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MULTILATERAL INVESTMENT FUND

**MEXICO**

**DISRUPTIVE INNOVATION: SUSTAINABLE MOBILITY IN MEXICO CITY**

**(ME-T1322)**

**DONORS MEMORANDUM**

This document was prepared by the project team consisting of: Claudia Gutierrez (MIF/IC), Project Team Leader; Fermin Vivanco (MIF/IC), Project Team Co-leader; Alberto Bucardo (MIF/CME); Amado Crotte (TSP/CME); Carina Arvizu (TSP/CME); and George Rogers (LEG/LEG).

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**PROJECT SUMMARY**  
**DISRUPTIVE INNOVATION: SUSTAINABLE MOBILITY IN MEXICO CITY**  
**(ME-T1322)**

Mexico City is one of the most congested cities in the world. The average speed during rush hour is between 8 and 11 km/hour. The effects of traffic congestion cause losses in time, money, and quality of life. On a daily basis, 3.3 million man-hours are lost due to traffic congestion. The value of these lost man-hours is equivalent to 33 billion Mexican pesos per year. Mexico City is regarded as one of the most polluted cities on the planet. According to the World Health Organization, one in eight deaths worldwide are due to air pollution. In Mexico City, transportation is one of the main causes of greenhouse gas emissions and poor air quality.

The main causes of traffic congestion include public transportation shortcomings and soaring numbers of automobiles in the city, currently 6 million. The need to reduce the number of vehicles on the road has led many entrepreneurs to launch innovative initiatives involving car sharing, car rentals, bicycles, motorcycles, etc. Mobility startups are emerging and growing in Mexico City to reinvent vehicle ownership, develop new technologies, and utilize data and connectivity to improve transportation in the city. However, these initiatives are happening in isolation without a vision of an integrated mobility system. Innovation is not necessarily addressing the city's main mobility problems, such as the need to improve concessioned public transportation. Actors are scattered and acting without a shared vision or direction.

The project seeks to build on the current momentum and enabling environment for urban mobility innovation in Mexico City, and channel this toward solving the city's main transportation problems: improve concessioned public transportation and reduce the number of vehicles on the road. This project is expected to generate and/or strengthen innovative mobility solutions that contribute to reducing traffic congestion. It will involve working with the city's main urban mobility actors, the private and public sectors, research institutes, civil society, and others, to develop a "Disruptive Innovation for Sustainable Mobility Platform" that is totally user-focused. This platform will seek to identify innovative mobility solutions using the Avoid-Shift-Improve (ASI) criteria for urban transportation: promote a reduction in private vehicle use (avoid); transition toward more sustainable means of transportation (shift); and enhance the quality and efficiency of the concessioned public transportation system (improve). In addition, the project will promote an integrated transportation and sustainable mobility system by working with large companies to develop mobility plans for their employees; develop a communications and awareness strategy with civil society to raise awareness and involve citizens in finding and testing the solutions identified by the platform; and prepare knowledge products to document and position Mexico City as a standard of reference for innovation of new forms of mobility, both regionally and worldwide.

The project's executing agency will be the Centro de Transporte Sustentable de México (CTS EMBARQ México), which has more than 13 years of experience on transportation issues and has worked closely with the public and private sectors to improve mobility in Mexico City. CTS EMBARQ México helped draft the new Mobility Law and is a technical advisor to the government for various municipal mobility improvement initiatives. It has also built relationships with the private sector, proposing mobility plans for businesses and promoting entrepreneurship and innovation in new forms of mobility.

## **ANNEXES**

Annex I	Results Matrix
Annex II	Summary Budget

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## **INFORMATION AVAILABLE IN THE TECHNICAL DOCUMENTS SECTION OF THE MIF PROJECT INFORMATION SYSTEM**

Annex III	Itemized Budget
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Annex V	Project status reports, fulfillment of milestones, fiduciary agreements, and institutional integrity
Annex VI	Impact indicator projections prepared by CTS EMBARQ México

## **ABBREVIATIONS**

ASI	Avoid-Shift-Improve
BRT	Bus Rapid Transit
CTS	Centro de Transporte Sustentable [Sustainable Transportation Center]
INADEM	Instituto Nacional del Emprendedor [National Entrepreneurship Institute]
INEGI	Instituto Nacional de Estadística, Geografía e Informática [National Institute of Statistics, Geography, and Information Technology]
SEMOVI	Secretaria de Movilidad [Department of Mobility]
WRI	World Resources Institute

**MEXICO**  
**DISRUPTIVE INNOVATION: SUSTAINABLE MOBILITY IN MEXICO CITY**  
**(ME-T1322)**

**EXECUTIVE SUMMARY**

<b>Country and geographic location:</b>	Mexico City, Mexico		
<b>Executing agency:</b>	Centro de Transporte Sustentable de México (CTS EMBARQ México)		
<b>Focus area:</b>	Inclusive Cities		
<b>Coordination with other donors/Bank operations:</b>	This project will be implemented in coordination with the Transport Division (TSP).		
<b>Project clients:</b>	One million people with improved mobility as a result of innovative solutions implemented or supported by the project.		
<b>Financing:</b>	Technical cooperation:	US\$1,000,000	49%
	Investment:	US\$000,000	
	Loan:	US\$000,000	
	Other (explain):	US\$000,000	
	<b>TOTAL MIF CONTRIBUTION:</b>	US\$1,000,000	
	Counterpart:	US\$1,040,000	51%
	Cofinancing (if any; include a separate line for IDB cofinancing, if applicable):		00%
	<b>TOTAL PROJECT BUDGET:</b>	US\$2,040,000	100%
<b>Execution and disbursement period:</b>	36 months for execution and 36 months for disbursement.		
<b>Special contractual clauses:</b>	Conditions precedent to the first disbursement: (i) designation of one or more persons to represent the executing agency in all acts related to the execution of this agreement and submit the notarized signatures of those representatives; (ii) evidence provided that the executing agency has appointed the project coordinator; and (iii) presentation to the Bank of financial planning that includes the amount required to complete the project activities, based on the costs of scheduled activities and future disbursements.		
<b>Environmental and social impact review:</b>	This operation was pre-evaluated and classified pursuant to the requirements of the IDB's Environment and Safeguards Compliance Policy (Operational Policy OP-703) on 7 October 2016. Since the impacts and risks are limited, the proposed classification for the project is Category "C."		

## I. THE PROBLEM

### A. Description of the problem

- 1.1 **Traffic congestion.** Mexico City is part of the Metropolitan Area of the Valley of Mexico, one of the most populated urban areas in the world. With a population of 8.8 million, Mexico City is one of the region's most congested cities.<sup>1</sup> The average speed during rush hour is between 8 and 11 km/hour, and the average resident spends more than three hours each day in travel.<sup>2</sup> Traffic in the city is causing losses in time, money, and quality of life. On a daily basis, 3.3 million man-hours are lost due to traffic congestion. The value of these lost man-hours is equivalent to 33 billion Mexican pesos per year.<sup>3</sup> Mexico City is also regarded as one of the most polluted cities on the planet. According to the World Health Organization, one in eight deaths worldwide are due to air pollution. In Mexico City, transportation is one of the main causes of greenhouse gas emissions<sup>4</sup> and poor air quality. In the first quarter of this year, air quality was classified as "extremely poor," forcing authorities to declare an environmental emergency for the first time in 10 years.
- 1.2 **Concessioned public transportation and growth in vehicle ownership in Mexico City.** In the Metropolitan Area of the Valley of Mexico, 60.6% of the more than 20 million trips made in the city on a daily basis use low-capacity concessioned public transportation (microbuses, shared vans, and taxis); 29% use private automobiles; 8% use integrated mass public transportation systems (the Metro, the Metrobús bus rapid transit (BRT) system, light rail, and trolleybus); and 2.4% use bicycles or motorcycles.<sup>5</sup> The main means of public transportation in Mexico City is concessioned public transportation. Currently, there are some 29,000 units operating around the city daily, 15,000 of which are more than 20 years old. There is no management firm or agency, and they operate by and large informally under an owner-operator model. Since 2006, Mexico City's government has been implementing a system of "corridors," to replace the aging fleet and improve bus service. There are currently 15 corridors, and around 4,000 buses have been replaced (13% of the fleet), a relatively low number given that the corridor project began 10 years ago.
- 1.3 The Department of Mobility (SEMOVI) continues to expand the corridor model. There are plans to replace 3,000 buses by December 2016, and an additional 13,000 over the next 3 years. While the corridor model brings improvements in service quality, an evaluation by the Centro de Transporte Sustentable de México [Sustainable Transportation Center of Mexico] (known as CTS EMBARQ México) found major weaknesses in the operation and management of the corridors. There is no effective administrative structure for them or professionalization of the sector. The business organization of transportation providers is extremely weak, and they

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<sup>1</sup> For example, TomTom's traffic index rates Mexico City as the most congested among a sampling of 295 cities. [https://www.tomtom.com/en\\_us/trafficindex/list](https://www.tomtom.com/en_us/trafficindex/list).

<sup>2</sup> Information provided by CTS EMBARQ México.

<sup>3</sup> "Reforma urbana: 100 ideas para las ciudades de México" [Urban reform: 100 ideas for Mexico's Cities], CTS EMBARQ, IMCO, Centro Mario Molina, September 2013.

<sup>4</sup> Vehicle generated emissions represent up to 60% of the total pollution from coarse suspended particulate matter (PM10).

<sup>5</sup> Data from Reporte Nacional de Movilidad Urbana en México 2014-2015 [National Report on Urban Mobility in Mexico 2014-2015], UN-Habitat.

- face significant challenges in operations management, fare collection systems, and information for users. Currently, there is no effective route planning, meaning that corridors compete against, rather than complement, the traditional bus system. The average passenger-kilometer index in the corridors is 3.7, whereas it should be between 8 and 10 passengers per kilometer. Bus supply does not meet demand during rush hours, and bus occupancy in nonrush is 30% to 50%. There are even some corridors where supply remains the same throughout the day. Service regularity falls well short at only 50%, whereas ideally it should be 80% or more. The fare collection system is not centralized and does not use electronic payment. Information for users is completely nonexistent; users do not know when buses will arrive, or their exact routes and stops.<sup>6</sup>
- 1.4 Although most trips in the city are on public transportation, low quality, fear for personal safety, and slow travel are driving migration to other alternatives, mainly private options. The number of cars registered in the Metropolitan Area of the Valley of Mexico practically doubled in eight years (2005-2013) from 3.5 million to 6.8 million.<sup>7</sup> The urban development model favors the use of private automobiles; 77% of the federal government's investment in mobility is allocated to automobile-oriented infrastructure.<sup>8</sup> According to the National Institute of Statistics, Geography, and Information Technology (INEGI), as of 2015, there were about 30 million vehicles registered in Mexico. In the period 1980-2012, Mexico's vehicle ownership rate rose 6.32% per year, outpacing the 2.41% population growth during the same period. If those growth rates continue, by 2030 there will be 70 million vehicles on the road.<sup>9</sup> In general, vehicles travel with only one rider, leaving 10 million unoccupied seats. From 2009-2013 in Mexico City, 42% of the more than 16 million square meters of projected real estate development was for parking,<sup>10</sup> and 15% to 20% of traffic congestion is due to vehicles looking for a parking space.<sup>11</sup>
- 1.5 The main causes of traffic congestion are the low quality of the public transportation service and the growing number of automobiles on the road. The low-income population living in the outskirts of the metropolitan area are most impacted by poor mobility options. In Mexico, two out of three people living in poverty are in a city, generally in outlying areas with poor facilities, cut off from employment sources and social networks. Low-income persons spend more on meeting their basic needs, and there is a correlation between an increase in family spending and living on the remote urban fringe. These families allocate up to 25% of their income to getting around and are the main users of public transportation.<sup>12</sup>

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<sup>6</sup> Proyecto de Transformación del Transporte Público Concesionado [Transformation Project for Concessioned Public Transportation], CTS EMBARQ México, 2015.

<sup>7</sup> <http://labrujula.nexos.com.mx/?p=305>.

<sup>8</sup> "Reforma urbana: 100 ideas para las ciudades de México" [Urban reform: 100 ideas for Mexico's Cities], CTS EMBARQ, IMCO, Centro Mario Molina, September 2013.

<sup>9</sup> "Planes integrales de movilidad. Lineamientos para una movilidad urbana sustentable" [Integrated mobility plans. Guidelines for sustainable urban mobility], Transportation and Development Policy Institute, 2012.

<sup>10</sup> "Menos cajones, más ciudad: El estacionamiento en la Ciudad de México [Fewer parking spaces, more city: Parking in Mexico City], Transportation and Development Policy Institute, 2014.

<sup>11</sup> Data provided by CTS EMBARQ México.

<sup>12</sup> "Reforma urbana: 100 ideas para las ciudades de México" [Urban reform: 100 ideas for Mexico's Cities], CTS EMBARQ, IMCO, Centro Mario Molina, September 2013.



- 1.6 **Development of “new forms of mobility” in Mexico City and an entrepreneurial ecosystem.** Significant mobility improvements have been made in Mexico City in the past 10 years. Examples are the inauguration of the Metrobús bus rapid transit (BRT) system; the introduction of corridors<sup>13</sup> to organize and improve the concessioned public transportation service; the construction of Metro line 12; the launch of the Ecobici public bicycle system; and the approval of the new Mobility Law in April 2014, which states that “Mobility is the right of every person and of the community to move individuals and goods effectively... through the various modes of transportation recognized by the law.”
- 1.7 In 2016, when an “environmental emergency” was declared, the government strengthened and expanded the “Hoy No Circula” [No Driving Today] program to limit the number of cars operating. The need to reduce the number of vehicles on the road has led many entrepreneurs to launch highly innovative initiatives involving car sharing, car rentals, bicycles, motorcycles, etc. Mobility startups are emerging and growing quickly in Mexico City to reinvent vehicle ownership, develop new technologies, and utilize data and connectivity in new applications. Entrepreneurial ventures like Carrot, ECONDUCE, Parkimóvil, Autotraffic, Punto a Punto, BUSSI, BICICOM, and others are part of a sector known as “smart mobility” or “new forms of mobility,” which seeks to generate innovative disruption in shared mobility, travel experiences, products, and decision-making about riding based on information and technology.
- 1.8 These new initiatives are developing in an environment that is increasingly favorable to entrepreneurship in Mexico. According to the Department of Economy, in recent years Mexico has significantly increased the number of engineers and technical workers graduating from universities. Estimates are that each year 115,000 new professionals graduate in those fields.<sup>14</sup> The number of new tech startups emerging is also noteworthy.<sup>15</sup> The increased penetration of the Internet, use of cell phones, and use of banking services in the past 10 years have enabled the population to have access to more information and better education, creating “better” entrepreneurs and investors. The presence of various actors, such as accelerators, incubators, impact investment funds, associations focused on creating an ecosystem, and government institutions, has strengthened the entrepreneurial ecosystem. The Asociación Mexicana de Capital Privado [Mexican Private Capital Association] (AMEXCAP) now has 55 venture capital funds operating in the market. The government has created incentives in venture capital funds and is supporting entrepreneurship through the Instituto Nacional del Emprendedor [National Entrepreneurship Institute] (INADEM), Nacional Financiera (NAFIN), and the Consejo Nacional de Ciencia y Tecnología [National Council on Science and Technology] (CONACYT).
- 1.9 **Limitations of the new mobility.** Although an innovation hub is being formed around mobility in Mexico City and there is a strengthened entrepreneurship ecosystem, mobility innovations are happening in isolation without an integrated

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<sup>13</sup> A group of concessionaires that get together and form a company, and have a route defined by the city's Department of Mobility.

<sup>14</sup> Department of Economy (2013), “PROMÉXICO: México es oportunidad” [Mexico is opportunity].

<sup>15</sup> [http://www.nytimes.com/2013/02/24/opinion/sunday/friedman-how-mexico-got-back-in-the-game.html?\\_r=0](http://www.nytimes.com/2013/02/24/opinion/sunday/friedman-how-mexico-got-back-in-the-game.html?_r=0).

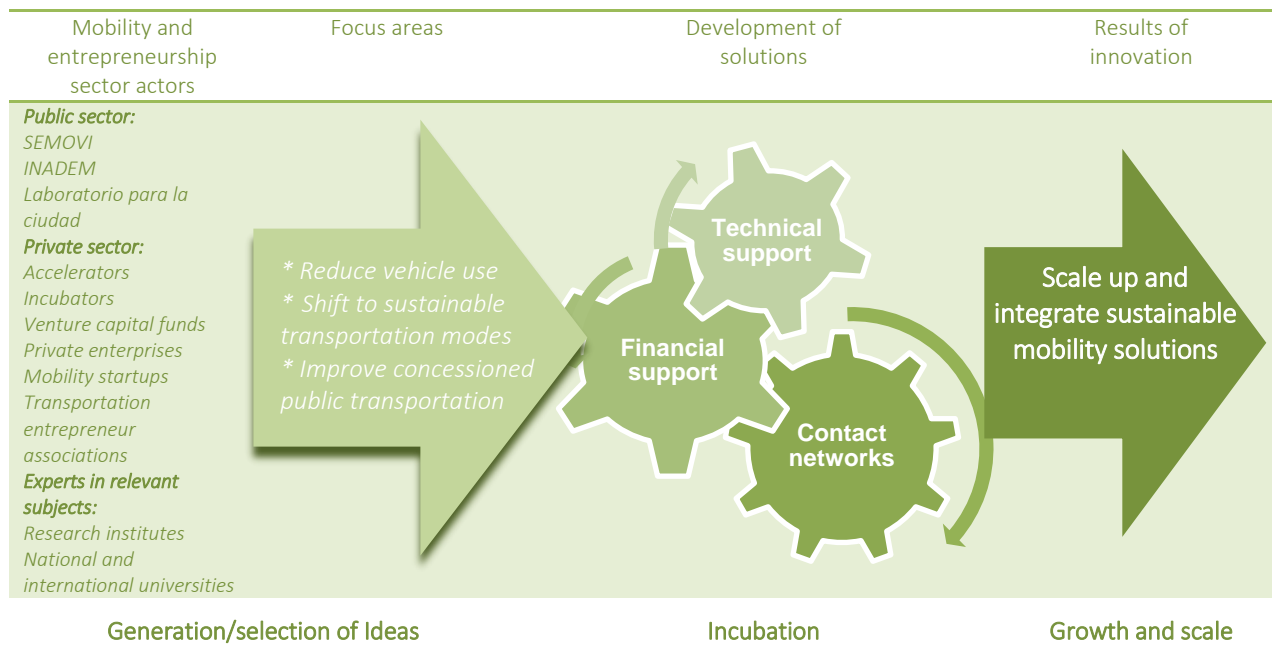
transportation system approach. This has given rise to startups that pursue an individual solution that may be useful in the short term for a limited number of people, but not synergies with public transportation, so scalability is limited. In addition, innovation is not necessarily addressing the city's main mobility problems, such as the need to improve concessioned public transportation. Private and public actors are scattered and acting without a shared focus or direction.

## **II. THE SOLUTION**

### **A. Project description**

- 2.1 The project seeks to build on the current momentum and enabling environment for urban mobility innovation in Mexico City, and channel this toward solving the city's main transportation problems. The project's expected impact is to contribute to improving the quality of life in Mexico City by promoting innovative initiatives for more sustainable mobility. The expected outcome is to contribute to decreased traffic congestion in Mexico City.
- 2.2 High-impact startups do not occur in a vacuum. They require a systemic vision that goes beyond the interaction of a few stakeholders, one that looks to the future in order to generate innovation that is disruptive, scalable, and replicable in different regions. Therefore, the project will work with main urban mobility actors in the public and private sectors, as well as with experts in relevant subjects (technology, urban planning, anthropology, etc.), to develop an innovation platform that is totally user-focused. It will be called the "Disruptive Innovation for Sustainable Mobility Platform." It will seek to identify, pilot, and scale up innovative mobility solutions using the Avoid-Shift-Improve (ASI) criteria for urban transportation: promote a reduction in private vehicle use (avoid); transition toward more sustainable means of transportation (shift); and enhance the quality and efficiency of the concessioned public transportation system (improve). The figure below shows the platform's stages and components.

## Disruptive Innovation for Sustainable Mobility Platform



- 2.3 The coordinator of this “mobility innovation platform” will be CTS EMBARQ México, which has more than 13 years of local experience on transportation issues and has worked closely with the public and private sectors to achieve mobility improvements in Mexico City. CTS EMBARQ México actively participated as an advisor in drafting the new Mobility Law and has also been supporting the mobility startup incubation and development in order to promote them as modes that complement public transportation.
- 2.4 **Innovation.** The project seeks to develop a “mobility Silicon Valley” in Mexico City: a high-innovation, high-impact ecosystem. This platform will be a pioneering concept in Latin America, changing the traditional ways of driving innovation in the region by involving the main stakeholders in order to generate concrete questions regarding real problems to identify sophisticated, specific solutions. The solutions will be selected by multidisciplinary teams with experience in transportation, urban development, technology, public policy, business, and other areas. Another innovative feature of the project will be to provide support during the development, implementation, and scaling of solutions. At this time, there are many initiatives calling for solutions for cities, but none focuses exclusively on transportation or offers ongoing support through until scale is reached.
- 2.5 **Component I: Creation of the “Disruptive Innovation for Sustainable Mobility Platform.”** The first step for creation of the platform will be a diagnostic assessment of technological advances and innovative initiatives in mobility, to address the weaknesses of the city’s current transportation system. In addition, a study will be

- done of concessioned public transportation,<sup>16</sup> focusing on the three weak areas identified (operations management, payment methods, and information for users), to identify the latest trends in technology and innovation that could be adapted for the “corridors.”<sup>17</sup> Then, a meeting of the leading mobility stakeholders in Mexico City will be called to present the findings and ask them to actively participate in working groups and workshops, in order to identify the main problems, priorities, and opportunities of the city’s transportation system, and to jointly and in an informed manner propose specific challenges to address the sector’s priorities. Once the challenges have been identified, multiple competitions and initiatives will be launched, locally and internationally, to find solutions and identify the most innovative ideas. Technical and financial support will also be provided for the implementation and testing of solutions, to ensure their commercial viability and integration with the city’s transportation system. Applying the platform’s processes and structure as well as CTS EMBARQ México’s knowledge and experience to the topic of concessioned public transportation is expected to yield specific questions for targeted solutions in such areas as controlling the number of vehicles on the road, route optimization, electronic payments, trip planning, etc.
- 2.6 The solutions to be identified may be at different phases of development. The emphasis will be more on innovation than entrepreneurship, so if solutions already exist but either still have to be put together or are in the pilot test stage, the project will seek to incorporate and expand them.<sup>18</sup>
- 2.7 **Component II: Promotion of an Integrated Transportation and Sustainable Mobility System.** The evaluation of Mexico City’s public transportation system conducted by CTS EMBARQ México found that the idea of “integration” was totally absent from the transportation system. The different modes of transportation—bus, Metro, the Metrobús BRT system, and Passenger Transportation Network—are not interconnected, lack joint operations planning, and in many cases compete instead of complementing each other. New mobility startups (shared cars, shared bicycles, shared motorcycles, and more) are also not integrated into the system and are being implemented and scaled up without joint or strategic planning.
- 2.8 At this time, attempts have been made in both the private and public sectors to work in a more coordinated manner. Mobility startups have created an association known as MUEVAC<sup>19</sup> with the objectives of reducing the number of vehicles on the road, jointly marketing the services offered by its members, and establishing a dialogue

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<sup>16</sup> Although CTS EMBARQ México has conducted a study of the weaknesses of the concessioned public transportation system, specific studies are still pending to identify potential technological solutions that can be adapted for the corridors.

<sup>17</sup> Work will be done exclusively with corridors that already have new buses with technological devices such as GPS, security cameras, and passenger counters (in some cases).

<sup>18</sup> For example, one of the possible questions might be: How can shared mobility be promoted in a business hub, such as Santa Fe in Mexico City, using the current infrastructure? Local and international calls for submissions would then be issued to address this question and identify potential new or existing solutions consistent with the ASI approach. Once identified, the solutions will be strengthened, principally with technology, and then piloted. Financing and technical support will be provided for the solutions during their various stages of development, in order to ensure their commercial viability and promote joint learning and exchange of know-how.

<sup>19</sup> Its members are CABUFY, ECOBICI, CARROT, AVENTONES, BLA BLA CAR, KANGOU, ECONDUCE, RESERBUS, and UBER.

with the authorities. In addition, over the next few months, the Office of the Undersecretary for Planning of the Department of Mobility (SEMOVI) intends to implement a “smart mobility districts” initiative in four of the city’s districts: Santa Fe, Polanco, Granadas, and the airport zone. Smart districts will provide incentives for multimodality with sustainable transportation and promote the use of options that include smart public transportation, bicycles, electric mobility, ride sharing, shared cars, and shared bicycles.

2.9 This component will promote these trends via three main activities:

- (i) ***Mobility plans for large companies.*** Companies suffer losses due to mobility issues as a result of several factors, including vehicle subsidies, space allocated for parking, and low employee productivity because of physical and mental fatigue, as well as difficulty concentrating and stress. Employees also lose a lot; they spend more time stuck in traffic than on vacation (26 days per year) and spend much money commuting to work (17% to 25% of total income for low-income individuals, and 3% to 10% for those with higher incomes). The project will work with large companies that have more than 350 employees to develop mobility plans,<sup>20</sup> promoting an integrated transportation and sustainable mobility system. CTS EMBARQ México has experience partnering with businesses.<sup>21</sup> Under the project, it will seek to expand the number of corporates implementing sustainable mobility strategies; offer businesses the solutions developed by the “innovation platform;” and try to pilot some of these solutions, when applicable, with interested businesses or in “smart districts.”<sup>22</sup> The participation of the business sector in implementing the solutions to be identified in Component I will be essential for their adoption and scaling up.
- (ii) ***Civil society communication and awareness strategy.*** In relation to civil society, the project will maintain close relationships with civil society change agents, to raise awareness among the population about the magnitude and importance of the urban mobility problem, and how each citizen can contribute to its solution. Mainstream media campaigns will be pursued in the city, as will partnerships with leading change agents, to promote sustainable mobility in Mexico City.
- (iii) ***Knowledge products and dissemination of lessons learned.*** Knowledge products will be developed to raise profile of the platform and Mexico City as a standard of reference for innovation in mobility. There are plans to produce publications in various formats and media, focusing on the “new forms of mobility” or “smart mobility” alternatives

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<sup>20</sup> Efforts will also be made to work with government departments at the national level and universities.

<sup>21</sup> In 2014, it launched a program called “Red Óptimo” offering businesses a diagnostic assessment of their corporate mobility, to identify and promote sustainable mobility strategies among employees, such as: promotion of public transportation, negotiation of business routes, telework, flextime, staggered shifts, bicycle usage, etc.

<sup>22</sup> In certain parts of the city, like Santa Fe, where there is a high concentration of population and jobs, there is a large volume of trips, and therefore congestion; in Santa Fe alone, 845,000 trips are made daily. In the Polanco area, the average speed at rush hour is 7.2 km/hour. Information provided by CTS EMBARQ México.

being created in Mexico City, in order to spread lessons learned to other cities of the region and around the world. A communication strategy will be developed that reflects the various audiences and messages to be conveyed.

**B. Project outcomes, impact, monitoring and evaluation**

- 2.10 The expected impact is to contribute to improving the quality of life in Mexico City by promoting innovative initiatives for more sustainable urban mobility. The expected outcome is to contribute to decreased traffic congestion in Mexico City.
- 2.11 The execution period will be 36 months. To monitor the project's progress, indicators were selected that contribute to the aspirational indicator of Inclusive Cities and to the Corporate Results Framework, and can be used to track the progress of key aspects of the project. The main indicators selected were: reduction of travel time on public transportation (a 10% decrease is expected on buses utilizing any of the solutions implemented by the project, for 32 million hours saved); reduction of single-occupancy vehicles (smart mobility alternatives are expected to take at least 144,000 vehicles off the road); and reduction of CO<sub>2</sub><sup>23</sup> (14,400 tons). By the end of the project, one million people<sup>24</sup> in Mexico City will have improved mobility thanks to a solution identified or strengthened by the project.<sup>25</sup> For more information on the indicators, see Annex I (Results Matrix) and Annex VI (Impact indicator projections).
- 2.12 **Monitoring.** To monitor the project's main performance indicators included in Annex I (Results Matrix), CTS EMBARQ México will maintain a system for monitoring activities and achievements. It will also be responsible for submitting project status reports with updated for Results Matrix indicator data on a half-yearly basis until the end of the disbursement period.
- 2.13 **Evaluation.** To evaluate the project's impact and planned targets met, a final evaluation will be conducted 36 months after the first disbursement.<sup>26</sup> This evaluation will seek to answer the following questions: Has the project catalyzed a mobility innovation ecosystem? Are the solutions identified by the project being used, and have they improved mobility in Mexico City? Have concessioned public transportation corridors improved their operations management, fare collection systems, and information for users? Have businesses and civil society organizations actively participated during the project's implementation?

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<sup>23</sup> CRF indicator 340100, "Tons of CO<sub>2</sub>e in greenhouse gas emissions reduced or saved."

<sup>24</sup> To estimate the number of beneficiaries under a conservative scenario, the following assumptions are made: at the end of 3 years, service will be improved for at least 1,600 buses, each bus will be transporting an average of 600 riders/day, resulting in 960,000 beneficiaries of bus improvements alone. Solutions seeking to reduce the number of automobiles (at least four) are expected to improve mobility for at least an additional 40,000 people.

<sup>25</sup> CRF indicator 210400, "Number of people who have adopted new practices or technologies."

<sup>26</sup> The supervision leader may change the date of the final evaluation, which should be conducted when deemed appropriate. These resources may also be reallocated to other knowledge activities considered more important for dissemination of the operation's outcomes and impact.

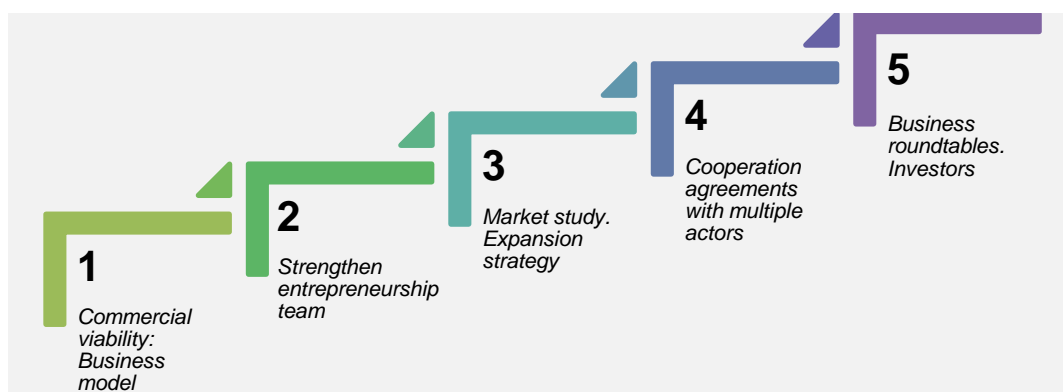
### III. ALIGNMENT WITH THE IDB GROUP, SCALABILITY, AND RISKS

#### A. Alignment with the IDB Group

- 3.1 The IDB country strategy with Mexico 2013-2018 mentions the importance of transportation and mobility as an urban development challenge for the Bank to address and support. The Bank has been supporting sustainable transportation primarily through subnational entities, financing the development of urban transportation plans, as well as providing technical assistance to strengthen their institutional structure. In Mexico City, the IDB is currently supporting the implementation of the “Comprehensive Road Safety Program for Mexico City,” which will be the first public policy document on this issue and identify actions to reduce traffic incidents.
- 3.2 The project with CTS EMBARQ México seeks to build on the Bank’s work and support its objectives in the area of improving the quality of life of citizens. It will be implemented with cooperation from the IDB’s transportation specialists, to ensure alignment and strategic direction of the innovative solutions to be implemented.

#### B. Scalability

- 3.3 The project intends to make Mexico City a standard of reference for mobility solutions in the region. Because of the magnitude of the traffic congestion problem in Mexico City and the amount of resources and actors involved in the issue, as well as its urgency and priority, solutions can be tested at significant scales and under adverse conditions similar to those of many cities of the region. Scaling up solutions is one of the project’s priorities, so a strategy should be mapped out from the beginning to ensure that the best ideas actually get implemented. Getting the leaders in mobility and entrepreneurship actively involved in the platform early will facilitate the implementation of the best solutions and their widespread application. The figure below shows the “scale-up path” for the mobility solutions generated or strengthened by the project.



- 3.4 Support will be provided during the scale-up phase for the solutions identified in their interaction with public and private sector stakeholders, who as members of the platform will be familiar with the various initiatives and will have been actively

engaged in their design and implementation.<sup>27</sup> If a solution is shown to be effective, demand for the service exists, and the business model is clear and commercially viable, it is very likely to be scaled up in the city. The informality and disorganization of the concessioned public transportation system and the soaring number of vehicles on the road are ills affecting many cities of the region, so any improvement achieved in Mexico City can serve as an example for other cities in Latin America and the Caribbean.

## **C. Risks**

- 3.5 The project's main risks are related to the active involvement of different stakeholders in the platform's launch and implementation. Keeping public- and private-sector actors and experts in potential areas of impact interested and involved is essential for the project. The presence of the MIF, as a neutral actor, will go some way toward strengthening these relationships. The risks identified during design, as well as potential mitigation measures, are described in detail below.

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<sup>27</sup> For example, for concessioned public transportation, one of the potential solutions to the lack of information available to users for trip planning could be the development or improvement of platforms that use GPS information to signal the location of buses, so that users know the arrival times of buses and their destinations. Transportation companies and Mexico City's government, since they were actively engaged in identifying the problem and solution, will be interested in piloting these types of solutions in certain corridors.



Risks	Likelihood	Seriousness	Mitigation measure
Technical or financial support for mobility solutions is insufficient to solve the problems they must face to scale up.	Medium	Medium	Work very closely with actors who have experience with Mexico City's entrepreneurship ecosystem, including MIF-supported investment funds.
Drivers of concessioned buses involved in improvement actions oppose the proposed improvements.	Medium	Medium	Work closely with transportation business leaders to ensure their involvement.
The security and/or perceptions of integrated urban transportation in Mexico decline, and its use decreases substantially, resulting in increased use of private automobiles.	Low	High	Awareness campaign coordinated with Mexico City's government.
Solutions presented are of low quality and do not meet the criteria stipulated for their scale-up.	Low	High	From the start of the project, relationships will be established with universities and research institutes to promote the involvement of their students and researchers.
Little interest among investors to support mobility startups.	Low	Medium	The project will establish relationships with venture capital funds and investors, to get them involved from the beginning and spark their interest in the issue.
"Corridor" model is not expanded or is replaced by another measure.	Low	Medium	The project will maintain close relationships with the authorities to keep abreast of changes in decisions regarding the implementation of corridors.
Weakness of the executing agency to execute project components.	Low	Medium	In October 2016, the executing agency transitioned from being CTS EMBARQ México, an affiliate of WRI International, to become WRI México. In addition to the change of name, this provides additional assurance as to the capacity of the executing agency and its ability to draw on an international network of experts.

#### IV. COST AND FINANCING

- 4.1 The project will have a total cost of US\$2,040,000. Of that amount, US\$1,000,000 (49%) will be contributed by the MIF, and US\$1,040,000 (51%) by the counterpart. The instrument used will be nonreimbursable technical cooperation. The counterpart CTS EMBARQ México will be covered with direct contributions from the Shell Foundation to CTS EMBARQ México.
- 4.2 **Retroactive recognition of the counterpart funds.** The amount of US\$290,000 granted by the Shell Foundation as seed capital for a shared vans startup will be recognized as counterpart funds. The project became eligible on 17 June 2016, and the seed funding was granted in October 2016.

Project components	MIF	Counterpart	Total
Component 1: Creation of the “Disruptive Innovation for Sustainable Mobility Platform”	728,000	750,000	1,478,000
Component 2: Promotion of an Integrated Transportation and Sustainable Mobility System	87,000	155,000	242,000
Execution and supervision	95,000	135,000	230,000
Ex post reviews	40,000		40,000
Contingency	50,000		50,000
<b>Grand total</b>	<b>1,000,000</b>	<b>1,040,000</b>	<b>2,040,000</b>
<b>% of financing</b>	<b>49%</b>	<b>51%</b>	<b>100%</b>

## V. EXECUTING AGENCY AND IMPLEMENTATION STRUCTURE

### A. Description of the executing agency

- 5.1 **Centro de Transporte Sustentable de México, Asociación Civil** (doing business as CTS EMBARQ México) will be the project’s executing agency and will sign the agreement with the Bank. CTS EMBARQ México is a nonprofit organization with more than 13 years of experience working in Mexico, and is part of the World Resources Institute (WRI),<sup>28</sup> an institution that promotes equity and prosperity through sound management of natural resources.<sup>29</sup>
- 5.2 CTS EMBARQ México has extensive experience in urban mobility and integrated transportation systems. It began its work in Mexico advising the government on the implementation of the Metrobús BRT system in Mexico City. In recent years it has played an active role as technical advisor of the public sector on mobility issues, and was a principal contributor in drafting the Mobility Law of April 2014.
- 5.3 CTS EMBARQ México promotes the coordination of the different means of transportation in cities, to ensure that public transportation offers a reliable, efficient, comfortable, and safe service that transports users with high standards of quality, access, and coverage. It also works to improve the quality of life of persons through advisory support and assistance in planning, implementing, and operating integrated transportation systems and BRT systems. CTS EMBARQ México is currently working with the Federal Program to Support Mass Transportation (PROTRAM) on Integrated Plans for Sustainable Urban Mobility (PIMUS), and generating demand management solutions through innovation and entrepreneurship.
- 5.4 **The Shell Foundation** has been financing the work of the EMBARQ network since 2002, and is one of the oldest and most important sources of financing for CTS EMBARQ México. The Shell Foundation, established in 2000, is an independent charity of the Shell Group. Its main purpose is to create and scale up new solutions to global development challenges. Taking a business approach to the biggest

<sup>28</sup> WRI has more than 450 specialists in the urban environment, climate change, food, forests, mobility, and water. EMBARQ is WRI’s mobility innovation center, active in Mexico, Brazil, China, India, Turkey, and the United States. Since 2005, EMBARQ’s international centers have achieved the following outcomes: 3.3 million tons of CO<sub>2</sub> emissions avoided; 1.2 billion hours of travel time saved; 1,922 lives saved; and 4.8 billion in investment leveraged.

<sup>29</sup> In September 2016, CTS EMBARQ México signed an agreement with WRI International to change its name to WRI México. The name will be officially changed during the first quarter of 2017.

environmental and social problems related to the energy sector, it leverages the networks and skills of Shell to achieve high development impact.

- 5.5 The Shell Foundation has supported mobility initiatives for several years, and its objective is to offer sustainable, safe, and inexpensive transportation solutions for low-income populations. It seeks to improve access to clean, cheap transportation in cities, improve the quality of urban and rural transportation services, and improve efficiency and emissions through technology innovations. Given the alignment of its objectives as an institution and the close relationship it has developed over the years with CTS EMBARQ México, the Shell Foundation will provide counterpart resources for the project through direct disbursements to the executing agency. In addition to financial resources, Shell will support the project with its global contact networks and experience in “new forms of mobility.”

**B. Structure and implementation mechanism**

- 5.6 CTS EMBARQ México will establish an execution unit and the structure necessary to execute project activities and administer project resources efficiently and effectively. It will also be responsible for preparing project status reports on project implementation. The execution unit will consist of a project coordinator and an administrative/financial assistant, and will have the support of technical staff from the transportation and innovation offices of CTS EMBARQ México.
- 5.7 The execution unit will be responsible for: (i) project management in the financial, administrative, and technical areas, as established in the Operating Regulations; (ii) operational monitoring of the project activities; (iii) design, implementation, and execution of the annual work plan; (iv) organization and administrative monitoring of the program; (v) project procurement and contracting, including preparing the terms of reference and supervising and coordinating with consultants contracted; (vi) budget management and control; (vii) processing of disbursement requests for the Bank’s contribution; (viii) preparation of financial statements for the resources utilized; (ix) delivery of administrative and technical reports to the Bank and the MIF; (x) coordination of necessary actions with the different project stakeholders; (xi) review and proposal of changes to the Operating Regulations; and (xii) dissemination of outcomes. Details of the structure of the execution unit and requirements for status reports are given in Annex V of the technical files for this operation.

**VI. FULFILLMENT OF MILESTONES AND SPECIAL FIDUCIARY ARRANGEMENTS**

- 6.1 **Results-based disbursements and fiduciary arrangements.** The executing agency will comply with the standard MIF arrangements on results-based disbursements, procurement, and financial management, as specified in Annex V. Project disbursements will be contingent upon the verification of achievement of milestones, according to the means of verification agreed upon between the execution unit and the MIF. Fulfillment of milestones does not relieve the executing agency from the responsibility of achieving the logical framework indicators and project objectives.
- 6.2 Under the risk- and performance-based project management modality, disbursement amounts will be determined according to project liquidity needs for a period of up to six months. These needs will be agreed upon between the MIF and

the executing agency and will reflect the activities and costs programmed in the annual planning exercise. The first disbursement will be contingent on fulfillment of the conditions precedent, and subsequent disbursements will be made as long as the following two conditions are met: (i) verification from the MIF that the milestones have been met, as agreed in the annual planning; and (ii) supporting documentation provided by the executing agency for at least 80% of the cumulative funds advanced.

- 6.3 **Procurement.** For the procurement of goods and contracting of consulting services, the executing agency will follow the IDB's Procurement Policies (documents GN-2349-9 and GN-2350-9), in accordance with market practices for the private or commercial sector and in a manner acceptable to the Bank.

## **VII. ACCESS TO INFORMATION AND INTELLECTUAL PROPERTY**

- 7.1 **Access to information.** Under the Bank's Access to Information Policy, the information in this donors memorandum is considered "public." Under exception 4.1.j of the Bank's Access to Information Policy, the documentation in each and every one of the annexes to this donors memorandum is confidential and for internal use, and cannot be disclosed until after a period of ten (10) years as of the official date of project approval by the Donors Committee.
- 7.2 **Intellectual property.** The Bank will have the right to disseminate the lessons learned and know-how gained as part of the project, as it sees fit. Regarding the intellectual property of the solutions, depending on the degree of development of each solution and the support received from the project, the Bank will have the right to disseminate the lessons learned and successful business models for information purposes and the public good. The IDB Group will have preferential entry in any investment rounds for the mobility solutions supported by the project.