

## Potential Investment Projects Colombia



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## 1 Introduction

This report contains the summary of the potential investment projects identified through the interviews conducted in Colombia. A total of 6 potential investment projects were identified of which 2 for urban buses, 3 for taxis and 1 for Light Commercial Vehicle (LCV). The interviews were conducted in December-February. Up to this date the financing conditions of the program were unknown. This was one of the biggest barriers to withdraw information from the potential project-owners. The National Government has enacted policies that seek to promote electromobility; major cities such as Bogota, Medellin and Cali have started incorporating EV fleets.

It is important to mention that all projects must be technically, financially, economically, environmentally, socially, gender and legally structured. The structuring of each project will contribute to an adequate allocation of risks and bankability, as well as to the deployment of innovative business models.

## 2 Urban Buses

<b>ID</b>	1
<b>City</b>	Bogota
<b>Project owner (private or public)</b>	Empresa del Tercer Milenio TransMilenio S.A. (BRT TransMilenio Public Company). Public.
<b>Degree of maturity</b>	TransMilenio is a structured and consolidated transportation system and has awarded approximately 1,500 electric buses. Business model has migrated to a scheme of separation of ownership and operation, which allows guaranteeing the availability of the fleet, regardless of the continuation of the operator. TransMilenio wants to electrify articulated and bi-articulated trunk buses, this will require a technology analysis to identify the most appropriate technological approach.
<b>Potential set-up</b>	Public Private Partnership with preferential interest rates.
<b>Name of Project</b>	Mass Transit System: BRT TransMilenio, Bogota.
<b>General summary of the project</b>	New trunk corridors (exclusive lanes) and electric fleet. The projected corridors are: Carrera 7 corridor: 20 km Carrera 68 Corridor: 16.9 km Soacha Phase II and III Corridor: 3.3 km Ciudad de Cali Avenue Corridor: 7.3 km
<b>Timeline</b>	Electric buses per corridor and per year (see Annex 1): - Carrera 7 corridor (year 2026): Articulated buses (high floor): 120. Buses (12 meters, for high and low floor operation): 350. - Carrera 68 corridor (year 2026): Bi-articulated buses (high floor): 320. Articulated buses (high floor): 9. - Soacha Phase II and III Corridor / Ciudad de Cali Avenue Corridor (years 2023-2025):

	Bi-articulated buses (high floor): 112. Articulated buses (high floor): 124.
<b>Barriers identified</b>	1. Lack of knowledge about the performance of electric buses (vehicle autonomy). 2. Investment for electric buses and electric recharging infrastructure is higher than diesel and gas technologies. 3. Financing resources at competitive interest rates for the incorporation of electric fleet.
<b>Included in Funding Proposal</b>	Yes for medium term (2024-2026).

<b>ID</b>	2
<b>City</b>	14 cities (Medellin, Cali, Barranquilla, Cartagena, Bucaramanga, Pereira, Santa Marta, Pasto, Montería, Popayan, Armenia, Valledupar, Sincelejo y Neiva).
<b>Project owner (private or public)</b>	Ministerio de Transporte (Ministry of Transportation), Unidad de Movilidad Urbano Sostenible - UMUS (Sustainable Urban Mobility Unit). Public. Financial mechanisms and business model will be defined by each city (Municipal Government).
<b>Degree of maturity</b>	Financing resources are key to achieve the electromobility objectives established by the National Government. In this regard, the National Government and GIZ are currently working on the design of an investment fund to promote the upgrade of public transportation systems to electric technologies, specifically for the incorporation of electric buses and charging infrastructure in the Integrated Mass Transportation Systems (SITM) / Strategic Public Transportation Systems (SETP). National Government is currently searching for financing sources (multilateral banks, international funds, own funds, etc.) to leverage the financing of electric buses in the different cities of the country. According to UMUS, the cities with the greatest financial viability for financing electric buses are: Medellin, Cali, Pereira, Monteria, Santa Martha and Pasto. These cities have a structured and consolidated transportation system and the cities' finances have favorable conditions compared to the remaining eight cities (Barranquilla, Bucaramanga, Cartagena, Popayan, Armenia, Valledupar, Sincelejo and Neiva).
<b>Potential set-up</b>	Public Private Partnership with preferential interest rates
<b>Name of Project</b>	Urban Public Transportation: Technological upgrading of the fleet in different cities in Colombia (14 cities).
<b>General summary of the project</b>	Promote the technological upgrading of the public passenger transportation fleet in different cities of Colombia based on the established national goals.
<b>Timeline</b>	See Annex 2.
<b>Barriers identified</b>	- Higher level of initial investment for electric technology and recharging system versus diesel. - Lack of financial soundness of private operators and municipalities to apply for loans. - Guarantees with sufficient financial backing.

	<ul style="list-style-type: none"> <li>- Lack of confidence in the financial sector to lend to private transport operators due to non-payment of their financial obligations.</li> <li>- Although the country has tax exemptions, the processes are lengthy and must be initiated in advance in order to receive the effective benefit.</li> <li>- There is still no certainty of the operational performance of electric fleets in the country; therefore, there is a risk and uncertainty of the operation of electric buses.</li> <li>- Updating of the electric network.</li> <li>- Yards and workshops: availability of land in the city is very restricted and with very high prices.</li> <li>- Support and warranty from manufacturers.</li> <li>- Capacity building for the operation and maintenance of electric vehicles.</li> <li>-Lack of established manufacturers in the country offering electric technology to diversify the market. Currently, BYD has concentrated the market.</li> <li>- Uncertainty about the useful life of batteries, including their final disposal.</li> </ul>
<b>Included in Funding Proposal</b>	no

### 3 Taxis

<b>ID</b>	3
<b>City</b>	Bogota
<b>Project owner (private or public)</b>	Secretaría de Movilidad de Bogotá - SDM (Secretariat of Mobility of Bogota). Private Taxi Owners. Public/Private
<b>Degree of maturity</b>	Currently, the Secretariat of Mobility of Bogota is developing the regulatory framework to define the tools that the District will implement to encourage the replacement of electric taxis. This is expected to be issued in the second half of 2021. Once this is done, the appropriate financial instrument will be structured to channel the financial resources that taxi owners can access for the purchase of taxis.
<b>Potential set-up</b>	A specific fund for taxi replacement can be established by the local government. Thus, preferential credit lines and subsidies for the purchase would be made available to taxi owners through local banks. This set-up needs to be re-evaluated after the regulatory framework has been approved.
<b>Name of Project</b>	Taxis: Taxi Replacement Project in the city of Bogotá.
<b>General summary of the project</b>	Replacement of the taxi fleet in the city of Bogotá with electric vehicles. A total of 48,294 electric taxis.
<b>Timeline</b>	<p>Electric taxis per year:</p> <p>2022: 301 electric taxis.</p> <p>2023: 930 electric taxis.</p> <p>2024: 2,233 electric taxis.</p> <p>2025: 6,415 electric taxis.</p> <p>2026: 7,091 electric taxis.</p> <p>2027: 7,202 electric taxis.</p> <p>2028: 7,555 electric taxis.</p> <p>2029: 8,209 electric taxis.</p>

	2030: 8,358 electric taxis. Total: 48,294 electric taxis.
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- The recharge infrastructure network is limited.</li> <li>- Access to financing for owners who are not creditworthy.</li> <li>- Lack of capacity building for the structuring of business models.</li> <li>- Differential fare models for electric taxis and taxis with conventional technologies.</li> <li>- Atomized ownership: small owners.</li> </ul>
<b>Included in Funding Proposal</b>	Yes, for short term (2022-2023)

<b>ID</b>	4
<b>City</b>	Bogota
<b>Project owner (private or public)</b>	Secretaría de Movilidad de Bogotá - SDM (Secretariat of Mobility of Bogota). Public.
<b>Degree of maturity</b>	Currently, the Secretariat of Mobility of Bogota is developing the legal framework that will allow the location of charging stations in public spaces and the development of tax incentives. This framework is expected to be issued in the second half of 2021. Once this is done, the business models for the participation of private parties through contracts for the administration and maintenance of public space will be established.
<b>Potential set-up</b>	<ol style="list-style-type: none"> <li>1. Management and maintenance contract for the public space, through a private operating permit, or</li> <li>2. Permission for the exploitation of the public space in exchange for economic or in-kind remuneration (private investment).</li> </ol>
<b>Name of Project</b>	Electric Recharging Infrastructure for the city of Bogota.
<b>General summary of the project</b>	Public access chargers (50 kW) that can be located in service stations, parking lots, malls and public spaces. A total of 2,342 public chargers.
<b>Timeline</b>	Public chargers per year: 2022: 14 chargers 2023: 44 chargers 2024: 123 chargers 2025: 281 chargers 2026: 331 chargers 2027: 337 chargers 2028: 353 chargers 2029: 384 chargers 2030: 475 chargers Total: 2,342 chargers
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- Costs of electric charging infrastructure are very high.</li> <li>- Unsustainable financial model because there is not enough demand for electric vehicles in the city.</li> </ul>
<b>Included in Funding Proposal</b>	Yes, included as part of Taxi project of Bogota for short term (2022-2023).

<b>ID</b>	5
<b>City</b>	Medellin
<b>Project owner (private or public)</b>	This project will be promoted by Secretaría de Movilidad de Medellín - SMM (Secretary of Mobility of Medellín). Private Taxi Owners. Public/Private.
<b>Degree of maturity</b>	Currently, Secretariat of Mobility of Medellin is working on a second call for taxi owners with new strategies, where the requirements to qualify for the program would be changed (with respect to the pilot project carried out in 2019) so that more taxi owners can participate, including companies that have taxis. However, for this new call would not include the subsidized offered by Empresas Pública de Medellin (energy company). This second call is being studied to give the benefit of having two taxis, so the people selected to participate in this second call could have the electric taxi and the conventional gasoline taxi as well. This business is financially feasible, because has income from two vehicles.
<b>Potential set-up</b>	Private equity and loans at a preferential interest rate.
<b>Name of Project</b>	Taxis: Taxi Replacement Project in the city of Medellin.
<b>General summary of the project</b>	Promote the technological upgrade of the taxi fleet in the city of Medellín: A total of 150 electric taxis.
<b>Timeline</b>	Electric taxis per year: 2022: 50 electric taxis. 2023: 50 electric taxis. 2024: 50 electric taxis. Total: 150 electric taxis.
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- Lack of knowledge of electric technologies.</li> <li>- Tariff fixation for electric and conventional vehicles.</li> <li>- Many taxi owners are not creditworthy, so it is very hard to get financing from commercial banks.</li> </ul>
<b>Included in Funding Proposal</b>	No

## 4 LCV

<b>ID</b>	6
<b>City</b>	Bogota
<b>Project owner (private or public)</b>	Secretaría de Movilidad de Bogotá - SDM (Secretariat of Mobility of Bogota). Public. Private LCV Owners. Public/Private
<b>Degree of maturity</b>	Currently, the Secretariat of Mobility of Bogota is developing the legal framework that will allow the renovation of the urban cargo fleet in Bogota. This framework is expected to be issued in the end of 2021. Once this is done, the appropriate financial instrument will be structured to channel the financial resources that LCV owners can access for the purchase of LCV.
<b>Potential set-up</b>	A specific fund for LCV replacement can be established by the local government. Thus, preferential credit lines and subsidies for the purchase would be made available to LCV owners through local banks. This set-up needs to be re-evaluated after the regulatory framework has been approved.
<b>Name of Project</b>	Light-duty vehicles: Replacement of light-duty fleet (less than 10,5 tons) in the city of Bogotá.
<b>General summary of the project</b>	Replacement of the light-duty vehicle fleet (less than 10.5 tons) in the city of Bogotá with electric vehicles. Current fleet (diesel) with an average age of 20 years.
<b>Timeline</b>	Light-duty vehicles (less than 10.5 tons) per year: 2022: 200 electric trucks 2024: 147 electric trucks 2025: 153 electric trucks 2026: 150 electric trucks 2030: 528 electric trucks Total: 1,178 electric trucks
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- Costs of electric vehicles are very high.</li> <li>- Lack of knowledge of electric technology.</li> <li>- Atomized ownership: small owners.</li> <li>- Access to financing for owners who are not creditworthy.</li> <li>- There is still no certainty of the operational performance of electric fleets in the country; therefore, there is a risk and uncertainty of the operation of electric trucks.</li> <li>- Support and warranty from manufacturers.</li> </ul>
<b>Included in Funding Proposal</b>	no

## 5 Annexes

### 5.1 Annex 1

#### TransMilenio - trunk corridors (exclusive lanes)

Corridor	Corridor length (km)	Start of operation (year)	Bi-articulated (high floor)	Articulated (high floor)	Buses (12 meters)*
<b>Carrera 7</b>	20	2026		120	350
<b>Carrera 68</b>	16,9	2026	320	9	
<b>Soacha Fase II y III</b>	3,3	2023 - 2025	112	124	
<b>Av. Ciudad de Cali</b>	7,3				

Source: TransMilenio S.A., 2021

\*Buses (12 meters) called "Patrones duales": buses that operate with high floor on the trunk corridor (left doors) and operate with low floor at sidewalk level (right doors).

### 5.2 Annex 2

City	Services	Total Fleet	2022	2023	2024	2025	2026
Medellin	Trunk Buses (18 meters)	9	0	2	2	0	5
Medellin	Pre-trunk Buses (12 meters)	15	0	4	3	0	8
Medellin	Feeder Buses (10 meters)	33	0	9	6	0	18
Medellin	Buses (10 meters)	75	0	20	14	0	41
<b>Total Medellin</b>		<b>132</b>	<b>0</b>	<b>35</b>	<b>25</b>	<b>0</b>	<b>72</b>
Cali	Trunk Buses (18 meters)	38	0	10	7	0	21
Cali	Trunk Buses (12 meters)	11	0	3	2	0	6
Cali	Pre-trunk Buses (12 meters)	79	0	21	15	0	43
Cali	Pre-trunk Buses (10 meters)	0	0	0	0	0	0
Cali	Feeder Buses (12 meters)	19	0	5	4	0	10
Cali	Feeder Buses (10 meters)	37	0	10	7	0	20
<b>Total Cali</b>		<b>184</b>	<b>0</b>	<b>49</b>	<b>35</b>	<b>0</b>	<b>100</b>
Barranquilla	Trunk Buses (18 meters)	18	0	5	3	0	10
Barranquilla	Trunk Buses (12 meters)	4	0	1	1	0	2
Barranquilla	Feeder Buses (12 meters)	16	0	4	3	0	9
Barranquilla	Feeder Buses (10 meters)	21	0	6	4	0	11
<b>Total Barranquilla</b>		<b>59</b>	<b>0</b>	<b>16</b>	<b>11</b>	<b>0</b>	<b>32</b>
Cartagena	Trunk Buses (18 meters)	11	0	3	2	0	6



City	Services	Total Fleet	2022	2023	2024	2025	2026
Cartagena	Pre-trunk Buses (12 meters)	35	0	9	7	0	19
Cartagena	Feeder Buses (10 meters)	86	0	23	16	0	47
<b>Total Cartagena</b>		<b>132</b>	<b>0</b>	<b>35</b>	<b>25</b>	<b>0</b>	<b>72</b>
Bucaramanga	Trunk Buses (18 meters)	2	0	1	0	0	1
Bucaramanga	Pre-trunk Buses (12 meters)	20	0	5	4	0	11
Bucaramanga	Feeder Buses (10 meters)	12	0	3	2	0	7
<b>Total Bucaramanga</b>		<b>34</b>	<b>0</b>	<b>9</b>	<b>6</b>	<b>0</b>	<b>19</b>
Pereira	Trunk Buses (18 meters)	11	0	3	2	0	6
Pereira	Feeder Buses (10 meters)	19	0	5	4	0	10
<b>Total Pereira</b>		<b>30</b>	<b>0</b>	<b>8</b>	<b>6</b>	<b>0</b>	<b>16</b>
Santa Marta	Buses (10 meters)	25	24	0	1	0	0
Santa Marta	Buses (7 meters)	63	60	0	3	0	0
<b>Total Santa Marta</b>		<b>88</b>	<b>84</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>
Pasto	Buses (10 meters)	95	90	0	5	0	0
Pasto	Buses (7 meters)	0	0	0	0	0	0
<b>Total Pasto</b>		<b>95</b>	<b>90</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>
Monteria	Buses (10 meters)	29	28	0	1	0	0
Monteria	Buses (7 meters)	27	26	0	1	0	0
<b>Total Montería</b>		<b>56</b>	<b>54</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>
Popayan	Buses (10 meters)	0	0	0	0	0	0
Popayan	Buses (7 meters)	77	73	0	4	0	0
<b>Total Popayán</b>		<b>77</b>	<b>73</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>
Armenia	Buses (10 meters)	61	58	0	3	0	0
Valledupar	Buses (7 meters)	56	53	0	3	0	0
Sincelejo	Buses (7 meters)	17	16	0	1	0	0
Neiva	Buses (7 meters)	66	63	0	3	0	0
<b>Total</b>		<b>1087</b>	<b>491</b>	<b>152</b>	<b>133</b>	<b>0</b>	<b>311</b>

Source: Information provided by the Sustainable Urban Mobility Unit (UMUS- Ministry of Transportation), data calculated by Sumatoria S.A.S in the framework of the *"Consultoría para diseñar un Fondo de inversión para promover el ascenso de los sistemas de transporte público a tecnologías eléctricas"* (Consultancy to design an Investment Fund to promote the upgrade of public transport systems to electric technologies) contracted by GIZ. January 21, 2021.