td>7.5 years[b]</td></tr>
<tr><td>Source</td><td>Amount (US$)</td><td>%</td><td colspan="2">Interest rate:</td><td>LIBOR-based</td></tr>
<tr><td rowspan="2">IDB (Ordinary Capital):</td><td rowspan="2">216,800,000</td><td rowspan="2">80</td><td colspan="2">Credit fee:</td><td>[c]</td></tr>
<tr><td colspan="2">Inspection and supervision fee:</td><td>[c]</td></tr>
<tr><td>Local:</td><td>54,200,000</td><td>20</td><td colspan="2">Weighted average life:</td><td>15.25 years[d]</td></tr>
<tr><td>Total:</td><td>271,000,000</td><td>100</td><td colspan="2">Approval currency:</td><td>U.S. dollar</td></tr>
<tr><th colspan="6">Program at a Glance</th></tr>
<tr><td colspan="6">Program objective/description: The program's objective is to help boost the competitiveness of the state of Espírito Santo by improving freight logistics and its national and regional integration. Its specific objectives are to: (i) improve the level of service of the state's roads that are relevant to port connections; (ii) improve the state road network's connectivity with the ports, minimizing the negative impacts on the affected urban areas; and (iii) improve the efficiency of road intervention processes for the DER-ES.</td></tr>
<tr><td colspan="6">Special contractual conditions precedent to the first disbursement of the loan: The borrower will submit to the Bank evidence of: (i) the signature and entry into force of the program execution agreement between the borrower and the executing agency establishing the conditions for the transfer and use of loan proceeds, under the terms previously agreed upon with the Bank; and (ii) the revision of the internal rules of the program management unit to include among its powers program administration and the appointment of its basic team, under the terms previously agreed upon with the Bank (paragraph 3.4).
Special contractual conditions for execution: Prior to the commencement of any works project, the borrower will submit to the Bank evidence of the signature and entry into force of the respective contract with the works supervision company (paragraph 3.3). Other special contractual conditions are included in Section B of the environmental and social management report.</td></tr>
<tr><td colspan="6">Exceptions to Bank policies: None</td></tr>
<tr><th colspan="6">Strategic Alignment</th></tr>
<tr><td>Challenges:[e]</td><td>SI</td><td>☐</td><td>PI</td><td>X</td><td>EI X</td></tr>
<tr><td>Crosscutting topics:[f]</td><td>GD</td><td>X</td><td>CC</td><td>X</td><td>IC ☐</td></tr>
</table>

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

[b] Under the flexible repayment options of the Flexible Financing Facility, changes in the grace period are permitted provided that they do not entail any extension of the original weighted average life of the loan and the last payment date as documented in the loan contract.

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

[d] The original weighted average life could be lower based on the date when the loan contract is signed.

[e] SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

[f] GD (Gender Equality and Diversity); CC (Climate Change and Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problem addressed, and rationale

1.1 **General context.** The state of Espírito Santo, which has 3.5 million inhabitants and GDP of US$32 billion in 2017, had a growth rate of 2.4% in 2018, above the national average of 1%.[1] In 2018, the state received an "A" rating for its payment capacity and was the state with the best fiscal evaluation in Brazil, which improved its financing conditions (paragraph 2.13). The state's most important economic activity is its service sector, including port and logistics services, followed by the industrial and agricultural sectors, which account for 57%, 32%, and 11% of GDP respectively.[2]

1.2 The state's territory is 46,140 square kilometers. Espírito Santo is bordered by the state of Bahía to the north, Minas Gerais to the west, Rio de Janeiro to the south, and the Atlantic Ocean to the east. Espírito Santo's ports serve the state's main logistics corridors for foreign trade. The goods transported are mining products, granite, cellulose, iron and steel, coffee, corn, and soybeans, originating from the country's interior and center-east region.

1.3 **National and regional connectivity.** According to the Logistics and Transportation Strategic Plan for Espírito Santo (PELTES) (paragraph 1.4), the state's logistics system relies mainly on the road network and its connection with the ports. The road network is comprised of two federal highways:[3] a 6,543-kilometer state road network,[4] and a municipal network. Espírito Santo's port complex is made up of seven ports located along 417 kilometers of coast.[5] In 2017, 18% of the total volume and 7.2% of the value of Brazilian goods were exported through these ports, and the state is third in terms of transporting port cargo volume in Brazil.[6] In addition, Eurico Sales International Airport, expanded in 2018, has increased cargo movement by 29.1%, reaching 7,800 tons transported. The system is supplemented by two rail connections with the country's Center-West (Ferrovía Vitória-Minas and Ferrovía Centro-Atlántica) and the South through the Rio de Janeiro-Vitória line, both belonging to mining company Vale do Rio Doce. This logistics infrastructure has enabled the diversification and increase of freight transportation in Espírito Santo, which has become the region with the largest movement of goods in Brazil.[7]

1.4 **Logistics and Transportation Strategic Plan for Espírito Santo.** The PELTES is a long-term strategic planning instrument prepared by the Government of the State of Espírito Santo under the Highway Program for the State of Espírito Santo II (loan 1675/OC-BR) (paragraph 1.21). The PELTES identifies critical investments for the improvement of transportation logistics efficiency in Espírito Santo (optional link 8). With the collaboration of public and private stakeholders from the logistics sector, priority

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1 Instituto Jones dos Santos Neves, Government of the State of Espírito Santo, 2018.

2 Ibid.

3 BR-101 and BR-262.

4 Made up of 3,564 kilometers of paved roads, 2,264 kilometers of unpaved roads, and 709 kilometers of planned roads.

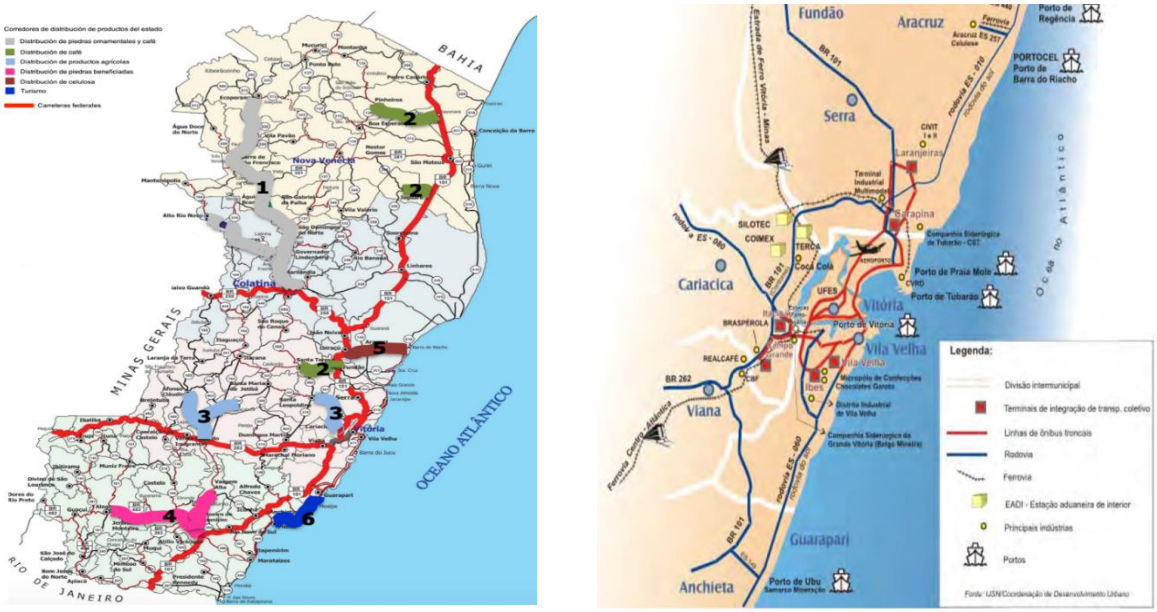
5 It includes the following ports: Vitória (public), Tubarão, Vila Velha, Praia Mole, Regencia, Barra do Riacho/Portocel (private), and Jurong shipyard.

6 The Tubarão terminal moved 94 million tons of cargo in 2018, which made it the third top port in Brazil for this indicator (National Port Secretariat, Brazil, 2018).

7 Government of Espírito Santo, inquiry letter, August 2018.

infrastructure interventions were identified to reduce transportation costs inside the state's logistics corridors. The PELTES represents an evolution in the planning of interventions for the Roads Department of the State of Espírito Santo (DER-ES),[8] based on logistics efficiency as a driver of competitiveness (paragraph 1.21). For the state road network, the PELTES identified the need to pave 1,265 kilometers of roads, increase capacity through widening works along 113 kilometers of roads,[9] and carry out maintenance works along 2,143 kilometers to improve the state's logistics situation. The Highway Program for the State of Espírito Santo III (loan 2483/OC-BR) financed widening/dividing works along 10.5 kilometers, paving of 15.3 kilometers, and rehabilitation of 259 kilometers of roads, as part of the first projects needed to implement this plan.

Figure 1. Map of state logistics corridors and connection with foreign trade hubs for Espírito Santo



Source: State of Espírito Santo.

1.5 **Transportation and competitiveness.** The importance of roads as a means to access Espírito Santo's ports depends on the levels of service[10] and capacity of the state road network, which could be improved (paragraphs 1.7 and 1.8). This situation limits the competitiveness of Espírito Santo and of other states that rely on its ports and airports.[11] According to the 2018 competitiveness ranking of Brazilian states prepared by the Centro de Liderança Pública [Public Leadership Center] jointly with The Economist, Espírito Santo ranked eighth, with an index of 56.3 out of 100. This number could be improved for a state

8 Originally known as the Departamento de Edificações e Rodovias do Estado do Espírito Santo, DER-ES changed its name to Departamento de Estradas de Rodagem do Estado do Espírito Santo via Supplemental Law 926 of October 2019.

9 Among them, segments included in this project: rehabilitation of ES-010 (Jacaraípe-Praia Grande) and construction of ES-115 (Jacaraípe-Nova Almeida).

10 The level of service reflects the condition of the road (excellent, good, adequate, and bad). The DER-ES uses a Pavement Condition Index combined with an evaluation of structural elements and signage (optional link 10). Its value reflects the conditions of surface wear and therefore, the comfort and safety of the road.

11 Of the freight originating in Espírito Santo, 27% is transported to other states (PELTES).

with a privileged logistics location in the country's most developed region.[12] The ranking has been impacted by poor road infrastructure, for which Espírito Santo is ranked 18th in Brazil, below other states in the Southeast.[13]

1.6 **Institutional framework of the road sector.** The DER-ES is the agency responsible for building and maintaining Espírito Santo's road network. Its functions include preparing the state road plan, implementing the state transportation policy, and preparing and implementing road projects. The agency has demonstrated capacity for managing and maintaining road assets (paragraph 2.12). The current context, however, calls for more visible, innovative, and efficient public management; harnessing technology to implement tools that streamline internal management and coordination processes with other agencies, from planning to operations; and enabling participatory management (paragraph 1.11). In addition, the DER-ES needs to move ahead with the self-management of road safety considerations, both at the planning and design levels, and the application of tools such as manuals and protocols necessary for road safety audits and inspections. Under the DER-ES's vision of excellence as a benchmark for public management, there is also a need to mainstream social considerations connected to infrastructure and services in the sector, such as gender equity and inclusion.

1.7 **Problems and their consequences.** The state's road infrastructure has issues involving low levels of service and congestion in a number of road segments, resulting in high transportation costs for goods from the productive areas to foreign trade hubs. According to a 2017 study of logistics costs in Brazil, prepared by Fundação Dom Cabral, logistics costs in the Brazilian Southeast (where Espírito Santo is located) increased to 12.3% of corporate revenues for 2017. This is substantially higher than the 6.4% reported for Brazil's Northeast, which has the lowest logistics costs. The study also demonstrated that the main factors impacting the final price of goods in Brazil are transportation costs (40%) and urban distribution of products. A qualitative study from the same foundation with logistics operators and companies identified an increase in logistics costs between 2015 and 2017, due to the predominance of the road transportation mode and poor road conditions. This situation is also reflected in relatively high rates of highway accidents (optional link 7).[14]

1.8 **Levels of service.**[15] Maintaining the state's 5,839-kilometer road network is the responsibility of the DER-ES through its Road Maintenance Office. Currently, that office operates through three regional offices of the superintendent and one urban road office of the superintendent (optional link 10). The offices of the superintendents identify needs and supervise maintenance works, which are contracted based on level of service. Maintenance costs for the state road network decreased from US$50 million in 2011 to an average of US$12 million between 2015 and 2018.[16] Roads that have recently undergone improvements are included under a routine maintenance program financed with these resources. Once the useful life of a road has elapsed, it will need corrective

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[12] Seven points above the Brazilian average (49.4) and below the three top places on the list (São Paulo, Santa Catarina, Federal District) by between 17 and 33 points. Santa Catarina, a state with similar characteristics, is 2nd in the ranking.

[13] São Paulo is in 1st place, Rio de Janeiro 4th, Minas Gerais 16th (Public Leadership Center, 2018).

[14] Espírito Santo shows the highest rate in the Southeast (PNATRANS, 2018) and is below Brazil's average death rate due to traffic incidents, with 20 fatalities per 100,000 inhabitants.

[15] See footnote 9.

[16] During this period, the majority of the contracts were paid by unit and measurement prices (DER-ES).

maintenance to restore the level of service for which it was designed.[17] However, budget constraints in Espírito Santo have limited corrective maintenance of the oldest paved section of the state road network (3,565 kilometers), of which 54% is more than 30 years old. This insufficient investment, along with an increase in heavy traffic,[18] has prompted a service level decrease in paved sections of the state's road network, which went from 53% of roads in fair/poor condition in 2011 to 73% in 2018.[19] In addition, Espírito Santo is exposed to rain, river, and coastal flooding threats and coastal erosion, potentially worsened by the effects of climate change. Projections point to an increase in rainfall of between 20% and 30% for Espírito Santo, which could cause even greater deterioration of its road infrastructure (optional link 6).

1.9 **Congestion and urban interference (optional link 3).** Espírito Santo was the first state in Brazil to have all its municipal seats connected by paved roads. Approximately 500 kilometers of state roads pass through urban areas,[20] resulting in competition between freight traffic to ports and productive areas, and urban and interurban flows of private and public vehicles, nonmotorized vehicles, and pedestrians.[21] In the coastal area, which two of the main logistics corridors cross (Highway ES-060 and Highway ES-010), their dual use for logistics (due to the presence of ports) and urban transportation is significantly exacerbated during summer, when traffic increases by up to 50%. The segment of Highway ES-010 that connects the state's capital, Vitória, to the port complex in the north of the state at Aracruz has ongoing congestion issues.[22] This is because the highway's capacity is insufficient to meet demand,[23] with narrow two-way roads, poor signage, low pavement quality, and deficient geometric design.

1.10 The logistics corridors on the coast—Highway ES-060 and Highway ES-010—cross through a number of urban areas, resulting in negative externalities, including an increase in traffic accidents[24] and deterioration of urban public spaces.[25] Where these thoroughfares pass through urban centers, trucks share the road with bicycles, pedestrians, and other vehicles in the absence of proper road signage and pavement markings. The DER-ES's capacity to improve this situation is limited because it lacks systematic urban planning tools to support its interventions, as well as specific service guidelines and instructions for

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17 Every 10 years, there should be sealing and resurfacing of the road to recover the original roughness index and therefore its level of service.

18 Increase from 2.5% to 5.8% in heavy vehicle traffic, above the traffic growth for other types of vehicles (roads master plan).

19 Inquiry letter, DER-ES.

20 Roads master plan (optional link 9).

21 Of the motorized vehicles in the state, 27% are trucks (PELTES).

22 The average vehicle speed on road ES-010 between Vitória and Barra do Riacho (74 kilometers) is 45 kilometers/hour, below the recommended average speed of 60-70 kilometers/hour in a logistics corridor (DER-ES).

23 The traffic on ES-010 is of between 160,000 and 250,000 vehicles per month, above the average traffic for single-lane roads (DER-ES).

24 In 2017, there were 4,852 road incidents (fatal and nonfatal) in the município of Serra, the highest in Espírito Santo (12% of the total). In the segment of ES-010 that crosses this município, there were 43 fatalities (Departamento Estadual de Trânsito do Espírito Santo/State Traffic Department of Espírito Santo) (optional link 7).

25 Municípios have been developed around the roads, without the proper standardization and control of the use and occupancy of right-of-way areas. The DER-ES does not have systematic records to measure the satisfaction of the population with the works in urban crossroads.

these works. The agency also lacks city planning experts in its expert group (optional link 3).[26]

1.11 **Innovation and technology (**optional link 5**).** The problems described are exacerbated by limitations of the DER-ES in terms of its management of road network interventions. These include the lack of harmonization in data and information produced and collected; the lack of information integration among its departments; and the lack of a digital, open, and integrated system to facilitate the interoperability for the various user levels. These limitations hinder the timely identification of roads that require improvement and the monitoring and evaluation of the results of their improvement, as well as the processes of expropriation and addressing affected services, resulting in higher management expenses.

1.12 **Gender and inclusion in the sector (**optional link 4**).** The mainstreaming of factors connected to gender equity and the overall inclusion of all users and indirect users of the road-infrastructure sector is still a challenge in the institutional context of the DER-ES. Brazil's civil construction sector has the lowest workforce participation of women, at 9.5%.[27] Freight transportation facilities are associated with discrimination, gender violence, and prostitution.[28] This should be confronted jointly by society and specifically by the sector's public entities. The existence of a salary gap of approximately 15% between men and women and the underrepresentation of women in sector jobs, particularly in management positions,[29] reveal a lack of incentives and barriers to access for women to this nontraditional employment sector. The DER-ES does not currently have a strategy and specific tools to coordinate and implement its own action plan or to coordinate actions with other agencies, both on gender issues and overall inclusion.

1.13 **Rationale.** By improving the logistics road network in Espírito Santo with the construction of new roads and rehabilitation of existing ones, the program will help boost the competitiveness of the state's productive sector. There will be better access to export hubs for goods produced in Espírito Santo and in other inland states of the country (paragraph 1.3), promoting intermodal and efficient use of transportation. The program will build on the connectivity achieved in Bank-financed road projects (paragraph 1.21), incorporating the logistics system vision promoted by the PELTES (paragraph 1.4). The construction of new roads will be based on climate-resilient designs[30] and incorporated under routine road maintenance programs (paragraph 1.8). The designs will feature specific solutions to address any critical points found in the road safety audits to be conducted, for which the DER-ES will receive training (paragraph 1.29). To help alleviate

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[26] The DER-ES does not provide landscaping elements, follow standards for the construction of sidewalks and public lighting, or install street furniture. Between June 2018 and June 2019, more than 120 administrative processes were executed regarding the need for urban interventions such as speed-reduction devices, bicycle paths, traffic lights, etc.

[27] Optional link 4.

[28] There is prostitution of minors at the facilities installed along the highways (gas stations, rest areas, etc.), particularly on state roads, where the Federal Police does not intervene. The construction and traffic growth could increase these criminal activities. MAPEAR project, Programa Na Mão Certa, Childhood Brasil, Polícia Rodoviária Federal [Federal Highway Police], and private transportation companies.

[29] Within the DER-ES, the proportion of management positions is 40% women/60% men. The overall proportion of women with a college education is 18% higher than men (optional link 4).

[30] For designs, the DER-ES takes into consideration the effects of climate change through a hydrologic and hydraulic analysis system based on updated rainfall records for the past 30 years. The Bank will support improvements in the procedure through the adoption of regional event-forecasting models (optional link 6).

congestion problems and interference with urban centers, city planning projects to facilitate integration with population centers will be included in road works that require them. This program will serve as a pilot to generate technical manuals and procedures for coordination among the various levels of government involved, which will be used for future projects (optional link 3).

1.14 To improve the management efficiency of the DER-ES, an infrastructure for integrated and constantly updated information will be established, with support from an open source geographic information system. This will improve the efficiency of administration, planning, and resource management process, incorporating technical decision-making criteria. Based on that information system, an online, open source application—SigWeb—will be developed, enabling the various levels of users to utilize the metadata. This application will include the necessary cybersecurity measures. The SigWeb mobile app will facilitate, *inter alia*, interaction with the public, cut down on process-related red tape, and enable users to report incidents, defects, and emergencies (optional link 5).

1.15 The program will help close the sector's gender and inclusion gap through: (i) formation of a standing committee on gender and inclusion, comprised of female staff members of the DER-ES, which will be responsible for the coordination of projects and actions focused on gender equity and inclusion within the DER-ES; (ii) training activities to prepare young professional women for nontraditional jobs related to construction and road maintenance in the sector;[31] (iii) implementation of a Ministry of Women, Family, and Human Rights (MMFDH)–National Secretariat for Women's Policies (SNMP) joint action plan with a focus on preventing violence against women and combating child prostitution, through service campaigns linked to highways and areas surrounding shipyards and ports, as well as the drafting of codes of conduct and recommendations to mainstream the gender perspective in DER-ES works contracts (optional link 4); and (iv) the inclusion of universal accessibility elements in integrated urban planning projects and technical design manuals (paragraph 1.13).

1.16 **Evidence of the effectiveness of interventions.** Recent evidence shows that the Latin America and the Caribbean region's low level of participation in global production networks is partly due to poor transportation infrastructure in the region.[32] IDB estimates reveal that a 10% improvement in the quality of a country's transportation infrastructure would mean a 3.9% increase in the number of global value chains in that country.[33] With respect to impacts on foreign trade, a 1% reduction in ad valorem transportation costs is expected to produce an increase in exports ranging from 1.3% for Mexico to 4.5% for Chile.[34] The IDB estimated that for Latin America and the Caribbean, reducing average transportation costs by 10% could increase imports by up to 9% and exports by 10%.[35] In another study[36] that

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[31] This training can be coordinated with the Sustainability Division of DER-ES, which has had successful experiences in training professional young women.

[32] Blyde, J. and Molina, D. 2015. *Logistic Infrastructure and the International Location of Fragmented Production*. Journal of International Economics. 95 (2); 319-332.

[33] Ibid.

[34] Molina, D.; Heuser, C.; and Mesquita, M. 2016. *Infrastructure and Export Performance in the Pacific Alliance*, IDB Monograph 424 (IDB-MG-424), 2008.

[35] Moreira, M.; Volpe, C.; and Blyde, J. *Unclogging the Arteries: The Impact of Transport Costs on Latin American and Caribbean Trade*, 2008, IDB.

[36] Osborne, T.; Pachón, M. C.; and Ayala, G. E. (2014). *What drives the high price of road freight transport in Central America?*

used available data on the elasticity of trade with respect to transportation costs, the authors demonstrated that decreasing by half the prices of truck freight on national routes to ports would reduce total transportation costs to extraregional destinations by between 13% and 22%, which would increase trade volume.

1.17 There is also a set of studies that reveal the impact of infrastructure on productivity. One found that a 10% reduction in the cost of market access can increase labor productivity by 6%.[37] Also, doubling transportation costs can reduce trade by 80%.[38] Another analysis demonstrated that expanding the road network in the Peruvian Andes has resulted in a decrease of 3.1 hours in travel times for farmers and a 40% increase in the share of agricultural products in the local market.[39]

1.18 **Alignment with the priorities of the Government of the State of Espírito Santo.** The program is consistent with the 2030 Espírito Santo Development Plan in its objective of promoting high value-added production in a more innovative, diversified, and competitive economy. In addition, the program is consistent with the PELTES (paragraph 1.4) and the roads master plan, which explores the main interventions needed for the road transportation mode to provide quality infrastructure to the state.

1.19 The program is aligned with the multisector initiative of the Government of the State of Espírito Santo to reduce road accidents, as part of the national commitment defined by the Brazilian government in the National Plan to Reduce Traffic Deaths and Injuries in 2018. The state's main traffic agencies launched the initiative Movimento Capixaba para Salvar Vidas no Trânsito [Espírito Santo Movement to Prevent Traffic Fatalities], a multilateral effort aimed at reducing traffic accidents by half, which defined activities to be accomplished by each of the organizations. The DER-ES is responsible for implementing efficient infrastructure actions that can reduce the rate of road accidents on the state's roads over the next 10 years (optional link 7).

1.20 **Proposed interventions.** The program features investments in roads that are part of the Espírito Santo logistics corridors identified in the PELTES. This includes improvements in road geometric design, cross sections, and surfaces; works to widen some segments of the targeted highways; and drainage works/upgrades as and road safety measures, with a focus on segments that pass through urban areas.

1.21 **The Bank's experience in the sector and lessons learned.** The Bank has supported Espírito Santo with three road infrastructure improvement operations since 1991 (loans 865/SF-BR, 1675/OC-BR, and 2483/OC-BR). This ongoing support has contributed to the consistency and sustainability of the investments made. Their objective has evolved from improving the state's territorial cohesion (programs I and II) to improving connectivity with the rest of the country's states (program III), and lastly, to a program of strategically planned investments to improve the logistics performance of the Espírito Santo productive system. Table 1 features the main lessons learned from the previous Bank-financed programs in the state and the actions included in this new operation.

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[37] Deichmann, Uwe; Fay, Marianne; Koo, Jun; and Lall, Somik V. 2002, *Economic Structure, Productivity, and Infrastructure Quality in Southern Mexico*, Policy Research Working Paper WPS 2900.

[38] Henderson, J. V.; Shalizi, Z.; and Venables, A., 2001, *Geography and Development*, Journal of Economic Geography, 1, 81-106.

[39] Aguirre, J. C. M.; Guerrero, E.; and Campana, Y. Roads and Agriculture: Impacts of Connectivity in the Peruvian Andes. International Journal of Transport Economics, Vol. 45, 4, 2018-12.

Table 1. IDB experience in the sector and lessons learned

Lesson learned	Actions considered in the operation
Delays in previous programs resulted from delays in the processes to manage interference.	The DER-ES has established an Interference Management Division, tasked with anticipating impacts.
The state government can have difficulties delivering the local counterpart resources.	Include the budget for the local counterpart contribution in the Espírito Santo multiyear plan of August 2019. The budget includes investments for the next five years and constitutes input for the Annual Budget Act.
A multisector approach is needed to ensure better integration between interurban roads and population centers (program completion report, loan 2483/OC-BR).	The operation will include pilot projects on roads that intersect urban centers. These will be based on an urban-development vision and include the preparation of guidelines for future interventions.
To improve the sustainability of the entire state road network, investments in maintenance works should be stepped up, based on road service levels.	The operation will have a maintenance subcomponent, based on road service levels dedicated to maintenance and preservation based on road service levels. The roads targeted for works will be included in the DER-ES maintenance programs, based on service levels.
The management capacity of the DER-ES improved as a result of the institutional strengthening provided to that agency under road programs I, II, and III.	An innovative management support mechanism will be included (paragraph 3.5). SigWeb will be developed to improve DER-ES management.
As a result of the contractual condition in the loan contract with the Bank requiring that maintenance reports be submitted annually, the program management unit (PMU) presents them to the DER-ES's management, which then uses them to prioritize interventions.	This contractual condition is being maintained in the current program.
Programs which include major works that are scattered over a vast geographical area require longer execution periods.	According to the DER-ES's own scheduling, this program has a six-year execution period.

1.22 **Strategic alignment.** The program is aligned with the new IDB Group Strategy with Brazil 2019-2022 (document GN-2973) by contributing to: (i) narrowing infrastructure gaps and enhancing the business climate to boost competitiveness and promote national and international integration, which facilitate a reduction in nontariff barriers to trade, such as infrastructure inefficiencies (paragraph 1.13); and (ii) developing a more effective public sector that promotes fiscal sustainability through greater efficiency in the management of Espírito Santo's road assets (paragraph 1.14). This program is included in the 2019 Operational Program Report (document GN-2948-2).

1.23 The program is aligned with the Update to the Institutional Strategy 2010-2020 (document AB-3008) through the following development challenges: (i) low productivity and innovation, under the criteria of providing suitable, reliable, and affordable infrastructure and public services by incorporating new road-management technologies (paragraph 1.14); and (ii) limited economic integration, by improving infrastructure that facilitates access to the main export and import hubs (optional link 11); and with the crosscutting themes of: (i) climate change and environmental sustainability, by contributing the climate change resilience of the Espírito Santo road network (paragraph 1.13); and

(ii) social exclusion and inequality, by promoting the mainstreaming of the gender and inclusion perspective in the DER-ES (paragraph 1.15). The program will benefit local production-oriented activities along the targeted roads (paragraphs 2.5 and 2.6) and will specifically foster the participation of micro, small, and medium-sized enterprises (MSMEs) in program execution.[40] In addition, the program will contribute to the Corporate Results Framework 2016-2019 (document GN-2727-6) through the output indicator "Roads built or upgraded (kilometers)." Of the operation's resources, 1.59% will finance climate change adaptation activities, based on the joint methodology of the multilateral development banks. These resources contribute to the IDB Group's financing target for climate change projects.

1.24 The program is aligned with the Transportation Sector Framework (document GN-2740-7), by contributing to improvements in the coverage, capacity, quality, and connectivity of transportation infrastructure, and the Gender and Diversity Sector Framework Document (document GN-2800-8), by promoting an agenda to mainstream gender and inclusion (paragraph 1.15). The program contributes to dimension of success 2 of the Urban Development and Housing Sector Framework Document (document GN-2732-6), which focuses on improving access to quality urban infrastructure by systematizing urban planning of works on state roads that cross urban centers. Likewise, the program is consistent with the IDB Infrastructure Strategy: Sustainable Infrastructure for Competitiveness and Inclusive Growth (document GN-2710-5); the IDB Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and Renewable Energy (document GN-2609-1); the Sector Strategy Institutions for Growth and Social Welfare (document GN-2587-2); and the Climate Change Sector Framework (document GN-2835-8) by promoting the planning, construction, and maintenance of infrastructure designed with criteria for resilience to climate change (paragraph 1.13), which will preserve cultural heritage and institutional sustainability, promoting quality services for sustainable and inclusive growth. The program fulfills the Bank's framework for sustainable infrastructure (Technical note IDB-TN-1388) in its dimensions of economic, social, and financial sustainability under the criteria: (i) favorable socioeconomic returns and positive net present value for investment (paragraph 1.33); (ii) optimum infrastructure maintenance (paragraphs 1.28 and 3.6); and (iii) suitable financial capacity (paragraph 2.13).

1.25 **Value added by the program and the Bank's participation.** The Bank, through its experience and multisector nature, has supported the development of the following additionalities to achieve an intervention standard that is more efficient, comprehensive, and sustainable, which will be useful for future operations in Espírito Santo and the rest of the country: (i) improvement of road safety standards in the design of the targeted roads, including inspections and audits in the construction stages and preparing guidelines and training for the self-management of safety inspections and audits by DER-ES personnel; (ii) implementation of a model urban pilot project for state roads that intersect urban centers and development of a protocol for interventions of this kind in DER-ES road projects; (iii) support for the preparation of a technology platform (SigWeb). This platform will lay the foundations for the adoption of digital management models, such as building information modeling and the use of public-participation applications; (iv) implementation of a sustainable infrastructure vision from an economic, technical, and environmental

[40] The DER-ES will include in tendering processes offer options that are advantageous for MSMEs, in compliance with Supplementary Law 0123/2006 and State Supplementary Law 618/2002.

standpoint; and (v) mainstreaming of the gender and inclusion perspective in the actions of the DER-ES, with a specialized unit and an action plan to that end (paragraph 1.15).

B. Objectives, components, and cost

1.26 **Objective.** The program's objective is to help boost the competitiveness of the state of Espírito Santo by improving freight logistics and its national and regional integration. Its specific objectives are to: (i) improve the level of service of the state's roads that are relevant to port connections; (ii) improve the state road network's connectivity with the ports, minimizing the negative impacts on the affected urban areas; and (iii) improve the efficiency of road intervention processes for the DER-ES.

1.27 To attain these objectives, the program has been structured into the following components:

1.28 **Component 1. Projects, rehabilitation, implementation, and maintenance of Espírito Santo road infrastructure (US$259,637,700).** This component will finance: (i) preparation of engineering studies and projects (ii) rehabilitation, widening, and road construction works for segments of the state's road network used for port access, including road works projects in urban areas; (iii) functional recovery and maintenance works on state roads by service level; (iv) implementation of socioenvironmental mitigation measures for the program works; (v) expropriation expenses; and (vi) technical and environmental supervision of works.

1.29 **Component 2. DER-ES capacity building (US$5,432,300).** This component will finance: (i) support tools to help the DER-ES conduct inventories and manage and maintain road assets, prioritizing innovative management solutions; (ii) preparation of manuals, procedures, and technical standards for projects in urban areas, as well as developing instruments to monitor and manage these interventions; (iii) training and development of tools to improve road safety management, including the preparation of guides, protocols, and rules with a view to implementing them in future DER-ES road works projects; and (iv) activities to build DER-ES capacity for managing with a gender perspective by instituting a standing committee on gender and inclusion, implementing training to prepare women for nontraditional jobs in the transportation sector, and carrying out campaigns to prevent gender violence and discrimination in connection with the transportation sector (paragraph 1.15).

1.30 **Program administration (US$5,930,000).** The program will finance consulting services to support its management and auditing activities (paragraph 3.5).

1.31 **Description of the beneficiaries.** The program's direct beneficiaries are the direct and indirect employees of the supply chains for decorative stone, coffee, cellulose, steel, and shipbuilding, estimated at approximately 560,000 workers (about 30% of the economically active population of Espírito Santo), as well as users of the targeted roads.

C. Key results indicators

1.32 The main outcomes expected for the targeted road segments are a reduction in average vehicle operating costs (U.S. dollar per vehicle kilometer) and travel times and a decrease in road accidents along the Jacaraípe-Nova Almeida segment of ES-010. Moreover, road accidents are not expected to increase on the urban road segments targeted by the program. A reduction in the times for the DER-ES to process verifications is also expected. These outcomes and impacts are detailed in the results matrix (Annex II), in which the

baseline is the benchmark for program evaluation, while the outcome and output indicators will be corroborated through valid verification methods.

1.33 **Technical and economic viability.** The DER-ES and the Bank have reviewed the studies and engineering designs for the projects of the representative sample (paragraph 2.4), including an analysis of their costs, and having considered them to be technically, socioenvironmentally, and economically viable. A cost/benefit analysis was conducted for the four projects of the representative sample. Benefits were estimated using the Highway Development and Management Model, Version 4 (HDM-4), which calculates the return for each project taking into account the investment costs, including costs to mitigate direct socioenvironmental impacts; savings in overall transportation costs; and maintenance costs. The analysis found an economic internal rate of return between 29.9% and 52.9% for each individual project, and an internal rate of return of 34.8% for the four projects of the representative sample as a group. A sensitivity analysis was conducted, increasing the investment costs by 25%[41] and with the maximum possible increase in investment costs (+ 277%) so that the program maintains an internal rate of return equal to the 12% discount rate used (optional link 1).

II. Financing Structure and Main Risks

A. Financing instruments

2.1 **Cost and financing.** The program will have a total cost of US$271,000,000, of which US$216,800,000 (80%) will be financed from the Bank's Ordinary Capital and the difference, US$54,200,000 (20%), will be financed with local counterpart resources. The following table contains itemized costs, by investment category.[42]

Component	Bank	Local	Total
Component 1. Projects, rehabilitation, implementation, and maintenance of Espírito Santo road infrastructure	206,573,930	53,063,770	**259,637,700**
Component 2. DER-ES capacity building	4,889,070	543,230	**5,432,300**
Program administration	5,337,000	593,000	**5,930,000**
Total	**216,800,000**	**54,200,000**	**271,000,000**

2.2 **Type of financing.** The program will be financed as an investment loan under the multiple works modality, since it includes works with similar characteristics but independent of each other, which must meet defined eligibility criteria (paragraph 2.8).

2.3 **Period and disbursement schedule.** Given the program's size and geographical dispersion of the works, the disbursement period has been estimated at six years from the effective date of the loan contract. The deadline for the physical start of the works included in the program will be five years from the effective date of the loan contract. In order to request advances of funds from the Bank, the executing agency will submit a financial plan.

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41 Assumption based on Brazilian legislation on this subject.

42 Optional link 17 provides a detailed breakdown by component.

Table 3. Disbursement schedule (US$)

Source	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	TOTAL
IDB	47.529.834	91.308.823	54.258.353	17.333.681	3.642.326	2.726.983	**216.800.000**
Local contribution	13.536.290	22.451.950	13.132.282	3.954.767	661.003	463.709	**54.200.000**
Total	61.066.124	113.760.773	67.390.635	21.288.448	4.303.329	3.190.692	**271.000.000**
%	**23**	**65**	**89**	**97**	**99**	**100**	**100**

2.4 **Representative sample.** The representative sample is comprised of four works of the type of projects that the program will finance (rehabilitation, construction, and functional recovery with performance-based maintenance), which meet the eligibility criteria established for the program (paragraph 2.8). The estimated cost of the representative sample is US$146.9 million, which accounts for 54%[43] of the US$271 million total program cost and includes the works described below (optional link 2).

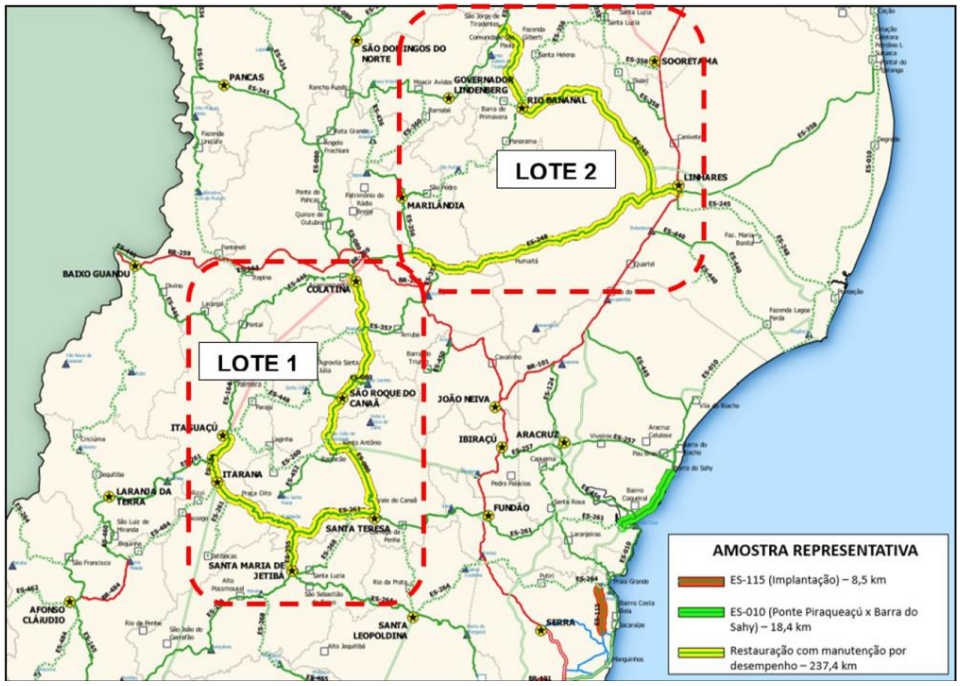
2.5 Rehabilitation of a 14.10-kilometer segment of ES-010 between Ponte Piraqueaçu and Barra do Sahy, which will include repaving, road-sign and pavement-marking improvements, sidewalk expansions, access improvements, speed-change lanes at intersections, and bus stops. Along this road, there is production of cellulose, beans (Aracruz is the state's largest producer of beans), and ornamental stones, with heavy traffic of trucks transporting the products to the ports.

2.6 Construction of a 8.68-kilometer segment of ES-115 between Jaracaípe and Nova Almeida (Segment 4), which will include a new two-lane road with urban integration works (binary) where it intersects with the urban centers that it connects. This road will have strategic significance for the integration of productive centers (cellulose, industrial center of Vitória, and iron and steel center) with the foreign trade hubs located at Barra do Riacho (ports Barra do Riacho, Imetame, and Portocel).

2.7 Functional recovery with performance-based maintenance of 236 kilometers of state roads (two 118-kilometer lots), which will finance the restoration of pavement and subsequent maintenance based on service level over a five-year period.

[43] A 30% larger sample was considered to ensure the representativeness of the different types of interventions planned for the program.

Figure 2. Segments of the representative sample



Source: State of Espírito Santo.

2.8 **Eligibility and prioritization criteria for road works.** The road works financed by the program will meet the following eligibility criteria: (i) must be part of the state road network and the state's logistics system; (ii) must have an internal rate of return of 12% or more; (iii) must have engineering studies, including road safety criteria; (iv) for roads that pass through urban areas, must include an urban integration project, in accordance with municipal master plans; (v) must have secured the applicable environmental licenses, in accordance with Brazilian legislation, and must be in compliance with the requirements set out in both the environmental and social management framework and the program's involuntary resettlement framework; and (vi) cannot be classified as a category "A" operation in terms of its environmental and social impacts, in accordance with the Bank's Environment and Safeguards Compliance Policy (Operational Policy OP-703).

B. Environmental and social risks

2.9 In accordance with the Environment and Safeguards Compliance Policy (Operational Policy OP-703), the program has been classified as a category "B" operation, owing to potential medium-term adverse impacts and environmental and social risks of the works of the representative sample, and viable mitigation measures with which viable and the executing agency is familiar. The environmental and social assessment analyzed these impacts and risks and identified suitable environmental and social management tools for use during the program execution stage, including construction and operation.

2.10 The potential risks and adverse impacts identified for the construction stage concern the possibility of minimal impacts on conservation areas through which the roads slated for rehabilitation works already pass. These include the generation of moderate amounts of dust, noise, particulate matter, greenhouse gas emissions, fuel spills, temporary increase in traffic, and temporary interruption of basic services. The potential adverse social

impacts for the sample projects include: (i) expropriation of land and structures for rehabilitation of some specific areas in the targeted segments; (ii) impact on and physical displacement of 43 properties, which entails involuntary resettlement; (iii) temporary and permanent economic impacts on formal and informal businesses; and (iv) temporary impacts on the health and safety of employees of the works and the population in the area of direct influence. During the operation stage, the potential adverse risks and impacts concern traffic accidents due to changes in traffic patterns and flows, flooding on the roads built and rehabilitated, and conflicts with indigenous communities owing to noncompliance with the demands agreed upon for the construction of program works on their lands.

2.11 These impacts can be avoided, mitigated, and controlled through management measures and actions that are familiar to the construction and road rehabilitation sector. These measures are part of the program safeguard instruments, which include an environmental and social management plan and framework, as well as an involuntary resettlement and livelihood restitution plan and framework for the projects of the representative sample and the remaining program works, which have been disclosed in accordance with Operational Policies OP-703 and OP-102 (required link 3). The operation has a Type 1 (moderate) disaster risk rating, owing to exposure to moderate rainfall events. Meaningful stakeholder consultations were held with the affected populations and parties involved in Segment 2 and Segment 4; with the population impacted by involuntary resettlement; and two rounds of culturally appropriate consultations with the Tupiniquim-Guaraní indigenous community. The consultations were received favorably and the resulting recommendations relating to road safety, improvement of access roads, and noise mitigation measures, including sound barriers, were incorporated into program.

C. Fiduciary risks

2.12 The institutional capacity assessment of the DER-ES using the Institutional Capacity Assessment System (ICAS), the risk management workshop, and their validation with government teams concluded that the executing agency has a high level of institutional fiduciary capacity and experience executing Bank-financed operations, and that the operation has a low level of fiduciary risk. The DER-ES has a well-organized, appropriate structure and ample experience contracting works with the private sector, as demonstrated by the successful implementation of three prior programs with the Bank (paragraph 1.21). In terms of technical elements, the institutional strengthening actions implemented have reinforced the organizational structure and management capacity of the DER-ES, enabling the optimization of the management support model (paragraph 3.5). The works planned under the program do not present exceptional technical complexities and there is a broad market, at the national and international levels, of qualified supervisory, consulting, and construction companies.

2.13 The financial analyses conducted based on the financial statements (optional link 16), summary budget execution reports, and fiscal management reports of Espírito Santo for the 2014-2018 period show that it the fiscal policy it pursued was satisfactory. This enabled Espírito Santo to generate a current account surplus that was sufficient to finance the investments of this loan operation and make the counterpart contribution without jeopardizing its fiscal health.

D. Other risks and key issues

2.14 To identify the main project risks, a workshop was held with the multidisciplinary team of the DER-ES involved in the entire project cycle.[44] This resulted in a detailed risk management plan, including a risk register, a qualitative evaluation of risks, and a response plan for risks prioritized as medium-high, such as: (i) execution delays due to delays in contracting of consulting services to support program administration and review detailed designs; and (ii) potential quality deficiencies in the designs that could impact execution periods.

2.15 The following actions will be taken to mitigate and eliminate the aforementioned risks: (i) proactive planning to contract consulting services to support program administration; and (ii) technical review of products during the program preparation stage, for which the executing agency plans to use retroactive financing and retroactive recognition of local counterpart expenditures (paragraph 3.11).

III. Implementation and Management Plan

A. Summary of implementation arrangements

3.1 **Borrower and executing agency.** The borrower will be the State of Espírito Santo and the guarantor of its financial obligations relative to the loan will be the Federative Republic of Brazil.

3.2 **Program management unit.** The DER-ES, acting through the program management unit (PMU), which is already part of the DER-ES's structure. The DER-ES, acting through the PMU, will be responsible for the program's technical and operational management, including: (i) coordinating procurement and contracting processes for works, goods, and services; (ii) requesting loan disbursements; (iii) preparing annual work plans and procurement plans, among others; (iv) submitting to the Bank reports and other program documents; (v) monitoring the supervision and inspection of works and service contracts; and (vi) serving as the liaison with the Bank.

3.3 The DER-ES will engage consulting firms to conduct the technical and environmental supervision of the works. **As a special contractual condition for execution, prior to the commencement of any works project, the borrower will submit to the Bank evidence of the signature and entry into force of the respective contract with the works supervision company** to provide independent inspection services for the respective works.

3.4 The basic team of the PMU assigned to the program will be comprised of DER-ES staff and include, at a minimum: (i) a general coordinator; (ii) a deputy general coordinator; (iii) an environmental and social coordinator; and (iv) an administrative and financial affairs coordinator. To support bidding processes, the PMU will be assisted by a standing committee tasked with supporting bidding processes, which is already a part of the DER-ES's structure. **As special contractual conditions precedent to the first disbursement of the loan, the borrower will submit to the Bank evidence of: (i) the signature and entry into force of the program execution agreement between the borrower and the executing agency establishing the conditions for the transfer and**

[44] Workshop conducted on 30 May 2019 with the participation of 25 DER-ES employees. This operation was selected as one of the pilots to apply the Bank's new risk-register methodology.

use of loan proceeds, under the terms previously agreed upon with the Bank; and (ii) the revision of the PMU's internal rules to include among its powers program administration and the appointment of its basic team, under the terms previously agreed upon with the Bank. The first condition is essential to ensuring that the borrower will transfer the loan proceeds and local counterpart funds to the DER-ES, taking into account that the latter is a decentralized body with its own legal status. Moreover, the execution agreement will establish the obligations and powers of the executing agency as part of the program execution mechanism, as set forth in the loan contract. The second condition is considered essential to assure the Bank that the PMU has the powers and team necessary for the program's execution and administration.

3.5 For program management technical support, the DER-ES, acting through the PMU, will engage consulting services to support program management and execution. The procurement model of support services for program execution includes three different payment modalities: (i) monthly, to provide a necessary minimum support structure throughout the lifetime of the program; (ii) payments by product, already identified and with an established price per unit; and (iii) a package of 1,000 hours of specialized consulting services in the various disciplines that could be required throughout the lifetime of the program, for which the payments will be impacted by a coefficient reflecting the level of service of the consulting assignment. As a result of this model, support for program execution is expected to be contracted for an amount that is 50% below traditional management services.[45]

3.6 After the program has ended, the DER-ES will ensure that the works and equipment financed by the program are maintained pursuant to generally accepted technical standards and good practices for the industry, for a period of up to three years from the completion date of program disbursements.

3.7 **Program execution plan.** Program activities will be carried out according to the schedule of the program's execution plan and annual work plan. The program execution plan contains details equivalent to the annual work plan for each year of execution (required link 1). The program execution plan will be amended each year, taking into account real progress made in the program. Annual reviews of the program execution plan (e.g. annual work plan) will be submitted to the Bank.

3.8 **Fiduciary agreements and requirements.** The fiduciary agreements and requirements (Annex III) reflect the guidelines for financial management and procurement to be applied for program execution. These agreements and requirements have been based on an analysis of the fiduciary context of the country and the executing agency; an institutional assessment of the executing agency; meetings with the executing agency's personnel; and ongoing meetings with the project team and key personnel of the DER-ES.

3.9 **Period and disbursement schedule.** Given the size of the program and geographical dispersion of the works, the disbursement period has been estimated at six years from the effective date of the loan contract. In order to request advances of funds from the Bank, the executing agency will submit a financial plan.

3.10 **Procurement plan.** The procurement plan contains the details of the program's procurement processes, which will follow the Policies for the Procurement of Goods and

[45] For the Highway Program for the State of Espírito Santo III (loan 2483/OC-BR), the administration cost was approximately 4% of the works budget. For this program, the estimated budget for management support is approximately 2%.

Works Financed by the Inter-American Development Bank (document GN-2349-9) and the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank (document GN-2350-9). The plan includes: (i) the contracts for works, goods, and consulting services required for program execution; (ii) the proposed methods for the contracting of goods and for the selection of consultants; and (iii) the procedures that the Bank applies for procurement processes (required link 4). The borrower will update the procurement plan annually, or according to the program's needs. Any proposed change to the procurement plan will be submitted to the Bank for its approval.

3.11 **Retroactive financing and recognition of expenditures.** The Bank may retroactively finance, from the loan proceeds, up to US$2,168,000 (1% of the proposed loan amount), and recognize, as part of the local contribution, up to US$542,000 (1% of the estimated local contribution) in eligible expenditures incurred by the borrower prior to the loan approval date for preinvestment studies and project preparation activities, consulting services for management support, and expropriation expenses, provided that they satisfied requirements substantially analogous to those established in the loan contract. Such expenditures will have been incurred on or after 8 May 2019 (project profile approval date) but may under no circumstances include expenditures incurred more than 18 months prior to the date the loan is approved by the Bank's Board of Executive Directors.

3.12 **Advance procurement.** Procurement processes undertaken before approval of the loan by the Board of Executive Directors of the Bank will follow the Bank's procurement policies.

3.13 **Audits.** During the disbursement period, the DER-ES will submit the program's financial statements, audited by an independent external audit firm acceptable to the Bank or the Espírito Santo Audit Office, within 120 days of the close of each fiscal year of the DER-ES. The final audited financial statement will be submitted within 120 days of the date of the final disbursement.

B. Summary of results monitoring arrangements

3.14 The monitoring and evaluation plan will support program execution pursuant to the targets and progress indicators defined in the results matrix. The following tools will be used for these purposes: (i) the program execution plan, annual work plan, procurement plan, and annual external audits; and (ii) semiannual status reports, to be submitted within 60 days of the end of each six-month period, in compliance with the provisions of the monitoring and evaluation plan (optional link 2). The Bank will conduct periodic missions to supervise technical considerations.

3.15 The executing agency will submit to the Bank a final evaluation within 90 days as of the expiration of the disbursement period for the loan. This evaluation will include, at a minimum: (i) an ex post cost/benefit analysis of the program's road works, using the same ex ante analysis methodology featured in the monitoring and evaluation plan (required link 2); (ii) the results of the financial execution; (iii) fulfillment of the targets established, pursuant to the agreed-upon outcome indicators; and (iv) fulfillment of contractual commitments that are not included in the financial audit.

Development Effectiveness Matrix		
Summary	BR-L1524	
I. Corporate and Country Priorities		
1. IDB Development Objectives	Yes	
Development Challenges & Cross-cutting Themes	-Productivity and Innovation -Economic Integration -Gender Equality and Diversity -Climate Change and Environmental Sustainability	
Country Development Results Indicators	-Roads built or upgraded (km)*	
2. Country Development Objectives	Yes	
Country Strategy Results Matrix	GN-2973	(i) Improve the business climate and narrow gaps in sustainable infrastructure to enhance competitiveness and promote international and national integration to boost productive capacity, by reducing non tariffs trade barriers (¶1.13); and (ii) Build a more effective public sector that promotes fiscal sustainability by improving efficiency in in the road assest management of ES.
Country Program Results Matrix	GN-2948-2	The intervention is included in the 2019 Operational Program.
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		
II. Development Outcomes - Evaluability		Evaluable
3. Evidence-based Assessment & Solution		9.6
3.1 Program Diagnosis		3.0
3.2 Proposed Interventions or Solutions		3.6
3.3 Results Matrix Quality		3.0
4. Ex ante Economic Analysis		10.0
4.1 Program has an ERR/NPV, or key outcomes identified for CEA		3.0
4.2 Identified and Quantified Benefits and Costs		3.0
4.3 Reasonable Assumptions		1.0
4.4 Sensitivity Analysis		2.0
4.5 Consistency with results matrix		1.0
5. Monitoring and Evaluation		8.5
5.1 Monitoring Mechanisms		2.5
5.2 Evaluation Plan		6.0
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood		Medium
Identified risks have been rated for magnitude and likelihood		Yes
Mitigation measures have been identified for major risks		Yes
Mitigation measures have indicators for tracking their implementation		Yes
Environmental & social risk classification		B
IV. IDB´s Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)	Yes	Financial Management: Budget, Treasury, Accounting and Reporting, External Control. Procurement: Information System.
Non-Fiduciary	Yes	Strategic Planning National System, Monitoring and Evaluation National System.
The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions:		
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project	Yes	Support of a social sector consultant for the expropriations; support of a consultant to identify gender activities under this program; support of a consultant to identify road safety activities for this program; support of a consultant to help the incorporation of urban planning matters in the design of the urban highways.

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

LOGISTIC EFFICIENCY PROGRAM OF ESPIRITO SANTO (BR-L1524)
Evaluability Note

The main goal of the operation is to contribute to increasing the competitiveness of the Brazilian state of Espirito Santo. To achieve this, the proposal defines three specific areas of intervention. The first area proposes an improvement of the state roads' service level, focusing on the ones that are relevant for the connection to the state's ports. The second area focuses on enhancing the linkage between the state road network and the ports while minimizing its impacts on the urban zones affected. The third area aims an institutional strengthening of DER-ES, seeking to increase the efficiency of the processes of intervening on state roads.

The project proposal diagnosis describes that Espirito Santo has a logistic system based mostly on the road network and its connection to the ports; however, the quality of the state roads is in depreciation, having more than seventy percent of it been classified as in fair/bad conditions in 2018. This situation has impacted the logistic costs of the state. Moreover, diagnosis states that the architecture of the logistic system, that makes some essential state highways cohabitate with urban zones near to the ports, generates complex dynamics to the connection to the docks, culminating in congestions and urban conflicts. Finally, the diagnosis identifies some institutional limitations - which creates inefficiencies in the process of intervening timely on the roads - and some gender challenges in the sector. In this sense, solutions are aligned to problems, although no evidence is presented for the country on the effectiveness of some proposed solutions.

The economic analysis uses the HDM-4 model and provides a quantification of some economic benefits. It quantifies benefits associated with the reduction of the vehicle operating cost and of the travel time. The model assumptions are based on the road network and traffic diagnosis and past local experiences. The analysis concludes the Project has an internal rate of return of 34.8%.

The Project presents a detailed monitoring and evaluation plan; the executing agency will provide most of the result indicators after executing the ex-post economic analysis based on updated model inputs. The evaluation plan does not include an impact evaluation.

RESULTS MATRIX

Program objective:	The program's objective is to help boost the competitiveness of the state of Espírito Santo by improving freight logistics and its national and regional integration. Its specific objectives are to: (i) improve the level of service of the state's roads that are relevant to port connections; (ii) improve the state road network's connectivity with the ports, minimizing the negative impacts on the affected urban areas; and (iii) improve the efficiency of road intervention processes for the Roads Department of the State of Espírito Santo (DER-ES)

EXPECTED IMPACTS

Indicator	Unit of measure	Baseline	Baseline year	Year 2025	Final target	Means of verification	Comments
Overall objective: Increase the competitiveness of Espírito Santo							
Espírito Santo competitiveness index	Index	56.3	2018	58.9	58.9[1]	Values determined by the annual competitiveness study of Brazilian states prepared by the Public Leadership Center jointly with *The Economist*.[2]	The indicator considers 10 dimensions, including road infrastructure. It ranges from 0 to 100, with 0 being not competitive and 100 highly competitive.[3]

EXPECTED OUTCOMES

Indicator	Unit of measure	Baseline	Baseline year	Final target	Means of verification	Comments
Specific objective 1: Improve the level of service of the state's roads that are relevant to port connections						
Average vehicle operating costs on roads that are maintained[4]	US$ per vehicle-kilometer	0.87	2019	0.83	Vehicle operating costs and time study based on HDM-4 VOC [vehicle operating costs] Roads Economic Decision model	Responsible entity or entities: DER-ES

1 Target based on improving the road quality index within the infrastructure pillar, which impacts the increase in the indicator. The calculation methodology is described in the monitoring and evaluation plan (required link 2).

2 Espírito Santo study.

3 For a description of the methodology, click here.

4 Weighted average traffic for each group of vehicles: motorcycles, small automobiles, buses, VC1 trucks, and VC2 trucks. Calculation methodology described in the monitoring and evaluation plan (required link 2).

Indicator	Unit of measure	Baseline	Baseline year	Final target	Means of verification	Comments
Specific objective 2: Improve the state road network's connectivity with the ports, minimizing the negative impacts on the affected urban areas						
Average travel time[5] for motorized freight vehicles for the entire length of rehabilitated segments	Minute	16.24	2019	15.62[6]	Vehicle-operating costs and time study based on HDM-4 VOC Roads Economic Decision model	Responsible entity or entities: DER-ES
Average travel time for motorized freight vehicles for the entire length of implemented segments	Minute	12.03	2019	8.52[7]		
Average operating cost[8] for motorized freight vehicles on rehabilitated roads	US$ per vehicle-kilometer	2.71	2019	2.32		
Average operating costs for motorized freight vehicles on implemented roads	US$ per vehicle-kilometer	2.22	2019	1.83		
Number of fatal and nonfatal traffic accidents on the Jacaraípe-Nova Almeida logistics corridor	Accident	144	2018	122[9]	Road safety report on roads improved by the DER-ES, with input from the Public Safety and Social Defense Department of Espírito Santo	
Number of fatal and nonfatal traffic accidents on the urban connection[10] between ES-115 and ES-010 in Nova Almeida	Accident	13	2018	13[11]		
Specific objective 3: Improve the efficiency of road intervention processes for the DER-ES						
Period for the DER-ES to process and issue a boundary verification[12]	Day	120	2018	72	DER-ES report	Responsible entity or entities: DER-ES

5 Weighted average for cargo-vehicle traffic: VC1 truck and VC2 truck. Calculation methodology described in the monitoring and evaluation plan (required link 2).

6 Reduction in travel times resulting from the rehabilitation of the representative sample segment of ES-010, between Ponte Piraqueaçu-Barra do Sahy.

7 Reduction in travel times on ES-115 between Jaracaípe-Nova Almeida.

8 Weighted average for freight-vehicle traffic: VC1 truck and VC2 truck. Calculation methodology described in the monitoring and evaluation plan (required link2).

9 Incidents on the ES-010 segment between Jacaraípe-Nova Almeida plus incidents on alternative road ES-115.

10 Urban binary road segment that continues with ES-115 once it is implemented. The monitoring and evaluation plan (required link 2) details the area taken into account and the computation of accidents.

11 The target seeks to maintain the same number of incidents, since urban works, taking into account best practices on urban planning, will reduce the impact of the new traffic generated as a result of the construction of ES-115.

12 Period between a request for verification to the DER-ES from the owner of land adjoining a road and its issuance. Calculation methodology described in the monitoring and evaluation plan (required link 2).

OUTPUTS

Output	Unit of measure	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Final target	Means of verification	Comments
Component 1: Projects, rehabilitation, implementation, and maintenance of Espírito Santo road infrastructure												
Number of kilometers improved or rehabilitated	Kilometer	0	2019	5	9	21.2	15.1	0	0	50.3	Supervision reports and receipt records of works	Responsible entity or entities: DER-ES and IDB
Number of kilometers implemented	Kilometer	0	2019	2	4	5.5	2.9	0	0	14.4		
Number of kilometers maintained and preserved	Kilometer	0	2019	47	140	140	140	140	93	700		
Number of critical points[13] addressed on the state road network	Number of critical points	0	2019	0	0	12	8	0	0	20		
Number of urban interventions[14] implemented	Number of urban interventions	0	2019	0	0	1	0	0	0	1		
Component 2: DER-ES capacity building												
Geographic information system implemented	Number of systems	0	2019	0	0	0	0	1	0	1	Final consulting assignment report approved by the DER-ES	Responsible entity or entities: DER-ES
Technical standards and manuals prepared and updated	Number of technical standards	0	2019	0	1	2	0	0	0	3		
Road safety audit and inspection manuals prepared	Number of manuals	0	2019	0	0	1	1	0	0	2		

[13] Points with an atypically high number of road accidents or potential dangers based on a road safety audit or inspection. The monitoring and evaluation plan (required link 2) sets out the calculation methodology.

[14] Urban interventions are works conducted on urban road segments aimed at improving integration between the road and its surroundings. The target for this indicator refers to the urban binary road in Nova Almeida, as a continuation of ES-115. The monitoring and evaluation plan (required link 2) sets out the calculation methodology.

Output	Unit of measure	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Final target	Means of verification	Comments
DER-ES employees trained in road safety audits and inspections	Number of employees	0	2019	0	0	5	5	0	0	10	List of employees trained and certificate of course completion	
Manual for road works in urban environments completed	Number of manuals	0	2019	0	0	0	1	0	0	1	Final consulting assignment report	Responsible entity or entities: DER-ES
Number of women trained in nontraditional jobs	Number of women trained	0	2019	10	10	0	0	0	0	20		Pro-gender. Responsible entity or entities: DER-ES
Gender action plan prepared	Number of action plans	0	2019	1	0	0	0	0	0	1		
Number of campaigns focused on gender issues conducted	Number of campaigns	0	2019	0	2	2	2	0	0	6		Responsible entity or entities: DER-ES

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Country:	Brazil
Project number:	BR-L1524
Name:	Espírito Santo Logistics Efficiency Program
Executing agency:	Roads Department of the State of Espírito Santo (DER-ES)
Fiduciary team:	Karina Díaz and Mario Castañeda (VPC/FMP)

I. EXECUTIVE SUMMARY

1.1 The institutional assessment for program fiduciary management was based on: (i) the fiduciary context of the country; (ii) the results of the ICAS[1] assessment; (iii) evaluation of the main fiduciary risks; (iv) previous experience with Bank operations executed by the DER-ES; and (v) working meetings with the executing agency and the Espírito Santo government.

1.2 Brazil has robust country fiduciary systems in place to facilitate sound management of administrative, financial, supervisory, and procurement processes and that comply with the principles of transparency, economy, and efficiency. The executing agency's systems used in its planning, organizational, execution, and supervisory capacities are found to have a satisfactory level of development.

1.3 The DER-ES has technical, legal, administrative, and fiduciary autonomy, as well as the experience to execute program actions. Although this is the first logistics-related operation, it will be the fourth Bank-financed operation with the executing agency. The program will utilize the existing—and consolidated—organizational structure, and will also draw on lessons learned.

II. THE EXECUTING AGENCY'S FIDUCIARY CONTEXT

2.1 The DER-ES is an autonomous state agency with its own revenue from the collection of tolls, road segment concessions, traffic tickets, use of rights-of-way, and other fees. It has technical, legal, administrative, and fiduciary autonomy, and reports to the Department of Transportation and Public Works.

2.2 The DER-ES was created 60 years ago and has experience maintaining and expanding the road network. It has specialized in the execution of programs with development organizations, both national and international. Specifically with the IDB, this would be the fourth operation with the agency. The first three were executed within the planned timelines and met the planned objectives.

[1] Institutional Capacity Assessment Platform

2.3 The executing agency currently has a program management unit (PMU) that was created under ordinance 113-S of 10 November 2010. This unit reports to the Engineering Division. The PMU has been responsible for the execution of the previous programs with the Bank and will also be responsible for this fourth operation. A restructuring of the DER-ES is currently under way, under which the agency would absorb the responsibilities for building construction. To that end, a specific division will be created for these purposes. Nevertheless, the agency will retain its current responsibilities. In view of its experience, the Engineering Division will become the Projects and Actions Management Division, and the PMU will be part of its structure.

2.4 For this operation, a structure within the PMU will be in place and include staff of the executing agency; it will be supported by a team to help manage and provide technical supervision for the various program activities.

2.5 In addition, support will be provided by the standing committee tasked with supporting bidding processes, the design of which is based on the special bidding committees established for the execution of previous programs with the IDB. The bidding committee is made up of three full-time permanent members and two alternates who have experience with the Bank's policies and local regulations (Decree 3786-R of February 2015). Organizationally, this committee is an independent structure attached to the director general of the DER-ES.

III. Institutional Capacity Assessment, Fiduciary Risk Evaluation, and Mitigation Actions

3.1 The ICAS assessment performed of the DER-ES, the risk management workshop, and their validation with government teams concluded that the executing agency has a high level of institutional fiduciary capacity and experience executing Bank-financed operations, and that the operation has a low level of fiduciary risk. Therefore, fiduciary reviews will be conducted on an ex post basis. The Bank's financial and procurement teams will support the operation, monitoring the risk level and making the necessary adjustments to the supervision plan.

IV. Agreements and Requirements for Procurement Execution

A. Procurement execution

4.1 **Procurement of works, goods, and nonconsulting services.** Works, goods, and nonconsulting services arising under the program and subject to international competitive bidding (ICB) will be procured using the standard bidding documents issued by the Bank. Bidding processes subject to national competitive bidding (NCB) will be executed using national bidding documents agreed upon with the Bank. The project sector specialist is responsible for reviewing the technical specifications for procurement.

4.2 **Selection and contracting of consultants.** Consulting service contracts arising under the program will be executed using the standard request for proposals issued by the Bank. The project sector specialist is responsible for reviewing the terms of reference for the contracting of consulting services.

4.3 **Use of the country procurement system.** The country procurement subsystem approved by the Bank, Pregão Eletrônico, will be used to procure off-the-shelf goods and

services for up to US$5 million. Any system or subsystem approved subsequently will be applicable to the operation. The procurement plan and its updates will indicate which contracts will be executed through approved country systems.

4.4 **Advance procurement.** Procurement processes undertaken before approval of the loan by the Board of Executive Directors of the Bank will follow the IDB's procurement policies.

4.5 **Retroactive financing and recognition of expenditures.** The Bank may retroactively finance, from the loan proceeds, up to US$2,168,000 (1% of the proposed loan amount), and recognize, as part of the local contribution, up to US$542,000 (1% of the estimated local contribution) in eligible expenditures incurred by the borrower prior to the loan approval date for preinvestment studies and design preparation activities, consulting services for management support, and expropriation expenses, provided that they satisfied requirements substantially analogous to those established in the loan contract. Such expenditures will have been incurred on or after 8 May 2019 (project profile approval date) but may under no circumstances include expenditures incurred more than 18 months prior to the date the loan is approved by the Bank's Board of Executive Directors.

4.6 **Direct contracting.** No direct contracting is anticipated.

Table 1. Threshold amounts for ICB and international shortlist

Method	ICB for works	ICB for goods and nonconsulting services	International shortlist for consulting
Threshold	US$25 million	US$5 million	US$1 million

Table 2. Main procurement processes

Procurement activity	Procurement method	Estimated date	Estimated amount (US$ millions)
Works			
Rehabilitation and paving works	ICB	2020 (first half) 2021 (second half)	100
Functional recovery with performance-based maintenance	ICB	2020 (first half) 2020 (second half)	141
Consultants			
Support for program management	QCBS[2]	2019 (second half)	5.35
Supervision	QCBS	2020 (first half)	7
Preparation of detailed designs	QCBS	2020 (first half)	4.8
Preparation of standards and procedures for the DER-ES	QCBS	2020 (second half)	4

Source: Procurement plan.

B. Procurement supervision

4.7 Procurement processes will be supervised on an ex post basis, except where ex ante supervision is warranted. When procurement is conducted through the country system, supervision will be performed through that system.

4.8 The supervision method will be determined for each selection process. Ex post reviews will be performed every 12 months in accordance with the program supervision plan.

[2] Quality- and cost-based selection (QCBS).

Ex post review reports will include at least one physical inspection visit, selected from the processes subject to ex post review.

Table 3. Thresholds for ex post review

Works	Goods	Consulting services
NCB and shopping	NCB and shopping	Under US$1 million

C. Records and files

4.9 The PMU will be responsible for maintaining the necessary supporting documentation for program supervision and auditing.

V. FINANCIAL MANAGEMENT

A. Programming and budget

5.1 The DER-ES will be responsible for the execution of activities as envisaged in the program execution plan, annual work plan, and financial plan. Therefore, it will ensure that the budget resources for the program—from the Bank and local contribution—are allocated annually and available for the execution pursuant to program planning.

5.2 The budgetary process begins in July, based on the Budget Guidelines Act. In accordance with its regulatory framework (Supplementary Law 381, Article 4(XIII)), the obligations of the DER-ES include preparing its budget and carrying out its financial execution. The agency's Financial Division is responsible for centralizing budget execution and accounting activities.

5.3 Annually, the PMU will submit to the Financial Division the program's budget execution estimate for the next fiscal year, indicating the budgetary needs and their sources of financing.

B. Accounting and information systems

5.4 As an autonomous state agency, the DER-ES follows the accounting principles set out in Law 4320 of March 1964. The State's general accounting is carried out through the integrated financial management system for states and municípios established under State Decree 40566 of December 1995. For this program, the DER-ES will prepare a specific chart of accounts acceptable to the Bank and will establish the records and auxiliary controls necessary to fulfill the Bank's records and control requirements.

C. Disbursements and cash flow

5.5 Disbursements will be made in U.S. dollars, mainly in the form of advances of funds, based on program liquidity needs included in its financial plan. Advances will be disbursed based on expense estimates for periods of up to 180 days. Resources will be deposited into a special account designated for the program, opened in the name of the borrower and under the supervision of the Ministry of Finance.

5.6 For subsequent advances, justification will need to be provided for at least 80% of the previously advanced funds. The Bank will verify expense justification on an ex post basis.

5.7 The exchange rate agreed upon for purposes of justifying advances of loan proceeds will be the first-in first-out exchange rate. For reimbursements, if applicable, the agreed-upon

exchange rate will be the rate in effect on the day before the reimbursement request was submitted to the Bank.

5.8 Expenditures deemed ineligible by the Bank will be repaid using other resources at the Bank's discretion, depending on the nature of the ineligibility.

D. Internal control and internal audit

5.9 The organizational structure of the DER-ES includes an internal control unit, which reports to the Office of the Director General. Its powers include conducting administrative, financial, technical, and operational audits. This unit conducts its supervisory activities pursuant to the guidelines issued by the State Department for Control and Transparency. The internal control unit is expected to be able to include in its plans activities related to the execution of this program and to verify the effectiveness of control systems.

E. External control and reporting

5.10 The program's annual audit will be conducted by the Espírito Santo Audit Office, with which the Bank has a memorandum of understanding, signed in August 2013. If the services of this office are not available in a timely manner, the program will contract an independent audit firm acceptable to the Bank. The PMU and the external auditors will agree on a schedule that makes it possible to submit audited financial statements in a timely manner, within 120 days of the close of each fiscal year.

F. Financial supervision plan

5.11 This plan may be amended during program execution to reflect the levels of risk or in the event that additional supervision is deemed necessary.

Table 4. Indicative supervision plan

Supervisory activity	Nature and scope	Frequency	Responsible party	
			Bank	Executing agency
Fiduciary	Ex post review of disbursements and procurement processes	Annually	Fiduciary team	PMU - External auditor
	Annual audit	Annually	Fiduciary team	PMU - External auditor
	Review of disbursement requests	Periodically	Fiduciary team	
	Supervision visit	To be determined – annually	Fiduciary specialist	

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-__/19

Brazil. Loan ____/OC-BR to the State of Espírito Santo. Espírito Santo Logistics Efficiency Program

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the State of Espírito Santo, as borrower, and with the Federative Republic of Brazil, as guarantor, for the purpose of granting the former a financing aimed at cooperating in the execution of the Espírito Santo Logistics Efficiency Program. Such financing will be for the amount of up to US$216,800,000 from the resources of the Bank's Ordinary Capital, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on ___ _____ 2019)

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BR-L1524