Draft TC ABSTRACT

I. Basic project data

▪ Country/Region:	Latin America and Caribbean Region
▪ TC Name:	Support to the development of Intelligent Transport Systems
▪ TC Number:	RG-T2360
▪ Team Leader/Members:	Carlos Mojica (INE/TSP), Seongkwan Mark Lee (INE/TSP), Virginia Navas Garay (INE/TSP)
▪ Indicate if: Operational Support, Client Support, or Research & Dissemination.	Research and Dissemination TC
▪ If Operational Support TC, give number and name of Operation Supported by the TC:	N/A
▪ Reference to Request[1]: (IDB docs #)	N/A
▪ Date of TC Abstract:	15 / May / 2013
▪ Beneficiary (countries or entities which are the recipient of the technical assistance):	All IDB countries (Regional TC)
▪ Executing Agency and contact name (Organization or entity responsible for executing the TC Program) {If Bank: Contracting entity} {If the same as Beneficiary, please indicate}	Inter-American Development Bank
▪ IDB Funding Requested:	$300,000
▪ Local counterpart funding, if any:	N/A
▪ Disbursement period (which includes execution period):	30 months
▪ Required start date:	15 / October / 2013
▪ Types of consultants (firm or individual consultants):	Individual and firms
▪ Prepared by Unit:	INE/TSP
▪ Unit of Disbursement Responsibility:	INE/TSP
▪ Included in Country Strategy (y/n); ▪ TC included in CPD (y/n):	N/A
▪ GCI-9 Sector Priority:	Infrastructure for competitiveness and social welfare

II. Objective and Justification

Urban transport problematic: The competitiveness of cities in the Latin America and Caribbean region[2] is hindered by external social costs such as increased road congestion, high accident levels and air pollution. Transport externalities are incurred by society as the result of excessive use of scarce resources such as roadway space and clean air. The economic value of these externalities for several major Latin American capitals[3] had been estimated to about 6% of the Gross Regional Product (GRP). In Sao Paulo, for instance, it is estimated that the loss of time and fuel consumed in traffic congestion in the city costs

[1] A copy of the Letter of Request, Programming/Portfolio Review Mission Aide Memoire or Report requesting the TC should be submitted with the Abstract.
[2] 80% urbanization rate (UM-Habitat, 2012)
[3] São Paulo, Buenos Aires, Santiago and Mexico City

the economy about U.S. $ 20,000 million a year (2008), about 10% of the GRP (Economist Intelligence unit). The motorization rate in the region is about 90 vehicles for every thousand people, which is about five times below OECD countries. This indicates that the number of vehicles is expected to increase significantly in the following decades. Urban transport demands attention, otherwise we may witness an increasing number of urbanized areas with a development potential but limited by precarious and inefficient transport systems.

Use of technology to address issues in transport: For the past ten years, countries around the world have begun to employ a new set of technologies under the name of **Intelligent Transport Systems (ITS)** to meet the challenges of surface transportation. The ITS are part of the most cost-effective solutions, developed only in the last two decades. ITS have a potential to meet the challenges associated with increasing motorization and make more efficient and sustainable transport systems in the region. ITS applications include:

- Traveler Information Services,
- Automatic Toll / Fare Collection
- Traffic Demand Management
- Advanced Driving Assistance
- Public Transport Management
- Freight Logistics Management
- Incident and Hazard Response Services

Benefits of ITS and international experience: The ITS in developed countries are known to have provided social benefits directly by solving conventional transport problems. These include a) Improved mobility for people and freight, b) Reductions in traffic congestion, c) A better managed transportation infrastructure, d) Reductions in the environmental impact transportation, and e) Reduced fatalities and crash severity. For example, Ramp Metering technologies in USA had annual mobility benefit estimates of over $287 million. And the annual benefits of the Electronic Toll Collection System [4] in USA were over $1 billion per year, at 2007 deployment levels. In case of Traveler Information Systems (including Dynamic Message Signs) [5] in USA, the annual benefits grew by roughly $100 million per year until 2003. At 2007 deployment levels (2009 dollars), these technologies had high annual mobility benefit estimates of over $543.1 million. The ITS have also helped to increase quality of services which individual travelers or individual transportation operators can get by reducing travel uncertainty, by increasing security for freight movement and personal travel, and by increasing efficiency for operators and users.

ITS in Latin America and the Caribbean (LAC): Countries in the LAC region have recently pursued technology investments in transportation. In urban transport, most modern public transport projects include any form of a fare collection system. Also, countries such as Chile and Brasil have progressed on providing Electronic Toll Collection systems for main urban and inter-urban roads. However most of the investments have been done on a project-by-project basis, instead of pursuing a coordinated effort to

[4] Korea's Hi-Pass (a unique name of the Electronic Toll Collection System in Korea) also reported about 26,000 tons of CO2 reduction and 2.8 million hours of travel time savings in 2012.

[5] In Japan, real-time alternative-route travel time information posted on dynamic message signs contributed to a 3.7 percent divergence rate during periods of congestion, saving detoured motorists an average of 9.8 minutes per vehicle.

promote the mainstreaming of ITS investments. Elements such as national ITS architectures, dedicated institutions, technology standards, and appraisal/evaluation guidelines are missing in the evolvement of LAC ITS.

The role of the IDB: Based on the circumstances, the Transport Division (TSP) is incorporating an ITS strategy as part of the continuous process of innovation and evolution of the transport sector policy for the region. The Bank can support countries in the region by sharing the knowledge of successful ITS experiences and transmitting best practices on ITS implementation. The first step in this regard was the organization of the IDB Transport Week in 2012 around the topic of ITS. In this event, IDB specialists participated on training activities to better understand the challenges of ITS implementation. For this event, TSP prepared the publication "Mainstreaming Intelligent Transport Systems in LAC", with the input of regional and international experts, which outlines key opportunities for the involvement of the Bank on ITS deployment.

Objective: The objective of this TC is to support the development of Intelligent Transport Systems in Latin America and the Caribbean (LAC). This TC will also strengthen the IDB's capacity as a responsive partner for LAC countries and cities that seek deploy ITS solutions. The specific areas where the TC will provide support are: i) increasing the ITS knowledge base; ii) building capacity among IDB clients and; iii) disseminating knowledge across the region

III. Description of activities and outputs

Component 1: Observatory of ITS projects in Latin America and the Caribbean: This component will finance the development of an open information system to consolidate a regional ITS inventory, generate ITS benchmarks and identify investment opportunities. The region has advanced on incorporating technologies in transportation projects (ITS). For instance, in terms of road infrastructure sector, some national governments are moving forwards on developing systems for electronic toll collection that reduce overall travel times and make transactions more convenient for users. Also, in terms of public transport, some cities are incorporating systems to inform passengers of the location, duration and availability of vehicles. Similar efforts are seen in the freight transport and logistics sector where shippers are developing information systems to notify carriers of freight requirements in a more timely fashion to increases the supply chain efficiency. All these are instances where ITS systems have been implemented in the region either by direct support of the public sector or by private sector initiatives. While these efforts are advancing rapidly, the region would benefit by having an observatory to centralize knowledge about ITS in Latin America. The ITS observatory will have the following purposes: i) consolidate a detailed inventory of ITS projects at the National and Local levels; ii) generate a set of common benchmarks and indicators regarding use and performance of technology improvements in transport. iii) foster an environment of cooperation and knowledge sharing across countries which have different levels of progress and investments on ITS; iv) identify investment opportunities for the IDB and other development agencies. The ITS observatory could be hosted initially by the Bank during the execution of this technical cooperation. Hosting the observatory task would consist of consolidating the information of existing ITS projects, uploading it into an open information system and carry out dissemination activities to make information available. It is expected that, once the technical cooperation is concluded, the observatory can be hosted by a client country or another relevant regional public/private organization to provide sustainability.

Component 2: Evaluation of technology investments. This component will finance the development of a guideline for the evaluation of ITS investments at the IDB. While technology investments in transportation (ITS) have measurable development outcomes, the methodologies to evaluate their effectiveness are not well established. The cost-benefit analysis (CBA) is the traditional methodology utilized for the economic evaluation of infrastructure investments. While the CBA can be applied, there are methodological challenges on its application (Stough, 2001) for technology investments such as the definition of an appropriate evaluation horizon, the valuation of non-quantifiable benefits and the valuation of secondary effects, among others. These challenges can be very pronounced in some ITS projects and thus may render higher uncertainties after the application of the CBA. In order to overcome these limitations developed countries use different methodologies for the evaluation of ITS projects. The US Department of Transport, for instance, uses a "Total Cost Approach" methodology where a comprehensive list of costs and benefits is considered such as safety, capacity, mobility, user satisfaction, productivity and environmental impacts. Australia uses a diversity of methodologies to evaluate ITS investments such as multi-criteria, commercial, cost-effectiveness and cost-benefit analyses. Streamlining a peer-reviewed evaluation guideline for the IDB will allow the Bank to adopt a working methodological guideline for the assessment and evaluation of technological investments in transport, considering that these are more likely to form part of the Bank lending portfolio in the upcoming years.

Component 3: Support to IDB clients. This component will finance technical assistance for IDB clients. Planning and structuring ITS investments requires very specific expertise in disciplines which are not the traditional areas of transport agencies. The Bank has identified an expertise mismatch in some transport agencies which have extensive expertise in civil engineering and economics, however, the agencies' staff lack experts in areas relevant to ITS projects such as telecommunications, software engineering and electronic engineering. This expertise is relevant when structuring an ITS project, preparing terms of reference and supervising the proposed designs. Expert support at early stages will ensure that ITS investments are designed while ensuring key characteristics such as inter-operability, compatibility, capacity for expansion and standardization (IDB, 2012). This component will provide financing for expert support and technical assistance to support ITS initiatives in the region. Projects will be identified through the development of the Observatory and the sector dialogue that the Bank carries out and support will be provided in the form of individual consultants to support agencies at the planning and design stages of ITS projects.

Component 4: Dissemination activities. This component will finance the preparation of a regional ITS forum. In order to disseminate the results of this technical cooperation, an ITS forum will be organized to bring together officials from transport agencies, ITS experts and IDB officers. The forum will ideally be organized in a country that strongly supports ITS investments and has ongoing IDB collaboration through this technical cooperation. The forum will provide a space to share knowledge and to strengthen the position of the Bank in areas of technology and transport.

IV. Budget

Indicative Budget (US$)

Activity/Component	Description	IDB/Fund Funding	Counterpart Funding	Total Funding
1. Observatory of ITS projects in LAC	•Consulting for the development of an observatory on ITS	120,000	-	120,000
2. Evaluation of technology investments	•Consulting for the development of guidelines, tools or instruments for ITS system evaluation	70,000	-	70,000
3. Support to IDB clients	•Consulting for ITS expert support	80,000	-	80,000
4. Dissemination activities	•Organization of a regional ITS forum	30,000	-	30,000
Total		**300,000**	**-**	**300,000**

V. Executing agency and execution structure

The Executing Agency will be the IDB, through the Transport Division (INE/TSP). The Transport Division (TSP) will hold general responsibility for the management, supervision, coordination and evaluation of the TC due to the fact that the project involves the participation of both TSP specialists themselves and various country members. In addition, INE/TSP has the specialized knowledge of the required methodology and procedures, as well as the experience providing assistance to the topics of interest of this TC.

Collaboration by the Korea Expressway Corporation (KEC). KEC is one of Korea's major government-invested corporations. Founded in 1969 to construct and manage expressways in Korea, KEC currently manages about 3,700km of expressway networks and is planning to increase the length of its expressways to 6,160km by 2020. To maximize the efficiency of transportation facilities, KEC introduced ITS on expressway networks. KEC installed Toll Collection Systems (TCS) in 1994 and the system has evolved into Electronic Toll Collection System (ETCS) in 2007, which is uniquely called as "Hi-Pass". KEC has also implemented various kinds of advanced devices and technology on expressways such as Vehicle Detection System (VDS), Variable Message Sign (VMS), Dedicated Short Range Communication (DSRC), Weigh in Motion (WIM), Automatic Vehicle Classification (AVC) and Automatic Vehicle Identification (AVI) to collect, manage and provide real-time traffic information. For about 20 years, KEC has been successfully and effectively operating and managing ITS applications and services in real expressway networks in Korea. KEC has successfully prepared a new master plan for tolling in Peru under the collaboration with Peruvian government. KEC also has cooperative relationships with the Morocco government for the development of an ITS Master Plan in the country. Given its extensive experience on ITS, KEC will execute Component 2 of this Technical Cooperation. Experts from KEC will participate as consultants in Component 3 to provide technical support on Expressway

Electronic Toll Collection Systems (ETCS) and will be invited to participate in Component 4 as guest speakers at the ITS forum.

VI. Project Risks and issues

No major risks were identified for this project.

VII. Environmental and Social Classification

This TC does not have negative environmental and social risk associated with it. This is due to the kind of activities financed through this operation which includes consultancy services to strength technical capacity and activities for communication and dissemination of annual results. In accordance with IDB's environmental and safeguards policy (OP-703) and under the framework of this TC's objectives, impacts and environmental risks, it is suggested a classification "**C**".