

## Potential Investment Projects Mexico



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<b>Author</b>	Andres Chaves, Verena Arauz, and Susana Ricaurte
<b>Revision</b>	Jürg Grütter and Daniel Wunderlin
<b>Contact</b>	Rte. des Esserts 92, 1854 Leysin, Switzerland <a href="mailto:jgruetter@transport-ghg.com">jgruetter@transport-ghg.com</a> , <a href="http://www.transport-ghg.com">www.transport-ghg.com</a>

## 1 Introduction

This report contains the summary of the potential investment projects identified through the interviews conducted in Mexico. A total of 10 potential investment projects were identified of which 7 for urban buses, 2 for taxis and 1 mixed including urban buses, taxis and Light Commercial Vehicle (LCV). The interviews were held throughout December, January and February. Although some institutions claim to have feasibility studies, these were not shared with the consultants. The willingness to invest in commercial EVs is clearly given, however, in order to obtain more detailed information (e.g. feasibility studies), a more formal and direct relation between the bank and the project owner (borrower) should be established.

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>	Mexico City
<b>Project owner (private or public)</b>	Metrobús. Ciudad de México. (Metrobus. Mexico City). Public.
<b>Degree of maturity</b>	<p>As part of its operations, the decentralized public entity Metrobus has generated the Metrobus System Fleet Renewal Plan 2020 - 2030. In addition, it has included in its Electromobility Strategy the operation of the Inner Circuit (738 buses in total).</p> <p>In order to analyze the model for the acquisition and operation of battery-electric buses and the proposed financing mechanism of buses for electromobility. Metrobus is currently implementing a pilot test (20 buses) for 10 articulated buses on Line 4 and 10 12-meter buses on Line 3, which will start operating in the first quarter and June 2021, respectively. Line 3 is expected to be 100% electrified and the new Circuito Interior is expected to start operating in this technology in the third quarter of 2021. Metrobús' vision is to achieve a system that operates in the processes of fleet renewal and expansion of the system in electric vehicles.</p>
<b>Potential set-up</b>	Public Private Partnership with preferential interest rates.
<b>Name of Project</b>	Urban Public Transportation: BRT Metrobus, Mexico City.
<b>General summary of the project</b>	Metrobus BRT fleet renewal plan 2020 - 2030: Acquisition of electric fleet to operate in new peripheral trunk corridors (exclusive lanes), including electric charging infrastructure. A total of 738 electric buses (109 bi-articulated (high floor), 523 articulated (high floor), 90 double deck (12 meters), 16 bus (12 meters).
<b>Timeline</b>	<p>Total 738 electric buses:</p> <p>Year 2023: 313 articulated (high floor) electric buses.</p> <p>Year 2024: 38 articulated (high floor) electric buses.</p> <p>3 bi-articulated (high floor) electric buses.</p> <p>1 bus (12 meters) electric buses.</p>

	<p>Year 2025: 26 articulated (high floor) electric buses. 1 bi-articulated (high floor) electric buses. 1 bus (12 meters) electric buses.</p> <p>Year 2026: 97 articulated (high floor) electric buses. 1 bi-articulated (high floor) electric buses.</p> <p>Year 2027: 10 articulated (high floor) electric buses. 26 bi-articulated (high floor) electric buses.</p> <p>Year 2028: 28 articulated (high floor) electric buses. 38 bi-articulated (high floor) electric buses. 90 double deck (12 meters) electric buses. 14 bus (12 meters) electric buses.</p> <p>Year 2029: 4 articulated (high floor) electric buses. 4 bi-articulated (high floor) electric buses.</p> <p>Year 2030: 7 articulated (high floor) electric buses. 36 i-articulated (high floor) electric buses.</p>
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- Uncertainty of the operational performance of electric buses.</li> <li>- High investment cost of vehicles.</li> <li>- Obtaining financial resources for electric buses.</li> <li>- Higher investments for medium voltage infrastructure works.</li> <li>- Uncertainty of battery life.</li> </ul>
<b>Included in Funding Proposal</b>	Yes, for the short term (2022-2023).

<b>ID</b>	2
<b>City</b>	Mexico City
<b>Project owner (private or public)</b>	Servicios de Transportes Eléctricos de la Ciudad de México - STE (Electric Transportation Services of Mexico City). Public.
<b>Degree of maturity</b>	In 2021, single and articulated trolleybuses (80 in total) have already been acquired. STE is currently studying its medium-term plans.
<b>Potential set-up</b>	Public bidding for the acquisition of the fleet with public resources. Public Private Partnership is being analyzed for the medium-term plans.
<b>Name of Project</b>	Urban Public Transportation: Trolebus, Mexico City.
<b>General summary of the project</b>	<p>Trolleybus system fleet renewal plan for different corridors in Mexico City. A total of 300 trolleybuses.</p> <p>Public resources are not sufficient for the medium-term plans, so STE will seek the participation of the private sector starting in 2021 and thus recover its participation in the public transportation system through the recovery of transport lines currently operated by traditional transport, for which they expect to reach 500 new units (200 have already been acquired) by 2024.</p>
<b>Timeline</b>	<p>Total 300 electric trolleybuses (subject to access to financing):</p> <p>2022-2025: 150 trolleybuses (12 meters). 150 trolleybuses (18 meters).</p>
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- Financial resources not available for fleet acquisition.</li> <li>- Operating income (user fare) does not cover operating costs.</li> </ul>
<b>Included in Funding Proposal</b>	Yes, for the short term (2022-2023).

<b>ID</b>	3
<b>City</b>	Monterrey
<b>Project owner (private or public)</b>	Metrorrey. Estado de Nuevo León. (Metrorrey. State of Nuevo Leon). Public.
<b>Degree of maturity</b>	This project is one of the three cities selected by Cities Finance Facility (CFF) to develop pre-feasibility studies for electric bus corridors. The project has a detailed pre-feasibility study conducted by C40 Cities Finance Facility which is available on the C40 website.
<b>Potential set-up</b>	Public Private Partnership.
<b>Name of Project</b>	Public transportation buses in the city of Monterrey.
<b>General summary of the project</b>	Acquisition of public transportation buses to feed line 3 of the Monterrey Metro and 3 corridors. A total of 130 electric buses (12 meters).
<b>Timeline</b>	Total 130 electric articulated buses: Year 2023: 130 electric buses (12 meters).
<b>Barriers identified</b>	Interest of the Government of the State of Nuevo Leon in supporting gas buses for political reasons in the face of the termination of the government's term (political decisions).
<b>Included in Funding Proposal</b>	No

<b>ID</b>	4
<b>City</b>	Guadalajara
<b>Project owner (private or public)</b>	Peribus. Estado de Jalisco. (Peribus. State of Jalisco) Public.
<b>Degree of maturity</b>	This project is one of the three cities selected by C40 Cities Finance Facility to develop pre-feasibility studies for electric bus corridors. The project has a detailed pre-feasibility study conducted by C40 Cities Finance Facility which is available on the C40 website.
<b>Potential set-up</b>	Public bidding for the acquisition of the fleet with public resources. Another option is a Public Private Partnership. Not yet been defined.
<b>Name of Project</b>	Public transportation buses in the city of Guadalajara.
<b>General summary of the project</b>	Acquisition of fleet for Guadalajara's Peribus (peripheral circuit) feeder system. A total of 33 buses (10 meters).
<b>Timeline</b>	Total 33 electric buses (10 meters): Year 2022: 33 electric buses.
<b>Barriers identified</b>	- Costs of electric vehicles are very high versus gas. - Public resources were allocated for the acquisition of gas fleet. In analysis of the change in the allocation of resources for electric vehicles.
<b>Included in Funding Proposal</b>	No

<b>ID</b>	5
<b>City</b>	Hermosillo
<b>Project owner (private or public)</b>	HermoBus. Estado de Sonora. (HermoBus. State of Sonora). Public.
<b>Degree of maturity</b>	This project is one of the three cities selected by CFF to develop pre-feasibility studies for electric bus corridors. The city is in the process of adjusting its public transportation system with the entry of new private operators. Feasibility studies for the public transportation system exist but were not shared with the consultants.
<b>Potential set-up</b>	Public Private Partnership.
<b>Name of Project</b>	Public transportation buses in the city of Hermosillo: BRT HermoBus.
<b>General summary of the project</b>	Acquisition of fleet for two lines of the HermoBus BRT system. A total of 51 electric buses (12 meters).
<b>Timeline</b>	Total 51 electric buses (12 meters): Year 2023: 51 electric buses.
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- Costs of electric vehicles are very high versus diesel.</li> <li>- Due to the pandemic (covid-19) passenger demand decreased; therefore, there is uncertainty for the private operator to invest in electric buses.</li> <li>- There is uncertainty about the future of the project. The city is in the process of adjusting its public transportation system with the entry of new private operators. However, the Covid crisis significantly affected demand levels, and it is unclear whether or not the city will implement the identified project.</li> </ul>
<b>Included in Funding Proposal</b>	No


<b>ID</b>	6
<b>City</b>	Culiacán
<b>Project owner (private or public)</b>	Government of the State of Sinaloa. Public.
<b>Degree of maturity</b>	The first phase of this project is expected to be completed in 2022. The number of electric buses depends on the results of the current pilot test in Mazatlán. The city is in the process of restructuring the transportation system.
<b>Potential set-up</b>	Public Private Partnership with preferential interest rates and government subsidies.
<b>Name of Project</b>	Renovation of urban buses as part of the implementation of the Culiacan Integrated Transportation System.
<b>General summary of the project</b>	Replace diesel buses with 12-meter electric buses. A total of 200 electric buses.
<b>Timeline</b>	Total 200 electric buses (12 meters): Year 2022 (Phase 1): 200 electric buses.
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- Costs of electric vehicles are very high versus diesel.</li> <li>- Atomized transportation system (small owners), in the process of restructuring the Transportation System.</li> </ul>
<b>Included in Funding Proposal</b>	No

<b>ID</b>	7
<b>City</b>	León
<b>Project owner (private or public)</b>	Government of the City of Leon. Public.
<b>Degree of maturity</b>	Project Idea without any assistance so far.
<b>Potential set-up</b>	Public bidding for fleet acquisition concession and fleet operation concession. Another option is a Public Private Partnership. It is under evaluation.
<b>Name of Project</b>	Plan for the renewal of the city's public transportation fleet 2022-2036.
<b>General summary of the project</b>	Renew diesel buses with 10-meter, 12-meter and 18-meter electric buses. A renewal potential of 1,490 electric buses. The participation of the electric fleet in this renewal plan has not been defined.
<b>Timeline</b>	<p>Total 1,490 electric buses:</p> <p>Year 2022: 64 (10-meters) electric buses.</p> <p>Year 2023: 117 (10-meters) electric buses.</p> <p>Year 2024: 74 (10-meters) electric buses.</p> <p>Year 2025: 7 (10-meters) electric buses. 23 articulated electric buses.</p> <p>Year 2026: 65 (10-meters) electric buses. 2 articulated electric buses.</p> <p>Year 2027: 133 (10-meters) electric buses. 16 articulated electric buses.</p> <p>Year 2028: 43 (10-meters) electric buses.</p> <p>Year 2029: 101 (10-meters) electric buses. 9 articulated electric buses.</p> <p>Year 2030: 106 (10-meters) electric buses. 2 conventional (12-meters) electric buses.</p> <p>Year 2031: 177 (10-meters) electric buses. 1 conventional (12-meters) electric buses.</p> <p>Year 2032: 91 (10-meters) electric buses. 77 conventional (12-meters) electric buses. 28 articulated electric buses.</p> <p>Year 2033: 38 (10-meters) electric buses. 3 articulated electric buses.</p> <p>Year 2034: 149 (10-meters) electric buses. 4 articulated electric buses.</p> <p>Year 2035: 118 (10-meters) electric buses. 4 articulated electric buses.</p> <p>Year 2036: 39 (10-meters) electric buses.</p>
<b>Barriers identified</b>	Electric vehicle cost is very high versus diesel.
<b>Included in Funding Proposal</b>	No.

### 3 Taxis

<b>ID</b>	8
<b>City</b>	Mexico City
<b>Project owner (private or public)</b>	Secretary of Mobility, Government of Mexico City. Public/Private.
<b>Degree of maturity</b>	The Secretary has carried out vehicle renewal programs and is in the process of structuring an exclusive line for e-taxi. SEMOVI has proposed to generate a special line of credit for electric units, with the objective of improving the dissemination and approach with the target public in order to have a higher rate of linkage to the program in this technology. It is expected that a new impulse can be given to the cab renewal program starting in 2022 after the failed calls in 2020 thanks to the difficult economic situation of cab owners in the midst of the Covid crisis. To date, financial resources are available to renew only 3,000 electric taxi.
<b>Potential set-up</b>	Public Private Partnership with preferential interest rates for the taxi owner and government subsidies.
<b>Name of Project</b>	Taxis: Taxi Replacement Program in Mexico City.
<b>General summary of the project</b>	Taxi replacement program of the Mexico City Government. Renewal potential: 26,000 electric taxis. Includes a government bonus (5,000 USD/taxi). Taxi Replacement Program is under evaluation by the Mexico City Mobility Secretariat due to the impact of the pandemic (covid-19) on the income of taxi owners.
<b>Timeline</b>	Total 26,000 electric taxis by 2030.
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- Electric charging infrastructure network is limited.</li> <li>- Costs of electric vehicles are very high versus gasoline.</li> <li>- Lack of technical capacity for vehicle maintenance.</li> <li>- Taxi owners who are not subject to credits.</li> </ul>
<b>Included in Funding Proposal</b>	Yes, for the short term (2022-2023).

<b>ID</b>	9
<b>City</b>	Mazatlan
<b>Project owner (private or public)</b>	Government of the State of Sinaloa. Secretariat of Sustainable Development. Private vehicles owners. Public/Private.
<b>Degree of maturity</b>	The Government of Sinaloa has advanced analysis of the technological conversion of "pulmonia/pneumonia" vehicle with a battery exchange system (battery swap). A pilot of converted units has been developed by the government. There is great interest on the part of the State in implementing the process of renovating the "pulmonias". However, there are still not enough resources to make it feasible. The recharge mechanism has not yet been fully defined, but there is a preliminary idea of linking a private SWAP recharge system provider.
<b>Potential set-up</b>	Public Private Partnership with subsidies. Preliminary analysis suggests the following division:

	<ul style="list-style-type: none"> <li>- Up to 50% of the value of the technological conversion is granted by the government of Sinaloa.</li> <li>- 30% equity payment by operators.</li> <li>- 20% commercial bank financing.</li> </ul>
<b>Name of Project</b>	Taxis: Technological conversion of traditional formal transportation vehicles (taxi), known as "pulmonías/pneumonia".
<b>General summary of the project</b>	<p>Progressively technological conversion of conventional technology vehicles with electric system. Renewal potential of 600 units. Phase I: A total of 112 converted vehicles.</p>  <p>Source: photo "Pulmonías/pneumonias", Secretariat of Sustainable Development of the State of Sinaloa, 2021.</p>
<b>Timeline</b>	Total 112 converted vehicles by 2023.
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>-Innovation in the technological conversion for the "pulmonía/pneumonia" vehicle is new and there is no experience in its implementation.</li> <li>- Investment costs are high.</li> <li>-The owners of the "pulmonias" are small owners who are not subject to credit.</li> </ul>
<b>Included in Funding Proposal</b>	No.

## 4 Mixed

<b>ID</b>	10
<b>City</b>	Several cities
<b>Project owner (private or public)</b>	Kreditanstalt für Wiederaufbau (KfW) (State Development Bank of the Federal Republic of Germany - KfW). Public/Private.
<b>Degree of maturity</b>	<p>Phase I of this project has been developed in partnership with NAFIN in the states of Oaxaca, Jalisco and Mexico City. This program involves a counterpart of resources by these states that define the transportation segment they want to address.</p> <p>The KfW program (Phase I) has three components: loans to end users through financial intermediaries, non-refundable resources (scrappage bonus), and technical assistance. This program is currently in the design phase and is expected to begin operations in the second half of 2021. KfW and NAFIN are moving forward with a vehicle renewal program focused on SMEs in the states of Mexico City, Oaxaca and Jalisco, where a 15% bonus is granted for electric</p>



	<p>vehicles. KfW's support in the replacement programs is expected to increase the value of the scrappage bonus, which will contribute to lowering the differential costs of the technology and allow higher adoption rates for electric models.</p> <p>Phase II is a project idea.</p>
<b>Potential set-up</b>	Financing with resources obtained from the program (profitability of Phase I) and counterpart resources from the participating Mexican states for special credit lines at a preferential interest rate and private/public equity. This program includes a scrappage voucher.
<b>Name of Project</b>	Phase II: Vehicle renewal program with scrappage voucher.
<b>General summary of the project</b>	Phase II Vehicle Renewal Program, focused on Mexican cities and states that have scrappage programs for private operators that are not subject to credit, for taxi, light-duty and public transportation bus fleets.
<b>Timeline</b>	Number of vehicles per year and per segment (taxis, light-duty and public transportation buses) has not been defined.
<b>Barriers identified</b>	<ul style="list-style-type: none"> <li>- Electric charging infrastructure network is limited.</li> <li>- Costs of electric vehicles are very high versus gasoline.</li> <li>- Lack of technical capacity for vehicle maintenance.</li> <li>- Taxi/LCV/Bus owners who are not subject to credits.</li> </ul>
<b>Included in Funding Proposal</b>	No