

Technical Cooperation Document (TC)

I. Basic Information for TC

▪ Country/Region:	REGIONAL
▪ TC Name:	Support for Building Transportation Systems Resilience to Climate Change
▪ TC Number:	RG-T3413
▪ Team Leader/Members:	Fioravanti, Reinaldo Daniel (INE/TSP) Team Leader; Lefevre, Benoit Jean Marie (CSD/CCS) Alternate Team Leader; Monter Flores, Ernesto (INE/TSP) Alternate Team Leader; Baladi Rodriguez, Aziz (INE/TSP); Cabrera Botero, Maria Margarita (CSD/CCS); Consolo, Marcelo Alejandro (INE/TSP); Greco, Maria Sofia (LEG/SGO); Persaud, Christopher (INE/TSP); Rosa Da Silva Cruvinel, Rodrigo (INE/TSP); Zamora Murillo, Edgar (INE/TSP)
▪ Taxonomy:	Client Support
▪ Operation Supported by the TC:	N/A
▪ Date of TC Abstract authorization:	18 Apr 2019
▪ Beneficiary:	Caribbean and Central American Countries
▪ Executing Agency:	Inter-American Development Bank
▪ Donors providing funding:	NDC Pipeline Accelerator Multidonor Trust Fund(ACL); OC Strategic Development Program for Infrastructure(INF)
▪ IDB Funding Requested:	US\$800,000.00
▪ Local counterpart funding, if any:	
▪ Disbursement period (which includes Execution period):	36 months
▪ Required start date:	2019 September
▪ Types of consultants:	Firms and individuals
▪ Prepared by Unit:	INE/TSP-Transport Division
▪ Unit of Disbursement Responsibility:	INE-Infrastructure and Energy Sector
▪ TC included in Country Strategy (y/n):	Yes
▪ TC included in CPD (y/n):	No
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Productivity and innovation; Climate change

II. Objectives and Justification

- 2.1 The general objective of this TC is to support the implementation of adaptation measures to improve resilience to climate change impacts of the transportation systems in the Caribbean and Central America. Its specific objectives are:
- (i) to improve the capacity of public agencies involved in planning¹, designing, building and maintaining the transport infrastructure and its related services;
 - (ii) deploy proven methodologies to identify critical vulnerability and accordingly prioritize investments identifying economic return on investments;
 - (iii) support

¹ Including assessing climate change impact projections through the interpretation of downscaled models to better understand climate risks and inform the design of transport infrastructure.

assessment and appropriate adoption of New Technology of Information and Communication (NTIC) in response to disaster emergency; and (iv) incorporate resilience in pre-investment studies for transportation projects financed by the Bank.

- 2.2 According to Germanwatch,² in the timeframe 1997 to 2016, four countries in Central America and the Caribbean are amongst the 10 countries in the world most affected by extreme weather events (Honduras, Haiti, Nicaragua and Dominican Republic), and three are in the top five (Honduras, Haiti and Nicaragua). Studies looking at the short-term effects of storms in Central America found that major hurricanes decrease Gross Domestic Product (GDP) growth by roughly 3 to 4% in up to 12 months after a hurricane strike³. According to the International Monetary Fund (IMF), small states⁴ are particularly affected, with an average annual GDP loss from natural disasters and climate change of 16% in Latin America and the Caribbean (LAC), and 11% of the population affected (versus 2.5% GDP loss and 1% of population affected for larger countries)⁵. An IMF report estimates that the largest damages in Caribbean islands occurred by Tropical Cyclone caused on average damages of 82% of GDP when observed the period 1950-2014⁶.
- 2.3 The transport sector is particularly exposed and vulnerable to the impacts of natural disasters, and, in particular, to extreme weather events such as storms and hurricanes, which are expected to be exacerbated by climate change in the future. Damaged transport assets, as infrastructure structural integrity, operational capacity and control systems, represent a sizable portion of economic losses from natural disasters. Transport infrastructure in countries⁷ as Barbados, Belize, Guyana, Surinam and Trinidad and Tobago, may be severe affected by changing rainfall patterns, that may be unable to accommodate heavy rain and storms,⁸⁹ particularly, in Caribbean islands where most of all economic activity, including transportation links, are located on the coast as a result of the inherent characteristics of the islands, and therefore in the direct firing line of storms and hurricanes and associated storm surge and inundation. A situation that, despite investments in disaster risk reduction and responses to face extreme weather, it will request efforts to improve the infrastructure resilience to reduce future losses in assets and well-being¹⁰¹¹.
- 2.4 Countries have an approach for responding to emergencies, however it is usually not structured and fragmented in different institutions and organizations, therefore, the problem of climate change and the occurrence of extreme weather events is not seen prospectively. It was noted that ex ante actions include having institutional capacity to anticipate the problem, to recover from disasters and to build a better

² Germanwatch, [Climate Risk Index 2018](#).

³ World Bank, ["Understanding the Impact of Windstorms on Economic Activity from Night Lights in Central America"](#), 2017.

⁴ Here defined as countries with a population < 1.5 million that are not advanced market economies or high-income oil exporters.

⁵ Average for 1950-2014, see IMF Policy Paper, ["Small states' resilience to natural disasters and climate change"](#), 2016.

⁶ IMF Working Paper, ["Gone with the wind: Estimating hurricane and climate change costs in the Caribbean"](#), 2016.

⁷ Caribbean DEVTrends+ - BID, ["What do you mean by Caribbean anyway?"](#), 2014.

⁸ USAID, ["Barbados and the Eastern Caribbean – Climate Vulnerability Profile"](#), 2013.

⁹ Cepal, ["An Assessment of the economic impact of climate change on the tourism sector in Barbados"](#), 2011.

¹⁰ Moviliblog-BID, ["This is how the transport sector is being affected by climate change"](#), 2018.

¹¹ CEPAL, ["Cambio climático y desarrollo en América Latina y el Caribe: una reseña"](#), 2009.

infrastructure that is prone to face these new events. An effort that will require inter-institutional collaboration, better capacity building and institutional strengthening.

- 2.5 Building resilience might be challenging. There is a need to establish measures and methods to prioritize and target investment to reduce the likelihood of negative impacts. That, in many cases, will require the use of sophisticated tools that make the link between the technical perspective of infrastructure projects and the financial perspective based on the economic impact the damages can cause, so policymakers can have evidences to prioritize public investments.
- 2.6 In summary, climate change is a real threat and for many countries its impacts are already a reality. The transportation sector is one of the most affected but also one that can be enabler for a better response to restore critical services and the economy; therefore, building resilient transport infrastructure is a task that government, private sector and international organization must embrace together from now on.
- 2.7 It is relevant to mention that IDB Transport and Climate Change and Sustainability Divisions are working together to share knowledges to improve resilience in the infrastructure sector, and this TC will contribute to consolidate the IDB efforts to foster a sustainable infrastructure for climate change effects in LAC region, that it was initiated in projects like the following: (i) Sustainable Transport and Climate Change in Mesoamerica (ATN/OC-12472-RG), that improved the capacities of national and local government agencies and private partners in Mesoamerican countries to increase their awareness of the impacts of transportation on climate change, with studies focused in Mesoamerica and events, like Transport and Adaptation to the Climate Change in Mesoamerica; (ii) Support for the Development of a Sustainable Infrastructure Portfolio for Public Investments which Take into Consideration Climate Change and Tourism Potential in the State of Mato Grosso (ATN/OC-15963-BR and ATN/OC-15964-BR), that is considering climate change forecast impacts to support the state to structure their transport network portfolio; (iii) InfraInvest: Sustainable Infrastructure in Brazil (ATN/MC-16594-BR), that is supporting the federal Brazilian government to the implementation of its infrastructure plans whilst ensuring alignment with its National Determined Contribution (NDC); and (iv) Resilient Transport Infrastructure – Support for the Development of Transport Infrastructure Adaptable to Climate Change (ATN/AC-16831-DR and ATN/OC-16830-DR), that is considering the climate and natural disaster risk scenarios to prioritize interventions in road assets.
- 2.8 **Strategic alignment.** This TC is consistent with the Update to the Institutional Strategy 2010-2020 (AB-3008) and is aligned with the development challenge of Productivity and Innovation, as it improves availability of and access to information, knowledge and efficient technologies. It is also aligned with the cross-cutting theme of Climate Change, as it will foster sustainable, efficient and resilient transportation. This TC is aligned with IDB Country Strategies of the beneficiary countries, Surinam (GN-2873) and Trinidad and Tobago (GN-2888), and also with countries as Barbados (GN-2812), Belize (GN-2746) and Guyana (GN-2905), by offering a support to improve and to disclosure the best practices in climate-resilient transport infrastructure in the Caribbean region.
- 2.9 Likewise, the operation is aligned with: (i) the Sectorial Strategy for the Support of Regional and Global Competitive Incorporation (GN-2565-4), by promoting regional capacity for management of transport infrastructures; (ii) the Sustainable

Infrastructure for Competitiveness and Inclusive Growth IDB Infrastructure Strategy (GN-2710-5), by supporting the development of an environmentally sustainable infrastructure; (iii) the Corporate Results Framework (GN-2727-6), at aligning at least one challenge or cross-cutting issue of the AB-3008 update; (iv) the Transportation Sectoral Framework Document (SFD) (GN-2740-7) and its focus on promoting adaptation measures as a strategy for sustainability and strengthening institutions and regulatory frameworks in the sector; (v) the Strategic Program for the Development of Infrastructure (GN-2819-1), in support to generate and deepen sector knowledge on good infrastructure practices that consider the climate change effects; (vi) the Climate Change SFD (GN-2835-8) as it will contribute to make climate change considerations, and especially adaptation to climate change impacts more central to sector actions; and (vii) with NDC Pipeline Accelerator Multi-Donor Trust Fund (GN-2890), in support LAC countries to plan and design investments in infrastructure aligned with sustainable development objectives.

- 2.10 The TC is also aligned with the following policies from the beneficiary countries: (i) Surinam Policy Development Plan 2017-2030¹², by support stakeholders in the planning of the transport infrastructure; and (ii) Trinidad and Tobago National Development Strategy (NDS) 2016-2030, Vision 2030¹³, by support to improve the productivity through quality infrastructure and transportation and placing the environment at the center of social and economic development. Also, the TC is aligned with policies from some countries on the Central America and Caribbean region, as: (i) Barbados Growth and Development Strategy 2013-2020¹⁴, by support to build resilience to natural hazards; (ii) Belize National Climate Resilience Investment Plan¹⁵, by integrate climate change and climate variability into transport infrastructure development planning; and (iii) Guyana National Development Strategy of Guyana¹⁶, by support the infrastructure development.

III. Description of Activities/Components and Budget

- 3.1 This TC will have two main components:
- 3.2 **Component I. Dialogue for transport resiliency (US\$100,000).** This component includes: (i) engagement preparation, that it will assess the state-of-play in participating countries, identifying needs, opportunities and gaps in knowledge and establishing priorities and defining a roadmap for addressing climate resilience and gender in transport infrastructure, including support IDB can provide; and (ii) knowledge share for scaling-up, that it will finance communication of the results of the engagement preparation in order to scale-up the impact of the project and foster replication in the sub-region, what will include print and digital media materials, as technical notes, presentations and infographics.
- 3.3 **Component II. Strengthening transport resiliency (US\$700,000).** This component will finance activities to improve the technical capacity of public agencies responsible for planning, designing, building and maintaining the transport infrastructure and its related services, it includes: (i) deployment of proven

¹² Surinam. [Policy Development Plan 2017-2030](#).

¹³ Trinidad and Tobago. [Vision 2030](#).

¹⁴ Barbados. [Barbados Growth and Development Strategy 2013-2020](#).

¹⁵ Belize. [National Climate Resilience Investment Plan](#). 2013.

¹⁶ Guyana. [National Development Strategy](#).

methodologies for integration of natural disaster and climate risk at both, the infrastructure level to incorporate resilience in pre-investment studies for transportation projects financed by the Bank (Disaster Risk Assessment) and the network level to identify critical vulnerability and prioritize investments identifying economic return on investments (Blue Spot Analysis and other Decision Making under Deep Uncertainty - DMDU approaches); (ii) feasibility studies and technological deployment strategies, including Minimum Viable Products (MVPs), for transportation projects; (iii) training for improve the public agencies capacity in sustainable infrastructure; (iv) individual consultants with skills in Geographic Information Systems (GIS), climate and hydrological models and economic risk evaluation to support the review of the technical products; and (v) knowledge materials and events, in print and digital formats, as folders and presentations, to disclosure the partial and final results of the component.

- 3.4 The components will be developed with the countries that formally requested the Bank support, Surinam and Trinidad and Tobago. Potentially, it could be included in the study other countries from the Central America and Caribbean region with similar infrastructure and climate change challenges that is faced by the currently beneficiary countries. For that, the interested country should send a no objection letter requesting support to the Bank to integrate the study before the beginning of the development of the forecasted activities.
- 3.5 The total estimated cost of the TC is US\$800,000, being US\$500,000 from ACL and US\$300,000 from INF, as shown below in the indicative budget table.

Indicative Budget (US\$)

Activity/ Component	Description	IDB/ACL	IDB/INF	Total Funding
I - Dialogue for transport resiliency	Engagement preparation and establishing priorities and defining a roadmap for addressing climate resilience and gender in transport infrastructure	-	70,000	70,000
	Knowledge material in order to scale-up the impact of the project and foster replication in the sub-region.	-	30,000	30,000
II - Strengthening transport resiliency	Deployment of proven methodologies for integration of natural disaster and climate risk to incorporate resilience in pre-investment studies for transportation projects and the network level to identify critical vulnerability and prioritize investments.	400,000	-	400,000
	Trainings for improve the public agencies capacity in sustainable infrastructure	50,000	-	50,000
	Prefeasibility studies and technological deployment strategies including minimum viable products (MVPs).	-	100,000	100,000
	Follow up and review of technical products.	-	100,000	100,000
	Knowledge materials and events	25,000	-	25,000

Other costs¹⁷	Trips	25,000	-	25,000
Total		500,000	300,000	800,000

IV. Executing Agency and Executing Structure

- 4.1 Due the request of the beneficiaries, the IDB will be the executor of this TC, through INE/TSP, by its experience with: (i) improving resilience in the infrastructure sector considering climate change forecast impacts in LAC; and (ii) coordination of beneficiaries from different countries, to provide technical knowledge in the development and realization of the components. The project team leader will have the responsibility of supervising and controlling the execution of the TC and will be responsible for the selection, hiring and supervision of external consultants, as well as the acquisition of other services in accordance with the applicable procedures. The project team leader also will be responsible by the project monitoring and to reporting to the corresponding sources of financing of the TC. Throughout the duration of the activities, contributions and comments will be requested from the beneficiaries and other stakeholders related to the project.
- 4.2 In this regard, the Bank will be responsible for: (i) identifying complementary studies and technical work that could be necessary to structure the project; (ii) select and hire the consultants to provide the necessary service; and (iii) manage the execution and delivery of consulting services. The Bank will contract the services of individual consultants and consulting firms in accordance with the policies and procedures in force in the Bank. The activities to be executed under this operation will be executed in accordance with the Bank's established procurement methods, namely: (i) Recruitment of Individual Consultants, as established in AM-650; (ii) Hiring Consulting Firms for Services of an Intellectual Nature according to GN-2765-1 and its associated operational guides (OP-1155-4); and (iii) Hiring of Logistic Services and Other Services Than Consulting, according to the policy GN-2303-20.
- 4.3 The IDB staff, specially from Transport Division (INE/TSP) and Climate Change and Sustainability Division (CSD/CCS), is expected to provide specialized technical and quality knowledge on the activities that will be implemented, and, in this regard, missions are foreseen to support the execution of the proposed activities. These activities should be done in a coordinated way by IDB Divisions and are essential for the correct application of the TC, to guarantee an adequate and coordinated cooperation between the Bank and the beneficiaries. All TC products will be subject to quality review by the Bank, and relevant national experts will be consulted during the activity's development.
- 4.4 INE will act as the TC Unit of Disbursement Responsibility (UDR). The execution time and disbursements of the TC is estimated at 36 months, in reason of the complexity of the proposed activities and the necessity to foster dialogue with the Caribbean and Central American countries.

¹⁷ Approximately 3% of the budget (of the three-year contribution) will be expected to be used for trips to LAC by beneficiaries and consultants to support the implementation of the components of this TC (GN-2470-2). Travel of IDB staff will be done with administrative budget for regular supervision travel.

V. Risks

- 5.1 The TC main risk is related to the difficulty of coordinating with different countries the joint action lines that determine the continuity of this initiative and future work, operations or collaborations in this area. To mitigate these risks, the TC will demand important coordinated action from the specialists of the INE/TSP and the CSD/CCS, to encourage dialogue and to explore synergies with beneficiary countries during the development of the activities.

VI. Bank Policy Exception

- 6.1 No exceptions to Bank policies were identified.

VII. Environmental and Social Strategy

- 7.1 The TC has been classified as category "C"¹⁸¹⁹.

Required Annexes:

[Request from the Client_36271.pdf](#)

[Terms of Reference_48492.pdf](#)

[Procurement Plan_90510.pdf](#)

¹⁸ [Safeguard Policy Filter \(SPF\).](#)

¹⁹ [Safeguard Screening Form \(SSF\).](#)