TC ABSTRACT

I. Basic Project Data

▪ Country/Region:	COLOMBIA/CAN - Andean Group
▪ TC Name:	Artificial Intelligence models for congestion prediction and optimal traffic management in Bogotá
▪ TC Number:	CO-T1784
▪ Team Leader/Members:	ARIZA DONADO, NATALIA (INE/TSP) Team Leader; PFEIFER VARGAS MARIA ANGELICA (INE/INE); FERRO BRICENO PAULA VANESSA (INE/TSP); CAMPOS LOMBEIDA, LISETH ANTONELLA (INE/TSP); RIOBO PATINO, JAIRO ALEXANDER (INE/TSP); ALLMI NATALIA (INE/TSP); TOVAR FARFAN SERGIO RAUL (INE/TSP); JIMENEZ MOSQUERA, JAVIER I. (LEG/SGO); GOMEZ DE LAS HERAS, EDUARDO (INE/TSP)
▪ Taxonomy:	Client Support
▪ Number and name of operation supported by the TC:	N/A
▪ Date of TC Abstract:	08 Oct 2024
▪ Beneficiary:	Secretaría de Movilidad de Bogotá
▪ Executing Agency:	INTER-AMERICAN DEVELOPMENT BANK (CO-SDM-SECRETARÍA DISTRITAL DE MOVILIDAD)
▪ IDB funding requested:	US$220,000.00
▪ Local counterpart funding:	US$0.00
▪ Disbursement period:	27 months
▪ Types of consultants:	Individuals; Firms
▪ Prepared by Unit:	INE/TSP - Transport
▪ Unit of Disbursement Responsibility:	CAN/CCO - Country Office Colombia
▪ TC included in Country Strategy (y/n): ▪ TC included in CPD (y/n):	Yes No
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Productivity and innovation ; Institutional capacity and rule of law; Environmental sustainability; Gender equality

II. Objective and Justification

2.1 This Technical Cooperation (TC) aims to enhance traffic flow prediction and optimization in Bogotá by leveraging artificial intelligence (AI) as a key tool, utilizing existing data resources for traffic management and transportation planning, and establishing a clear pathway for AI integration into mobility management.

2.2 Mobility in Bogotá faces significant challenges due to population growth, elevated levels of motorization, and rapid urbanization. The city ranks among the most congested in the world. Despite efforts by authorities to promote public transportation, mobility conditions have worsened, with the average speed of public transport dropping from 19.2 km/h to 16.6 km/h between 2010 and 2015. As a result, the increase in travel times on mass transit leads to a productivity loss of 172,000 hours per day for the city. Furthermore, higher congestion levels lead to more contamination and air pollution, affecting citizens' quality of life. In 2021, the city of Bogotá emitted a total of 9,528,152 tons of CO2 equivalents, 40% of which was emitted by the transport sector. In 2021, 8% of all premature deaths were linked to exposure to the pollutant PM2.5.

AI is a cross-cutting tool to improve congestion management. Investing in AI and innovative technologies supports the development of sustainable and resilient

infrastructure, providing benefits such as increased productivity, process automation, new services and products, optimized asset management, cost reduction, improved transparency with the public sector, more efficient decision-making, and greater user empowerment in transport services.
AI can significantly enhance urban mobility in Bogotá. AI-based models use vast amounts of data, such as real-time traffic patterns, historical trends, and public transport usage, to forecast congestion points and traffic flow. By predicting areas of bottlenecks or potential delays, AI can help city planners and authorities make data-driven decisions to optimize traffic management and urban investments, improve transportation planning and implement informing transportation policies. The derived actions from data-driven decisions can include adjusting traffic signals, enhancing public transportation routes, and prioritizing infrastructure improvements. Additionally, this initiative can significantly reduce congestion, improve air quality, and increase economic efficiency. These enhancements will lead to safer, more reliable transportation, better public health, and higher life quality for residents.
AI will aid this process by analyzing and interpreting data provided and collected by the Secretaría de Movilidad de Bogotá and the IDB, employing tools like video analytics for congestion measurement and incorporating data from platforms such as Waze, GPS tracking, vehicle movements, and public transport usage.

III. Description of Activities and Outputs

3.1 **Component I: Data treatment and AI model.** Data treatment and AI model. This includes all the necessary activities related to data and the AI model. Key activities include: (i) collecting, preparing, and integrating traffic data (speed and volume); (ii) developing an AI-based congestion model; (iii) testing the model and evaluating traffic management measures; and (iv) training and adoption. The project will also examine international AI integration methods to propose strategies for local traffic management and planning.

3.2 **Component II: Training, Knowledge, and Dissemination.** Training, Knowledge, and Dissemination. This component will finance training sessions, courses, or workshops with the Beneficiary, reinforcing the applicability and sustainability of the model development. The component will also finance the dissemination of the findings and lessons learned from the tool development.

IV. Budget

Indicative Budget

Activity/Component	IDB/Fund Funding	Counterpart Funding	Total Funding
Data treatment and AI model	US$200,000.00	US$0.00	US$200,000.00
Training, Knowledge, and Dissemination	US$20,000.00	US$0.00	US$20,000.00
Total	**US$220,000.00**	**US$0.00**	**US$220,000.00**

V. Executing Agency and Execution Structure

5.1 The Executing Agency will be the Interamerican Development Bank (IDB) through the Transport Division in the Infrastructure and Energy Sector (INE/TSP). The Bank will hire the services of individual consultants, consulting firms, and non-consulting services in accordance with the Bank's current policies and procedures. The TSP Division will be responsible for preparing and publishing calls for expressions of interest, preparing shortlists, preparing, and distributing requests for proposals, evaluating, and selecting consultants according to the criteria set forth in the requests for proposals, and negotiating the respective contracts.

5.2 The execution of the Technical Cooperation (TC) by the Transport Division of the Infrastructure and Energy Department (INE/TSP) is justified for the following reasons: (i) INE/TSP has the specialized knowledge to provide assistance on matters of interest related to this TC, with the capacity to bring experience and lessons learned from across the region for the development of the products to be prepared; and (ii) as an external agent, the Bank plays a role that facilitates mediation and the participation of different organizations and stakeholders involved.

VI. Project Risks and Issues

6.1 No major risks have been identified for the execution of this TC. Some existing minor risks include: (i) data availability: the lack of data availability and accessibility to develop the AI model could constitute a potential challenge. This risk will be mitigated by conducting a thorough inventory of existing data sources available through the IDB and within the Secretaría de Movilidad de Bogotá; (ii) integration of technological tools: the successful adoption of the developed tools within the Secretaría de Movilidad de Bogotá could pose a challenge. This can be mitigated by elaborating a change management plan and executing knowledge and dissemination activities, including knowledge transference workshops and training sessions for public officials; (iii) knowledge transfer: ensure this process in the context of potential high turnover in administrations constitute a challenge. This is a risk common to every process of capacity building and knowledge transfer. To mitigate the risk, the team in coordination with beneficiaries will select staff with long-term stability in the institution (i.e., public servant status) and ensure to document each process (record workshops, elaborate completion reports, etc.); (iv) stakeholder engagement: lack of stakeholder engagement and participation can impede the timely execution of the TC. This will be mitigated by implementing effective communication strategies, scheduling regular meetings to facilitate dialogue, and continuously monitoring the completion of activities.

VII. Environmental and Social Aspects

7.1 This TC does not have applicable requirements of the Bank’s Environmental and Social Policy Framework (ESPF).