



**GREEN
CLIMATE
FUND**

Meeting of the Board
17 – 20 October 2022
Incheon, Republic of Korea
Provisional agenda item 13

GCF/B.34/02/Add.05

29 September 2022

Consideration of funding proposals - Addendum V

Funding proposal package for FP195

Summary

This addendum contains the following seven parts:

- a) A funding proposal titled "E-Motion: E-Mobility and Low Carbon Transportation";
- b) No-objection letter issued by the national designated authority(ies) or focal point(s);
- c) Environmental and social report(s) disclosure;
- d) Secretariat's assessment;
- e) Independent Technical Advisory Panel's assessment;
- f) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
- g) Gender documentation.

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Funding Proposal

Project/Programme title:	E-Motion: E-Mobility and Low Carbon Transportation
Country(ies):	Panama, Paraguay and Uruguay
Accredited Entity:	Corporación Andina de Fomento (CAF)
Date of first submission:	2021/04/16
Date of current submission	2022/09/22
Version number	V9



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Note to Accredited Entities on the use of the funding proposal template

- Accredited Entities should provide summary information in the proposal with cross-reference to annexes such as feasibility studies, gender action plan, term sheet, etc.
- Accredited Entities should ensure that annexes provided are consistent with the details provided in the funding proposal. Updates to the funding proposal and/or annexes must be reflected in all relevant documents.
- The total number of pages for the funding proposal (excluding annexes) **should not exceed 60**. Proposals exceeding the prescribed length will not be assessed within the usual service standard time.
- The recommended font is Arial, size 11.
- Under the [GCF Information Disclosure Policy](#), project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Accredited Entities are asked to fill out information on disclosure in section G.4.

Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

“FP-[Accredited Entity Short Name]-[Country/Region]-[YYYY/MM/DD]”

List of Abbreviations and Acronyms

ACP	Panama Channel Authority
AFD	French Development Agency
AMA	Accreditation Master Agreement
AML	Anti-Money Laundering
ANDE	National Electricity Administration
APR	Annual Performance Report
ATTT	On road Transit and Transport Authority
ASI	Avoid-Shift-Improve
BAU	Business as Usual
BEB	Battery Electric Bus
BEV	Battery Electric Vehicle
BMF	German Federal Ministry of Finance
BMZ	German Federal Ministry for Economic Cooperation and Development
BN	Banco Nacional
BNF	Banco Nacional de Fomento
BNP	Banco Nacional de Panamá
BpfA	Beijing Declaration and Platform for Action
BROU	Banco República Uruguay
CA	Caja de Ahorro
CAF	Development Bank of Latin America
CAPEX	Capital Expenditure
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CETRAPAM	Metropolitan Area Passenger Transport Entrepreneurs Center
CFF	Cities Finance Facility
CIME	Electric Mobility Interinstitutional Committee (PA)
CNCC	National Climate Change Commission
DNCC	National Directorate of Climate Change
EASI	Electrify-Avoid-Shift-Improve
ENME	National Strategy for Electric Mobility (PA)
ESMF	Environmental and social management framework
ESMS	Environmental and social management systems
EV	Electric Vehicle
FA	Financial Assistance
FAA	Funded Activity Agreement
FDN	Fondo de Desarrollo Nacional
FIRR	Financial Internal Rate of Return
GAP	Gender Action Plan
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gases
GIEET	Interinstitutional Group for Energy Efficiency in Transportation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HEV	Hybrid Electric Vehicle
ICE	Internal Combustion Engine
IDB	Inter-American Development Bank
IDFC	the International Development Finance Club
IEA	International Energy Agency
ILO	International Labor Organization
IM	Intendencia Montevideo
KfW	Kreditanstalt für Wiederaufbau
LAC	Latin America and the Caribbean
LAIF	Latin America Investment Facility
LCV	Light Commercial Vehicle
MADES	Ministry of the Environment and Sustainable Development
MEF	Ministerio de Economía y Finanzas
MH	Ministerio de Hacienda
MIEM	Ministry of Energy and Mining



MoV	Means of Verifications
MRV	Measurement, Reporting, Verification
MTOP	Ministry of Transport and Public Works
MUPA	Municipality of Panama City
NDC	Nationally Determined Contribution
NMT	Non-motorised transportation
NUMP	National Urban Mobility Policy
OECD	Organisation for Economic Co-operation and Development
OPEX	Operational Expenditures
PA	Panama
PHEV	Plug-in Hybrid Electric Vehicles
PIMUS	Plan integral de movilidad urbana sustentable para el área metropolitana de Panamá
PMU	Program Management Unit
PNCC	National Climate Change Policy
PPP	Public-Private Partnership
PROPARCO	Société de Promotion et Participation à la Coopération économique
PT	Public Transport
PY	Paraguay
RFI	Rapid Financing Instrument
RFP	Request for Proposals
SC	Steering Committee
SCC	Social Cost of Carbon
SDG	Sustainable Development Goals
SNE	National Secretary of Energy (PA)
SPV	Special Purpose Vehicle
TA	Technical Assistance
TC	Technical Cooperation
TCO	Total Cost of Ownership
TTL	Task Team Leader
TTW	Tank to Wheel
UTE	National Administration of Power Plants and Electrical Transmissions (Spanish: Administración Nacional de Usinas y Trasmisiones Eléctricas)
UY	Uruguay
VMT	Vice Minister of Transport (PY)
VMME	Vice Ministry of Mining and Energy (PY)
WACC	Weighted Average Capital Cost
WHO	World Health Organization
WTT	Well to Tank
WTW	Well to Wheel

A. PROJECT/PROGRAMME SUMMARY				
A.1. Project or programme	Programme	A.2. Public or private sector	Public	
A.3. Request for Proposals (RFP)	<p>If the funding proposal is being submitted in response to a specific GCF Request for Proposals, indicate which RFP it is targeted for. Please note that there is a separate template for the Simplified Approval Process and REDD+.</p> <p><u>Not applicable</u></p>			
A.4. Result area(s)	<p>Check the applicable GCF result area(s) that the <u>overall</u> proposed project/programme targets below. For each checked result area(s), indicate the estimated percentage of GCF and Co-financers' contribution devoted to it. The total of the percentages when summed should be 100% for GCF and Co-financers' contribution respectively.</p>			
		GCF contribution	Co-financers' contribution¹	
	Mitigation total	<u>Enter number</u> %	<u>Enter number</u> %	
	<input type="checkbox"/> Energy generation and access	<u>Enter number</u> %	<u>Enter number</u> %	
	<input checked="" type="checkbox"/> Low-emission transport	100 %	100 %	
	<input type="checkbox"/> Buildings, cities, industries and appliances	<u>Enter number</u> %	<u>Enter number</u> %	
	<input type="checkbox"/> Forestry and land use	<u>Enter number</u> %	<u>Enter number</u> %	
	Adaptation total	<u>Enter number</u> %	<u>Enter number</u> %	
	<input type="checkbox"/> Most vulnerable people and communities	<u>Enter number</u> %	<u>Enter number</u> %	
	<input type="checkbox"/> Health and well-being, and food and water security	<u>Enter number</u> %	<u>Enter number</u> %	
<input type="checkbox"/> Infrastructure and built environment	<u>Enter number</u> %	<u>Enter number</u> %		
<input type="checkbox"/> Ecosystems and ecosystem services	<u>Enter number</u> %	<u>Enter number</u> %		
A.5. Expected mitigation outcome <i>(Core indicator 1: GHG emissions reduced, avoided or removed / sequestered)</i>	Total: 3.3 MtCO ₂ e	A.6. Expected adaptation outcome <i>(Core indicator 2: direct and indirect beneficiaries reached)</i>	Indicate total number of direct and indirect beneficiaries	
			Indicate number of direct beneficiaries	Indicate number of indirect beneficiaries
			Indicate % of direct beneficiaries vis-à-vis total population	Indicate % of indirect beneficiaries vis-à-vis total population
A.7. Total financing (GCF + co-finance²)	231,032,800 USD	A.9. Project size	Medium (Upto USD 250 million)	
A.8. Total GCF funding requested	76,616,550 USD <i>For multi-country proposals, please fill out annex 17.</i>			

¹ Co-financer's contribution means the financial resources required, whether Public Finance or Private Finance, in addition to the GCF contribution (i.e. GCF financial resources requested by the Accredited Entity) to implement the project or programme described in the funding proposal.

² Refer to the Policy of Co-financing of the GCF.

<p>A.10. Financial instrument(s) requested for the GCF funding</p>	<p><i>Mark all that apply and provide total amounts. The sum of all total amounts should be consistent with A.8.</i></p> <p> <input checked="" type="checkbox"/> Grant 9,821,100 <input type="checkbox"/> Equity <u>Enter number</u> <input checked="" type="checkbox"/> Loan 66,795,450 <input type="checkbox"/> Results-based payment <u>Enter number</u> <input type="checkbox"/> Guarantee <u>Enter number</u> </p>		
<p>A.11. Implementation period</p>	<p>5 years</p>	<p>A.12. Total lifespan</p>	<p>25 years</p>
<p>A.13. Expected date of AE internal approval</p>	<p>12/9/2022</p>	<p>A.14. ESS category</p>	<p>B</p>
<p>A.15. Has this FP been submitted as a CN before?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>A.16. Has Readiness or PPF support been used to prepare this FP?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p>A.17. Is this FP included in the entity work programme?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>A.18. Is this FP included in the country programme?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>A.19. Complementarity and coherence</p>	<p><i>Does the project/programme complement other climate finance funding (e.g. GEF, AF, CIF, etc.)? If yes, please elaborate in section B.1.</i></p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>		
<p>A.20. Executing Entity information</p>	<ul style="list-style-type: none"> ▪ Corporación Andina de Fomento (CAF) – is a multilateral development bank created in 1970, and owned by 20 countries, 18 of which are in Latin America, and the Caribbean, Spain and Portugal, as well as 13 private banks in the region. CAF promotes a sustainable development model through credit operations, non-reimbursable resources, and support in the technical and financial structuring of sub-projects in the public and private sectors of Latin America. CAF is both the accredited entity and the implementing entity. ▪ Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). GIZ is the German Agency for International Cooperation. It is a public-benefit federal enterprise. GIZ's sole shareholder is the Federal Republic of Germany, represented in Germany by the Federal Ministry for Economic Cooperation and Development (BMZ) and the Federal Ministry of Finance (BMF). GIZ is headquartered in Bonn and Eschborn but operates from about 120 countries around the globe. 70% of its 20,000 employees are national staff. 		
<p>A.21. Executive summary (max. 750 words, approximately 1.5 pages)</p>			
<p>The E-Mobility and Low Carbon Transportation Program (hereinafter referred-to as E-Motion or Program) aims to enable a large-scale regional transition towards electro-mobility in Latin America focusing on intensive use vehicles leading to reduced fossil fuel consumption, greenhouse gas emissions and air pollutions. E-Motion will be implemented through two Funding Proposals: one by AFD (Sub-Program 1) as an Accredited Entity to cover 8 countries in Latin America, and one by CAF (Sub-Program 2) to cover the following 3 countries: Panama (PA), Paraguay (PY) and Uruguay (UY). See Figure 15 on the Partnership model of E-Motion.</p> <p>Climate Context Transport contributes almost one-quarter of the current global energy-related greenhouse gas (GHG) emissions and is growing faster than any other energy end-use sector. Latin America already accounts for 10% of global GHG emissions</p>			

as of today and transportation related GHG emissions from many countries in Latin America represent even a higher proportion than global average. Limiting the global temperature increase to below 2 degrees Celsius requires changing this transport emissions trajectory, which involves the development of an integrated electromobility ecosystem encompassing various transport modes, coupled with the low-carbon production of electricity and hydrogen (Paris Declaration on Electro-Mobility and Climate Change & Call to Action, 2015). To achieve this goal International Energy Agency (IEA) modelling says electric vehicles (EVs) need to represent 35% of global sales in 2030. Latin America has strong enabling conditions in terms of clean transport and e-mobility. The region has one of the cleanest electricity generation portfolios in the world (high hydroelectric production and growing deployment of wind and solar power plants). For the countries of the E-Motion Sub-Program 2, i.e., Panama, Paraguay and Uruguay, the electrification of transport modes can reduce GHG emissions on a well-to-wheel (cradle-to-grave) base by 80-100% (50-90%) compared to fossil units due the respective low grid emission factors.

Avoid-Shift-Improve (ASI) has been a long-standing framework for classifying mitigation interventions in the transport sector. A new dimension needs to be added to this framework: EASI: Electrify-Avoid-Shift-Improve. Electrification is a game-changer especially in emerging countries and a *must* if carbon neutrality shall be achieved. No shift and no improve measures alone will be capable to reach carbon neutrality in the transport sector. Electrification coupled with a fossil-free grid creates this opportunity. Not surprisingly do carbon neutrality plans involve a fully electrified vehicle fleet and some Latin American countries have developed national strategies and regulatory frameworks to go toward this direction (including tax incentives, EV targets for some segments, public transport concession with especial incentives for electric buses, among others. Sub-program 2 countries have currently their own electromobility strategies, but they still need financial assistance (FA) from external sources as they are developing countries.

Electrification of public transport (PT) buses is an important component to modernize and upgrade the public transport system of countries. This results in new and attractive buses which incentivize passengers to use public transportation. Public transport systems are modernized through establishing new business models, which increase the financial stability and economic efficiency of public transport operators and systems, e.g., through separation of bus ownership and bus operations and the introduction of new investors with strong financial background to the sector. This shift of business models incited by e-mobility and thus E-motion will also promote, can be clearly observed in Chile and in Colombia where in both cases large capital investors have entered the market (electric utilities, private capital funds and bus manufacturers) which results in public transport operations being financially more solid (in both countries bankruptcy of traditional bus operators has been a major problem), more efficient and with better and lower cost access to capital. This results in e-mobility being a game-changer not only in terms of fostering low-emissions vehicles but also in modernization of the public transportation system increasing its attractiveness and thereby resulting in an important mode-shift towards public transport compared to a business-as-usual situation. Private and public national banks will be co-financier of many sub-projects of the E-motion, indeed, national banks and some private banks were interviewed and stated that they are willing to participate in E-motion as a financial executing entity by developing products to promote e-bus sub-projects or enabling credit lines to finance e-LCVs. Some of the entities were Caja de Ahorro, Banco General and Banco Nacional (PA), Banco Nacional de Fomento (PY), Banco de la República de Uruguay (UY). Therefore, to ensure an active participation of national development banks in the Program and allow them to gain experience and de-risk the sector, the Program will propose technical assistance and financial assistance- which are key to ensure that the credit line proposed by these banks are disbursed.

The Program and Sub-Program activities will also improve the grid resilience and the resilience of urban infrastructure. Used batteries from EVs have a second-life application where they can serve as storage units and thereby (i) increase the resilience and independence of the grid at critical spots such as hospitals or schools; (ii) increase the grid resilience and reduce costs of renewable grids by increasing storage capacity capable of taking up electricity during times of over-supply; (iii) act as peak shavers in urban settings.

Social and Environmental Context

In Latin America, levels of urbanization and motor vehicle use are higher than in most other developing regions throughout the world. Almost 75% of residents live in urban areas. Residents of urban areas experience greater exposure to air pollution, as in particular motor vehicles still emit harmful pollutants. As a result, air pollution is a large problem in most Latin American cities with levels affecting seriously human health. According to several studies, air pollution has significantly increased in cities within Latin America and the Caribbean (LAC) due to the rapid increase in urban population, higher traffic and vehicle use, and industrialized zones. Latest data from the WHO indicate that in 2016 almost 700 people in Panama, over 1,300 people in Paraguay and almost 1000 people in Uruguay died as a result of excessive exposure to fine particulate matter³.

³ See: <https://www.who.int/data/gho/data/indicators/indicator-details/GHO/ambient-air-pollution-attributable-deaths>

In LAC, approximately 100 million people are exposed to poor air quality, exceeding WHO guidelines. Despite poor information on air quality provided by environmental authorities, making it difficult to take action for critical air pollution episodes, it is evident that all large cities in Latin America show annual particular matter that exceed the World Health Organization Air Quality Guidelines⁴. Among the most polluted cities in LAC are Santiago, Lima, Mexico City, or Medellín. Such Metropolises have experienced dramatic growth in the last two decades of the previous century (1980 to 2000) forcing governments to implement a poorly organized mass transport system, however, some of them have taken the lead in electromobility adoption for public transport already: Mexico City with the renewal of its trolleybus system as well as the e-buses introduction on its BRT; Chile has more than 800 eBuses through PPP and Medellín has financed with Municipal funding 64 eBuses.

This development and condition with environmental and social pressure on local ecosystems, can get even worse. In particular further migration from rural to urban areas will increase the population density in the areas and the demand for more public services, such as transportation, clean water, waste management. This will under business-as-usual condition go hand in hand with an increase in further pollution of regional eco system and natural resources. This is due to poor public policy in relation with clean air / sustainability, transition to clean energy, and low-carbon transportation in most countries in Latin America.

The COVID-19 pandemic has created an unprecedented challenge for many Latin American countries, from the health and economic perspectives, but it is also opening new opportunities for an accelerated sustainable transformation of its energy, transport, and urban landscapes while contributing to economic recovery. A recent report prepared by the International Labor Organization (ILO) shows that fostering of electric mobility can have a significant positive job impact (ILO, 2020).

Additionally, the pandemic has hit Latin American women's employment very hard: according to the UN Economic Commission for Latin America and the Caribbean (ECLAC) the unemployment rate for women in the region is currently 12%. Many of them have been pushed out of the market. But that figure rises to 22.2% if we assume the same level of labour participation for women as in 2019, which makes more sense considering that they have also been pushed out of the economically active population: forced to fully commit to care activities, they plainly aren't seeking for new jobs. But they'll need to return and after the long pause, less jobs will be available, especially for women as it has always been after economic crises. Taking also into account that the transportation sector is traditionally very masculinized, the project also represents an opportunity to shorten the gender gaps related with job segregation.

As well, it has the chance of reducing or broadening (whether gender issues are taken or not into account) the current disparities in access and use of transportation means by women, children, the elderly, people with disabilities and other vulnerable collectives.

Transport Context

Most of the transport sector was deregulated in the region for more than 3 decades until the beginning of the 21st century. Apart from some metro systems in a few capital cities, most of the public transport (buses and taxis) and urban cargo, suffered of atomization, lack of quality service, road insecurity, poor labour conditions, pollution, and congestion, driven by a poor management and control of the operations and almost no attention from the public sector. Major changes in transport in Latin America are slow and only occur when technological triggers allow them to set up the business environment to make this possible. It is important to bear in mind that the transport sector represents a big share of the daily trips (around 30% in most cities⁵, mostly captive), and in the case of urban logistics the sector is one of the main sources of employment, sadly informal in most cases.

Business models in transport in LAC had a major change with the appearance of BRT. Behind its advantages on operation and service driven by a new technology, the BRT system introduced a new conception based on better accessibility, quality and economical sustainability for all stakeholders given the opportunity to formalize part of the sector. However, the implementation of this type of systems is not possible for all contexts and all cities, thus mobility served by public buses is still the main mode in the region. Public transport is one of the pillars on the ASI framework in Latin America given the socioeconomically conditions of this part of the world, but in almost all cities the demand numbers have been decreasing against other modes specially motorcycles, adding more pressure and negative externalities to sustainable transport. This situation has worsened by the pandemic context that is putting at stake almost every transport system in Latin America. Electrification in transport represent an opportunity to re-think/re-plan urban mobility needs based on the pyramid of sustainable urban mobility concept, that allows multiple choices for transport in effective and efficient, encourage modal shift from private transport means. Thus, modern and improved

⁴ See: <https://www.sciencedirect.com/science/article/abs/pii/S1462901120305542>

⁵ Urban Mobility Observatory (OMU – CAF)

https://www.caf.com/app_omu/#graphic?i0=superf_area_metropol_km2_urban&i5=num_vehic_micro_bus&i2=viajes_hab_dia_colectivo&i3=tiempo_hs_hab_dia

public transport system, including new and cleaner technologies, improved comfort and quality service will lead to modal shift, strengthened by comprehensive public policy that will be supported by TA component. PA, PY and UY have stated that energy transition in transport sector, at urban level, will require a group of mechanism that restrict private car use, give more vial space to public transport, improve social awareness about decreasing GHG emissions in this sector and how electromobility can contribute on this effort. For this purpose, local stakeholders need to be included in the process, where E-motion TA component would have a key role. E-Motion represents the opportunity to transform Public Transport, urban logistics and in general mobility for most of the countries in the region through new business models that can give better economic sustainability in the long run.

Intervention Strategy

The Program's goal is to response on the current environmental and climate challenges in Latin American cities by accelerating EV deployment through a change of paradigm under a holistic approach. This will involve country specific financial and TA components. The underlying objective is to transit to a cleaner, better-organized, efficient, equitable, comfortable, secure, sustainable and affordable mass transport systems, using EV as the spearhead to promote this sustainable change. Ideally the Program should induce demand into better-organized, cleaner, efficient and affordable EV-based public mass transport, which in turn will translate into considering cleaner mobility for individual journeys (e-Taxis, e-Bikes, etc). Indirectly, the Program could have positive externalities by fostering an adequate environment for other transport sub-sectors to join sustainable electric mobility, particularly individual vehicle owners and commercial fleets. The Program will share results about technical and economic benefits and comprise the dissemination activities to different stakeholders.

The Program will implement interventions to kick-start EV mass deployment significantly earlier than under a BAU scenario by reducing the risk profile of investments and by comprehensive technical assistance. The key strategic value of the Program is that it functions as a market accelerator enabling a far faster uptake of e-mobility than under a BAU scenario avoiding a lock-in of long-lived assets in fossil technology. The Program fills the gap between initial pilots and long-term targets by addressing comprehensively TA and FA. These interventions are made in a time where e-mobility is commercially not yet viable and thus require initial investment support-like is the case in all countries which have a significant uptake of e-mobility. From pilot phase in PA, PY, UY, technical concepts have been tested positively and these in-developing countries need to move forward to big scale adoption through financial assistance (concessional loans) and thus, overcome on of the main barrier/gap which is the EV CAPEX. In parallel, TA component has been outlined (regulations, incentives, capacity buildings) to enable the countries' long-term targets. PA, PY and UY are in-developing countries and for that, they need and look for international funding sources such GCF, as they don't have enough resources to provide concessional condition for invest. GCF and E-motion have had excellent receptivity from the subprogram 2 countries and their main authorities, as it represents an FA that is aligned to start the energy transition in the transport sector at an early stage and not only when prices reach parity between diesel and electric. This is the added value that E-motion represents to PA, PY and UY.

The electrification of public transport is coupled with innovative business models, which will modernize the sector making it financially more stable and more efficient. The attractiveness of the public transport system is increased with improved services and new, clean buses. This can reverse the trend of decreasing mode shares of public transport and result in a sustainable urban transport system. TA component from E-motion will support public role to strength clean urban planning mobility based on the pyramid of sustainable urban mobility concept which stablish a framework to prioritize active mobility first, public transport second, urban logistic third and private mobility at last. Cities like London has had 10% of drops ins trips made by private car⁶ through Ultra low emission zones and congestion charge. This type of initiatives also has been pushed by Singapore, Milan and Stockholm. Cities like Sevilla and Oslo have worked in making parking difficult or expensive. Disincentive in private transport modes must come with efficient, affordable and cleaner mobility alternatives like electric buses, as new potential drivers can change their mobility choices if they have efficient and cleaner alternatives⁷. E-motion will work on both challenges by its TA and FA component.

The Program focuses on electric commercial vehicles with high intensive use i.e., buses, light commercial vehicles fleets, public fleets and urban freight vehicles together with the required charging infrastructure and grid upgrades. No private usage vehicles are financed. The main investment area is on electric buses. Investments are linked with new business models and service delivery structures which enhance the attractiveness and sustainability of the public transport sector and thereby is an important component to ensure that current public transport ridership levels are sustained or even increased and the gender – and other socially-constructed – disparities in its workforce and ridership reduced or even eliminated through the implementation of new business models, such as ownership splitting, that may transform the transport sector (incl. green routes or green services concessions models, with only 100% BEB). The Program aims to become an important contribution towards mode shift, as it has been described in the previous text.

⁶ https://www.c40knowledgehub.org/s/article/How-to-drive-a-modal-shift-from-private-vehicle-use-to-public-transport-walking-and-cycling?language=en_US

⁷ <https://blogs.worldbank.org/transport/are-hybrid-and-electric-buses-viable-just-yet>

Country Conditions and Ownership

Latin America has strong enabled conditions in terms of clean transport and e-mobility. The region has one of the cleanest electricity generation portfolios in the world due to a high share of renewable, incl. large hydro power plants; the average grid emission factor of the Program countries of this funding proposal (Uruguay, Paraguay and Panama) amount to between 0 and 0.23 tCO₂/MWh⁸. The adoption of an e-mobility strategy would allow the countries to move towards a decarbonisation pathway.

The main motivating forces to foster e-mobility in the countries included in the Program are (i) reduce GHG emissions; (ii) improve air quality and reduce health problems associated with air pollution; (iii) reduce dependency on imported fossil fuels and exposure to external price shocks; (iv) achieve positive economic impacts related to reduced health costs, reduced fuel import bill and job equitable creation; (v) contribute to unveiling and satisfying the very different needs that workers and caretakers face regarding urban transportation; (vi) promote local industries and suppliers in the EV value chain; (vii) introduce innovative business models to modernize mass transport systems; and (viii) set the basis to facilitate a holistic change in urban clean mass mobility.

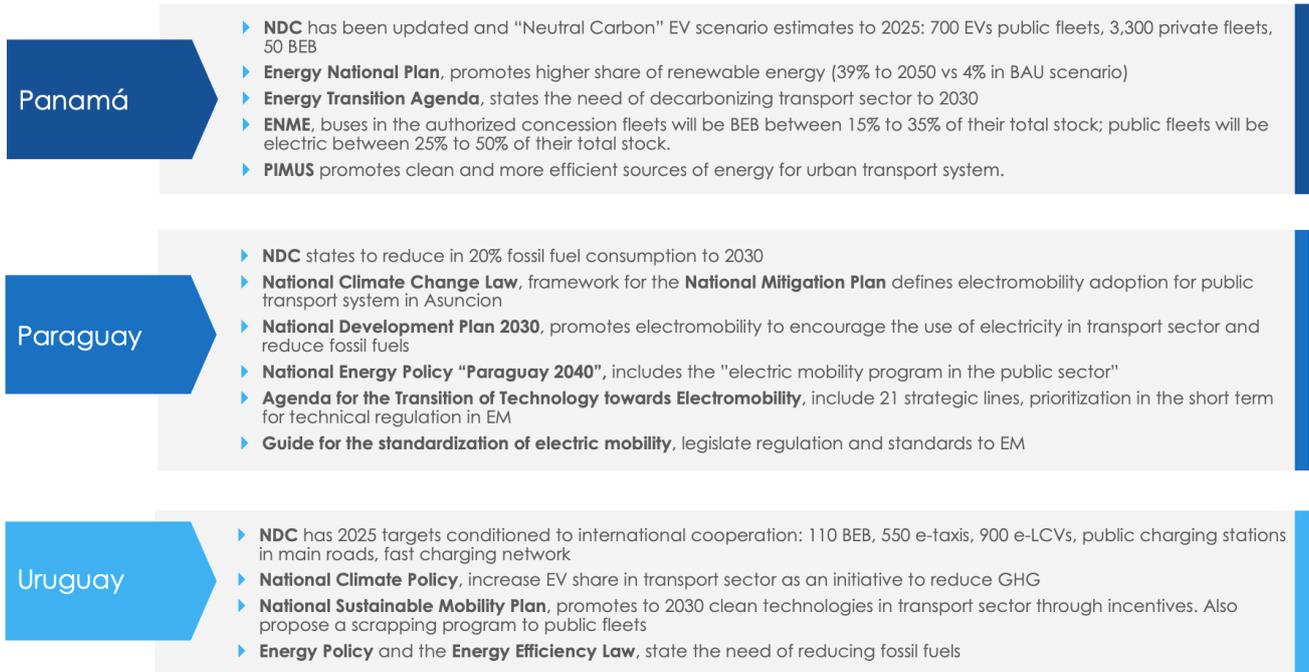
The updated Nationally Determined Contributions (NDCs) of Sub-Program 2 countries all include measures to reduce transport emissions. The majority of countries have included in the NDCs electric mobility as a core mitigation measure to reduce transport emissions and have formulated concrete electrification targets through regulations, policies or EV roadmaps. In Panamá, the National Strategy for Electric Mobility (ENME) was approved in 2019, promoting four objectives until 2030: 10-20% of the total fleet of private vehicles will be electric; 25-40% of private vehicle sales will be electric vehicle sales; 15-35% of the buses in the authorized concession fleets will be electric; 25-50% of the public fleets will be made up of electric vehicles. Panamá's updated NDC (2020) focuses mainly on mitigating emissions from the land use change sector and the energy sector, of which transportation accounts for about half of the sector's emissions and represents the biggest challenge. Paraguay's NDC aims to reduce 20% of the fossil fuel consumption by 2030, compared to the projected baseline (with respect to the BAU scenario to the year 2030). Unilaterally, the country aims to reduce 10% of projected emissions by 2030. Additionally, a conditional goal of 10% reduction in emissions projected by 2030 depends on international cooperation. The first NDC of Uruguay sets specific goals for E-motion categories towards 2025: e-Buses (110 units), and electric light commercial vehicles (LCVs) (900 units), a network of electric vehicle charging stations throughout the main roads across Uruguay (52% completed in 2020), and a fast-charging network (no progress yet). However, these goals are part of a scenario conditioned to additional means of implementation (i.e. access to international financing). E-motion's TA will contribute to define complementary roadmaps. Despite of having "national EV strategies" or Energy transition framework (see figure 1 in FP), in the three countries is still needed to complement with more specific roadmap for eBus adoption, public fleets, charging infrastructure, in order to determine initiatives and actions to be taken, stakeholders and roles, resources and deadlines.

Political support, governance and law enforcement

An utmost success factor for the implementation of national strategies and achieving countries' NDC targets is political support to induce organizational and/or regulatory changes in the status quo of mass transport systems that will generate uncomfortable disruption at several levels, particularly to incumbent transport operations. Political establishment must be firm, forward looking, institutionally sound and credible to enact and enforce regulatory changes in favour of the public health and tackle climate change. The Sub-Program 2 will support and enhance through its TA component the political governance and regulatory enforcement in the countries to ensure long-term sustainability and transformation in the transport sector. Panamá, Paraguay and Uruguay have a good starting point to allocate GCF FA and TA to kick start EV adoption. Local authorities are working in electromobility aligned with their respective policy framework (see Figure 1), it is stated the need of incentives (direct/indirect) that should be allocated in the short-medium term to achieve 2030 EV goals, thus the need to find resources like GCF. This represents a good level of readiness to provide funds and accelerate electromobility, which is why **E-motion's value proposition was so attractive to the public and private stakeholders interviewed**: 19 entities in PA, 14 entities in PY and 22 entities UY.

⁸ Combined Grid Emission Factor by IFI Technical Working Group on GHG Accounting/UNFCCC (2021): Uruguay: 0.065 tCO₂/MWh_{el}; Panamá: 0.23 tCO₂/MWh_{el}; Paraguay: 0.00 tCO₂/MWh_{el}; See Annex 2

Figure 1 Summary of policy framework where E-motion will take place in Sub-program 2 countries.



Barriers to EV Deployment

Main barriers to EV deployment are (i) 2-3x higher Capital Expenditure (CAPEX) of EVs resulting in higher capital requirements, higher finance and insurance costs and higher risk exposure due to higher debt levels; (ii) EVs are financially unprofitable in developing countries with long payback times. The incremental CAPEX of e-buses attracts additional finance costs compared to conventional units. The Program tackles this barrier by providing **concessional loans** which reduce the finance costs and **technical assistance** which promote new business models with lower costs and risks for public transport (PT) operators and through an optimal e-bus system design which reduces costs and operational risks. Other "second level" barriers are: (iii) governance structures and business models not conducive to EV deployment, especially in the public transport sector; (iv) limited know-how on optimal EV ecosystem design, maintenance & operations; (v) EV targets have been established but concrete and tangible support policies which are conducive to EV uptake are still missing.

The Program tackles these barriers and offers a comprehensive e-mobility package including financial and technical assistance thereby improving the policy framework and the ecosystem and removing barriers which allows to kick-start mass deployment of EVs. **E-motion seeks to avoid urban fleet renewal through combustion technologies and thus, delay electromobility adoption in 8-10 years more.** The barriers of lack of financial profitability and high risks are overcome through concessional loans and TA which assists cities in designing optimal e-bus systems, which has a knowledge exchange platform and allows to learn from experiences of other cities in Latin America, and through training and capacity building of staff. The policy and regulatory work done with TA is also critical to increase profitability of e-bus investments e.g., through establishing concession contract lengths in line with the (longer) lifespan of e-buses or through tender documents which favour the participation of e-buses based on their positive environmental and health impact.

Business Models

Two components stand out that can improve in a decisive manner the attractiveness and commercial viability of commercial e-bus sub-projects: (i) bulk purchase –that will be tackled through the TA-, and (ii) separation of asset ownership and operations/management. Bulk purchase is important not only due to significant price discounts but also as this allows to optimize the e-mobility system in terms of charging infrastructure and bus types allowing e.g. to use fast-charged buses with common usage of chargers (up to 12 buses per charger). Separation of asset ownership & management is critical due to high investment costs of buses which require strong financial players with access to cheap long-term finance. Private bus operators typically have a weak balance sheet and are financially not preferred clients of FIs. Business models with asset separation have been successfully implemented in Chile with e-buses involving initially electric utilities and also bus manufacturers as well as private investment companies. To thrive such business models also need the regulatory framework defining payment schemes, procedures in case of bankruptcies of parties, clear long-term concession contracts etc. Separation of ownership and management can be done with public led delivery systems (public asset companies) or with private led delivery vehicles (special purpose vehicles within a private public partnership PPP). **This needs to be adjusted and structured per country based on national and**

even local requirements, priorities and conditions. It is also essential to work on standardized bidding documents to acquire EVs in order to strengthen the ability to replicate this business model in Latin American cities. One of the main features of the Program will thus be to design, establish and implement such business models which can work as delivery vehicles for widespread commercial replication of e-buses (through the TA component). eBus in PA are two in the pilot with BYD; PY has just 2 two BEB in commercial phase. UY has 32 with the investment gap subsidy provided for the government. It's too optimistic to consider that pilot phase has been overcome however, thanks to these BEBs running in pilot phase (PA, PY) and commercial conditions (UY), data and TCO are now more accurate, and the remaining barrier still is the high upfront costs and lack of financial profitability. Bulk purchase also has great potential for eLCVs and e-public fleets

Program Components

The Program and its Sub-Program 2 have a comprehensive approach to establish an e-mobility conducive ecosystem at the local, national, and regional level, including activities such as targeted policy advice, business model development, stakeholder management, and capacity building (all of which gender mainstreamed) to ensure a favourable e-mobility environment combined with financial instruments to ensure deployment of large-scale fleets thereby de-risking future investments into e-mobility of investors. The Program can significantly reduce investment risks through the investment interventions combined with the implementation of business models and a policy framework conducive to EV deployment.

For each country a market assessment (see Annex 2 for Uruguay, Paraguay and Panama) has been performed analysing (i) the current financial viability per vehicle sub-sector in terms of total cost of ownership, profitability, payback period, cash-flow and debt structure; (ii) required financial instruments and support structures to overcome viability barriers; (iii) market readiness of EVs related to the countries current and projected cost structure. Interventions are designed to accelerate market readiness and to foster widespread commercial deployment of EVs without further financial assistance. Therefore, interventions in each country are targeted to vehicle segments where (i) existing conditions are favourable for EVs (in terms of policies, energy prices, interest of investors); (ii) targeted financial and technical support can make a decisive change and (iii) national market conditions would allow by the end of the Program a sustained uptake of EVs based on commercial conditions.

The Sub-Program 2 of the E-Motion Program is implemented in Uruguay, Paraguay and Panama and has the following components:

- **Component 1:** Establishment of an e-mobility conducive ecosystem by providing Technical Assistance to create a policy and business framework conducive for massive deployment of EVs on a local (project design, business model design and development, city EV policies, training etc.), national (sectoral electrification roadmaps, stakeholder coordination, support of national enabling policies for EV deployment, advice on battery re-usage, recycling and disposal) and a regional level (capacity building, knowledge materials, outreach and dissemination, program monitoring).
- **Component 2:** Deployment of large-scale e-bus fleets (major investment component) coupled, when possible, with innovative business models for e-bus fleets based on a separation of asset ownership and operations modernizing and increasing the attractiveness of the public transport sector whilst also making it financially more efficient and sustainable.
- **Component 3:** Deployment of electric light commercial vehicles (public⁹ and private).
- **Component 4:** Deployment of large-scale fast-charging and gender aware infrastructure for the countries.
- **Project management:** Establishing a Program Management Unit (PMU) for project implementation and impact monitoring.

The Program has a comprehensive and ambitious Gender Action Plan (GAP) targeting to improve gender equality and reduce sexual harassment in public transport.

Sub-Program 2 Outcomes

The Sub-Program 2 supports a paradigm change to low-emission transportation systems in the target countries Panamá, Paraguay and Uruguay. The Sub-Program shall help to overcome barriers identified to kick-start the mass deployment of commercial EVs. Long-term outcomes to be achieved are (i) GHG reduction: EVs have significantly lower lifecycle GHG emissions than fossil units in all countries included in the Program and mode shift triggered through program investments and technical assistance from modes with high levels of carbon emissions per passenger-km (private vehicles) to low carbon transport modes (public transport); (ii) improved air quality; (iii) reduced fossil fuel import dependency; (iv) improved fuel economy: EVs are up to 3-4x more energy efficient than fossil vehicles.

⁹ Component 3 is for both, public and private fleets in light commercial or light passenger vehicles. Just to be clear, public e-fleets is not for providing public transport systems (eBuses which is component 2), is for operation of many public entities within the countries that also needs to decarbonize their mobility operations.

The Sub-Program 2 key figures are:

- Total investment **USD 231 MM**
- GCF investment **USD 76.6 MM (33%)** of which **USD 66.8 MM (29%) loans** and **USD 9.8 MM (4%) grants** (technical assistance)
- **Co-finance ratio 67%**
- Mitigation impact over lifetime of assets **3.3 MtCO_{2e}** directly of investment sub-projects
- GCF cost of intervention of investment sub-projects **23 USD /tCO_{2e}** for direct emission reductions
- Energy savings: **31,400 TJ** energy directly saved

Program Pipeline

The E-Motion Sub-Program 2 envisages to finance at least one project in each participating country. The initial project pipeline includes **14 sub-projects (6 in Panama, 4 in Paraguay and 4 in Uruguay, see Annex 2)**. The Program will finance directly individual sub-projects and will work also through financial intermediaries which provide loans to purchasers of commercial EVs (commercial or public use). Delivery models show that financial assistance will be mainly channelled through Special Purpose Vehicles (public, mixed or private led), or through financial intermediaries and electric utilities. The anticipated implementation arrangements, including the selection criteria that financial intermediaries will use to deploy the finance to public and private companies and disbursements process of resources, are described in the section B.3 (Delivery channels and new business models) and B.4 (Implementation Arrangements).

B. PROJECT/PROGRAMME INFORMATION

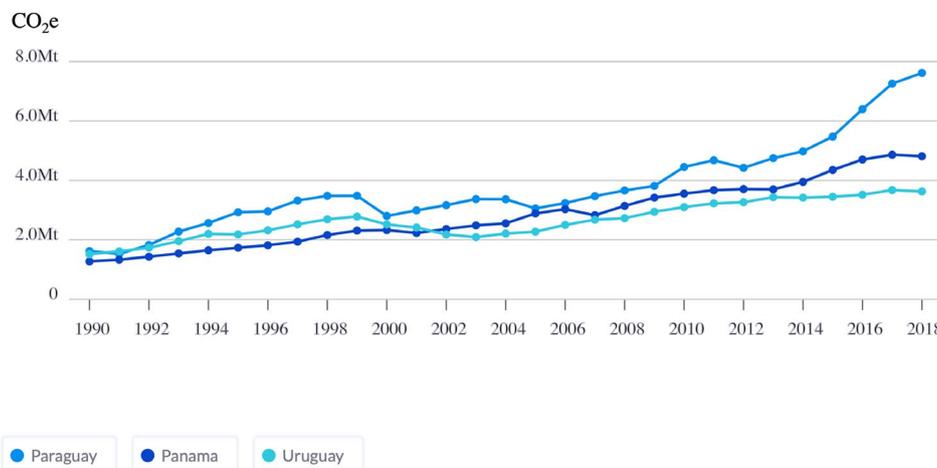
B.1. Climate context (max. 1000 words, approximately 2 pages)

Climate Change Problem and the Relevance of Electric Mobility

Latin America already accounts for 10% of global GHG emissions as of today. Overall, the transport sector in Panama, Paraguay, and Uruguay account for 47%¹⁰, 90%¹¹, and 57%¹², respectively, of the countries' total CO₂ emissions. For comparison, globally transportation is responsible for 24% of direct CO₂ emissions from fuel combustion in 2019^{13,14} and transportation in countries of the European Union (EU27) accounts for about 28% of total CO₂ emissions on average. The climate impact of the transport sector in the program countries is expected to increase even further in coming years. According to data from Climate Watch, the sector contributes already to about one-third of the current energy-related GHG emissions in LAC. In Panama, Paraguay and Uruguay, emissions from transportation are even higher and increasing faster than any other energy end-use sector. In 2018, the transport sector in the three countries jointly emitted 16.1 million tCO₂e, which is above 50% of all energy related GHG emissions in each country (in Paraguay even above 75%) and¹⁵ sub-program 2 directly would be able to mitigate about 5% of this total. From Figure 2, in the period 1990-2018 Panama has the greatest CO₂e emission increase with 3,4x the 1990's PA levels; Paraguay had 1,7x and Uruguay 1,2x of increase compared with 1990's respective levels.

In addition, NDCs for Panama and Uruguay are explicit in EV adoption, where E-motion would contribute with 150 and 200 eBuses compared with 50 and 110 eBuses for NDC targets, respectively. In the case of electric public fleets, NDC in Panama targets to 700 EVs and E-motion would contribute with 400 EVs. Finally, in the case of eLCVs, NDC in Uruguay targets to 900 EVs and E-motion would contribute with 100 EVs.

Figure 2: Development of GHG emission from transportation in Panamá, Paraguay and Uruguay



Source: Climate Watch, 2021

Current transport demand per capita in developing and emerging economies is far lower than in Organisation for Economic Co-operation and Development (OECD) countries but is expected to increase at a much faster rate in the next decades due to rising incomes and development of infrastructure¹⁶. GHG emissions from transport are anticipated to rise from today's levels by nearly 20% by 2030 and close to 50% by year 2050 unless major action is undertaken. Limiting the global temperature increase to below 2 degrees Celsius requires changing this transport emissions

¹⁰ Climate Watch, Historical Emission, 2021: <https://www.climatewatchdata.org/ghg-emissions>

¹¹ Climate Watch, Historical Emission, 2021: <https://www.climatewatchdata.org/ghg-emissions>

¹² National Communication, 2019:

<https://unfccc.int/sites/default/files/resource/20191231%20URUGUAY%20NC5%20EX%20SUM%20ENG.pdf>

¹³ IEA, Tracking Transport, 2020: <https://www.iea.org/reports/tracking-transport-2020>

¹⁴ According to IEA, 2021, emission has drop in 2020: "A common theme across all economies is the scale of the impact of the pandemic and lockdown measures on transport activity. The decline in CO₂ emissions from oil use in the transport sector accounted for well over 50% of the total global drop in CO₂ emissions in 2020, with restrictions on movement at local and international levels". <https://www.iea.org/articles/global-energy-review-co2-emissions-in-2020>

¹⁵ Climate Watch, Historical Emission, 2021: <https://www.climatewatchdata.org/ghg-emissions>

¹⁶ https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter8.pdf

trajectory, which involves the development of an integrated electromobility ecosystem encompassing various transport modes, coupled with the low-carbon production of electricity (Paris Declaration on Electro-Mobility and Climate Change & Call to Action, 2015). The Paris Declaration on Electro-Mobility calls for the deployment of electric vehicles (EVs) compatible with a 20% share of all road transport vehicles in 2030. To achieve this goal modelling performed by the IEA suggests that EVs need to represent 35% of global sales by 2030¹⁷.

Avoid-Shift-Improve (ASI) has been a long-standing framework for classifying mitigation interventions in the transport sector. A new dimension needs to be added to this framework: EASI: Electrify-Avoid-Shift-Improve. Electrification is a paradigm change and not a simple improvement. The latter caters more to hybrid vehicles, eco-drive, increased vehicle occupation rates etc. i.e., typical efficiency measures. Electrification is a game-changer and a **must** if carbon neutrality shall be achieved¹⁸. EVs improved efficiency around 3-4x and emit zero local air and noise pollutants, and when coupled with renewables electricity, they have immense GHG reduction benefits, especially plugged into grids which are clean or projected to get clean. No shift measures and no improve measures will be capable to reach carbon neutrality in the transport sector. Electrification coupled with a fossil-free grid creates this opportunity. Not surprisingly do carbon neutrality plans involve a fully electrified vehicle fleet.

Electrification of public transport buses is an important component to modernize and to upgrade the public transport system of countries. This results in new and attractive buses which incentivize passengers to use public transportation. More important is however the impact caused on modernization of public transport systems through establishing new business models which increase the financial stability and economic efficiency of public transport operators and public transport systems e.g. through separation of bus ownership and bus operations and the introduction of new investors with deep pockets to the sector. Both movements are spearheaded by the electrification of public transportation due to the different financial structure of e-buses with a high upfront investment and a long recovery time of investments. This shift of business models incited by e-mobility can be clearly observed in Chile and in Colombia, the 2 countries in Latin America, which have already embarked on electrifying their public transport fleet and both of which have within this process changed their business models and how to deliver public transport services. In both cases large capital-heavy investors have entered the market (electric utilities, private capital funds and bus manufacturers), which results in public transport operations being financially more solid (in both countries bankruptcy of traditional bus operators has been a major problem) and with better and lower cost access to capital. E-motion will allow to decrease the cost access to capital by delivering concessional loans with very low interest rate. From Accredited Entity CAF, they are able to provide sovereign or private interest rate that will be blended with CGF loans and being delivered through different executing entities in order to keep lower capital cost to final investors/operators. See **Table 3** the potential financial executing entities interviewed to implement E-motion's FA.

Figure 3 Potential financial executive entities for e-motion sub-program 2

	PANAMA	PARAGUAY	URUGUAY
 MBus	<ul style="list-style-type: none"> Public: MEF, METRO + MBus, Banco Nacional, Caja de Ahorro 	<ul style="list-style-type: none"> Public: Ministry of Finance, Banco Nacional de Fomento (BNF) 	<ul style="list-style-type: none"> Public: MEF, Banco de la República Uruguay (BROU) Private: private banks
 E-Public Fleet	<ul style="list-style-type: none"> Public: MEF 	<ul style="list-style-type: none"> Public: Ministry of Finance 	<ul style="list-style-type: none"> Public: MEF
 eCVs	<ul style="list-style-type: none"> Public: Banco Nacional, Caja de Ahorro Private: Banco General 	<ul style="list-style-type: none"> Public: Banco Nacional de Fomento (BNF) 	<ul style="list-style-type: none"> Public: Banco de la República Uruguay (BROU) Private: private banks
 FAST CHARGING NETWORK	<ul style="list-style-type: none"> Public: MEF, SNE, Municipalities Private: energy distributor companies 	<ul style="list-style-type: none"> Public: Ministry of Finance, ANDE, VIVUE, Municipalities 	<ul style="list-style-type: none"> Public: MEF, UTE, Municipalities

¹⁷ This includes BEVs, fuel cell and plug-in hybrid electric vehicles (PHEVs); [paris-electro-mobility-declaration.pdf \(windows.net\)](https://www.windows.net/paris-electro-mobility-declaration.pdf)

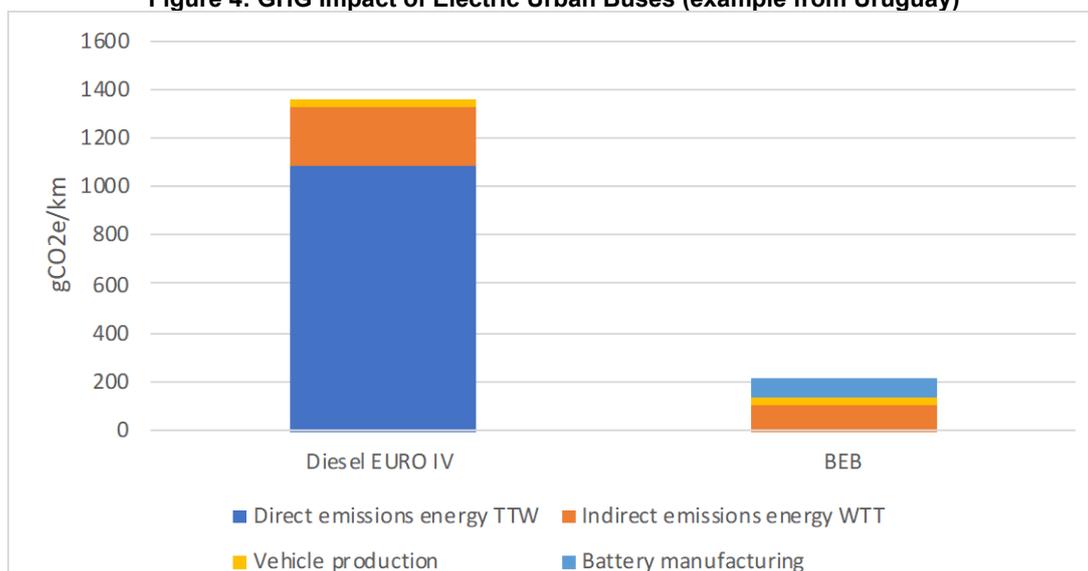
¹⁸ Avoid in theory also has the potential of zero GHG emissions– however, avoiding 100% of motorized transport is unrealistic

If local banks are involved, that are more familiar and reduced their own risk profile as well for the investments then access to capital can be increased, also at lower cost. From market study (Report ID T4 in Feasibility Study-Annex 2), private and public banks were interviewed, some of which have already financed electric vehicles such as the co-financing required by operators in UY for the acquisition of BEBs using the investment gap subsidy that the government enabled in 2019-2020. In the 3 countries (PY, UY, PA), the banks expressed interest in contributing to the national policies to promote electromobility, stating that a good regulatory framework helps to be able to transfer concessionality to operators, which is a work stream of the TA.

The change of the business model is directly linked to e-mobility as (i) new investors are competitive with traditional bus operators with e-mobility due to the high amount of capital involved; (ii) the interest of new investors is linked to electric mobility due to their business background; and (iii) e-mobility will not float with the traditional business model as operators do not have sufficient capital, to finance higher costs and vested interests with the repair and spare parts market which is a major business for fossil buses but not for e-buses. This change of the business model solidifies public transport operations, reduces in the long-term its costs (due to lower financial costs) and allows for upgrading of the service offer with the separation of ownership and operations and investments not only in new buses but also in improving the network, fare integration, and increased usage of electronic means. These measures can be better implemented by a transport authority if transport operators just operate instead of managing the system as they do nowadays. This results in e-mobility being a game-changer not only in terms of fostering low-carbon vehicles, but also in modernization of the public transportation system increasing its attractiveness and thereby resulting in an important mode-shift towards public transport compared to a business-as-usual situation.

Already today electric vehicles can result in less GHG emissions per kilometre than conventional ICE vehicle, even including a life-cycle approach as is shown for the case of Uruguay, one of the countries involved in the Program, for BEB. Given the low grid emission factor (0.065 tCO₂/MWh¹⁹) in the country due to high share of renewable energies (approx. 93-98% including large hydropower), a BEB can reduce WTW GHG emissions in Uruguay by 92% and “cradle to grave” GHG emissions by 84% compared to an ICE bus (see figure below).

Figure 4: GHG Impact of Electric Urban Buses (example from Uruguay)



Source: Annex 2.; TTW = Tank to wheel, WTT = well to tank; Main assumptions: energy consumption based on values for Uruguay; annual mileage 64,500 km; Urban standard bus (diesel) 40 l/100km and BEB 1.3 kWh/km; 16-year lifespan diesel and BEB; 8-year lifespan of battery; battery set of average 300 kWh; 145kg CO₂/kWh battery (assumed average, IFEU, 2019); grid emission factor for Uruguay 0.065 tCO₂/MWh

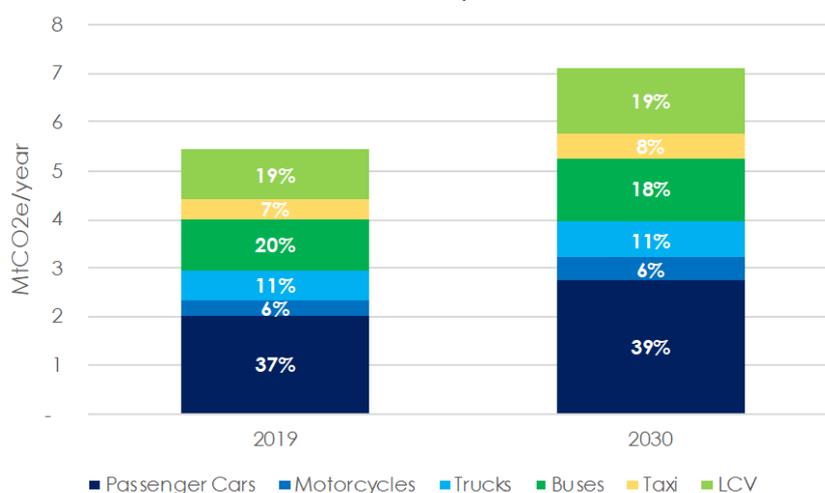
Electrification is happening within all vehicle segments. However, long-range vehicles such as inter-urban buses or long-haul trucks are only at the start of electrification process. Hydrogen technology might be, at least initially, a more appropriate technology solution for these vehicle segments. Battery Electric Vehicles (BEVs) are the most competitive and also have the largest environmental impact in urban areas. Hybrid and plug-in hybrid vehicle technologies have

¹⁹ Source: Harmonized IFI Default Grid Factors 2021 (v3.1, January 2022, "Combined Margin Grid Emission Factor, gCO₂/kWh", Electricity Consumption)

been outgrown by the fast development of battery technology and only offer a limited GHG impact. For commercial vehicle applications at least (buses, light-commercial vehicles) manufacturers have switched towards full electric vehicles. Hybrids as well as plug-in hybrids are therefore not considered in this Program (see for further details Benchmark Report in Annex 22).

The Program focuses on high-utilization vehicles (buses, light commercial vehicles and public fleets). These represent in the countries covered by the Sub-Program 2, 20-50% of road-based transport emissions²⁰ (see example from Panama in **Figure 5**). Electric commercial vehicles are the vehicle segment closest to being at cost-par with fossil units, due to high usage and long distances which often has a faster payback period. They have a high mileage and are used in urban areas where most people live. Replacing such units thus has a high GHG as well as air quality and health impact.

Figure 5: GHG emission from transport by vehicle segment 2019 and 2030 under BAU scenario (TTW, example from Panama)



Source: Annex 2, Country Diagnostic for Panamá

Program activities will also improve the grid resilience and the resilience of urban infrastructure. Used batteries from EVs have a second-life application where they can serve as storage units and thereby (i) increase the resilience and independence of the grid at critical spots such as hospitals or schools; (ii) increase the grid resilience and reduce costs of renewable grids by increasing storage capacity capable of taking up electricity during times of over-supply: this feature is especially important for grids moving towards high rates of (supply unpredictable) renewables; (iii) increase grid resilience through acting as grid shavers, especially in urban settings, thus reducing peak impacts.

Accelerating Transformation towards Low-Emission Mobility

By 2019 there were about 4.8 million full electric cars on the worlds' roads²¹. 8 countries have more than 90% of all electric cars in operation worldwide²². Only Norway and the Netherlands have an EV car share above 5%. Considering different income levels, EV deployment is still at an infant stage in Latin American countries and lags behind Asia or Europe. Under a BAU Scenario prices of EV's are dropping reaching cost parity or full commercial viability in 5-15 years depending on the vehicle category and the country²³. The Program's core function is to accelerate EV deployment in involved countries through financial and technical assistance. The Program ensures at-scale transition towards e-mobility and closes the gap between the current pilot stage and commercial large-scale sustained growth.

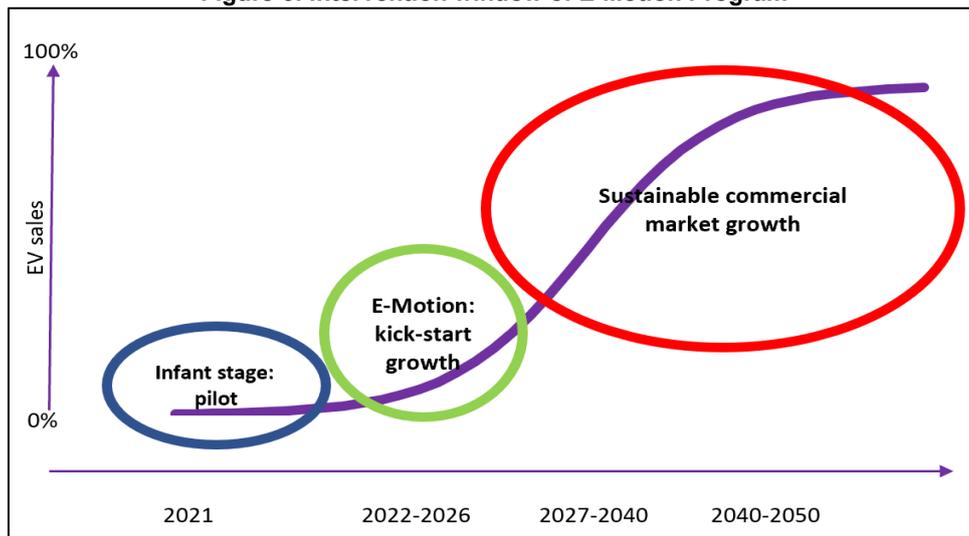
²⁰ See Annex 2

²¹ (IEA, 2020)

²² in decreasing EV stock numbers PR China, USA, Norway, France, Japan, Germany, Netherlands and the UK

²³ See e.g. [Electric vehicle trends | Deloitte Insights](#) or [McKinsey Electric Vehicle Index: Electric Vehicle Trends | McKinsey](#); See for an analysis per country per Program targeted vehicle segment Annex 2

Figure 6: Intervention window of E-Motion Program



Source: AFD FP, 2021

The Program implements the required interventions to kick-start mass deployment significantly earlier than with a BAU scenario by reducing the risk profile of investments and by comprehensive technical assistance. The Program works in countries and vehicle segments where this gap can be closed, i.e., where conditions for promoting on a larger scale e-mobility are met and where simultaneously commercially sustainable e-mobility deployment is feasible within 5 years by kick-starting the process and by eliminating barriers towards commercial uptake. This is the reason why the Program does not have the same sequencing and activities as well as support levels in all countries. The Program is thus not about pilots and initial technical assistance but about accelerating market based commercial EV deployment, acknowledging that there would be “ready to implement” opportunities in more organized and sophisticated segments (i.e. well established BRT systems, well-organized and credit worthy unions, etc). Feasibility Study (Annex 2) include criteria for financing potential investment sub-projects. Market Study/Strategy of intervention report (T4 within Feasibility Study – Annex 2) considered multiple stakeholders (public sector, operators, banks, providers, among others), finding from interviews that electromobility must be coupled with a general modernization and restructuring of the transport system, mainly to strengthen public transport. This is how the transport authorities require support to define the best roadmap to formalization, supported by regulation and working with the unions to define the enabling conditions that sustain this transition and promote their repayment capacity and make sub-projects eligible. In this sense, there was an excellent reception in the interviewees to work this roadmap through E-motion TA, so that financial resources are fully allocated to new and better organized actors/sub-projects. A case of this initial trend is Panama, where new companies have already been established (Colon City and Herrera City) groups of ex-individual vehicle owners, thus preparing their financial profile for reforms and concessions that will be developed within the framework of the National Electric Mobility Strategy (ENME) and potential incentives to be implemented.

Strengthening Public Transport (PT)

Private vehicle growth is prevalent in all Program countries resulting in decreasing mode shares of public transport (PT). In many countries the PT sector is under severe financial pressure with limited willingness of financial institutions to further finance the sector without structural change of business models and/or explicit government guarantees on minimum revenues. This situation has aggravated with the COVID-19 pandemic. It is a result of atomized ownership structure, financially weak transport operators and lack of an integrated attractive offer for clients. Moreover, with one of the fastest urbanization and motorization rates worldwide, the vehicle and motorcycle fleet in Latin America may triple over the next 25 years, reaching over 200 million units in 2050²⁴. In sub-program 2 countries some work is in progress on revenue guarantees model, where Panama is quite advanced, as they have been working in BEB adoption through operational leasing business model, where authority and METRO support/guarantee MiBus (only concessioned bus operator in PA) repayment to the fleet provider. PY has been analysing this model through IDB support and VMT (Vice-ministry of Transport) but TA are required to implement progressively PPP or operational leasing from “green routes” to the whole system. In the case of UY, further work needs to be performed through TA. However, in UY the first call for their ebus subsidy has the “fideicomiso” as a public tool to guarantee the proper implementation and repayment.

²⁴ UN Environment, Electric Mobility: Developments in Latin America and the Caribbean and opportunities for regional collaboration, 2018

Electric mobility offers a unique opportunity to re-structure the PT sector, introduces new PPP and business models (incl. green routes of BEB) based on separation of asset ownership and operations, when possible, favours the entry of new financially stronger players and leads the structuring of a modern, attractive, and integrated offer to potential users of PT. This disruptive, and largely unpopular among existing transport operators, move is provoked through e-mobility which requires the adoption of new business and service delivery models that also consider the needs and interests of different users' segments and profiles, such as women, other caretakers, children, people with disabilities. It also entails that the Program not only makes a paradigm shift towards e-mobility and ultra-low carbon mobility but also strengthens and enhances the attractiveness of public transport thereby allowing for a mode shift towards public transport (mode shift in relative terms compared to a BAU situation which means in some countries stopping the negative downward trend of decreasing mode share of PT). Customers might also appreciate an EV more due to less noise or due to a positive image and therefore ridership of electric buses could increase resulting in a positive mode shift towards PT and therefore additional EVs. As well, if the buses and their infrastructure are not only greener and cleaner but also accessible, designed for running errands besides of commuting, child-friendly, violence-free, the potential of attracting a market segment that currently relies on private cars, motorcycles and taxis is significant. A report of the UN Environment found for example that e-buses could attract 1.9% additional ridership compared to diesel units.²⁵ However, such results are preliminary and might be city and country dependent. As mentioned previously more important is, however, the impact caused on modernization of public transport systems through establishing new business models paired with investments in improving PT systems, which increase the financial stability and economic efficiency of public transport operators and public transport systems. This results in e-mobility being a game-changer not only in terms of fostering low-emission vehicles but also in modernization of the public transportation system increasing its attractiveness and thereby resulting in an important mode-shift towards public transport compared to a business-as-usual situation.

Local Context

Latin America has strong enabling conditions in terms of clean transport and e-mobility. The region has one of the cleanest electricity generation portfolios in the world (high hydroelectric production and growing deployment of wind and solar power plants). Therefore, the adoption of an e-mobility strategy would allow the sector to move towards a decarbonisation pathway. The table below shows the carbon intensity of electricity generated of Sub-Program 2 countries. With these grid factors EVs can reduce GHG emissions on a well-to-wheel (cradle-to-grave) base by 80-100% (50-90%) compared to fossil units²⁶.

Table 1: Grid Emission Factor of Sub-Program 2 Countries

Country	Grid Emission Factor Electricity ²⁷
Panama	0.230 tCO ₂ /MWh _{el}
Paraguay	0.00 tCO ₂ /MWh _{el}
Uruguay	0.065 tCO ₂ /Mwhel
World average ²⁸	0.475 tCO ₂ /MWh (2019)

Source: Grid emission factor based on CO₂ emissions from electricity generation in relation to net generated electricity based on country diagnostics in Annex 2; world average based on IEA²⁹

The region is also well known for having developed innovative bus-based transportation systems and cities like Bogotá, Medellín, Santiago and Curitiba have become international benchmarks for innovation in this area. Finally, Latin America has a positive local manufacturing context: three large vehicle producers operate in the region (Argentina, Brazil and Mexico) and Argentina, Bolivia, and Chile are called the "Lithium Triangle", as the three countries hold more than half of the world's lithium reserves that are an essential material for building electric batteries.

The main motivating forces to foster e-mobility in the countries included in the Program are:

- Reduce GHG emissions;
- Improve air quality and reduce health problems associated with air pollution;
- Reduce dependency on imported fossil fuels and exposure to external price shocks;

²⁵ Currie, 2018

²⁶ See Annex 2

²⁷ Source: Harmonized IFI Default Grid Factors 2021 (v3.1, January 2022, "Combined Margin Grid Emission Factor, gCO₂/kWh", Electricity Consumption)

²⁸ 2019

²⁹ [Emissions – Global Energy & CO2 Status Report 2019 – Analysis - IEA](#)

- Re-structure and modernize the public transport system to increase its attractiveness and mode share;
- Achieve positive economic impacts related to reduced health costs, reduced fuel import bill and equitable job creation;
- Participate in the new growth industry of EV and battery manufacturing.³⁰

Air pollution is a large problem in most Latin American cities with levels affecting seriously human health. According to the latest urban air quality database, 98% of cities in low- and middle-income countries with more than 100,000 inhabitants do not meet WHO air quality guidelines³¹. The WHO estimates that annually 4.2 million deaths result due to excessive exposure to fine particulate matter equivalent to 7.6% of all deaths³². The transport sector is thereby a major source of air pollution. The poor are disproportionately affected by air pollution as they tend to live and work closer to its sources³³. Children and the elderly are particularly vulnerable. Recent studies show that women are more affected by poor air quality than men³⁴. There is no available information that correlates specific transport-related air pollution with the observed higher prevalence of respiratory mortality among women. However, numerous epidemiological studies³⁵ show that air pollution in general affects more women than men. The differentiated consequences are in general attributed to gender roles as well as to a combination of women’s bigger loads of caretaking activities and their higher poverty rates.

The COVID-19 pandemic has created an unprecedented challenge for many Latin American countries, from the health and economic perspectives, but it is also opening new opportunities for an accelerated sustainable transformation of its energy, transport, and urban landscapes while contributing to economic recovery. A recent report prepared by the ILO shows that fostering of electric mobility can have a significant positive job impact primarily due to the induced impact of savings of consumers on fossil fuels and vehicle maintenance resulting in increased spending on goods with a high-income elasticity which tend to be labour intensive service-goods (ILO, 2020).

CAF has conducted in all Sub-Program 2 countries a diagnostic and market study. A brief context is given per country below with more information found in the country diagnostics in Annex 2.

Panamá

Area	Population	GDP/Capita	Vehicle Fleet	Diesel price	Electricity price
75,475 km ²	4.2 million	15,731 USD	1.3 million	0.69 USD/l	0.17 USD/kWh

Sources: Annex 2; energy prices are retrieved from global petrol prices website³⁶

The deployment of electromobility in Panama is generally on a pilot scale. Charging infrastructure is mainly supported by private companies, such as ENSA, Celsia Panama, Bavarian Motors and Ciudad del Saber. Panama’s national government aims to reduce greenhouse gas emissions from the transport sector, hence different departments promote sustainable mobility and alternative means of transport. The National Strategy for Electric Mobility (ENME) was approved in 2019, promoting four objectives until 2030: 10-20% of the total fleet of private vehicles will be electric; 25-40% of private vehicle sales will be electric vehicle sales; 15-35% of the buses in the authorized concession fleets will be electric; 25-50% of the public fleets will be made up of electric vehicles. Panama’s updated NDC (2020) focuses mainly on mitigating emissions from the land use change sector and the energy sector. Transport sector in PA represents about 24% of national GHG emissions.

³⁰ For instance, there are Economic Complementation Agreements (ECAs), currently in effective use, within the framework of ALADI, related to the automotive industry that could lead to manufacturing of parts in UY for the Brazilian and Argentinean markets.

³¹ <https://www.who.int/airpollution/data/cities-2016/en/>

³² <https://www.who.int/gho/phe/en/>

³³ Mitchell G. and Dorling D. 2003. An environmental justice analysis of British air quality, *Environment and Planning*, vol. 35, 909-929

³⁴ Clougherty J. 2010. A Growing Role for Gender Analysis in Air Pollution Epidemiology, *Environmental Health Perspectives*, 118(2), 167-176

³⁵ [A Growing Role for Gender Analysis in Air Pollution Epidemiology | Environmental Health Perspectives | Vol. 118, No. 2 \(nih.gov\)](https://pubmed.ncbi.nlm.nih.gov/)

³⁶ <https://www.globalpetrolprices.com/Panama/>

Paraguay

Area	Population	GDP/Capita	Vehicle Fleet	Diesel price	Electricity price
406,752 km ²	7.3 million	5.415 USD ³⁷	2.5 million	0.68 USD/l	0.06 USD/kWh

Sources: see Annex 2; energy prices are retrieved from global petrol prices website³⁸

Paraguay's NDC aims to reduce 20% of the fossil fuel consumption by 2030, compared to the projected baseline. Unilaterally, the country aims to reduce 10% of projected emissions by 2030. Additionally, a conditional goal of 10% reduction in emissions projected by 2030 depends on international cooperation. Among the measures to be implemented in the transport sector, action lines for more efficient technologies in this sector are being evaluated together with the Vice Ministry of Transport, with electric mobility being one of these possibilities. See Figure 1 for policy framework in this country. Paraguay has two ideal attributes that could make possible to take full advantage of the benefits that electromobility offers and that makes it especially interesting for its deployment in the country: the energy surplus generated by hydroelectricity, and the competitive price of the electricity tariff. However, PY is on a very early stage with regards EV adoption (2 ebuses). Thus electric vehicles provide the opportunity to reduce various environmental and financial externalities resulting from mobility dependent on fossil fuels. Transport sector in PY represents about 29% of national GHG emissions. In this context, the country is taking its first steps in the transition towards electric mobility, advancing with the development of technical standards for electric vehicles, implementing "green routes" with chargers installed between the three main cities – Asunción, Ciudad del Este, and Encarnación – and starting to operate the first two electric buses on the streets of the Metropolitan Area of Asunción. Electromobility is seen as a possible strategy to make use of the surpluses of renewable electricity generation, thus reducing the amount of fossil fuel imports. In fact, both the National Development Plan 2030 and the National Energy Policy 2040 consider electric mobility to be one of their dimensions to achieve the country's development goals. Paraguay has great potential in public fleets as the country has set targets to ANDE and to public fleets in general: By 2021, 10% of renewal with EVs; by 2030, 20% of renewal with EVs and ANDE 50%; by 2040, 50% of renewal with EVs and ANDE 100%. ANDE owns 1300 vehicles.

Uruguay

Area	Population	GDP/Capita	Vehicle Fleet	Diesel price	Electricity price
176,215 km ²	3.5 million	16,200 USD	1.5 million	0.94 USD/l	0.08-0.37 USD/kWh

Sources: see Annex 2

The transport sector in Uruguay is responsible for high GHG emissions, specially associated with fossil fuel use in road transport. In 2017, CO₂ emissions were 3.73 MtCO₂, accounting for 64 % of total CO₂ emissions in the energy sector. In parallel, Uruguay is a country recognized for its recent transition to renewable energy in the power system, with 95% renewable sources in the power generation mix, which is a good framework for electromobility adoption. Uruguay has adopted several national strategies that promote energy efficiency, increased renewable energy supply, and the reduction of fossil fuel consumption. Several initiatives (e.g., incentives and regulation) aim at achieving lower emissions until 2030. Additionally, the National Sustainable Mobility Plan promotes a transition towards transport technologies with better energy efficiency.

The NDC of Uruguay sets specific goals for E-motion categories towards 2025: e-Buses (110 units) and electric light commercial vehicles (LCVs) (900 units), a network of electric vehicle charging stations throughout the main roads across Uruguay (52% completed in 2020), and a fast-charging network (no progress yet). However, these goals are part of a scenario conditional on additional means of implementation (such as access to international financing).

In summary, the work carried out in each country (PA, PY and UY) collected information from each context and from multiple actors, among them are those who have been directly involved with ongoing EM projects (buses, private, public sector). This is how the main gaps to be resolved with the program (TA and FA) have been captured, cross-sectionally highlighting access to concessional financing that allow scaling up EV adoption now and not having to wait until prices drop by 5 to 8 more years. This is due to the fact that it is not desired to block the renewal process for up to 8-10 more years, since if it is renewed for a new combustion vehicle, using this asset until their useful life necessarily delays the adoption of electric vehicles.

³⁷ <https://datos.bancomundial.org/indicador/NY.GDP.PCAP.CD?locations=PY>

³⁸ <https://www.globalpetrolprices.com/Paraguay/>

From a technical point of view, urban mobility in each of these 3 countries operates optimally, therefore, there is certainty in initiating adoption on a larger scale (the technical gap has already been overcome). However, another point that is reiterated is the need to have public charging points, which has also been integrated into E-motion.

Finally, each country has its own challenges caused by each local context, indicated in Annex 2-Pre-feasibility Study, and that the Program seeks to solve through TA.

Related projects/interventions

Multiple actors are engaged in promotion of e-mobility. CAF, AFD group, GIZ and KfW, all of which are included in the E-Motion Program, are important actors in e-mobility in various Program countries. IDB also intends to present to the GCF a program focused on e-mobility, which will have complementarities with the E-Motion Program. The two programs will collectively have the potential to contribute with transformational change in the transportation system of the Region.

The Inter-American Development Bank (IDB) is also an active e-mobility player in various countries e.g. financing a pilot fleet of e-buses studies and implementation in Paraguay or the technical-economic evaluation to acquire three to five electric buses for the Historic Centre in Panama City (PA), which would be under the conventional scheme of owning the fleet and MiBus; or TA for e-buses study case in Uruguay. IDB also intends to present to the GCF a program focused on e-mobility for the Latin American region, which will have complementarities with the E-Motion Program. The two programs will collectively have the potential to contribute with transformational change in the transportation system of the Region. For instance, IDB will include different elements such as green hydrogen and maritime transportation, urban regeneration and technical assistance on value-chains as different elements, IDB proposal would be limited to sovereign loans or sovereign-guaranteed loans. IDB and its role to promote electromobility in sub-program 2 countries has been clearly identified and discussed throughout the work conducted in PA, PY and UY. E-motion will implement TA and FA in accordance with the need of each country context, properly articulated through their respective technical groups (all of them interviewed): CIME in PA, Electromobility Strategic Table in PY and GIETT in UY; in order to avoid overlap parallel FA and/or TA programs that may happen at the time. We don't have further detail on IDB's activities for its regional program also applying for GCF.

As part of their energy and transport sector low-carbon recovery plans, countries are requesting more support from all multilateral agencies towards a paradigm shift to low emissions transport systems, with a boost to electromobility and green hydrogen. UN Environment is implementing the GCF Readiness Program "advancing a regional approach to e-mobility in Latin America" in thirteen countries in the region. The Program focuses on enabling strategies and policies to scale up electric mobility. The individual Tas per country have been designed so that a complementarity exists with on-going and planned initiatives of other actors.

Baseline activities and projects/programmes in the region and target countries implemented by leading intergovernmental organizations and multilateral development banks focusing on the introduction of electric mobility include:

- **GIZ – Changing Transport**³⁹: Supporting partners in defining low carbon transport strategies, implementing climate actions to reduce emissions and harnessing sustainable transport benefits. On e-mobility there is Euroclima+ Urban Electric Mobility supporting in the development of an E-Mobility Master Plan for Public Transport and Logistics and strengthening capacities for sustainable urban mobility planning and promoting electric urban mobility planning in Uruguay and Paraguay⁴⁰.
- **IDB – Accelerating NDC Implementation**. Unlocking Clean Buses in LAC⁴¹: Technical Cooperation (TC) is to improve public transportation in LAC cities through the replacement of diesel buses with low-carbon hybrid or electric alternatives. IDB is also active in financial structuration of about 30 BEB in Paraguay.
- **UNEP – Global Programme to Support Countries with the Shift to Electric Mobility**⁴²: The aim of the Global Programme (covering Antigua & Barbuda, Chile, Costa Rica, Ecuador, Grenada, Jamaica, Peru and St. Lucia in LAC) is to support low and middle-income countries in overcoming these barriers through a combination of technical assistance and investment. Technical assistance on the Country Child Project level includes awareness raising campaigns, capacity building and the development of instructional structures to support the introduction of electric mobility. It furthermore includes laying the ground for large-scale market introduction of electric mobility through 1) The development of policies, including fiscal, regulatory and local measures; 2) The establishment of

³⁹ <https://www.changing-transport.org/about/>

⁴⁰ <http://www.euroclimaplus.org/en/mobility/nump-uruguay-en>

⁴¹ <https://www.iadb.org/en/project/RG-T3078>

⁴² <https://www.thegef.org/project/global-programme-support-countries-shift-electric-mobility>

adequate business models and finance mechanisms; and 3) The development of plans and studies to ensure environmental sustainability. The investment component of the Country Child Projects will be used for electric mobility demonstration projects to allow for the creation of local experience to de-risk the technology and to attract investors to upscale electric mobility in the respective countries.

- **UNEP GCF Readiness Programme on E-Mobility in Latin America:** The UNEP Regional Office in Panama currently implements a GCF Readiness Programme on E-Mobility with the title “Advancing a regional approach to e-mobility in Latin America” including Argentina, Costa Rica, Cuba, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay and Uruguay. The project has a budget of USD 2,800,000 and aims at building capacity, development of e-mobility policies and business models, identification of strategies to finance the shift to electric mobility in the region and will be implemented combining a national with a regional approach, whereby close collaboration is sought for with the GEF Global E-Mobility Programme.
- **UNEP – MOVE Electric Mobility in Latin America⁴³:** In 2016, UNEP and Mario Molina Centre Chile launched a regional platform to accelerate deployment of electric mobility in Latin America. Since then, MOVE has provided (1) capacity building to public technical officers from almost 20 countries in the region through online webinars and face-to-face meetings, (2) knowledge creation on the uptake of electric mobility in Latin America and the Caribbean, (3) technical assistance, through the elaboration of National Electric Mobility Strategies in Colombia, Argentina and Panama and (4) resource mobilization to enable countries to transition to electric mobility – with a special focus on electric road mass transit.

The E-Motion Program will leverage on ongoing programs of GIZ and Euroclima+ specifically through the following aspects:

- The NUMP in Uruguay will set a long-term vision regarding sustainable mobility that will enable different sectors to engage. The NUMP will generate capacity at the city level to develop mobility plans, those plans expect to be financed in private public partnership. Consideration for future financing models is welcome. Uruguay is building a working group that will set the agenda for fleet renewal as for energy production. Considering their almost 100% renewable electric grid, they are exploring Hydrogen and Bio-fuels. Governance capacity is suitable to pilot energy transition as to work on innovative multi-actors networks to accelerate the transition and to outreach lessons learned to other countries.
- The NUMP in Paraguay will set a long-term vision regarding urban sustainable mobility by the development of the Multimodal Electromobility Master Plan for Urban Public Transport and Logistic in Paraguay. This NUMP will generate ecosystem, the master plan and its MRV (monitoring, report and verification), capacity building, a social awareness campaign with its respective communicational strategy; and electromobility projects and financial instruments that will be leverage by E-motion.

In addition, as GIZ is one of the E-motion partners and therefore, the complementarity of the ongoing projects/programs will be direct and consistent in order to not duplicate efforts in TA. In the case of the IDB, and other TA that are taking place in the country, it is important to point out that E-motion will validate the needs proposed in the TA component through the continuous coordination of the technical teams of each country (CIME in PA, MS Strategy Table in PY, GIEET in UY). The previous is because they are the ones who orchestrate the needs of normative studies, institutional strengthening, project structuring, among others. Finally, E-motion has already met with all the technical teams mentioned, with which the TA proposal for the program was built.

The ongoing and planned project / programmes are addressing the current inexistence of socially and economically viable alternatives to fossil fuel road transport, as one of the key associated drivers for the on-going reliance on internal combustion engine transport. However, despite those ongoing initiatives, persistent barriers to the broad adoption of low-emission electric vehicles exist in many countries, particularly: (i) High up-front investments, (ii) lack of information/awareness, (iii) policy and planning challenges, (iv) limited institutional capacity, (v) range anxiety and limited availability of charging infrastructure, (vi) limited offer of electric vehicles and electric vehicle supply equipment in low and middle income countries, (vii) uncertainty with regards to end-of-life issues of used EV batteries.

For the further acceleration of shifting the transport sector towards low-emission e-mobility solutions, overcoming the investment barriers will be key in the Program countries. Gap finance and financial incentives are still missing to a larger extend. The E-Motion Program and its Sub-Programs will hence support closing the funding gap of higher up-front cost, while providing business model support and complementary TA elements for commercial fleets and general enabling activities, which will help accelerating the transformation towards low-Carbon mobility in the respective countries.

⁴³ <https://movelatam.org>

B.2 (a). Theory of change narrative and diagram (max. 1500 words, approximately 3 pages plus diagram)

The theory of change is described in the following, a detailed diagram for the E-Motion Sub-Program 2 is included in Annex 24.

Climate Problem

The environmental problem of sharply increasing GHG transport emissions due to fossil fuel-based vehicles (ICE) is addressed by the Program through the promotion of low-emission transport modes and electrification. The current situation and business-as-usual projection will result in a non-attainment of climate targets. Fossil vehicles are in urban areas a significant driver of worsening air quality resulting in severe health impacts affecting above-proportionally women and vulnerable people. Electric mobility combined with low carbon electricity production can significantly decarbonize the transportation sector whilst improving air quality. However, e-mobility solutions are not properly structured and only to a limited extent deployed in the Program countries, resulting in growing GHG emissions from passenger and commercial road transport.

Goal Statement

The Program aims to persuade people to use clean public transportation modes by enabling a large-scale regional transition towards electro-mobility in Latin America, focusing on intensive use vehicles leading to reduced fossil fuel consumption, greenhouse gas emissions and air pollutions. This will induce not only more demand into the existing public transport network, but also a shift in mindset among the users considering low-emissions options within their regular journeys.

If countries succeed to kick-start mass deployment of EVs and the shift to low-emission transportation modes, transport climate targets can be achieved as mobility emissions are reduced significantly. To achieve zero-emission transport systems EV technology fuelled by emission-free renewable energies is critical. Ambitious climate targets for 2030 require GHG reductions relative to the baseline in the transport sector. A rapid and massive EV deployment is necessary due to the long permanence of the vehicle stock.

The Programme's headline Goal Statement is: **IF** the regulatory and political framework (including standards, regulations, subsidies and tax reforms, and procurement guidelines) is enhanced for EV deployment, relevant public and private stakeholders are trained, e-buses and e-LCVs are financed and deployed, and charging infrastructure is prepared, financed and constructed **THEN** the foundations for a mass deployment of e-mobility and ultra-low emissions mobility is created and the attractiveness of public transport is enhanced (towards low-emissions, reliable, efficient, secure and affordable public transportation), hence, cities can influence users' mobility patterns and promote a mode shift towards public transport (/ non-motorised transportation) **BECAUSE** an e-mobility and public transport conducive ecosystem is created, while the mass deployment of e-buses and e-LCVs is kick started and innovative business models are promoted.

Paradigm Shift

The Program supports a paradigm change to low-emission transportation systems. The Program not only shall overcome the barriers identified to kick-start the mass deployment of commercial EVs, but also represent a turning point on how cities can influence users' mobility patterns by setting the foundations of a low-emissions, reliable, efficient, secure and affordable e-transportation.

Scale:

Accelerated EV investments take place due to an e-mobility conducive policy environment, innovative business models, lower performance and income risks and the entrance of new market players. For instance, the Program involves the local banking sector to accustom it's risk and opportunity perception, and develop appropriate business models for electric mobility deployment finally leading to lower costs of financing EVs. Also, by supporting the development of EVs regulatory framework and EV acquisition, the Program will reduce the acquisition of fossil fuel vehicles. The transformative shift is possible through the accelerated uptake of commercial EVs and electric public transport thanks to an improved ecosystem for EVs with (i) financial assistance (FA) made available for EV investments as well as (ii) a equate technical assistance (TA) on each pre-identified scalable EV segments in each country.

The country studies show that depending on respective scenarios the Sub-Program 2 will have significant spill-over effects that lead to an uptake and acceleration of EVs in all major vehicle segments. The high-potential scenarios show that spill over effects lead to 100% of newly registered vehicles being electric in 2030.

Replicability: Replicability is based on three pillars:

1. **Market based price decrease:** EV prices are decreasing in all vehicle segments due to decreasing battery prices and increasing competition and supply of EVs. Total Cost of Ownership (TCO) parity with fossil vehicles is expected in the targeted vehicle categories by 2025 and price tags of EVs will get close to fossil models by 2030. TCO alone will in many cases be competitive (electric vs combustion) however not be a sufficient argument to support the switch towards EVs if the upfront incremental investment is still significantly higher and the risks are still perceived to be higher. However, decreasing vehicle costs is a very important ingredient to make EVs commercially viable without need for further financial assistance. Finally, the gradual emergence of a second-hand market for e-vehicles may also help to establish certainty about prices in case of resale of vehicles and thereby reduces the risk of financing E-vehicles.
2. **Reduced risks and costs for 2nd and 3rd sub-projects due to showcasing of successful implementation sub-projects and business models.** Risks which are reduced by large fleet applications are: (i) vehicle reliability and vehicle performance risks; (ii) improved information and therefore lower risk on assessing the re-sale value of used EVs as a key step for introducing business models based on leasing; (iii) less risk concerning maintenance & repair capabilities and availability of spare parts including secondary spare parts markets; (iv) reduced risk on the workability of new business models in practice. The Program assists in this process by designing and implementing business models and by enabling with concessional finance the uptake of large fleets, which are critical to reduce these risks. Vehicle performance is influenced by multiple external parameters such as climatic or traffic conditions as well as by the operator itself, e.g., maintenance, types of tires used, or driver training making a guarantee of real-world performance very difficult. Pilot sub-projects cannot create the required information and base for reducing these risks – this has resulted in many countries worldwide having done pilots without ever reaching large-scale fleet implementation because not getting access to financial support and grant.
3. **Policies which are more conducive for e-mobility.** This allows EVs to be more competitive. Countries have however been careful with such policies prior having assurances that this will not result in significant cost increases of the transport sector. The Program will improve the framework conditions for EVs through Technical Assistance. However, this will be dependent on having implementation sub-projects in place that showcase their commercial and technical viability. The paradigm shift as well as medium- to long-term sustainability of the proposed Program beyond the project lifetime is achieved by laying the foundation for an EV conducive ecosystem, which results in investors purchasing EVs on a commercial base. Barriers towards mass EV deployment have been successfully eliminated or significantly reduced through the Program interventions, such that replicability of proposed business models and financing structures can be maintained in the long-term without concessional support from GCF (see particularly sub-component 1.5).

Sustainability:

A core element of the intervention strategy of the Program is the medium-term commercial viability of EVs. For each country and vehicle segment the commercial feasibility has been assessed based on expected future price developments. Only vehicle types and countries per areas have been included where it is deemed as feasible that a sustainable commercial uptake of EVs will take after Program end without further concessional finance from the GCF. The magnitude and time of commercial uptake of EVs is accelerated in a decisive manner by the Program through the operations of large fleets and through risk reduction measures making investment in EVs feasible for investors. Lower risk profiles of EV investments are attained directly due to FA investments for example due to better information of performance and operational costs of EVs, improved maintenance and management of EVs, through the establishment of fast charging infrastructure and through TA due to improved regulatory and enabling conditions (including concession contracts) for EVs, due to proven business models more in accordance with the financial profile of EVs and due to policy roadmaps which create a conducive e-mobility surrounding.

The establishment of a conducive EV framework, local business models which match the EV situation (e.g. separation of ownership and usage of assets) as well as reduced (perceived) risks of operating EVs due to the experience gained with large fleets all make it feasible that at the end of the Program implementation period EVs are taken up massively and at a far larger scale than in absence of the Program. Also, in absence of the Program EVs will still be purchased but in a lower rate– the difference the GCF can make is that the uptake and corresponding GHG reductions are made faster and at a large scale.

Finally, at the sectoral level the Program will deliver road maps for electric mobility in public transport and LCVs (public and private) for countries which do not yet have such sectoral roadmaps. The roadmaps guide policymakers in creating a long-term enabling policy environment conducive towards increased investments in e-mobility. On a regional level

the knowledge products and outreach events assist other countries in implementing e-mobility sub-projects and contributes towards the creation of a non-reversible dynamic towards electrification of the transport sector.

Country needs:

Regarding specific national regional and municipal needs of the sub-program 2 countries, the Technical Assistance at the national level will be differentiated according to the needs of the country. No program country, with the exception of Uruguay, has experience with fleets of EVs as targeted by the Program but only with pilots with singular buses. Annex 2 provides country reports including the specific scope of each country-specific TA component. Targeting the large cities is far more effective in these countries as this serves as lighthouse for other cities to follow, whereas second wave sub-projects might focus on secondary cities, according with the strategy of intervention of Uruguay, Paraguay, and Panamá. Despite the lighthouse effect, secondary cities will significantly benefit from lessons learned of this programme, e.g. regarding institutional capacities/capacity needs, technical know-how, business and operational know-how, and de-risking approaches – see above the paragraph “Replicability”

The transportation sector is transformed to a sustainable low-emission system with a dominance of public transportation and non-motorised transportation (NMT). Multiple countries in the region are establishing Green Recovery Plans due to the COVID-19 crisis as a vehicle to transform the society by investing in profitable infrastructure which creates economic, environmental and social benefits, short-term jobs and a long-term greening of the economy. Electrified and sustainable public transportation systems are thereby a core feature.

Outcomes & Co-Benefits

Long-term outcomes

- **GHG reduction (Long-term Outcome 1):** An increased share of low-emission transportation is reached by replacing fossil fuel-based vehicles. EVs have significantly lower lifecycle GHG emissions than fossil units in all countries included in the Program. The expected GCF fund-level impacts are reduced GHG emissions through increased access to low-emission transportation, resulting in direct emissions reductions of 3.3 MtCO₂ over the asset lifetime of investments co-financed by the Sub-program 2.
- **Reduced energy dependency (Long-term Outcome 2):** EVs use domestic resources, hence reliance on imported fossil fuels is reduced. Thereby also the resilience of the country’s economy to external oil price shocks is increased.
- **Improved fuel economy (Long-term Outcome 3):** EVs are up to 4x more energy efficient than fossil vehicles, hence energy efficiency in the transport sector is increased. Electricity consumption even if pursuing an ambitious EV penetration level such as proposed by the EV30@30 target supported by the International Energy Agency (IEA) is marginal compared to national production levels – however, localized grid problems need to be addressed.
- **Implementation of innovative business models facilitated (Long-term Outcome 4):** The Programme introduced new business models that allow for the separation of fleet ownership and operation as a precursor, among others, for paradigm shift. This also includes the support of public and private financing institutions including leasing entities with appropriate technical assistance.
- **Co-benefit 1⁴⁴ - Improved air quality and health:** EVs have no combustion emissions and are a crucial instrument to achieve clean air in cities. Commercial vehicles are a major source of PM_{2.5} and NO_x emissions in cities. By replacing fossil fuel powered commercial vehicles with EVs the air quality is improved significantly. Such improvement reduced deaths and health issues associated with poor air quality. Also, the replacement of combustion engine vehicle will lead to reduced noise pollution.
- **Co-benefit 2 - Socioeconomic benefits:** Due to a higher energy efficiency and particularly due to the reduction of GHG emissions, the programme saved costs related to energy consumption, pollution, and global warming externalities. Moreover, the uptake of the EV market and promotion of a modal shift in public transportation led to the creation of new jobs.

Meanwhile the Sub-Program 2 contributes significantly to sustainable development goals (SDG) 3 (“good health and well-being”), SDG goal 7 (“affordable and clean energy”), SDG goal 9 (“industry, innovation and infrastructure”), SDG goal 11 (“sustainable cities and communities”), and SDG 13 (“climate action”).

Short term outcomes

⁴⁴ The co-benefits of this programme are elaborated in more detail in section D.3.

The Program will result in (i) increased number of BEBs; (ii) strengthened public transportation with new and innovative business models; (iii) increased number of e-LCVs and e-public fleets; (iv) additional new fast-charging infrastructure; and (v) establishment of a conducive enabling environment for the further up-take and spill-over to other transport segments promoting low-emission transportation.

The incremental number of EVs is directly influenced through the FA of the Sub-Program 2 by lowering the current financial investment barriers and indirectly through the creation of an e-mobility conducive environment which sparks further investments in commercial EVs. Latter is achieved through TA activities whilst also being a consequence of the FA, which reduces the risk profile of future EV investments. New business models combined with electric mobility increase the attractiveness of public transport and result in a mode shift towards public transport in relation to a BAU scenario.

The e-mobility conducive eco-system is related to policy initiatives, more attractive business models, impacts on reducing risk profiles for e-mobility investments, the availability of charging infrastructure and the experience with mass fleet deployment of commercial EVs.

The Sub-Program Outcomes related to the four Components are the following:

- **Outcome 1:** Action is taken by the Government toward an e-mobility conducive ecosystem by
 - enhanced coordination, planning, and capacity for promoting electric mobility
 - required regulatory technical standard and implementing policy frameworks for electric mobility
 - implemented appropriate emission standards and mandates
 - implemented policy frameworks for ensuring the long-term sustainability of low-carbon electric mobility
 - the created enabling investment climate for implementing policy frameworks for electric mobility
- **Outcome 2:** The mass deployment of e-buses is kick-started and the public transport ridership is increased by
 - Finance of e-buses kick-started the mass deployment and provided evidence of technical, financial, social, and environmental sustainability
 - Ridership of public transport and e-buses is increased through smart infrastructure measures
- **Outcome 3:** Finance of e-LCVs kick-started mass deployment and provide evidence of technical, financial, social, and environmental sustainability.
- **Outcome 4:** Investment in low-emission (fast) and inclusive charging infrastructure laid the foundation for the deployment EVs in the commercial fleets and facilitate further spill-over to other segments.

The incremental number of EVs is directly influenced through the FA of the Program by lowering the current financial investment barriers and indirectly through the creation of an e-mobility conducive environment which sparks further investments in commercial EVs. Latter is achieved through TA activities whilst also being a consequence of the FA which reduces the risk profile of future EV investments. The individual outputs to achieve the outcomes are further detailed in section B.3.

Outputs

The Outputs that result in an enhanced e-mobility conducive ecosystem are the following:

- Output 1.1.1: A national sustainable and inclusive e-mobility strategy and implementation plan established / complemented / A multi-stakeholder and gender inclusive consultation strategy is implemented and recommendations for a long-term coordination mechanism are delivered to key government actors
- Output 1.1.2: Key public and private stakeholders are trained (including on gender policies)
- Output 1.1.3: Public and private stakeholders' awareness enhanced
- Output 1.2.1: Regulatory standard reform proposal that includes gender-equality policy issues for electric vehicles delivered
- Output 1.3.1: Standards and policy framework for regulating eligible emissions developed
- Output 1.3.2: An appropriate monitoring system for air pollutants for the Metropolitan Area of Asunción
- Output 1.4.1: Standards and a policy framework for regulating the disposal of electric vehicles developed
- Output 1.4.2: New business models, including the responsibility of vehicle distributors delivered
- Output 1.4.3: Waste management stakeholders are trained on EV management
- Output 1.5.1: Proposal for regulatory subsidy and tax reforms for the uptake of electric vehicles developed
- Output 1.5.2: Business models, financial schemes and procurement guidelines delivered
- Output 1.5.3: Project sourcing and preparation delivered for pipeline sub-projects

The Outputs that result in the kick start of mass deployment of e-buses and an increase of the public transport ridership are the following:

- Output 2.1. Financing of e-bus sub-projects is provided, and e-bus fleets are deployed by bus operators
- Output 2.2. Smart facilities for enhanced public transport access, improved inter-modality and non-motorised transport are implemented and in operation

The output that results in the kick start of mass deployment of e-LCVs is the following:

- Output 3.1. LCVs (public and private) are financed and deployed

The outputs that result in the construction of a low-emission charging infrastructure are the following:

- Output 4.1. Technical preparations for fast charging infrastructure investments finalised, incl. engineering and procurement process
- Output 4.2. Low-emission fast-charging infrastructure financed and construction of in relevant municipalities completed

Program Activities / Inputs

The Sub Program 2 activities (see section B.2(b)) are aligned with financing needs targeted towards reversing the current trend of increasing transport emissions and towards low-emission electrified and sustainable transportation systems. The Program outputs will be achieved through providing:

- **Inputs 1:** Loan de-risking of investments to enhance bankability and leverage resources in electric mobility and sustainable urban transport systems (under Component 2, 3 and 4). Concessional investment are a game-changer and allow to make EV investments sufficiently attractive to pull-in private and public capital. Investments are related to urban public transport buses, public fleets and light commercial vehicles (LCV) used in the urban context. Public transport investment sub-projects are linked to replicable and innovative business models which allow for a modernization and increased attractiveness of public transport. Public fleets and light commercial vehicles are linked to the establishment of fast-charging infrastructure which allows to fundamentally de-risk the investment in such vehicles and removes a core barrier to mass deployment of such vehicles.
- **Inputs 2:** Grant-based technical assistance under Component 1 to enable EV conducive environments on a local, national and regional level fostering innovative business models, policies which favour e-mobility, training and capacity building measures to strengthen local know-how and capabilities, performance monitoring and outreach activities to increase awareness and information on e-mobility, and gender actions to reduce existing gender gaps and to foster an equitable public transportation system.
- **Inputs 3:** Grant-based technical assistance to source and structure investment sub-projects for the Program which act as door-opener and catalyser of innovative business approaches and of EV mass deployment (Component 1).

Barriers and Risks Addressed by the E-Motion Program (Sub Program 2)

Financial barriers

Higher up-front procurement costs: A core barrier to EV deployment is the 2-3x higher CAPEX of EVs including associated infrastructure, e.g., grid connections and bus depot upgrades. The higher CAPEX results in higher capital requirements, higher finance and insurance costs and higher risk exposure due to higher debt levels. Higher CAPEX can be partially or fully recovered with lower Operational Expenditures (OPEX), primarily lower energy and maintenance costs and a higher lifespan of EVs. However, the profitability of EVs is only in the long-term and insecure. In the majority of involved countries, the differential investment in an e-bus is not recovered during its lifespan, due also to having to re-invest in batteries and chargers during the asset lifetime. Municipalities and transport operators in developing countries therefore prefer to invest scarce capital resources in a larger number of new fossil vehicles although electric units have potentially lower total costs of ownerships (TCO).

Table 2. Capital demand diesel and electric bus (example from Uruguay)

2020	Diesel Bus	BEB	%BEB/diesel bus
Capital investment	\$182,000	\$358,000	197%
2030	Diesel Bus	BEB	%BEB/diesel bus
Capital investment	\$182,000	\$230,545	127%

Source: Annex 2

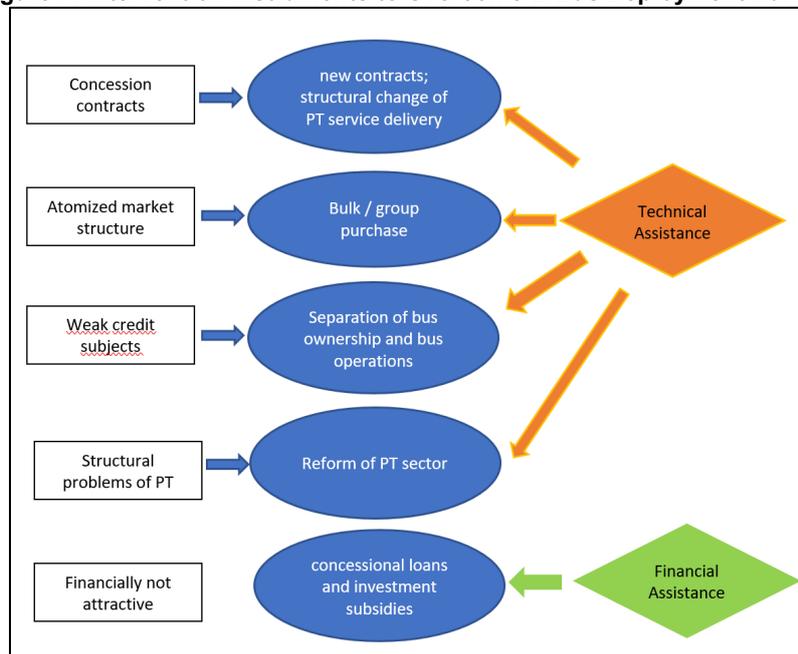
This barrier can be overcome with alternative financial structuring and business models which allow financially stronger players with lower capital costs to invest in assets whilst transport companies (private or public) operate the system based e.g. on leasing schemes.

Profitability barrier: Currently EVs are financially unprofitable without support in any of the countries included in the Program. Whilst TCOs can be lower than of fossil units, this does not take into account the time value of money or risk. The market studies (for E-Motion Program Sub-Program 1 and 2) show that in general the Financial Internal Rate of Return (FIRR) of investing in EVs is lower than for investing in fossil units and the differential investment is not profitable. This barrier is overcome through concessional financing in the short term and in the medium term through policies which increase the financial attractiveness of EVs. Such medium-term policies and measures could include business models, financial schemes, and procurement guidelines while building capacities among stakeholders, such as local financial institutions, to enhance risk perception. Medium-term policies could also involve regulatory subsidy and tax reforms for the uptake of electric vehicles. In addition, market forces result in decreasing EV purchase prices and associates' components, batteries in particular (based on battery and BEB price decreases of US DOE and trend prices of BEB prices of last 5 years from PR China manufacturers).

Fiscal barriers

Unfavourable business models and fiscal environment for EV deployment. The barrier prevalent in various countries are governance structures and business models not conducive to EV deployment. Innovative and localized business models that redefine the roles and the risk allocation among involved private and public actors are required. Local regulations, contract structures, payment systems and fare structures are frequently not favourable for e-buses. Adjusting such structures can be a game-changer for e-mobility allowing to apply innovative business models adapted to the eco-system of e-mobility. Public transport concession contracts are in general not conducive (too short) for e-buses, credit subjects are weak, many transport operators with small fleets are prevalent in many Latin American countries and many PT systems and operators suffer from severe financial problems not making them credit subjects to banks. The following figure shows in an exemplary manner the barriers related to business structures and measures to overcome these for e-buses.

Figure 7: Intervention Instruments to Overcome E-Bus Deployment Barriers



Source: AFD FP – E-Motion Sub-Program 1

Regulatory barriers

Policy environment not conducive for mass EV deployment: The barrier is related to conducive policies. Initial steps have been taken by all countries and some have developed comprehensive EV targets and roadmaps. However, policies have not yet boiled down to the implementation level and require more clarity and a higher level of detail to foster mass change. As example, targets on numbers of EVs on the road in 2030 are a visible signal. However, if they are not followed up with incentives, activities and measures to actually get there, they will remain a paper tiger. A sector-specific roadmap for example for electrification of public transport which identifies short-, medium- and long-term actions to be taken, funding options and responsibilities, will have a much larger potential to achieve real results.

Lack of optimal vehicle & charging standards, incl. battery recycling & disposal: The barrier is related to a lack of know-how on optimal EV ecosystem design (identification of type of EVs to use, fast/slow/opportunity charging etc.), maintenance & operations, as well as on used battery management policies including options of 2nd-life usage, recycling and disposal. This barrier is overcome through regulatory support, capacity developing and training efforts as well as knowledge materials.

Technical barriers

Performance risks and related perception of EVs: Refer primarily to higher than expected energy consumption, energy costs, maintenance costs and repair costs. The higher risk of EVs compared to fossil vehicles as the technology performance level in the respective country is unknown, the long-term profitability of EVs depends on long-term energy price development and cities and operators lack know-how in EV system design, maintenance and operations. Energy costs in many countries are dependent on time of usage and are split in a consumption and demand charge requiring multiple ex-ante assumptions on vehicle usage which have an intrinsic imprecision. Performance risks are also related to vehicle power, usage possibility and battery lifespan. This results in a (perceived) high-risk profile of EVs. Some of the risks can be covered through contractual measures whilst others require experience of large-scale operations. The investment sub-projects will allow to gather real data on EV performance thus reducing performance risks of investing in EVs.

Lack of low-emission infrastructure investments for enhancing deployment of e-mobility: One of the main barriers for EV deployment is a missing large charging infrastructure in the cities that generates trust in these new technologies. In countries of Sub-Program 2, most of the light vehicles are bought in secondary markets with reduced prices (e.g., in Panamá) from generally recognized brands, in that sense, promoting the dynamization of this secondary market while helping built a large charging infrastructure in the countries will help with the shift to EVs, while the program finance large new and well-organized fleets.

Social barriers

Disregard of transportation uses other than those employment related. Travel patterns considered when designing buses, stops, charging facilities, routes, infrastructure for modal shifts, etc. respond to a male standard. Many studies around the world show that decision-making regarding the abovementioned transport policy considerations is biased: it mostly takes into account commuting purposes, and a stereotypical (male) worker as a model user. Although nothing is planned to deliberately disadvantage women, the lack of appraisal of their patterns, needs or difficulties results in their exclusion at a certain extent, ergo, a less efficient system. Women, who are responsible for about 75% of all caregiving activities, don't make point-to-point daily journeys. They tend to trip-chain, to combine short walks with motorized travel, to spend more time in the buses, at the stops, at the streets; to travel with children and other dependants, to carry strollers, purchases, etc., and to suffer from sexual harassment and other gender-based public forms of violence. If a paradigm shift ignores this information, it will not only be less efficient and transformative, but it also carries the risk of deepening the existing gaps and gendered forms of exclusion.

These barriers can be overcome in the most efficient and effective manner by targeting high-usage vehicles and by focusing on cities as this allows for a high mitigation impact with a good value for money, is less complex due to less involved stakeholders, is in the political influence area of cities which are known to be drivers of the transformational shift towards e-mobility and is a more equitable approach as the focus is on commercial, public and shared mobility fleets and not on private passenger cars. The Sub-Program 2 tackles these barriers and offers a comprehensive e-mobility package including technical assistance (Component 1) thereby improving the policy framework and the ecosystem and removing barriers which allows to kick-start mass deployment of EVs and the long-time shift to low-emission transportation, financial support for e-buses (Component 2), financial support for commercial EVs (Component 3) and charging infrastructure (Component 4).

Assumptions and drivers

The key assumptions of the Program are that (i) investments in EVs take place as planned, despite potential unpredicted impacts of the Covid-19 pandemic or any other drivers for economic crises; (ii) the political framework in the programme countries is stable, hence the performance of political willingness and support throughout the programme implementation is as expected; (iii) fleet electrification and new operational models for public transport services are perceived and adopted well by the society in each country; (iv) the countries undertake and put additional measures in place to enhance and make public transport more attractive, e.g. attractive fares linked to new business models to provide better service, improvement of the quality of service, better trip experience, dedicated buses lanes, enhanced service (incl. more lines, and interconnection etc.); (v) beyond the programme scope, the interest of new investors is linked to electric mobility and new business models (hence the programme's paradigm shift potential can

unfold); (vi) capacity building leads to effective know-how transfer and spill-overs, (vii) EVs have lower emissions than fossil units (i.e., electric energy systems can cope with growing EV charging demand with renewables);⁴⁵ (viii) future electric vehicle capex and energy costs will decrease.

In addition, a key driver for the accelerated uptake of EVs will be spill-over effects to other vehicle categories influenced by the project's business models and financial schemes. This will be flanked by the strong political support and prioritizing of e-mobility and renewable energy.

The theory of change diagram for the E-Motion Sub-Program 2 is included in Annex 24, taking into account the FA and TA Component 1 to 4. Outputs are detailed in B.3. Country specific theory of change illustration can be found in the country reports T4-Market Study and Strategy of Intervention⁴⁶ for each country, i.e., Panama, Paraguay and Uruguay.

⁴⁵ Assumption VII is a fundamental assumption related to the mid- to long-term grid performance in the envisaged case of a large-scale roll-out of EV deployment and high penetration rates for buses, LCVs, and spillover effects to other vehicle segments, such as private cars and taxis. As shown by the pre-feasibility studies, the initial e-vehicles financed by the program do not depend on this assumption – despite certain recommendations made regarding micro level grid impacts that should be addressed by the Program's infrastructure interventions. However, in order to adapt to implications/risks associated with assumption VI and ensure the paradigm shift component of the Program, activity 1.1.1a aims at preparing studies to assess impacts on the countries' grid, charging infrastructure, and power generation capacity under high shares of e-mobility. Varying scenarios of low carbon electric vehicle and renewable energy penetration will be analysed against a business-as-usual scenario. The studies aim at identifying required grid capacity in different parts of the countries, as well as analysing the impact of different electric vehicle charging scenarios on the grid (not only as an overall power requirement).

⁴⁶ See Table 1 from Annex 2-Feasibility Study.

B.2 (b). Outcome mapping to GCF results areas and co-benefit categorization

Fill in the GCF results area table below to map each project/programme outcome identified in section B.2(a) to the contributing GCF results area(s) by referring to the description of eight results areas provided in the guidance note.

Outcome number	GCF Mitigation Results Area (MRA 1-4)				GCF Adaptation Results Area (ARA 1-4)			
	MRA 1 Energy generation and access	MRA 2 Low-emission transport	MRA 3 Building, cities, industries, appliances	MRA 4 Forestry and land use	ARA 1 Most vulnerable people and communities	ARA 2 Health, well-being, food and water security	ARA 3 Infrastructure and built environment	ARA 4 Ecosystems and ecosystem services
Program Outcome 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program Outcome 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program Outcome 3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program Outcome 4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long-term Outcome 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long-term Outcome 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long-term Outcome 3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long-term Outcome 4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If any co-benefits have been identified in section B.2(a), fill in the Co-benefit table below to map each co-benefit to the corresponding category as defined in the FP guidance note.

Co-benefit number	Co-benefit					
	Environmental	Social	Economic	Gender	Adaptation	Mitigation
Co-benefit 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Co-benefit 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B.3. Project/programme description (max. 2500 words, approximately 5 pages)

Program Description & Intervention Strategy

The E-Motion Program and its Sub-Program 2 in Uruguay, Paraguay and Panamá shall contribute to overcome the barriers to mass deployment of commercial EVs. The Program has a comprehensive approach and includes implementation-oriented activities such as targeted policy advice, business model development and capacity building to ensure a favourable e-mobility environment combined with financial instruments to ensure deployment of large-scale fleets. The establishment and operation of large-scale EV fleets works as proof of concept of the commercial viability of EVs and fosters a mass replication without further concessional finance. The Program can reduce risks through the investment interventions combined with the implementation of business models appropriate for EVs (e.g., asset and operation separation; operating/financial leasing, Bus-as-a-Service and PPP schemes).

For each country, a market assessment (see for details section below) has been performed analysing (i) the current financial viability of commercial EVs in terms of total cost of ownership, profitability, payback period, cash-flow and debt structure; (ii) required financial instruments, which are currently not available, to overcome current financial viability barriers; (iii) market readiness of EVs in the specific country based on energy and vehicle prices and future expected EV costs. Interventions are designed to accelerate market readiness and to foster widespread commercial deployment of EVs without further financial assistance. Therefore, interventions in each country are targeted to vehicle segments where (i) existing conditions are favourable for EVs (in terms of policies, energy prices, interest of investors, clean electricity mix to ensure environmental integrity); (ii) limited financial support can make a decisive change and (iii) market conditions allow in the medium term (by the end of the Program) for a sustained uptake of EVs based on commercial conditions.

The Feasibility Study in Annex 2 provides market assessments for buses, public fleets and LCVs in all Sub-Program 2 countries (Uruguay, Paraguay and Panama). The proposed intervention instruments are thus targeted to the specific country situation and follow the concepts of minimum degree of concessionality and high potential of commercial uptake at the end of the Program. Also, the needs for technical assistance on a national and local level has been identified through country specific diagnostics and stakeholder consultations. This has resulted in interventions not being suggested for all countries in all vehicle segments.

The Program is for commercial EVs and charging infrastructure. Private passenger cars and motorcycles are not financed. Commercial vehicles result in a much larger impact in terms of reduced GHG emissions and improved air quality and have significantly lower GHG abatement costs than private vehicles. With a small number of vehicles and a limited investment, a large impact and a high visibility can be achieved. Concessional finance for private vehicles is socially inequitable and could result in a mode-shift from public to private transportation. Commercial EVs targeted are urban electric buses which have attracted the most attention from stakeholders in the involved countries, public fleets and urban light commercial vehicles.

The potential segments for investment sub-projects in Uruguay, Paraguay and Panama that have been identified (see also Annex 2) are:

- **e-buses.** Public / private bus operators with different legal regimes, which could operate **650 e-buses**. In business model 1 (direct purchase), the operators would own/lease the fleet (e.g., leave from a special purpose vehicle).
- **e-LCV.** A variety of LCV users, both public entities and private companies are interested in investing in this type of EV. The potential is **1,150 e-LCV** to be financed under the Sub-program 2. This operation could be managed via a funding Special Purpose Vehicle (SPV) leasing those vehicles. From this total, 900 eLCV are for public fleet operations. The three countries have been implemented and/or plan to create a scrapping program⁴⁷. To have a scrapping program for public fleet will enable the scrapping for other segments such private LCVs.

The Program only includes 100% BEVs. Hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEV) are not included. HEVs and PHEVs were an intermediate technology as long as BEVs were not yet technologically mature (see for details Annex 22). Hybrid buses can recover their incremental investment but only have a limited environmental impact of around 20% of emission reductions. A review of >50,000 plug-in hybrid buses deployed in PR China revealed that the overwhelming share of plug-in hybrid buses are never re-charged and thus only result in 20% energy and GHG savings (ADB, 2018). Exceptional cases where such buses can make sense are in countries or cities with electricity supply problems and frequent prolonged black-outs⁴⁸ or on very demanding routes. PHEV light vehicles are not a commercially attractive option. The battery size of PHEVs is small resulting in an electric driving range of only 30-50km. Most PHEVs models can only use AC slow chargers which means charging of more than 1 hour to re-charge their already small batteries. A recent study of ICCT revealed that commercial PHEVs only run 20% of real-world driving on electricity⁴⁹. Also, PHEVs are more complex and expensive to maintain due to having both electric and internal combustion powertrain. The limited operational savings are insufficient to recover incremental investments of PHEVs compared to fossil or hybrid units. Hydrogen or fuel-cell vehicles are not included in the Program. They use on a life-cycle base 3-4x more electricity than BEVs due to highly energy intensive hydrogen production. They therefore result in most countries in an increase of GHG emissions compared to fossil units, except if hydrogen supply is exclusively based on electrolysis using renewable energy. In such cases hydrogen can be of interest especially for long-haul vehicles or large vessels. However, this is not the scope of this Program.

Market Assessment

A market viability assessment has been made for each of the three vehicle segments (urban buses, public fleets and LCVs) in each country based on local prices, costs and operating conditions (for all E-Motion countries). This reflects the current market situation for EVs which is then expanded, based on projected future selling prices of EVs until 2030 (again per vehicle segment and country) to assess commercial viability of vehicles without financial support. Financial parameters used for the assessment are primarily TCOs, the FIRR compared to the weighted average capital cost (WACC) of the transport sector, the dynamic payback, cash-flow and debt levels and required equity investment levels (see Annex 2). Whilst results differ between countries and vehicle segments core take-aways are:

⁴⁷ E-motion does not promote earlier replacement or scrapping of vehicles. Scrapping Programs in any case have limited merits as for example in the case of buses old municipal buses could still be used to replace even older rural or private transport buses with low mileage.

⁴⁸ This is the reason why plug-in hybrid buses and not full electric buses were purchased for the BRT Peshawar.

⁴⁹ ICCT, 2020: Real-World Usage of Plug-In Hybrid Electric Vehicles

- Regulations are often not conducive for EV investment e.g., the length of concession contracts is too short for long-term investments or concession payment systems are not conducive for other ownership structures.
- Long-term market signals and target from the governments are missing e.g., mitigation target for the transport sector, incl. measures such as zero emission shares / plans / restrictions, emission standards etc.
- Non-discounted TCOs of e-buses are in various countries lower or at-par with fossil units. However, this depends on various critical assumptions including lifetime of EVs versus fossil vehicles, maintenance costs, energy usage and energy costs and battery replacement costs.
- The differential FIRR (profitability of the incremental investment in an EV versus a fossil vehicle due to operational expenditure savings) is in the large majority of cases below the benchmark WACC, which means the investment is not profitable.
- The dynamic payback time of EVs is long (often beyond 10 years) and in general exceeds the concession periods of transport operators and in many cases also exceeds the asset lifetime.
- EVs require 2-3x more investment capital, 3-4x higher equity investment⁵⁰ and higher loan volumes resulting in a balance sheet laden with debt and high consequential risks. Most investors prefer to purchase more fossil vehicles thus renewing their fleet more rapidly or increasing revenues instead of investing in costly EVs.
- EV investments result in prolonged periods of cumulative negative cash-flow which can result in liquidity problems of investors.
- The lack of large fleets results in scepticism concerning the reliability and performance of EVs and a lack of know-how on EV maintenance. Also, spare parts are scarce in the country without deployment of large fleets. No party wants to be the first mover and take the risk, although many acknowledge that this might be an interesting investment.

Business models in many countries are not conducive for EV deployment. Example for buses: short period for concession that is not enough to amortize eBuses investment, subsidy and payment index only to passenger transfer and not considering a component for kilometres travelled or level of service. New business models (see for more details section below) based on separation of asset ownership and operations or leasing models also require risk instruments to be in place e.g., fare systems managed by third parties with automated debiting to the vehicle asset company to ensure payments, vehicle transfer agreements in case of operator default, vehicle insurance systems or bankable concession contracts.

Financial Support Instruments

The market assessment identified that without initial support commercial EVs are not yet viable in Program countries. The market assessment also identified the main financial support instruments required:

- Concessional loans
- Equity (private sponsor)

The level of support is determined per country and per vehicle segment. Rates established based on the market analysis and the objective of minimum concessionality levels are shown in the table below. Financial structure considers: 90% of the Sub-Program investments are funded with loans (65% of loans from CAF, 35% of loan from GCF). Remaining 10% is funded by equity from private sponsors.

Table 3: Proposed Financial Instruments under the Sub-Program 2 (maximum levels as % of total CAPEX)

Country	Instrument	Electric Buses ⁵¹	e-LCVs	e- Public Fleets	Urban fast charging
Panama	Concessional loans	90%	90%	90%	100%
	Equity (public or private sponsor)	10%	10%	10%	0%
Paraguay	Concessional loans	90%	90%	90%	100%
	Equity (public or private sponsor)	10%	10%	10%	0%

⁵⁰ This rate is higher even than the total investment capital as FIs in general only finance a percentage of the vehicle cost and not the associated charging infrastructure, grid connection or bus depot upgrades which are considered non-marketable assets.

⁵¹ Includes vehicle, charging infrastructure, grid connection and vehicle depot upgrades (if required).

Uruguay	Concessional loans	90%	90%	90%	100%
	Equity (public or private sponsor)	10%	10%	10%	0%

Concessional loan conditions of GCF are expected to be **0.75% interest rate for public and 1.10% interest rate for private sector** plus service and commitment fee when applicable. The **loan tenor** is for **15 years** maximum.

The viability of the Program is highly dependent on the accessibility of concessional funding. The absence of this financial support limits the ability of public and private initiatives to invest in EV fleets. Initial financial support for large-scale fleet deployment of electric buses as well as LCVs is critical and there is sufficient international evidence to support this statement. So far, even in developed economies, no country worldwide has been able to deploy a large-scale fleet of commercial EVs without financial support (see feasibility study in Annex 2). The following sections summarize the international experience.

Table 4: Investment Grants for E-Bus Purchase

Country	Incentive
China	100% of incremental bus cost subsidized; chargers and grid connection up to 100% subsidized; electricity price initial 3-5 years subsidized; decreasing rates since Program start in 2009
India	80-100% of incremental bus cost subsidized in Fame II; chargers subsidized. FAME I 2015-2019 had 20 percentage points higher subsidy levels than FAME II
Germany	80% of the total incremental cost of e-buses and 40% of all other costs for charging infrastructure, grid connection, bus depot upgrades subsidized plus coverage of 100% of costs for the establishment of new maintenance centres
Switzerland	80-100% of incremental costs of buses and 100% of charging infrastructure and grid connection costs subsidized
UK	75% of incremental bus and charging infrastructure costs subsidized under Phase II (since 2019); under Phase I (2016-2019) 90% of incremental costs were financed
Poland	100% of incremental cost of entire e-bus system subsidized
USA	90% of incremental cost of entire e-bus system subsidized
Colombia	100% of incremental CAPEX of entire e-bus system was paid in Medellin and Phase I in Bogota. 100% of incremental total lifetime cost of e-bus system (CAPEX plus OPEX) subsidized in Phase III in Bogota (16% incremental cost compared to fossil units) ⁵²
Chile	100% of incremental cost of entire e-bus system for Phase I (200 buses) subsidized with monthly instalments during 10 years; phase II longer concession periods for e-buses compared to conventional units (+40%) and additional points in tenders
Uruguay	100% of the incremental cost of e-bus plus chargers is paid in monthly instalments for 7 years; the government subsidy for e-buses equals the government savings on subsidies saved on diesel fuel. ⁵³

Source: Grutter Consulting (2020), attached a Benchmark Report of the Sub-Program 1 FP (Annex 22)

Countries consistently subsidized 80-100% of the entire e-bus system incremental cost for the initial phase. Countries decreased their subsidy rates significantly within few years (e.g., China, India, UK, Chile). The importance of upfront investment subsidies – independent of TCOs – to kick-start deployment of e-buses is thus clear. It also shows however that once a large fleet is established, subsidies can be reduced gradually and even be eliminated due to more competitive prices of e-buses combined with the experience of mass operations of e-buses. Concrete examples are⁵⁴:

- In PR China, the average subsidy level per 12m urban e-bus decreased within 5 years from 150,000 USD per bus to 30,000 USD per bus and is expected to be fully eliminated by 2022⁵⁵.
- In India, under FAME I 2017-2019, e-buses were subsidized with 60% of incremental costs. This was reduced to 40% under FAME II 2020-2021 (40% of a lower absolute value meaning absolute subsidies were reduced by more than 50% within 2 years).
- In the UK, the 1st scheme for low carbon buses (until 2017) subsidized 90% of the incremental cost and the 2nd scheme, since 2018, 75% of the incremental cost of e-buses (including charging infrastructure).

⁵² Phase II had no subsidies for e-buses and all contracts were awarded to fossil bus systems as e-bus offers were non-competitive

⁵³ This subsidy has a cap, 4% of the national bus fleet for public transport (about 130 buses). In 2020, after the first call a total of 30 BEB have benefited so there are 100 left but conditioned to: 1) technical evaluation of the 30 BEB and 2) for the actual COVID 19 scenario that have impact country fund availability. E-Motion's Sub-Program 2 aims to contribute to reactivate this subsidy, to actually allocate resources to increase the target (4%)

⁵⁴ See Benchmark Report in Annex 22

⁵⁵ Source: Grutter Consulting; contract with ADB for monitoring of e-bus fleets in 18 cities with 60,000 buses financed by leasing funds with support by ADB

- Chile subsidized for the first lot of 200 electric buses 100% of incremental costs. The next lots received no more investment gap subsidies but some additional benefits for e-buses relative to fossil units in tenders which is translated into higher payments per distance driven or per service unit for e-buses (TransMilenio, Colombia analysed the tenders of Santiago and estimates the subsidy to amount to more than 16% of total costs per km⁵⁶).
- Uruguay subsidized for the first lot of 30 buses 100% of the incremental cost, through a National law that was intended to be up to 150 buses for the whole country.

Delivery Channels and new business models

Once the E-motion implementation stage begins in each country, it will be necessary to have the active involvement of the national technical teams that conduct electromobility in each country of sub-program 2 (see abbreviation list):

- PA: CIME, SNE, MiAmbiente, ATTT
- PY: VMT, VMME, Strategic Electromobility Table, MADES, ANDE
- UY: MIEM, GIEET, MiAmbiente, MTOP, UTE

These teams must articulate with the other relevant entities identified by E-motion, to generate the enabling conditions (regulation, incentives, private-public alliance) that allow the replicable operation of the electromobility sub-projects that will receive funds from financial assistance (FA). As it was mentioned in previous section, Figure 3 summarizes potential financing executing entities identified during the market study; and all them have been interviewed during the market study with high interest in E-motion value proposition.

Finance is channelled to investment sub-projects through:

- 1) Financial intermediaries for loans for the purchase of e-LCVs (public⁵⁷ and private) which are mostly owned by public and private companies. CAF has identified a number of reputable intermediaries. Some of CAF potential partners for the implementation of this component include In Panama: Banco Nacional, Caja de Ahorro, Banco General; in Paraguay with Banco Nacional de Fomento; in Uruguay: Banco de la República de Uruguay and private banks like Santander and HSBC. It is also important to mention that CAF has, or have had, working relationships with some of these institutions.

CAF will enter into loan agreements or amend existing loan agreements with Financial Intermediaries to deploy an e-LCVs credit line. Financial Intermediaries loan agreements will contain Anti-Money Laundering (AML) and Countering the Financing Terrorist (CFT) clauses.

CAF will establish a methodology to follow appropriate commercial practices and procedures in all projects financed with GCF resources. In the provision of financing, CAF will perform a due diligence of the Financial Intermediaries and carefully assess their ability to meet their obligations under the loan agreement.

CAF and GCF proceeds will be lend to Financial Intermediaries, which will in turn on-lend these proceeds to public and private companies. CAF will contractually ensure that the financial conditions provided by GCF are transferred to the public and private companies.

CAF as per the loan agreement will have the ability to reject a sub-loan. The Financial Intermediaries screen potential loan recipients (i.e., the final beneficiaries) in accordance with the eligibility criteria presented below and then present a list to CAF for final approval. CAF has the ability to reject a proposed sub-project (loan recipient). Moreover, it will be a requirement in the credit line rules that refinancing is not allowed. Financial Intermediaries will disburse GCF and CAF loans to public and private companies consistent with the mandate of the Program and eligibility criteria. As part of the Program, CAF teams will provide technical assistance and capacity building to help Financial Intermediaries conduct internal procedures to evaluate eligible projects, check compliance with the mandate and put in place monitoring systems. No project may be financed with GCF's resources if it does not meet the conditions required by the GCF according to the FAA. The Program Management Unit will review and assess projects eligibility. In addition, contractual obligations will be established for both: the Financial Intermediaries and the agreements with beneficiaries.

Loans will be repaid by the public and private companies to the Financial Intermediaries, and after those resources will be transferred to CAF. CAF will repay the resources to GCF.

⁵⁶ Grutter Consulting, personal communication with TransMilenio

⁵⁷ Component 3 is for both, public and private fleets in light commercial or light passenger vehicles. Just to be clear, public e-fleets is not for providing public transport systems (eBuses which is component 2), is for operation of many public entities within the countries that also needs to decarbonize their mobility operations.

The eligibility criteria for accessing e-LCVs credit line are listed in the table below.

Table 5: Eligibility criteria to access to e-LCVs credit line

Criteria	Description
Beneficiaries	Public and private companies that uses own or rented fleets for operations
Eligible investment	Electric light commercial vehicles Plug in Hybrid vehicles are not eligible For high millage use For people and goods transportation (urban logistics)
Financing thresholds	Up to USD 12.1 MM Refinancing is not allowed
Minimum co-financing by the beneficiary	10% (expected upfront down payment by beneficiary/ultimate borrower)
E&S category	B or C (category A is not eligible)
Other conditions	Vehicles must be new (not second hand) The technology must comply with the current national regulation The technology must guarantee at least 8 years of the battery. The operational solution must be proven by the promoters for each project, according to the characteristics of the beneficiaries Purchase must include charging systems for the fleet Provision of technical maintenance must be provided At least 15 years of lifespan Satisfactory money laundering, integrity, and credit rating assessment ⁵⁸

Table 6: Eligibility Criteria to access to Sub-projects (From LFIs)

Criteria	Description
Eligible borrowers	Small-medium size logistic, last mile, Local/urban delivery companies, supermarkets, local authorities (municipal)
Eligible investment	Electric light commercial vehicles Plug in Hybrid vehicles are not eligible For high mileage use For people and goods transportation (urban logistics)
Financing thresholds	Up to USD 5.0 MM Refinancing is not allowed
E&S category	B or C (category A is not eligible)
Other conditions	Vehicles must be new (not second hand) The technology must comply with the current national regulation The technology must guarantee at least 8 years of the battery. The operational solution must be proven Purchase must include charging systems for the fleet Provision of technical maintenance must be provided At least 15 years of lifespan Satisfactory controls against money laundering, integrity, and credit rating assessment ⁵⁹

- 2) Direct loans to public authorities (e.g., municipalities, federal states), Special Purpose Vehicles (SPVs), and/or other private companies including, asset management companies, leasing companies and/or other private existing

⁵⁸ Beneficiaries will need to maintain a satisfactory assessment throughout the investment life.

⁵⁹ Beneficiaries will need to maintain a satisfactory assessment throughout the investment life.

concessionaries to deploy funds for the acquisition, operation and management of electric fleets. SPVs can be publicly owned (public delivery model e.g., ownership of a municipality), a Public-Private Partnership (PPP) or fully privately owned (e.g. by electric utility, investment fund or private transport operator). In the majority of bus investment, projects either fully private or municipal owned projects are expected.

CAF will enter into loan agreements with public authorities, special purpose vehicles (SPV) and/or other private companies including public utility firms, asset management companies, leasing companies and/or existing concessionaires to deploy funds for the acquisition, operation and management of electric fleets including those related to ESG.

CAF and GCF proceeds will be lend and disburse to public authorities, special purpose vehicles (SPV) and/or other private companies including public utility firms, asset management companies, leasing companies and/or existing concessionaires. CAF will contractually ensure that provisions established in the FAA are reflected in the credit agreement. Moreover, it will be a requirement in the credit line rules that refinancing is not allowed.

As part of the Program, CAF teams will provide technical assistance and capacity building to help counterparts perform internal procedures to evaluate eligible projects, check compliance with the mandate and put in place monitoring systems. No project may be financed with GCF's resources if it does not meet the conditions required by the GCF according to the FAA. The Program Management Unit will review and assess projects eligibility.

Loans will be repaid by the counterpart to CAF. CAF will repay the resources to GCF.

CAF will directly select the sub-projects in accordance with the eligibility criteria. The eligibility criteria for accessing e-Buses finance are listed in the table below.

Table 7: Eligibility criteria to access to E-buses finance

Criteria	Description
Beneficiaries	Public authorities (e.g., municipalities, federal states), Special Purpose Vehicles (SPVs), public utility firms or asset companies for e-buses
Eligible investment	Battery Electric Bus in all technologies available (Fast Charging, Slow charging, opportunity charging) Charging systems and infrastructure included Plug in Hybrid Buses are not eligible
Financing thresholds	From USD 25 MM to 50 MM Refinancing is not allowed
Minimum co-financing by the beneficiary	10%
E&S category	B or C (category A is not eligible)
Other conditions	Buses must be new (not second hand) The technology must comply with the current national regulation The technology must guarantee at least 8 years of the battery The operational solution must be proven by the promoters for each project, according to the characteristics of the beneficiaries Purchase must include charging systems for the fleet Provision of technical maintenance must be provided At least 15 years of lifespan Satisfactory money laundering, integrity, and credit rating assessment ⁶⁰

- 3) Loans to electric utilities or third parties which establish urban fast-charging infrastructure for e-public fleets and e-LCVs - e.g. Naturgy in Panama, ANDE in Paraguay and UTE in Uruguay.

CAF will enter into loan agreements with public authorities, special purpose vehicles (SPV) and/or other private companies including public utility firms, asset management companies, leasing companies and/or existing

⁶⁰ Beneficiaries will need to maintain a satisfactory assessment throughout the investment life.

concessionaires to deploy urban fast-charging infrastructure. Financial loan agreements will contain AML/ CFT clauses.

CAF will establish a methodology to follow appropriate commercial practices and procedures in all projects financed with GCF resources. In the provision of financing, CAF will perform a due diligence of the counterpart and carefully assess their ability to meet their obligations under the loan agreement.

CAF and GCF proceeds will be lend and disburse to public authorities, special purpose vehicles (SPV) and/or other private companies including public utility firms, asset management companies, leasing companies and/or existing concessionaires.

As part of the Program, CAF teams will provide technical assistance and capacity building to help counterpart conduct internal procedures to evaluate eligible projects, check compliance with the mandate and put in place monitoring systems. No project may be financed with GCF's resources if it does not meet the conditions required by the GCF according to the FAA. The Program Management Unit will review and assess projects eligibility. Loans will be repaid by the counterpart to CAF. CAF will repay the resources to GCF.

CAF will directly select the sub-projects in accordance with the eligibility criteria. The eligibility criteria for accessing urban fast-charging infrastructure finance are listed in the table below.

Table 8: Eligibility criteria to access to urban fast-charging infrastructure finance

Criteria	Description
Beneficiaries	Public authorities (e.g., municipalities, federal states), public utility firms, SPV's under PPP arrangements or private companies
Eligible investment	Urban fast-charging infrastructure for public use
Financing thresholds	From USD 2 MM to 10 MM Refinancing is not allowed
Minimum co-financing by the beneficiary	10%
E&S category	B or C (category A is not eligible)
Other conditions	Interoperability must be guaranteed The technology must comply with the current national regulation Renewable sources of energy are desired Being part of a network is desirable Smart charging is also desired Satisfactory money laundering, integrity, and credit rating assessment ⁶¹

In addition, eligible sub-projects must fulfil the following criteria:

- Sub-projects must reduce GHG emissions and have a positive sustainable development impact;
- Sub-projects must demonstrate a transformational potential;
- Sub-projects must be financially viable, according to CAF internal policies⁶² and an agreed expected investor's hurdle rate (EIRR between 8% and 18%);
- Sub-projects must meet the environmental and social safeguard policies of CAF;
- Sub-projects must be in compliance with relevant national and local laws and regulations;
- Sub-projects with potential adverse impacts on Indigenous people will not be eligible;
- Sub-projects shall have a gender action plan taking into account guidelines developed in Annex 8;
- Sub-projects shall undergo a climate risk analysis and, if merited, specialized climate hazard mitigation studies shall procure to propose technical and technological solutions to be incorporated in the final designs;
- Sub-project shall strive to generate employment and local economic development;
- Only commercial vehicles for passenger or cargo transport are financed;
- Only full-electric battery-electric vehicles are eligible⁶³;

⁶¹ Beneficiaries will need to maintain a satisfactory assessment throughout the investment life.

⁶² CAF Risk Manual for Credit Operations, CAF's Risk Manual for Investments, CAF's Guide for Credit Ratings of Project Finance Operations, among others,

⁶³ Hybrid trolleybuses (trolleybuses with battery) can also be financed if they proof to be a more cost-efficient option than usage of battery-electric buses considering also infrastructure replacement and maintenance costs.

- No pilot program/project with less than 20 EVs are financed:
- All sub-projects will require a monitoring system to collect data and disseminate results

The Sub-Program 2 envisages to finance at least one investment project in each participating country. In the case that become unfeasible to finance any sub-project in a particular country, the resources will be re-allocated in other countries under the same component. No more than 50% funding shall be invested in one specific country. Investment projects will be determined on a “first come, first served” basis, depending on their level of maturity at the time of availability of GCF proceeds.

In addition, EVs are purchased instead of new conventional vehicles i.e. the old unit is at the end of its lifespan and not retired or phased out prior normal replacement. The intervention of the Program that instead of a new fossil vehicle a new electric vehicle is purchased. What happens with the old vehicle is the same in the project case or in the baseline case. The difference is not the old vehicle but the BAU new vehicle (fossil) against the Program new vehicle (electric). All emission impacts and financial calculations are also a comparison of a new fossil against a new electric unit. The Sub-Program 2 does not promote earlier replacement or scrapping of vehicles. Scrapping Programs in any case have limited merits as for example in the case of buses old municipal buses could still be used to replace even older rural or private transport buses with low mileage. The Program does not change the number of vehicles but the vehicle technology. Instead of 650 new diesel buses (BAU) the Program will support 650 new electric buses. What happens with the old buses being replaced by new diesel or electric units is the same in the baseline and project case. Therefore, the Program does not add vehicles. In absence of the Program the exactly same amount of vehicles would be purchased, just fossil instead of electric units.

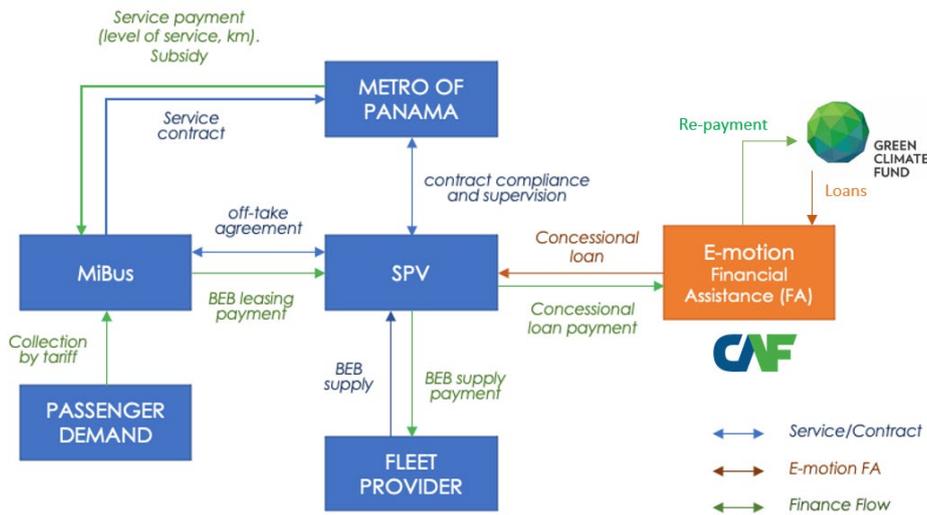
The major innovative business models proposed for e-buses are structured around bulk purchase and splitting asset ownership and operations. Unbundling ownership and operation can also include the provision of power, chargers and bus depots. Leasing by fleet owners can be limited to the vehicle or include also maintenance and energy⁶⁴. Leasing can effectively reduce the barrier of upfront investment. E-buses can have lower TCOs and leasing models can bring this advantage to bus operators. Various models are used separated in the type of leasing, the type of leasing company or components leased. The importance of these business models for e-buses relies in their ability to reduce upfront CAPEX barriers which are larger than for fossil vehicles. Difficulties of leasing models for e-buses are the long-payback period resulting in long lease terms required to make e-buses competitive. This again results in difficulties as concession contracts might be for a shorter duration than the payback time for e-buses and question concerning the actual lifespan of buses as well as the re-sale value of a leased e-bus arise (there is only a very thin market currently for used e-buses). Without proper estimate of the re-sale value of used e-buses and the actual lifespan a determination of the lease fee is complex. Long payback periods and a high CAPEX also result in high finance costs and the importance of low interest rates. Asset separation can allow for new, financially stronger companies, to enter the market and act as SPV leasing vehicles as they can have access to less costly financing sources. Supporting these business models will add to the additionality of GCF resources by de-risking the sector and providing incentives to new actors to invest in the sector. The Program will work with municipalities, the national government, transport operators and companies willing to invest in urban transport schemes in concession contracts, regulations and the structuring of business models conducive for e-bus deployment. The delivery scheme can thereby be public or private led (see figures below).

PANAMA BEB MODELS

In the case of Panama City, there are two main situations: i) concessioned operator which is MiBus (only one); and ii) small bus owners. In the case of MiBus, they have been analyzing through a TA with the World Bank several financing structures to implement their BEB renewal process (2021 to 2023, with 237 BEB). MiBus will be the public off-taker for BEB, which is part of public entity Metro of Panama. Figure 8 depicts an operational leasing model in which an SPV purchases the vehicles and leases them to the concession operator MiBus, which becomes the project off-taker. MiBus's incomes are from Metro of Panama and by tariff collection. Metro would guarantee payments to the SPV. SPV provides BEB leasing and access to concessional loans from E-motion. The offtake agreement makes fee conditional to performance. Demand risk is retained by MiBus.

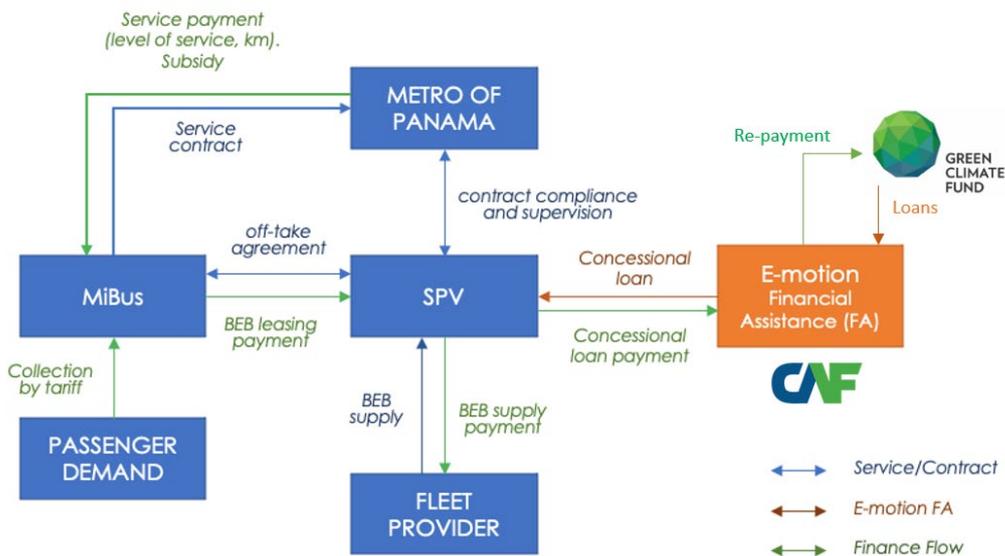
Figure 8 e-bus APP operational lease business model for Panama. Source: based on models shared by MiBus and World Bank TA

⁶⁴ Charging infrastructure can be unbundling from operator ownership, this is the concept of charging as a service, where bus operator or any fleet operator pays a monthly fee where is included energy and infrastructure (assets and maintenance). This is a possible business model among a diversity of models. Regulatory framework could impact in the new upcoming business models as well.



The previous business model won't directly be feasible for the rest of the transport service in Panama. ZEBRA project indicates that the adoption of electromobility in public transport buses requires that cities study their mechanisms to restructure their current systems. This will attract investment, BEB supply and a better level of service for the city. In this sense, the strategy recommended is to start with small or medium concessions that involve 100% electric axes or routes, which have high visibility, high demand and social support in order to ensure the conditions to make the operation sustainable in the transition process. In this way, the ecosystem begins to be stimulated, authorities assume new leadership and operators begin to organize themselves into formal companies to remain in the system and in the business, access to concessional loans. In Santiago province, UTRAPSA⁶⁵ is moving on that direction and with MOVILISA the route Chitre – Santiago has been studied to operate with BEB. Figure 9 describes a potential business model that could be feasible for structuring a new concession in Santiago where UTRAPSA has a contract with ATTT and lease BEB (offtake agreement). The security trustee manages concession payments that would be covered with ticket collection and concession budget from ATTT. E-motion would provide concessional loans to MEF which provides concession budget to ATTT. The offtake agreement makes fee conditional to performance. Demand risk is retained by ATTT.

Figure 9 Potential business models for new concessions in Panama with privates' operators. Source: own elaboration

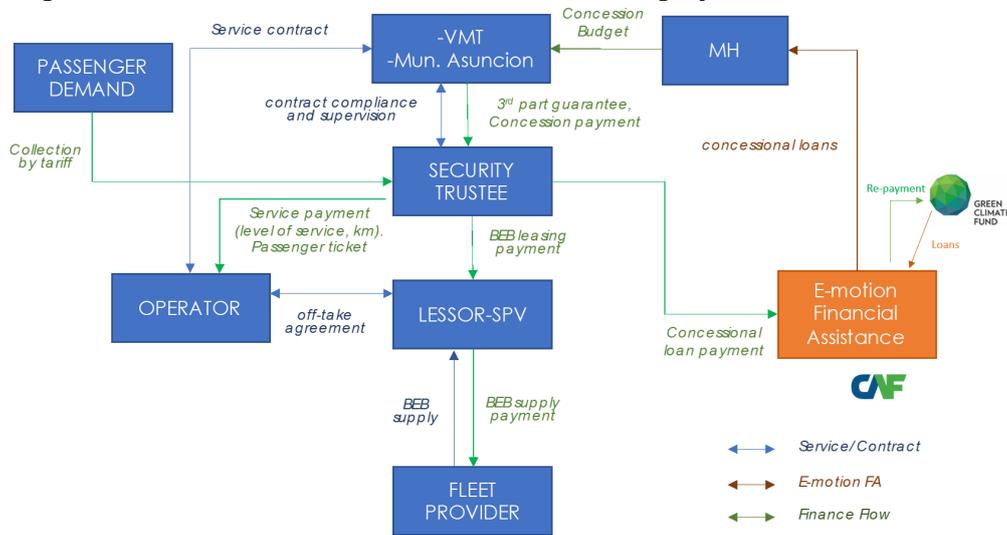


PARAGUAY BEB MODEL

⁶⁵ UTRAPSA is a new operator Company made of a group of small bus owners. They already organized and are willing to implement, at least 20 BEB for Chitre-Santiago Route.

Figure 10 schematizes the business model, which does not follow a PPP structure. Still, it is necessary to structure the model with project financing techniques. The SPV is the same fleet provider, who purchases the buses and leases them to individual private bus operators, which become the offtakers. The transport authorities (VMT and Asuncion Municipality) manage E-motion funds to implement a new version of the scrapping program through MH (concessional loan). Also they may grant operational subsidies to cover the difference between fees and costs, contingent upon performance. Most of the money movements (monthly lease payment collection, dividends, interest payments, etc.) will be made via a Security Trustee. The Security Trustee will have separate account, one for each individual private bus operator (CETRAPAM members, MAGNO). Demand risk is retained by VMT and/or Mun. Asuncion.

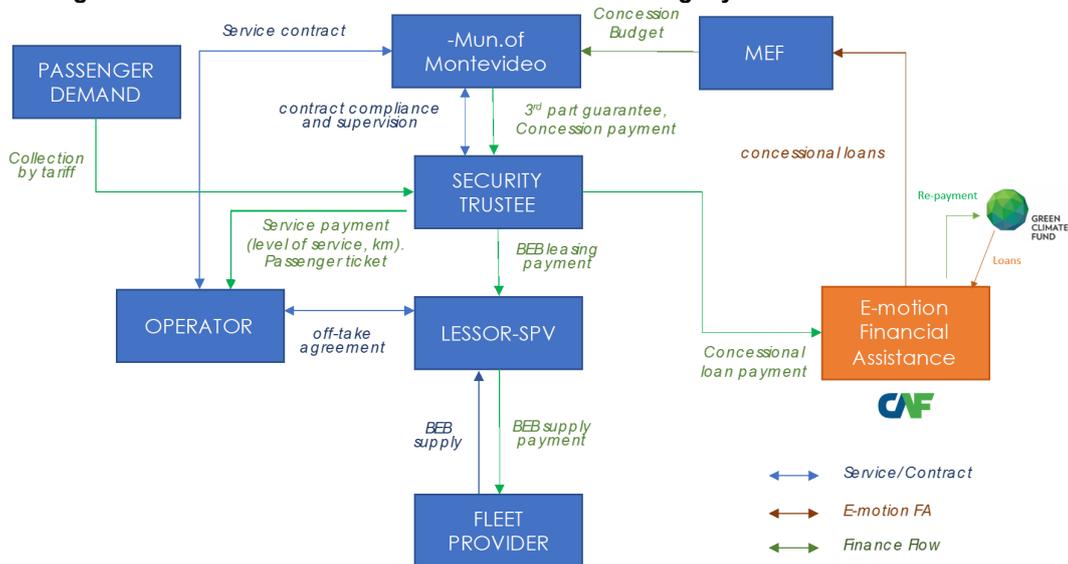
Figure 10 e-bus financial lease business model for Paraguay. Source: own elaboration



URUGUAY BEB MODEL

Figure 11 schematizes the business model, which does not follow a PPP structure. Still, it is necessary to structure the model with project financing techniques. The SPV is the same fleet provider, who purchases the buses and leases them to individual private bus operators, which become the offtakers. The city of Montevideo (IMM) may grant operational subsidies to cover the differences between fees and costs, contingent upon performance. Emotion would provide a concessional loans component that would have MEF as executing entity, in the current “fideicomiso” framework. Financial leasing would be a good option for the bus operators (COETC, UCOT, CODELESTE, COME), as they are smaller operator than CUTCSA and they actually make BEB deal with one common OEM (Yutong) and share depot (in the case of the first two companies).

Figure 11 e-bus financial lease business model for Uruguay Source: own elaboration



Also, the conventional business models of direct purchase can be an option if some off-takers prefer to keep ownership, like CUTSA may want. In this alternative, the current “fideicomiso” model for BEB subsidy would be the business model complemented by concessional loans through intermediate banks (see reference model of direct purchase in figure above). However, transition to restructure Uruguayan public transport systems needs to be started. In this sense, the strategy recommended is to start with small or medium concessions that involve 100% electric axes or routes, which have high visibility, high demand and social support in order to ensure the conditions to make the operation sustainable in the transition process. In this way, the ecosystem begins to be stimulated, authorities assume new leadership and operators begin to organize themselves to remain in the system and in the business and access to concessional loans.

Examples of Chile and Colombia in e-Bus Promotion

Chile and Colombia have been particularly successful in promoting e-buses. Why that? What was the game-changer?

Chile

The case of Chile is especially interesting due to the introduction of new business models separating bus ownership and bus operations. The first batch of 200 electric buses was based on investments of electric utilities leasing e-buses to operators, in order to boost their core business (energy sales and the installation of charging infrastructure). Critical for the first batch of e-buses was not only the investment of electric utilities but also a government subsidy for the entire incremental investment cost of e-buses versus fossil units as well as changes in concession contracts reducing risks for investors in vehicle assets and ensuring payments from vehicle operators. In subsequent tenders ownership of e-buses is mixed with some offers based on JVs of bus operators with bus suppliers and others being JVs of bus operators with investment firms. Electric utilities are no longer engaged or have teamed up with capital investment firms as they do not consider vehicle investments to be a part of their core business (e.g. AMP Capital and NEEoT Capital have entered as investors). The government no longer pays for incremental investment costs but still offers other advantages for e-buses such as longer concession periods and additional points in the bidding process representing effectively a subsidy to e-buses. Critical take-aways from the Chilean case are: (i) separation of ownership and operations can be an effective instrument to promote e-buses and can bring in new financially strong players into the industry; (ii) for kick-starting the process investment subsidies are critical; (iii) e-buses still require incentives to be competitive with fossil buses; (iv) required subsidies can be reduced significantly after an initial fleet of e-buses and after having established a working business model.

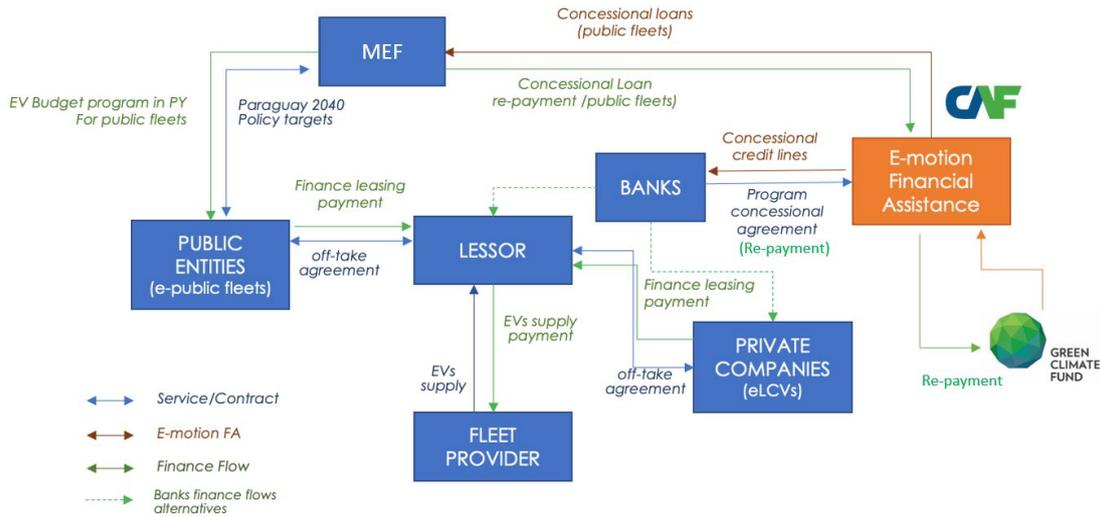
Colombia

Large Colombian cities already run successfully since many years BRT systems with private operators and a public system manager paying companies based on distance driven cum service delivery targets. E-buses have been introduced for secondary routes based on local e-bus targets. The initial batch of 500 e-buses (2019) was based on a tender which only allowed for the provision of e-buses. A subsequent second tender which allowed for any technology resulted in all winning offers to be fossil buses, thereby clearly showing that e-buses are not yet commercially competitive (end 2019). The third tender (2020) included significant additional points for e-buses as well as longer concession periods. This made electric buses competitive with fossil units but also resulted in 16% higher per-km costs of buses which is being paid by the municipality. The experience of Colombia reveals two important points: (i) e-buses can be inserted into public transport operations and will be offered by private operators if concession contracts are sufficiently attractive and if e-buses receive benefits compared to fossil units; (ii) without financial incentives e-buses are commercially not yet competitive. However, some large cities such as Bogota are willing to pay for these incremental costs due to e-buses improving air quality and reducing GHG emissions.

PANAMA e-public fleets and e-LCV model

Figure 12 shows the common model proposed for fleets cases: e-public fleets and e-LCVs in Panama. The most efficient business model requires selecting one or more private fleet providers on a competitive tender (least monthly payment), request them to set up a SPV for this project. As this is a financial lease, the SPV and the fleet provider may have the same shareholders. The SPV would lease the vehicles to both private and public parties. E-motion would provide a loan through banks (public in preference to keep concessional conditions to final users) which have separate account, one for each private entity. In the case of public fleets, E-motion would provide concessional loans to MEF for the management of the EV public fleet program (EVs and charging infrastructure).

Figure 12 e-public fleets and e-LCV financial lease business model for Panama



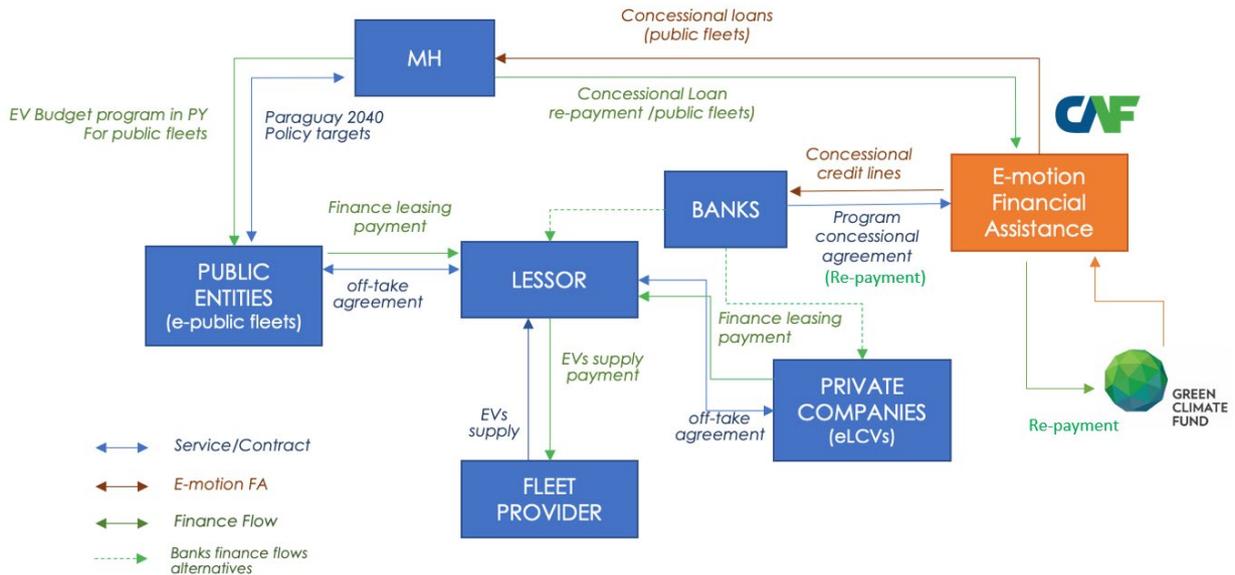
Source: own elaboration

Also, the conventional business models of direct purchase can be an option in some off-takers that prefer to keep ownership. ACP pointed they prefer direct purchase as they have a maintenance team.

PARAGUAY e-public fleets and e-LCV model

In the same line as previous diagram, Figure 13 shows the common model proposed for fleet cases: e-public fleets and e-LCVs in Paraguay. E-motion would provide a loan through banks (public in preference to keep concessional conditions to final users) which have separate account, one for each private entity. In the case of public fleets, E-motion would provide concessional loans to MH for the management of the EV public fleet program (EVs and charging infrastructure).

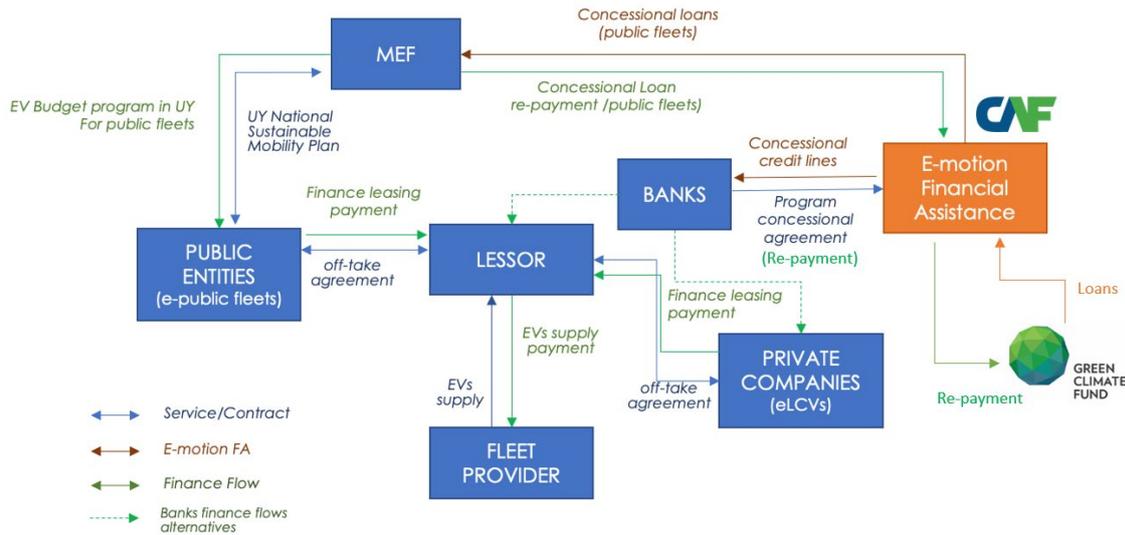
Figure 13 e-public fleets and e-LCV financial lease business model for Paraguay. Source: own elaboration



URUGUAY E-public fleets and e-LCV model

Figure 14 shows the analogous diagram for Uruguay where E-motion would provide concessional loans to MEF for the management of the EV public fleet program (EVs and charging infrastructure).

Figure 14 e-public fleets and e-LCV financial lease business model for Uruguay. Source: own elaboration



The same financial loan conditions independent of the beneficiary are requested from the GCF. The same financial hurdles are faced if vehicles are operated and owned by a private or a public entity. Program finance will not result in competitive distortions or favouring of specific private service providers as loans for LCVs are given through open-access FIs and loans to private and public owned public transport operators are based on competitive bidding.

Program Components

The Program is structured in four components supported by overarching project management:

- **Component 1: Establishment of an e-mobility conducive ecosystem (Technical Assistance)**
- **Component 2: Deployment of e-bus fleets and enhancement of public transport (Financial Assistance)**
- **Component 3: Deployment of e-public fleets and light commercial vehicles (Financial Assistance)**
- **Component 4: Fast-charging infrastructure (Financial Assistance)**
- **Project management: Program Management Unit**

Component 1: Establishment of a conducive e-mobility ecosystem

This component addresses the barrier of lack of business models and policies conducive to EV deployment (barriers 1.1. policies non conducive for EV mass deployment; 1.2. unfavorable business models).

This component and associated activities provide technical assistance to enable effective financial assistance and to create a (gender-responsive) policy and business framework conducive for massive deployment of EVs. Activities are coordinated and realized together with national authorities to ensure complementarity of different endeavors.

To address the technical assistance needs of each country and of each project in particular, it is contemplated to work through technical assistance packages that will be approached from a regional, national and local perspective. A first package of assistance will be established at the regional level and will serve as a sharing platform to provide information and general technical assistance to create a community of practice in electromobility. A second package contemplates the more specific works that must be developed at the national level and that, due to their own conditions, require particular attention. It will be oriented to the particular needs of strengthening the regulatory and normative framework such as strategies and public policy instruments related to promotion of electromobility. As it was mentioned in Figure 1, the three countries have partially a comprehensive policy framework for promoting EV, which some of them already has their own Electromobility Strategy (like Panama) or are in process to be published (Paraguay and Uruguay). E-motion's TA will complement each country context in line with their existing policies and strategies. Roadmaps will be developed related to specific country needs, like planning the fast-charging network in Uruguay, as it was mentioned in the interview with UTE. Finally, a technical assistance package will be structured at local level and will focus on specific project development addressing particular local context in which they will be developed.

The TA component lays the foundation for a long-term shift to low-emission transportation and the deployment of e-buses and commercial EVs and addresses several identified barriers, outlined in section B.2. Activities under this component address the barrier of higher up-front procurement costs, the profitability barrier, and the barrier of unfavorable business models and fiscal environment for EV deployment, by supporting alternative financial structuring,

business models, and medium-term policies which increase the financial attractiveness of EVs. Furthermore, TA addresses regulatory barriers, like an insufficient policy environment (including targets and roadmaps),⁶⁶ which is not conducive for mass EV deployment and the lack of optimal vehicle and charging standards, (including battery recycling and disposal). Also, TA helps overcoming the technical barrier of performance risks and related perception of EVs and establishes data gathering on EV performance.

Component 1,2,3 and 4 jointly address social barriers, particularly the disadvantage of women in current transportation patterns (see also section B.2.).

This technical assistance strategy according to demands of increasing specificity, will allow the sharing of successful experiences among the participating countries and cities, avoiding the repetition of work that can clearly be adapted and then applied according to particular local conditions. This also translates into a more efficient use of resources with a broader coverage from the general to the particular of each case. General aspects that are a fundamental part of the enabling conditions for the development of electromobility can be addressed without neglecting the accompaniment of the different phases that the formulation of a project requires to meet the first objective of the Program, which is the successful implementation of electromobility.

The establishment of an e-mobility conducive **national ecosystem** will comprise the sub-components 1.1a, 1.1b, 1.2, 1.3 and 1.4:

Outcome 1.1: The government enhanced coordination, planning and capacity for promoting electric mobility⁶⁷

Sub-Component 1.1a - Enhancing policies and strategies on electric mobility (PY and UY): Establishment (or complementing⁶⁸) of an e-mobility conducive **national ecosystem** with sub-activities on design and divulgation of sectoral roadmaps (for instance, electrification of public transport, electrification of public fleets; electrification of urban freight), support of national enabling policies for EV deployment, and capacity development at national level. The Program intends to establish in all countries where not yet available roadmaps for electrification of public transport and roadmaps for public fleets and urban freight. Sectoral specific and gender aware roadmaps are a tool to steer climate investments and initiatives beyond the Program's scope and will help to inform and/or further detail the countries long term mobility strategies and their NDCs.

- *Output 1.1.1a: A national sustainable and inclusive e-mobility strategy and implementation plan established / complemented* – Activities: Undertake a comprehensive assessment of the economic, environmental and social viability of fleet electrification, renewable energy capacity penetration and electrical distribution grid stabilization. This includes to conduct a fleet electrification feasibility analysis, a study to evaluate changes in the planning of public transport systems, a study to assess renewable energy generation capacities, by addressing the implication of increased deployment of renewable power generation and e-mobility charging in the energy system, and an impact analysis on the electricity sector and deployment of charging points. On this basis a national e-mobility strategy, consisting of a technology and policy roadmap and implementation plan (incl. deployment targets until 2030, 2035 and 2050) will be drafted for submission for adoption by the government.
- *Output 1.1.2a: Key public and private stakeholders are trained (including on gender policies)* – Activities: Train civil servants, municipalities and public and private decision-makers on sustainable transport and e-mobility policies, standards and regulations. Furthermore, private and public stakeholder participate in E-Motion's regional trainings activities, incl. design, operation & maintenance of e-fleets – Business models and financial instruments. Also, 6 trainings per country will be provided to public and private fleet operators, incl. bus drivers, maintenance personnel, first response staff and insurance companies on EV and charger operations and maintenance, safety trainings gender and gender-based-violence awareness and optimal fleet management, as well as EV-related hazards. Participants must fulfil the following eligibility criteria:
 - should be located in one of the key cities in the target countries, (PA (Panama City, San Miguelito, Tocumen, Colon, Herrera, Santiago de Veraguas); UY (Montevideo, Salto, Ciudad de la Costa, Paysandú, Maldonado, Canelones); PY (Asunción, Ciudad del Este, San Lorenzo, Luque, Encarnación))

⁶⁶ Enhancing the policy environment might also include to mainstream gender aspects into policies, targets, and roadmaps. The Gender Assessment Report (see Appendix 8) provides several good practices to counteract Gender-based Violence (GBV) and Sexual Exploitation, Abuse and Sexual Harassment (SEAH), such as the establishment of appropriate Grievance Redress Mechanisms (GRM).

⁶⁷ Outcome 1.1 comprises 2 sub-components. For the respective countries, only one of the sub-components applies to the individual country context.

⁶⁸ Taking into account ongoing activities on developing a national strategy, if any, e.g., In Uruguay, the project on Promotion of Electric Urban Mobility under Euroclima+. The TA component may be adjusted to missing and complementary elements and/or the implementation of the first measures targeted under the roadmap, depending on the specific situation in each country and gaps existing at the time of the Sub-Program 2 implementation start.

- operation in the public transport sector for at least 3 years
- appropriate gender balance among participants is envisaged

- Output 1.1.3a: Public and private stakeholders' awareness enhanced – Activities: Design a communication campaign and outreach plan on low-carbon and climate-resilient electric mobility and a communication campaign on low-carbon and climate-resilient electric mobility, as well as develop (or use) the public information platform for electric mobility to disseminate communication material and knowledge products.

Sub-Component 1.1b – Enhancing governance and stakeholder through institutionalization of electric mobility (PA): Establishment of an e-mobility conducive **national ecosystem** with sub-activities on a multi-stakeholder consultation strategy and recommendations for a long-term coordination mechanism to key government actors, and capacity development at national level. In the three countries the national electromobility committees were identified and interviewed. E-motion will enhance governance and stakeholder ecosystem by supporting the existing CIME in Panama, GIEET in Uruguay and the Electromobility Strategic Table in Paraguay; all these 3 groups will be the strategic connection node to articulate public sector in this sub-component 1.1b.

- Output 1.1.1b: A multi-stakeholder and gender inclusive consultation strategy is implemented and recommendations for a long-term coordination mechanism are delivered to key government actors – Activities: activities include to develop a stakeholder consultation strategy, recommendations on long term coordination, and a public-private strategy on transition.
- Output 1.1.2b: Key public and private stakeholders are trained (including on gender policies) – Activities: Train civil servants, municipalities and public and private decision-makers on sustainable transport and e-mobility policies, standards and regulations. Furthermore, private and public stakeholder participate in E-Motion's regional trainings activities, incl. design, operation & maintenance of e-fleets - Business models and financial instruments. Also, 6 trainings will be provided to public and private fleet operators, incl. bus drivers, maintenance personnel, first response staff and insurance companies on EV and charger operations and maintenance, safety trainings gender and gender-based-violence awareness and optimal fleet management, as well as EV-related hazards. Participants must fulfil the following eligibility criteria:
 - should be located in one of the key cities in the target countries, (PA (Panama City, San Miguelito, Tocumen, Colon, Herrera, Santiago de Veraguas); UY (Montevideo, Salto, Ciudad de la Costa, Paysandú, Maldonado, Canelones); PY (Asunción, Ciudad del Este, San Lorenzo, Luque, Encarnación)
 - operation in the public transport sector for at least 3 years
 - appropriate gender balance among participants is envisaged
- Output 1.1.3b: Public and private stakeholders' awareness enhanced – Activities: Design a communication campaign and outreach plan on low-carbon and climate-resilient electric mobility and a communication campaign on low-carbon and climate-resilient electric mobility, as well as develop (or use) the public information platform for electric mobility to disseminate communication material and knowledge products.

Outcome 1.2: The Government takes actions towards required regulatory standard and implementing policy frameworks for electric mobility.

Sub-Component 1.2 - Enhancing vehicle and charging standards: Technical support will be provided to the relevant national and local authorities in the countries and cities where the Program will support investments in order to set-up, improve and/or enforce enabling public policies and legal, regulatory and/or normative frameworks for e-mobility.

TA is used to ensure delivery of adequate training from equipment suppliers or third parties for EV and charger operations and maintenance, safety trainings, gender and gender-based-violence (including SEAH) awareness trainings and capacity building in optimal management of EV fleets.

- Output 1.2.1: Regulatory standard reform proposal that includes gender-equality policy issues for electric vehicles delivered – Activities: First, review reporting on global good practices on standards for vehicles energy efficiency, EV charging infrastructure and RE grid integration, and recommendations to update national regulation.⁶⁹ Second, prepare a regulatory proposal on electric vehicle imports specification, licencing and periodic technical inspection requirements, developed and presented to Ministry of Transport for adoption. Third, present the proposal on technical approval and installation, incl. standards and technical specifications, of public and private charging stations.

⁶⁹ Such Analysis and knowledge will be shared among the three Program countries throughout the whole program cycle. This is likewise the case for any following review/analysis of best practices.

Outcome 1.3: The Government takes action towards implementing appropriate emission standards and mandates (PY only)

Sub-Component 1.3 - Introducing appropriate emission standards and mandates: The activities under the component will support the development of standards and a policy framework for regulating the eligible emissions of road vehicles. This will include an analysis of regional and global good practices for standards and laws for regulating emissions of road vehicles and recommendations for such regulation in the national context. As a deliverable, proposals on emission policy, regulations and standards are developed and drafted for adoption by government ministries.

- Output 1.3.1: Standards and policy framework for regulating eligible emissions developed – Activities: Analyse regional and global good practices for standards and laws for regulating emissions of road vehicles and recommendations for such regulation in the national context and prepare a proposal of emission policy, regulations and standards submitted to the government for adoption.
- Output 1.3.2: An appropriate monitoring system for air pollutants developed – Activities: Develop and implement an appropriate monitoring system for air pollutants for the Metropolitan Area of Asunción, and train personnel on its application.

Outcome 1.4: The Government takes action towards implementing policy frameworks for ensuring the long-term sustainability of low-carbon electric mobility.

Sub-Component 1.4 - Long-term environmental and social sustainability of electric mobility: The activities under the component will provide policy advice on the end-of-life vehicle management (ELV) of EVs, particularly on battery re-use, recycling and disposal, and related capacity development at a national level.

- Output 1.4.1: Standards and a policy framework for regulating the disposal of electric vehicles developed – Activities: Analyse regional and global good practices for standards and laws for regulating the ELV disposal (including reuse and recycling) of electric vehicles and recommendations for such regulation in the national context and prepare a proposal of policy and regulations for ELV management (including re-use and recycling) submitted to the government for adoption.
- Output 1.4.2: New business models, including the responsibility of vehicle distributors delivered – Activities: Analyse global good practice on international successful financial and commercially viable business models on managing ELV components for all vehicles and second-life battery use, including cost benefit analysis estimating investment needs and financing schemes and develop a roadmap on sustainable and commercially viable ELV and battery management.
- Output 1.4.3: Waste management stakeholders are trained on ELV management – Activities: Provide a Gender-sensitive training course on reusing, recycling and disposing of used vehicles, with modules on each of the key disposal areas (General aspects of end-of-life vehicle disposal (conventional and electric), Vehicle spent battery management and battery reuse, Hazardous waste management, Lithium-ion recycling technology) and identify and develop business models for reuse and disposal of vehicles and their components in local, regional and international markets as well as catalysing finance for such business models. Targeted training participants are waste management stakeholders, i.e., public representatives and private sector waste management operators, which fulfil the following eligibility criteria:
 - should be located in one of the key cities in the target countries, (PA (Panama City, San Miguelito, Tocumen, Colon, Herrera, Santiago de Veraguas); UY (Montevideo, Salto, Ciudad de la Costa, Paysandú, Maldonado, Canelones); PY (Asunción, Ciudad del Este, San Lorenzo, Luque, Encarnación)
 - operation in the waste management sector for at least 3 years
 - appropriate gender balance among participants is envisaged

The Establishment of an e-mobility conducive **local ecosystem** is addressed in sub-components 1.5:

Outcome 1.5: Preparing for scale-up and replication of electric mobility through fiscal incentives

Sub-Component 1.5 - Preparing for scale-up and replication of electric mobility through fiscal incentives: Establishment of an e-mobility conducive **local ecosystem** with sub-activities related to the local environment such as business model design and development, local policy advice (e.g. preferential downtown access for e-LCVs), advice on concession contracts for bus services (e.g. concerning concession length as this is important for e-bus deployment, implementation of gender equality policies), capacity building and training of operators, safety staff, maintenance staff etc. and the realization of knowledge materials related to the local policy environment and the investment sub-projects.

The activities comprise the development and advisory services on optimal business models and financial structuring which relate to the peculiarities of EVs. This is targeted for public transport to identify business models e.g., for atomized urban transport providers, models which allow for increased influx of private capital and which lower financing costs

and risks for operators, leasing models, inclusion of electric utilities etc. The activities will be coordinated with corresponding the national electromobility committees in each country to steer the implementation.

In addition, the TA in policy also includes advice on concession contract issues, electricity pricing (e.g., demand charge for public charging networks) or diversion of fossil fuel subsidies.

Project sourcing and preparation including technical, financial, economic, environmental, social, gender and legal feasibility / due diligence. The Program will provide direct technical assistance to sub-projects that will potentially receive financial assistance. TA includes pre- and full feasibility assessment, legal, institutional, financial and technical advisory as well as advisory on possible business models and financial structuring. This activity will contribute to a proper structuring of the sub-projects, an adequate risk allocation and bankability and to the deployment of innovative business models. This also includes the optimal design of e-mobility ecosystems including charging networks and the interface between vehicle, charging, and the grid.

The activities under outputs 1.5.1, 1.5.2 and 1.5.3 also include performance monitoring of EVs in technical (energy usage, emissions) and financial terms (operational expenditures, vehicle availability rates), which is core to reduce the perceived performance risk of EVs and to create a solid base of actual costs and benefits of EVs in the country.

- Output 1.5.1: Proposal for regulatory subsidy and tax reforms for the uptake of electric vehicles developed – Activities: Develop a regulatory tax, subsidy and incentive reform proposal to facilitate fiscal incentives and stability for the transitions towards e-mobility.
- Output 1.5.2: Business models, financial schemes and procurement guidelines delivered – Activities: Prepare an analysis for enhancing existing financial products and risk mitigation products to promote EVs, analyse global good practice on electric vehicle incentives, such as tax and duty reduction, propose suitable electric vehicle incentives, and provide recommendation on procurement of EVs.
- Output 1.5.3: Project sourcing and preparation delivered for project pipeline – Activities: Project sourcing, project preparation, and prepare and regular update EV project pipeline. Public or private companies which fulfil the following eligibility criteria (EC) will be eligible when:
 - They propose sub projects within the 3 countries (PA, PY, UY) with pre or feasibility studies meeting basic EC for components 2, 3 or 4.
 - E&S category B or C (category A is not eligible)
 - The technology must comply with the current national regulation
 - The operational solution must be proven by the promoters for each Sub-project, according to the characteristics of the beneficiaries
 - Satisfactory controls against money laundering, integrity, and credit rating assessment

All TA sub-components will take into account gender aspects. The following table indicated the suggested provision of TA to the Sub-Program 2 countries based on the need assessments per country performed during the preparation of the Feasibility Study. The TA components will be addressed by national or international consultants. The estimate costs are detailed broken down in Annex 4 and the Annex 10.

Table 9: Expected TA activities by country

Country TA Component		Panama	Paraguay	Uruguay
National	Sub-Component 1.1a - Enhancing policies and strategies on gender-aware electric mobility		x	x
	Sub-Component 1.1b - Enhancing governance and stakeholder through institutionalization of electric mobility:	x		
	Sub-Component 1.2 - Enhancing vehicle and charging standards (considering among other dimensions gender interests)	x	x	x
	Sub-Component 1.3 - Introducing appropriate emission standards and mandates		x	
	Sub-Component 1.4 - Long-term environmental and social sustainability of electric mobility	x	x	x
local	Sub-Component 1.5 - Preparing for scale-up and replication of electric mobility through fiscal incentives	x	x	x

The **regional** sub-component related to the E-Motion Program is provided through Sub-Program 1 lead by AFD and GIZ: Establishment of an e-mobility conducive **regional ecosystem** which is core for learning and experience exchange between Latin American countries with sub-activities such as the realization of different knowledge materials including publications, webinars, benchmark and best-practice studies, dialogue with EV suppliers and outreach events including trainings and workshops.

Output 1.5.3: Sub-projects sourced and prepared with activities of project sourcing and preparation including technical, financial, economic, environmental, social, gender and legal feasibility. This activity will contribute to a proper structuring of the sub-projects, an adequate risk allocation and bankability and to the deployment of innovative business models. Output 1.1 to 1.5 will be undertaken partially concurrently and in sequences over 5 years. (see Annex 5).

Component 2: Deployment of e-bus fleets and enhancement of public transport

It is expected that this component will be applied in all involved countries. Component 2 addresses in Output 2.1 the barrier of higher up-front procurement costs of e-buses as well as the barrier of lower financial profitability compared to fossil units (see section B.2.). The goal is to deploy large-scale fleets of electric buses to showcase their technical and commercial viability to operators. Public urban transport buses are the target. This includes different e-bus technologies (slow-, fast-, opportunity and ultra-fast charged buses), bus sizes of 12 m and different operational structures (mixed traffic buses as well as units operating on bus-only routes). The targeted e-bus fleet size is 100 or more units but for smaller cities also smaller fleets can be financed as well⁷⁰. The Program will not finance pilot sub-projects. Buses are operated by municipal transport operators or private parties (see above for pre-identified business models). E-buses are purchased instead of new conventional fossil buses i.e., the old, replaced bus is the same in the baseline case or in the project case⁷¹. E-bus sub-projects can be embedded in urban transport sub-projects e.g., a new bus fleet within a Bus Rapid Transit project (incl. “green routes” based on BEB). Table 10 shows indicative sub-projects to be financed. This includes 6 sub-projects for 650 e-buses in 3 countries. Only urban public transport buses and no pilot fleets with less than 20 buses are financed. E-mobility is combined with PT measures to foster mode shift to low-carbon transport to strengthen attractiveness and convenience of PT including measures such as exclusive bus lanes, improved pedestrianization and public transport accessibility, transit-oriented development, fostering of electric micro-mobility and gender sensitive interventions under Output 2.2.

Outcome 2.1: Finance of e-buses kick-start the mass deployment and provide evidence of technical, financial and environmental sustainability

Output 2.1. Financing of e-bus sub-projects is provided, and e-bus fleets are deployed by bus operators. This includes the sub-activities project preparation, financing and deployment. The Sub-Program 2 envisages to finance the deployment of up to 650 e-buses. Finance covers the entire e-bus system of buses, charging infrastructure, grid connection and bus depot upgrades to accommodate e-buses. This needs to be designed individually per project as the optimal technology choice (e.g., overnight charging, fast/opportunity/at boarding station ultra-fast charging) is dependent on route and operational characteristics as well as local costs.

Activities of Output 2.1 are preparation, financing and deployment of e-bus sub-projects.

Table 10: Number of BEB expected to be financed by country

Country	Fleet	Number EV	Potential financing implementing partners (among others)	E-Motion financing model ⁷²
Panama	BEB (12m)	150	Ministerio de Economía y Finanzas (MEF), METRO (owns MiBus), MiBus (operator), Banco Nacional de Panamá (BNP), Caja de Ahorro (CA)	MEF and Metro deals with concessional loan to operator MiBus, through operational leasing model. BNP or CA deals with concessional loan for bus depot electrification, in PA potential entities can be Naturgy or Evergo. MiBus has 3 phases, E-Motion supports finance phase 2
Paraguay	BEB (12m)	300	Ministerio de Hacienda (MH) and Banco Nacional de Fomento (BNF)	MH deals with concessional loans to operators, BNF deals concessional Loan to private bus

⁷⁰ Fleets of 100 or more units are far more cost effective and allow for efficient usage of charging infrastructure and grid upgrades. They also result in more reliable operations due to availability of technicians from the manufacturer on-site and sufficient spare parts.

⁷¹ The existence of a scrapping program is irrelevant for the determination of emission reductions as in the baseline case the old bus is being replaced with a diesel unit and in the project case with an electric unit i.e. in both cases an old diesel unit is either replaced or continues to operate. Emission reductions are not calculated against the old, replaced unit but by comparing the emissions of a new baseline bus with a new e-bus. Scrapping Programs in any case have limited merits as old municipal buses could still be used to replace even older rural or private transport buses with low mileage. Monitoring experience of CDM mass transport projects also shows that old municipal buses are discontinued to be used due to pure financial reasons after some time and that average bus occupation rates are not negatively affected by countries which introduce new mass transport systems without scrapping Programs.

⁷² A detailed business models is presented in B.3 “Delivery Channels and new business model”.

				operators (bus and depot electrification). In PY, ANDE deal with depot electrification.
Uruguay	BEB (12m)	200	Ministerio de Economía y Finanzas (MEF) and Banco República Uruguay (BROU)	MEF deals with concessional loans to operators BROU deals concessional loans to private bus operators (bus and depot electrification). In UY, UTE deals with depot electrification.

Source: Annex 2

Table 11: Indicative eBus sub-projects to be financed

Country, city	Program e-buses (12 m)	CAPEX Finance in USD million of Program Buses				
		Total CAPEX	GCF loan	CAF	National finance / equity	Transport Operator
Panama, Panama City	130	38.6	12.1	22.6	3.9	MiBus
Panama, Santiago City	20	5.9	1.8	3.5	0.6	Utrapsa
Paraguay, Asunción	23	6.3	2	3.7	0.6	Municipality of Asuncion
Paraguay, Asunción	77	21.2	6.7	12.4	2.1	MAGNO
Paraguay, Asunción	200	55.1	17.4	32.2	5.5	CETRAPAM
Uruguay, Montevideo	200	40.8	12.8	23.9	4.1	CUTCSA, COETC, UTOC, COME, CODELESTE
TOTAL	650	168.2	53	98.4	16.8	

Outcome 2.2: Ridership of public transport and e-buses is increased through smart infrastructure measures

Output 2.2. Smart facilities for enhanced public transport access, improved inter-modality and non-motorised transport are implemented and in operation. Output 2.2 is linked with Output 2.1. E-mobility is combined with public transport measures to foster mode shift to low-carbon transport.

Declining public transport shares are a fact in many countries. If the trend towards more motorised individual transport (MIT) cannot be countered by leading the migration towards sustainable transportation, e. g. high quality public and non-motorised transport, the trend of rapidly growing MIT will unavoidably lead to cities sinking into traffic congestion, with the result of declined air quality and strongly rising health care costs as well as other externalities. One of the reasons is the lack of attractiveness, connectivity, accessibility and convenience of public transport. The program will work in the involved cities (see Table 11) to increase public transport attractiveness through measures such as integrated ticketing systems and bus only lanes thereby reducing travel time and making public transport faster than private means of transport. In addition, route restructuring, tariff and mode integration, transport policies (in coordination and based on the TA work under Component 1), which favour public transport and de-incentivize private means of transport e.g., through parking policies. E-bus sub-projects are embedded in urban transport sub-projects, which include measures such as bus route restructuring, exclusive bus lanes, integrated fare systems, or inter-modal integration and change stations to increase the attractiveness and usage rate of public transport. Sub-projects are also integrated with measures to increase the usage of NMT including segregated cycling lanes and bicycle parking lots at bus stations, walking areas for increased pedestrianization and improved accessibility, and improved last-mile mobility services including (electric) micro-mobility. Common urban spaces and new urban mobility services facilitate the independence and mobility of all residents and are key to promote sustainable, competitive cities while increasing the quality of life of citizens taking into account the different mobility patterns in women and men.

Table 12: Indicative smart facilities project to be financed

Country, city	Intervention type	Total Investment by National finance / equity (USD million)	Description
Paraguay, Asunción	Public transport infrastructure and smart facilities	8.9	Sustainable Mobility Project, Investment fund to promote BEB ⁷³
Uruguay, Montevideo		1.1	Ministry of Energy and Mining (MIEM) programs to promote

⁷³ <https://www.lanacion.com.py/negocios/2022/03/17/analizan-impulsar-uso-de-buses-electricos-en-el-pais-mediante-una-inversion-de-us-20-millones/>

			electromobility in the 2 nd energy transition framework ⁷⁴
TOTAL		10	

For the advancement of low-carbon sustainable mobility, this component will be supported by government projects in Paraguay (Sustainable Mobility Project, Investment fund to promote BEB⁷⁵) and Uruguay (Ministry of Energy and Mining (MIEM) programs to promote electromobility in the 2nd energy transition framework) to finance (i) the allocation and improvement of supporting urban spaces and infrastructure for public e-transport and (ii) public transport improvements. The output supports the programs and the successful implementation in different ways: 1) the projects will benefit from the introduced ecosystem for e-mobility under Component 1, being embedded in an broader strategy for an enhanced enabling framework for the deployment of alternative transportation modes and its interlinkage between modes; and 2) the aims of the projects – enhancing mobility and promoting low-carbon transport – will be supplemented and accelerated through activities under Component 1 addressing route restructuring, tariff and mode integration, transport policies Hence, the impact of the government projects will be leveraged and upscaled through the GCF support. The Program will prioritize solutions that integrate into the urban fabric, are compatible and conducive to modes of sustainable mobility guaranteeing universal access. This can include the infrastructure connecting public transport systems to alternative modes of urban mobility (electric and non-motorized) such as cycling lanes, pedestrian streets, etc., and/or providing the infrastructure conditions to facilitate these alternative modes of urban mobility as bicycle parking, park and ride, waiting areas, charging areas etc.

Component 3: Deployment of e-public fleets and e-LCVs

LCVs (public and private) sub-projects are expected for all countries. Component 3 addresses the barrier of higher up-front procurement costs of e-LCVs as well as the barrier of lower financial profitability compared to fossil units (see section B.2.). LCVs (public / private) sub-projects have been identified for most countries. At a later stage, countries where currently no such sub-projects have been identified, might enter, if framework conditions prove to be more favourable. The goal is to deploy large-scale fleets of e-LCVs to make a fast-charging infrastructure (see Component 4) viable. The following table shows indicative sub-projects to be financed. This includes 6 sub-projects for 1,150 e-LCVs (public and private) in 3 countries (see Table 13).

Outcome 3: Finance of commercial EVs kick-start mass deployment and provide evidence of technical, financial and environmental sustainability.

Output 3.1. LCVs (public and private) are financed and deployed. The Sub-Program 2 envisages to finance the deployment of 1,150 electric LCVs (public and private fleets) in cities.

Activities of Output 3.1 are preparation, financing, and deployment of e-LCV.

Table 13: Number of e-LCV expected to be financed by country

Country	Fleet	Number EV	Financing implementing partners	E-Motion financing model
Panama	Public Fleets	400	Ministerio de Economía y Finanzas (MEF)	MEF deal with concessional loans to promote EVs as PA has targets on electrification of its public fleet to 2030 (ENME).
	LCVs	50	BNP, CA	MEF deal with concessional Loan to promote EVs as PA has targets on electrification of its public fleet to 2030 (ENME). NDC last version scenarios states that 400 to 700 VEs should be purchased by 2025
Paraguay	Public Fleets	300	Ministerio de Hacienda (MH)	MH deal with concessional loan to promote EVs
	LCVs	100	BNF	BNF deals concessional Loan to private LCVs operators.
Uruguay	Public Fleets	200	MEF	MEF deal with concessional Loan to promote EVs
	LCVs	100	BROU	BROU deals concessional loans to private LCVs operators. Private operators will come from MOVES ongoing pilot program as first

Source: Annex 2

⁷⁴ <https://www.gub.uy/ministerio-industria-energia-mineria/comunicacion/noticias/miem-anuncio-medidas-para-promover-movilidad-electrica-uruguay>

⁷⁵ <https://www.lanacion.com.py/negocios/2022/03/17/analizan-impulsar-uso-de-buses-electricos-en-el-pais-mediante-una-inversion-de-us-20-millones/>

Table 14: Indicative e-public fleets expected to be financed by country

Country, city	e-Public Fleets	CAPEX Finance in USD million of Program Buses				Transport Operator
		Total CAPEX	GCF loan	CAF	National finance / equity	
Panama, City	400	14.0	4.41	8.19	1.4	MOP, ETESA, others
Asuncion, Paraguay	50	1.78	0.61	1	0.17	Mun. Asuncion
Asuncion, Paraguay	250	8.92	2.82	5.2	0.9	ANDE, BCP, COPACO, PETROPAR, others
Montevideo, Uruguay	200	4.1	1.3	2.4	0.4	Mun. Canelones, several ministries pointed by GIZ
TOTAL	900	28.80	9.1	16.8	2.9	

Table 15 Indicative eLCV Sub-projects to be financed

Country	E-LCVs	CAPEX Finance in USD million of Program Buses				Transport Operator	
		Total CAPEX	GCF loan	GCF FA grant	CAF		
Panama	50	1.8	0.57		1.1	0.18	Private companies like Riba Smith
Paraguay	100	3.6	1.1		2.1	0.4	Private companies
Uruguay	100	2.1	0.7		1.2	0.21	MOVEs ecosystem
TOTAL	250	7.5	2.35		4.4	0.75	

Component 4: Fast-charging infrastructure

The deployment of commercial EV fleets require the establishment of fast-charging infrastructure. This infrastructure is also precondition for the further promotion and spill-over to other vehicle segments. A fast-charging infrastructure is a key element to enable deployment of commercial EVs. This faces a typical chicken-egg dilemma with insufficient clients to make a charging system commercially viable and vehicle owners not purchasing an EV due to absence of the charging infrastructure. The barrier analysis identified the lack of a low-emission infrastructure investments for enhancing deployment of e-mobility as a key technical barrier. The barrier will be addressed by Component 4 and work within country context stakeholder as it was described in Figure 12, Figure 13, and Figure 14 for PA, PY and UY respectively. Against the background of common climate change impacts such as heavy rains, floods, and storms, the charging infrastructure need to account for present and future climate hazards, to ensure a stable and long-term operation. For instance, bus depot locations needs to be resilient in terms of providing infrastructure to mitigate flooding. In the three countries, public entities will lead the fast charger deployment:

- In Panama, SNE will lead the implementing phase, working with the main cities government/municipalities that have been part of the work within Emotion feasibility study: Panama City, Colon, Herrera. In the case of Panama, private entities like Naturgy, ENSA, Casa de las Baterías.

- In Paraguay, ANDE will lead the implementing phase working with Municipality of Asunción government. ANDE is the National Electricity Administration (Administración Nacional de Electricidad).
- In Uruguay, UTE will lead the implementing phase working with Municipality of Montevideo government. UTE is the National Administration of Power Plants and Transmission (Administración Nacional de Usinas y Transmisiones Eléctricas).

Outcome 4: Investment in low-emission (fast) charging infrastructure lays the foundation for the deployment EVs in the commercial fleets and facilitate further spill-over to other vehicle segments

Output 4.1. Technical preparations for fast charging infrastructure investments finalised, incl. engineering and procurement process. Activities under Output 4.1 will facilitate the construction of the charging infrastructure through preparing necessary steps, including the formulation of requirements and the selecting process for eligible construction companies. The envisaged **20 chargers per country** will have a capacity of 150 kW each allowing fast charging. The output is linked to TA for project sourcing and structuring, TA for design of charging infrastructure including the business model for future commercial operations.

Output 4.2. Low-emission fast-charging infrastructure financed and construction of in relevant municipalities completed.

The Sub-Program 2 envisages to finance and construct up to 60 fast charging station networks in, at least, 3 cities. The costs for the infrastructure are mainly related to the chargers (50%) and installation⁷⁶ (50%) and will supported with loans to public entities / utilities. Involved municipality will provide and dedicate corresponding public space and land free of charge. The electricity supply will be delivered by the respective utility, which will be involved in the planning and construction. In addition, the interplay between the utilities and the electricity customers will be addressed, i.e., support the establishment of adequate power supply tariffs offered by the utilities (addressed in coordination with Component 1). The Sub-Program and the AE, respectively, will be responsible for coordination among different stakeholders under Outcome 4. The fast-charging infrastructure established under Component 4 could be used for Component 3 and other vehicles like taxis or private vehicles (not bus fleets under Component 2).

Program Management Unit (PMU)

The PMU will be in charge of:

- the general coordination and management of the Program;
- the management of the Technical Assistance for the sub-projects' preparation;
- the preparation of the reporting and monitoring reports due to the GCF and the supervision of the evaluation process;
- the implementation and the follow up the E-Motion Sub-Program communication plan;
- the implementation and maintenance of a knowledge and records management system;
- the implementation of activities as per Gender Action Plan

Knowledge management: The Program will develop knowledge products and share experiences and cases through channels such as webinar, electronic reports, case-studies, and workshops to disseminate experiences and build a base for replication thereby accelerating EV uptake on a regional scale. The Sub-Program 2 will not create own platforms or channels for information dissemination but use existing channels, such as the one created by UNEP/MOVE or by GIZ in Paraguay under its project to support the Master Plan for Public Transport. An interchange of experience shall also take place where experiences can be shared from countries more advanced in specific issues, e.g., Colombia on bus systems.

B.4. Implementation arrangements (max. 1500 words, approximately 3 pages plus diagrams)

Partnership arrangement under the E-Motion Program:

An IDFC Alliance: working together for a stronger impact for E-motion Program

The Program will be implemented by three IDFC development banks: CAF, AFD group (including PROPARCO), KFW, and a bilateral technical cooperation agency (GIZ). The partnership proposed for the Program allows combining complementary and diverse range of assets of the different entities, to maximize impacts and pave the way for a real paradigm shift. All partners have a very strong commitment in the region promoting sustainable and low-carbon mobility. Moreover, they have a very strong local presence in Latin American countries and experience working with political institutions (territorial entities and countries) and transport operators through technical and/or financial assistance. The partnership will allow the Program proposing innovative financial instruments at a regional scale reaching a large number of countries and benefitting to a higher number and diversity of actors. Indeed, CAF can finance the private sector and AFD group can reach the private sector through its private subsidiary PROPARCO. CAF and AFD can offer

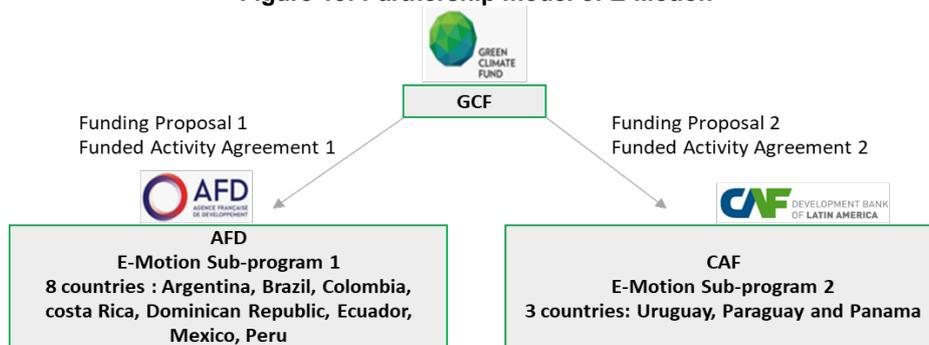
⁷⁶ Charging infrastructure cost structure has: cost of chargers (in this case DC 150 kW), cost of electric works (all the adequations and engineering to connect high voltage point in the middle of urban area), civil works (these consider that in historic and strategic points, civil works can be quite expensive).

non-sovereign loans to public banks, public companies, cities and regions without asking State guarantee. GIZ is a major actor worldwide in designing and developing large technical assistance programs. Finally, CAF, AFD group, KfW, and GIZ are used to co-finance development sub-projects together and each institution is GCF accredited and knows well the GCF guidelines and requirements, having already several GCF sub-projects under implementation. KfW and AFD have an existing institutional arrangement (Mutual Reliance Initiative) that provides a straightforward framework for AFD and KfW co-financing. That will guarantee a proper use of the funds but also a maximization of impacts and enhanced cooperation between those agencies to strengthen and harmonize the ongoing parallel local actions towards e-mobility in Latin America.

A partnership model with AFD and CAF as leaders

The E-Motion Program will be implemented through two Funding Proposals: one by AFD as an Accredited Entity to cover 8 countries (Sub-Program 1), and one by CAF to cover the following 3 countries: Panama, Paraguay and Uruguay (Sub-Program 2).

Figure 15: Partnership model of E-Motion



Sub-Program 2 (Panama, Paraguay and Uruguay), 2 institutions with strong experiences in e-mobility in Latin America and with GCF

CAF has four GCF funded projects/programs under implementation, totalling more than USD 549 MM, and has already led this kind of multi-country programs with GCF (e.g., FP 149: Green Climate Financing Facility for Local Financial Institutions in Latin-America). In addition, CAF has a high-level political dialogue in the region and knowledge and has produced a very comprehensive report analysing possible regulatory and financing alternatives that exist in order to replace the conventional fleet of buses that run on fossil fuels and integrate electric vehicles into the urban public transport system. CAF financed the Measurement, Reporting, Verification (MRV) of a pilot for 2 electric buses in Buenos Aires. These buses operated in commercial conditions for a year in one of the routes of a private operator. The study was conducted for the Municipality of Buenos Aires in order to evaluate the technical performance of the technology. As a result of that pilot, CAF/ AFD have developed pre-feasibility study for Buenos Aires with the Latin America Investment Facility (LAIF) aiming to support the potential conversion of one of the largest bus fleet of Latin America (18,000 buses) into electric buses. Likewise, CAF has received in the past year growing demands to support financially the renewal of fleets in Uruguay, especially Montevideo, Ecuador in Guayaquil, Panama and Panama City and Brazil in the state of Espirito Santo. In order to attend these demands, CAF is working very closely with every local government providing TA and support. Recently CAF has started a project as an accredited entity of GEF for supporting the National strategy on low carbon Transportation of the Government in Chile, the project main objective is to develop through lessons learned in Santiago and from 4 pilots in intermediate cities, new financial mechanism involving public and private incentives to enhance e-mobility adoption in the country. Moreover, CAF has a strong track record in the transport sector, in the past 10 years has financed over 2.200 MM in massive and integrated public transport rail sub-projects such as Metro of Panamá - Panamá (line 1); Metro of Lima - Perú (lines 1 and 2); Metro of Quito - Ecuador (line 1); Metro of Sao Paulo – Brazil (line 17 and extension of line 2). The Bank has also financed infrastructure for Bus Rapid Transit (BRT) systems such as Transmilenio in Bogotá (phases II and III); Metrobus – Quito; Niteroi Transoceanica, Contagem and Sao Bernardo do Campo in Brazil.

GIZ has a strong technical expertise in the development of large TA programs and in the E-Mobility sector. GIZ finances together with AFD the National Urban Mobility Policy (NUMPs) of Ecuador, Chile and Uruguay (Euroclima+ program). Moreover, GIZ is particularly active in the promotion of e-Mobility in the region and supports the design and implementation of e-Mobility policies through several grant-funded sub-projects: support to introduce specific criteria for electric buses within the renewal fleet program REFROTA, integration of bus systems and electrification in Florianopolis (FELICITY program with EIB) and technical assistance to strengthen conditions to consolidate electrical mobility in Brazil (PROMOB-E program), development of a National E-Bus Promotion Program in Colombia, and support to the operationalization of e-buses in Costa Rica (MiTransporte program). Through the Cities Finance Facility (CFF) program, GIZ is also developing two bankable sub-projects for new electric buses on 2 routes in Quito and

providing assistance for new electric bus corridor and bicycle lanes in Mexico City. In Chile GIZ is working to set-up a financing mechanism to strengthen private sector investments in electric mobility and to accelerate the deployment of electric buses outside of Santiago.

The current regional Program aims at completing these multiple initiatives, which are currently being implemented across Latin America, with a common ambitious financing and technical assistance proposal specifically targeted towards the commercial EV segments, which are now able to reach the scale and become commercially viable in the short to medium term.

Implementation Arrangement for Sub-program 2

With regards to the Funding Proposal led by CAF, E-Motion will be implemented jointly by the following two institutions:

- CAF, as accredited entity, executing entity and co-financier for the financial assistance targeting public and private sector project owners (Component 2, 3, and 4), and to support the technical assistance dedicated to sub-projects' preparation (Component 1, Output 1.5.3).
- GIZ, as executing entity for technical assistance (outputs under all sub-component under Component 1).

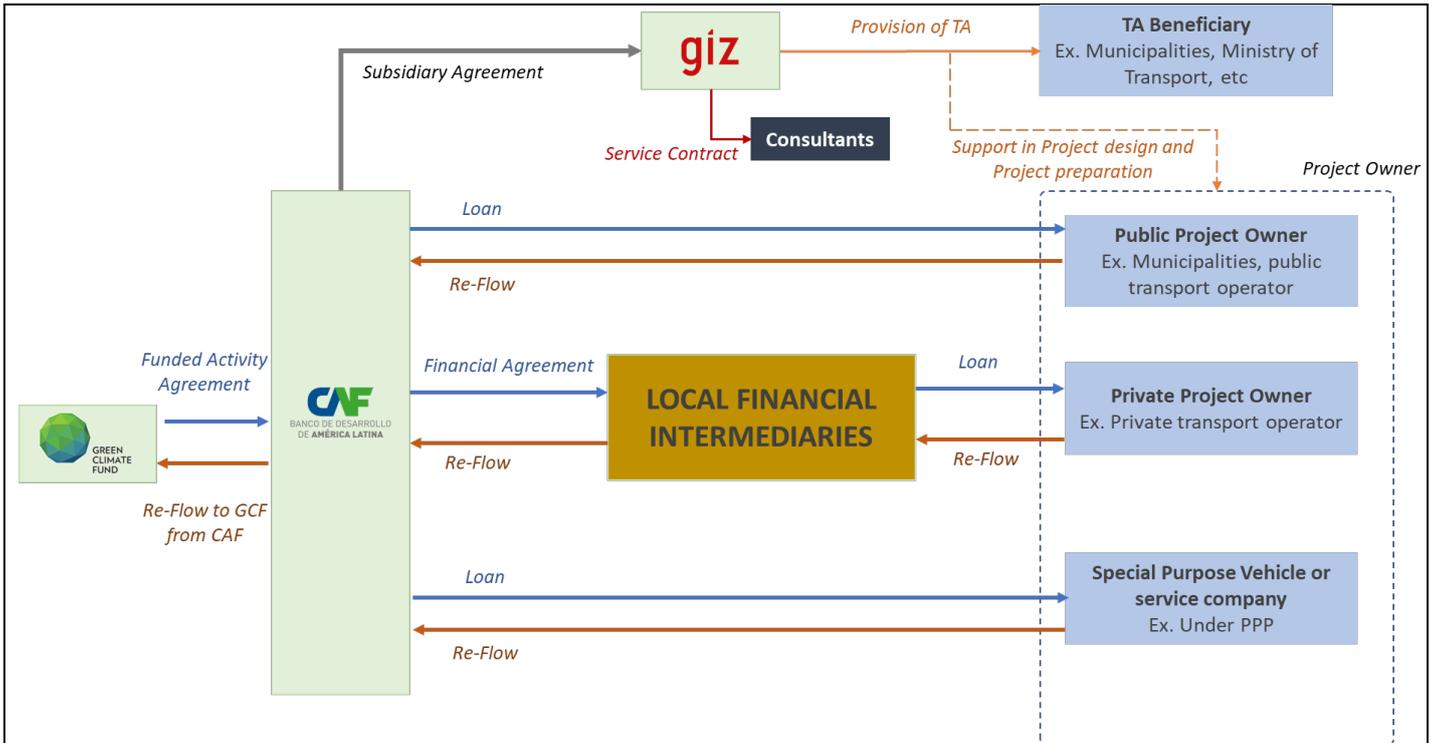
The proposed implementation structure takes into account executing entities' expertise: technical assistance to public bodies for GIZ, financing solutions and technical and public and private sector expertise for CAF. Both entities will be part of the PMU.

CAF will be responsible for providing governance, oversight, and quality assurance in accordance with its policies, procedures, and with the FAA and AMA. Moreover, CAF project teams will be responsible for the identification, appraisal, implementation and evaluation of eligible investments of the E-MOTION Sub-program 2. The sub-projects' appraisal process will follow CAF's procedures. In particular, business and technical teams will carry out due diligence⁷⁷ and appraisals on each project in accordance with CAF standards and procedures.

GIZ will be responsible for the implementation of activities within the technical assistance Component 1. GIZ will ensure the implementation of activities using a combination of own technical staff based in respective partner countries as well as independent consultants. The TA activities will be addressed by national or international consultants. The estimate costs and the procurement are detailed broken down in Annex 4 and the Annex 10. During the implementation of the contracting process, 1 or more consultancy bids may be considered per activity, and will be awarded to qualified firms or individual. Per country one bid / assignment envisaged, where deemed efficient activities could be consolidated per country. GIZ will report to the E-Motion Steering Committee and to the CAF Programme Manager.

Figure 16: Illustration of implementation arrangements

⁷⁷ Due Diligence start at eligibility criteria evaluation, and it is fully completed during CAF's credit evaluation process.



Contractual arrangements

- The GCF and CAF will enter into a Funded Activity Agreement (FAA) for the Program in the framework of the Accreditation Master Agreement (AMA). The FAA will outline the sectorial, technological, and geographical scope (the “Mandate”) of the proposed CAF/GCF Program.
- GCF funds, whether reimbursable or non-reimbursable, will be transferred to CAF according to the provisions set in the FAA. GCF proceeds will be held in a Trust Fund.
- CAF will sign a subsidiary agreement with GIZ to channel GCF funds to GIZ for the purpose of Component 1 implementation;
- In addition, CAF, AFD, and KFW will sign a Partnership Agreement in order to agree on the common terms of the E-Motion Program.

Service contracts between CAF and consultants

CAF and GIZ will hire consulting companies to implement the TA dedicated to the preparation of the sub-projects and to support the PMU activities. In order to implement the sub-projects’ preparation Facility of E-Motion, a call for tenders will be launched to hire a pool of consulting firms that shall be mobilised to meet the specific needs of each project. This will allow flexibility in the TA activities and speed in the mobilisation of consultants for the sub-projects.

Finance

For the Sub-Program 2, CAF will blend its finance with resources from GCF for the investment Component 2, 3 and 4. The financing amount will be defined based on the specific requirements of each project. CAF will finance sub-projects implemented by both public and private bodies and potentially channel the funds to the beneficiaries through country-specific and financial intermediaries. According to the market study (see Annex 2), the following institutions have shown their interest and deem the finance approach feasible:

Panama

Component 2: Ministerio de Economía y Finanzas (MEF), METRO (owns MiBus), MiBus (operator), Banco Nacional de Panamá (BNP), Caja de Ahorro (CA).

Component 3 and 4: Banco Central, Caja de Ahorro, Ministerio de Economía y Finanzas (MEF).

Paraguay

Component 2, 3 and 4: Ministerio de Hacienda (MH) and Banco Nacional de Fomento (BNF).

Uruguay

Component 2: Ministerio de Economía y Finanzas (MEF) and Banco República Uruguay (BROU).

Component 3 and 4: Ministerio de Economía y Finanzas (MEF), Intendencia Montevideo (IM), Administración Nacional de Usinas y Trasmisiones Eléctricas (UTE, national energy utility) and Banco República Uruguay (BROU).

For the technical assistance component, a co-financing by the German Government (of up to EUR 1 MM) is intended to be included in Component 1 of E-Motion and subject to a separate bilateral contractual arrangement between GIZ and the Federal Ministry for the Environment, Nature Protection and Nuclear Safety. The co-financing will enable GIZ to support the program management unit and link to other German Government funded sub-projects.

CAF will enter into loan agreements or amend existing loan agreements with each of the Financial Intermediaries or individual projects participating in the program. It will be a requirement in the eligibility criteria and credit rules that refinancing is not allowed. These loan agreements will make available CAF financing and GCF co-financing for investments consistent with the Mandate of the program. CAF as per the loan agreement will have the ability to reject a sub-loan. No project may be financed with GCF's resources if it does not meet the conditions required by the GCF according to the FAA.

For the Program Management Unit, CAF and GIZ will mobilize USD 2 MM (86.78% of the total cost of the PMU) with an in-kind contribution of staff of each institution. The PMU costs will be financed by the GCF in proportion to its financing of the programme (13.22%, i.e., USD 302 M).

Governance and Program management

An E-Motion **Steering Committee** (SC) will be constituted for the whole E-Motion Program. It will meet at least on a quarterly basis and be responsible for making the strategic decisions required for the execution of the programme. Its members are representatives of the executing entities (CAF, AFD, GIZ, KFW and PROPARCO). The SC shall notably review and approve programme annual budget and work plans, discuss implementation issues and identify solutions, and ensure coordination and communication between implementing entities.

The following additional committees will be constituted to ensure a proper implementation of the Program:

- A Technical Assistance coordination committee to ensure the consistence of the TA activities implemented at local, national and regional level;
- For each Sub-program (driven respectively by AFD and CAF):
 - An investment committee to pre-validate the level Concessional GCF loans proposed to be mobilized on the Financed sub-projects. Its members are CAF's representatives.
 - A Project Preparation Committee to coordinate and validate the mobilization of the TA dedicated to sub-projects' preparation. Its members are CAF's representatives.

CAF investment approval process entails two Investment and Credit Committees (CCI). In each instance different aspects of the transaction are assessed. In the first Committee, main elements to consider are: 1. Impact, 2. Additionality, 3. Risk-return profile, 4. Adequacy of financial/commercial indicative terms, 5. Overall strategic. The second Committee takes place when the project's due diligence has been completed, reports from advisors have been received and risks and associated mitigants have duly identified. CCI are composed as following: Executive Vice-president, Vice-president Corporate Programming, Vice-president Private Sector, Vice-President Finance and Risk Management. By exception other teams may be invited to opine (without voting) such as Representative of the Executive President, legal teams, HR-knowledge. Projects need to be approved in both instances.

Considering the large geographical scope targeted by E-Motion and the diversity of financial and technical assistance tools managed by the Program, it is essential to have a strong Program management Unit (PMU) for each Sub-Program to ensure the coordination between the partners and a proper implementation of the Program.

The PMU staff for the Sub-Program 2 will be composed of professionals from CAF and GIZ that will be in charge of handling the respective components of the Sub-Program. In addition, the PMU will be composed of external consultants: an e-mobility expert, an Environmental, Social and Gender expert, a communication Expert and a Project Management support officer. CAF will be in charge of contracting the PMU consultant team.

The PMU will be in charge of:

- The general coordination and management of the Program, which will include the animation of the governance bodies of the Sub-Program 2, the technical coordination and animation, and the administrative and financial follow-up for structuring;
- The management of the Technical Assistance for the sub-projects' preparation;
- The preparation of the reporting and monitoring reports due to the GCF and the supervision of the evaluation process;

- The implementation and the follow up the E-Motion communication plan for Sub-Program 2 in accordance with GCF communication obligations, supporting the organization and implementing of events, seminars and conference related to the program and preparing all the communication support (web content, press release etc.);
- The implementation and maintenance of a knowledge and records management system;
- The implementation of activities as per Gender Action Plan.

Information on Project / Programme Sponsor (Accredited Entity)

CAF is a multilateral development bank created in 1970, and owned by 19 countries, 17 of which are in Latin America, and the Caribbean, Spain and Portugal, as well as 13 private banks in the region. CAF promotes a sustainable development model through credit operations, non-reimbursable resources, and support in the technical and financial structuring of sub-projects in the public and private sectors of Latin America.

With headquarters in Caracas, Venezuela, CAF has offices in Buenos Aires, La Paz, Brasilia, Bogota, Quito, Madrid, Mexico D.F, Panama City, Asuncion, Lima, Montevideo and Port of Spain. CAF's mission is to provide sustainable development and regional integration through an efficient mobilization of resources for a timely provision of multiple financial services, with high value added, to clients in the public and private sectors of the shareholder countries. CAF is a competitive financial institution, client-oriented, sensitive to the social needs, and supported by a highly specialized staff.

In 2019 CAF's actions have focused on supporting countries' efforts to improve their productive and social infrastructure, as well as institutions for better attention to citizens and more transparent and efficient public action. CAF financed the construction, improvement, or rehabilitation of 1,294 km of roads; contributed to increased productivity of 23,213 SMEs; financed energy infrastructure benefiting more than 7 million people; established 3,000 new sewerage connections and 52 km of pipelines for drinking water for nearly 3 million beneficiaries; rehabilitated or built 128,164 m² of educational infrastructure that will benefit 22,680 students; and contributed to a 40,000-ton reduction in carbon emissions. In the financial field, we also made great strides. CAF approved 133 operations with a combined total of USD 13.0 billion. It is also worth noting that the operating profit reached USD 460 MM in 2019, the highest in the past decade, and a 48% increase over 2018. CAF actions continue to make a significant difference in the lives of millions of Latin Americans, who can see CAF as a tireless champion of their well-being and the realization of their hopes for a better future.

CAF's credit ratings are among the highest of Latin American debt issuers. CAF's long-term credit rating is AA-1 (Fitch Ratings), A+ Standard & Poor's, AA Japan Credit Rating Agency, and Aa3 Moody's Investor Service. CAF's partnerships with public and private sector organizations have allowed it to play an active role in the promotion of sub-projects and programmes that generate environmental benefits and to address climate change impacts.

CAF's Green Agenda fosters the incorporation of development solutions based on nature, credit facilities for low-carbon growth resilient to climate change, and processes supporting virtuous cycles of green financing. Over 28% of CAF's portfolio includes green finance. Such sub-projects have focused on energy efficiency, renewable energy solutions, sustainable transport and climate change adaptation through disaster risk reduction and ecosystem services. CAF is part of the International Development Finance Club (IDFC) through which its members have adopted green finance commitments. CAF has an aspirational target to reach 40% of its portfolio for green finance. In November 2019, CAF completed its first public Green Bonds issuance, EUR 750 million bonds due 2026. This transaction added to the USD 132 MM private placements of green bonds completed during 2018. In 2020, as experience of working directly with private sector, CAF contributes in the development of a Solar PV plant in Chile, called Atacama Solar.

CAF is a Regional Direct Access accredited entity to the GCF.

B.5. Justification for GCF funding request (max. 1000 words, approximately 2 pages)

Rationale for Additionality of GCF Funding

The Program introduces a concessional financing mechanism that addresses barriers to the uptake of innovative public transport business models with EVs and supports a transformative shift to low-emission transportation. Currently fossil vehicles dominate the market and the fleet renewal. In all involved countries no large fleets of commercial EVs operate. The paradigm shift towards electric mobility not only entails new vehicles but a new fuelling/charging infrastructure, changes in vehicle maintenance and operations and frequently also requires changes in the business model. Actors in the commercial vehicle sector fear such disruptive changes as it can affect their core business. Governments on the other hand are keen on promoting e-mobility as this can reduce emissions and dependence on (often imported) fossil fuels whilst also creating long-term sustainable jobs. They therefore often announce political targets or objectives to promote e-mobility coupled with stand-alone EV pilots. The missing link is however to kick-start EV massification with a first batch of at-scale implementation sub-projects. Such initiatives are dependent on concessional funding to make

them financially and from a risk perspective feasible. These sub-projects are the foundation for meaningful, practical, realistic and action-oriented roadmaps and for developing policies which are cost-effective and reduce barriers towards e-mobility. Stand-alone pilots or technical assistance has proven to be insufficient to kick-start mass deployment of EVs. GCF concessional financing is critical to ensure this comprehensive e-mobility approach – in absence of concessional GCF finance, such sub-projects will not materialize in the short or medium term.

The major financial barriers for the potential beneficiaries which prevent alternative financing options are (i) the low financial profitability of EV investments reflected in a low FIRR and very long payback times; (ii) the high risk profile of EV investments due to performance risks, asset risks (e.g. unclear resale value of assets), and replacement investments (batteries); and (iii) high capital and investor's capital demand resulting in high debt and risk exposure levels of the investing entity. Commercial funding is thus not willing to enter this market. Alternative funding vehicles with a higher risk appetite are potentially interested but are critical of the lack of profitability and/or the high-risk profile. A good example for this case is Chile where traditional banks were reluctant to finance commercial EVs and private electric utilities entered the market with a leasing scheme for buses thus creating a new business approach (see Benchmark Report from Sub-Program 1 in Annex 22). However, also these entities were only willing to kick-start the process when the government recognized and paid for the incremental investment cost of e-buses plus guaranteed payment of the leasing fees i.e., without concessional finance and risk mitigation instruments the deal would not have taken place.

The main barriers for investors, cities or PTOs to purchase e-buses are the lack of profitability as a result of regulated tariffs to amortize capital intensive assets within existing concessional tenors and the higher upfront CAPEX resulting in higher financial costs. Hereby mainly three developments are decisive:

- (i) **EV market prices decrease:** EV prices are decreasing in all vehicle segments due to decreasing battery prices and increasing competition and supply of EVs. Total Cost of Ownership (TCO) parity with fossil vehicles is expected in the targeted vehicle categories between 2025 and 2030. Price tags of EVs will get close to fossil models by 2030. TCO alone will in many cases however not be a sufficient argument to move towards EVs if the upfront incremental investment is still significantly higher and the risks are still perceived to be higher. However, decreasing vehicle costs are a very important element to make EVs commercially viable without need for subsidies and further financial assistance in the mid-term.
- (ii) **Reduced risks and costs for 2nd and 3rd generation sub-projects due to showcasing of successful implementation sub-projects and innovative business models.** Risks which are reduced by large fleet applications are (a) vehicle reliability and vehicle performance risks; (b) improved information and therefore lower risk on assessing the re-sale value of used EVs important for introducing business models based on leasing; (c) less risk concerning maintenance & repair capabilities and availability of spare parts including secondary spare parts markets; (d) reduced risk on the workability of new business models in practice. The Program assists in this process by designing and implementing business models and by enabling with concessional finance the uptake of large fleets which are critical to reduce these risks.
- (iii) **Policies which are more conducive for e-mobility and restrict fossil vehicle usage.** This allows EVs to be more competitive. Lower costs, reduced risks, and improved framework conditions all create favorable conditions for investors to pour capital into this market as profit rates improve and risks get down. This will allow for widespread replication based on commercial terms in 5-10 years if the country has gained experience with initial fleet deployment.

Traditional commercial financial institutions are also hesitant to enter the market due to the novelty of the technology. A pilot project will not dispel their concerns as these are associated basically to the lifespan of the technology including batteries, associated replacement costs, the quality and reliability of vehicle providers (basically Chinese bus manufacturers which are not all well known in the market), resale value of vehicles, and potential savings in terms of maintenance and repair costs. These financial institutions perceive these risks as complex and difficult to mitigate and are often reluctant to finance EVs. The establishment of new technologies and new business models also entails significant additional transaction costs. Concessional GCF finance can provide for technical assistance to design and structure e-mobility investments with a reduced performance risk whilst the financial instruments of the Program reduce risk exposure and increase profitability of the investment.

Finally, also public resources for financing the envisaged activities are not sufficiently available in Panamá, Paraguay, and Uruguay due to the country's debt position. In recent years, Panamá's debt position has increased significantly and is currently at about 60% of GDP. In 2020 the government's net lending/borrowing was at -9% of GDP. The most recent financial difficulties of Panamá are mainly driven by impacts of the COVID-19 pandemic. Panama experienced a drop in international trade, transportation, and finance, while necessary health and social spending increased largely. To cope with the crisis, Panama asked for a precautionary credit line of USD 2.7 billion from IMF, as an insurance

policy against crisis risk.⁷⁸ The country recently had to abandon its fiscal rule which is to limit net fiscal spending to a maximum of 3% of GDP. Paraguay currently has a government gross debt of 35.7% with a rising tendency. Recent net lending/borrowing has been -5%. Paraguay managed to succeed in containing the pandemic with comparably few cases and casualties. However, the economic impact has been harsh. Paraguay's GDP shrank by 4% in 2020. In order to finance its increased fiscal deficit, a USD 274 MM loan was approved in 2020 under the IMF's Rapid Financing Instrument (RFI), complemented by help from other international organizations.⁷⁹ According to the IMF, Paraguay is urged to return to the country's Fiscal Responsibility Law ceiling of 1.5% of GDP, once the economic recovery has strengthened. Lastly, Uruguay inherits a rising government gross debt of almost 70%. Also, in Uruguay, recent net lending/borrowing has been negative at -4%. According to the World Bank, the COVID-19 pandemic is pushing Uruguay's economy into a recession.⁸⁰ In 2020 Uruguay's GDP shrank by 4%. Thus, in all three countries, fiscal restrictions, current liabilities and crisis management obligations impede large government investment programmes into electromobility. Investments in deploying EVs to mitigate CO₂ emissions from the transport sector relies on international support and concessional finance.

The multi-country approach is critical for a transformative and accelerated shift towards e-mobility which is again required to achieve the target of limiting the global temperature increase to below 2 degrees Celsius. Multi-country approaches are critical for learning and experience exchange between Latin American countries with activities such as the development of different knowledge materials including publications, webinars, benchmark and best-practice studies, preparation of capacity building guidelines, dialogue with EV suppliers and outreach events including trainings and workshops. The exchange of experience is included in component 1 and is realized within the program. Through participation of various countries with a similar context the learning effect can be much larger helping to achieve replication activities. Therefore, outreach and learning from experiences of other countries is critical. If the program is realized only in one country the replication will be basically on a national level. National programs are always important but experiences from other countries can be brought in much easier if the Program covers multiple countries. Thus, a multi-country programmatic approach is necessary given the scale of climate change challenges facing countries and the critical need to deliver transformative change at scale as quickly as possible as vehicle replacement rates are low thus resulting in long lock-in times of investments. The GCF involvement is critical to support low-carbon transport investments across multiple countries and vehicle sectors. With a multi-country programmatic approach resources can be used efficiently to highest priority investment sub-projects – this cannot be achieved with a piecemeal, project-by-project approach. Individual sub-projects are in most cases too small to warrant a Funding Proposal to the GCF with all transaction costs involved. CAF would thus refrain from financing electric mobility in most cases and not integrate it into its transport investments. The Program will also capitalize on synergies and lessons learned across countries and vehicle sectors and can effectively ensure transfer of knowledge and capacity building between stakeholders.

The E-Motion Program will benefit from **technical assistance** that will be made available to accompany each project and will ultimately serve to enhance the viability of the sub-projects. A total of **USD 5.4 MM** are required for national and local TA activities in the three countries of Sub-program 2. A TA package has been designed for each country individually based on the FA interventions, a demand analysis and an assessment of other actors in this area in the same country and other regional readiness programs to avoid duplication of effort.

Concessionalality of GCF Funding

GCF concessional finance are used for TA and for FA. The Sub-Program 2 will provide project financing worth **USD 231 MM**. The concessional finance from the GCF is **USD 66.8 MM in concessional loans, USD 5.4 MM in grants for TA, and USD 4.2 MM in grants for project management unit and M&E.** GCF assistance enables linking finance with technical and policy assistance. Investments alone are insufficient to achieve the transformation in climate action needed by the transport sector. Strategic sectoral planning and policy reform are critical aspects to enable the transformation towards electric mobility. The GCF, with the goal of supporting paradigm shifts in climate action, is critical for sufficient funding of the policy and technical assistance component of the Program. The Program and involved countries also depend on technical assistance that serves to enhance the viability of the sub-projects and leads to long-term transformational impacts. The program countries would not be able to source the required public funds by its own, due to current fiscal situation in the countries (e.g., economic situation coping with the impact of the COVID-19 pandemic and high global inflation rate, which required extensive policy support deployed by the authorities. These included historical cuts to monetary policy rates to help support economic activity and a sharp expansion of

⁷⁸ <https://www.imf.org/en/News/Articles/2021/01/19/na012021-precautionary-credit-line-provides-panama-with-crisis-insurance>

⁷⁹ <https://www.imf.org/en/News/Articles/2020/07/01/na0701220-paraguay-beats-the-pandemic-and-seeks-new-growth>

⁸⁰ <http://documents1.worldbank.org/curated/en/510831593396031201/pdf/Uruguay-COVID-19-and-Economic-Recovery-Emergency-Development-Policy-Financing.pdf>

social support and health spending⁸¹). Thus, the GCF grants are essential for successful implementation of the required TA activities. The Program involves private transport operators, national FIs, and potentially SPVs of PPPs for vehicle ownership. For LCVs (public and private) predominantly private companies are involved and for buses private operators are involved in the majority of countries. National FIs will be co-financing the investments in many cases. The private involvement is stimulated by involving national FIs in sub-projects and by having PPPs as the major delivery agent for sub-projects. SPVs for private led delivery in a separation of ownership and operation of assets are private companies. In some countries however public sector led SPVs might be more appropriate depending on country circumstances.

FA concessional finance is critical to make investments commercially viable and to compensate for risks from initiating climate investments in a new technology and business models. GCF's ability to offer concessional terms in investments enables prospective clients to invest in e-mobility which would otherwise not be able to do with CAF finance alone. The initial concessional terms are key for the private market to scale up technology deployment as well as new business and financial models. Meanwhile, regulatory reforms, introducing new business models, and procurement guidelines for electric vehicle fleets and charging stations can stimulate private market long-term economic sustainability for operators, OEMs, distributors or maintenance service providers. Furthermore, the TA elements help local banks to understand better the EV technologies in order to perform appropriate risk assessments and innovate their products and services finally leading to lower costs of financing EVs and associated infrastructure. GCF concessional finance is critical for sustainable market uptake linking initial pilot sub-projects with commercial EV viability by inserting the missing part of initial large-scale fleets combined with business models, policy advice and technical designs which reduce risks related to EV investments and allow to close the gap between political aspirations and commercial EV uptake.

The total Program's Sub-Program 2 volume of **USD 231 MM** is based on the investment need, TA requirements, and other co-financers contribution expectations in the Program countries over the five year availability period. The Program value estimate is based on a combination of (i) an analysis of the market potential in commercial e-mobility in the respective countries including scoping and costing studies; (ii) discussions with core stakeholders in each country including governments, regulators, transport operators and financiers; (iii) an assessment of the forthcoming investment project pipeline based on discussions with possible investors; (iv) the level of scaling-up expected as a result of concessional GCF co-finance thereby reducing barriers to investment and increasing investment appetite. The analysis was discussed with all major stakeholders, with expert judgement applied to ensure robustness of the estimated volume. CAF therefore considers the Sub-Program 2 size of **USD 231 MM**, including **USD 76.6 MM of CGF funding**, to be realistic and achievable.

B.6. Exit strategy (max. 500 words, approximately 1 page)

Exit Strategy

Repayments under concessional loans provided with GCF funds under the Program will be channelled through the CAF-GCF Special Account in accordance with repayment schedules set forth in CAF's loan agreement. It is envisaged that tenors will not exceed 15 years. All loans will be monitored by CAF. GCF resources will be reflowed back to the GCF in accordance with the terms of the FAA.

Sub-projects involved in the proposed Program will not be dependent on a continuous flow of GCF funds. Rather, the Program aims to achieve substantial reduction in the need for concessional financing in future sub-projects. It is expected that, over the course of implementation of the Program, commercial e-mobility will gradually move towards commercial viability in countries which have kick-started the process. This process has clearly been validated in the market studies realized in all countries and the Program will only engage in vehicle segments and in countries or regions where this condition of mid-term (by end of Program) commercial viability is given and can be achieved with the interventions of the Program. The Program therefore acts clearly as accelerator and massively reduces GHG emissions which is fully in-line with the global climate targets and the urgency to achieve earliest possible a change in greening long-term assets. The use of GCF funds de-risks future investments and demonstrates the viability of e-mobility investments on a commercial scale. It closes the gap between initial stand-alone initial pilot ventures and mass market deployment.

At the end of the Program (based on an implementation period of 5 years this would be 2030) there are operational large fleets of e-buses in all Program countries and in multiple countries also large LCVs fleets (public and private) including urban fast charging infrastructure. This forms the base for a large-scale commercial replication. The projections of dropping EV prices point to cost-based parity (of TCO) between 2025 and 2030 for the involved vehicle segments and strongly decreasing upfront price tags. The market analysis performed per country shows that a significant share of investors would then be willing to purchase electric buses and LCVs (public and private) at standard national financial conditions without subsidies. In addition to price/costs parity, it is important to highlight that as with

⁸¹ IMF, 2022, 05 July; <https://www.imf.org/en/News/Articles/2022/06/29/CF-Central-America-resilient-growth>

any new technology cost will lower and stabilize long term, especially because the entry costs of the technology are high due to the installation of new infrastructure which will not be as representative on posterior investments. It is important to mention here also, that the lifespan of electric vehicles- especially e-buses is estimated to be longer than those of ICE, leading to longer periods between investment cycles. Procuring ICEs will result on technology anchoring and longer cycles to have a technological upgrade.

Hence, the withdrawal of Program resources after the implementation period is not expected to risk the further deployment of e-mobility in the Program countries. The built infrastructure (charging infrastructure and public transport infrastructure) will be operated and maintained by the fleet operators, utilities and municipalities. In the long-term this will be ensured by the commercial business models that will guarantee the utilisation of the assets even after the Program ends. In addition, the TA component will enhance the capacity and ownership of the municipalities and fleet operators involved, which is expected to continue also after the Program implementation.

At the end of the program, the electromobility ecosystem will be strengthened and the ecosystem will be more consolidated to scaling up, as the target countries have a framework towards energy transition giving more relevance to renewable energy, climate change and reduced CO₂ contributions from transport sector (Figure 1). E-motion is a transformational program to effectively mitigate GHG from transport sector at urban level that focuses on commercial and intensive vehicle segments. Moreover, E-motion will contribute to develop innovative business models to bring new and clean technologies to one of the most important transport modes in terms of social impact: electric buses for public transport. According to the sustainable urban mobility pyramid, after active modes such as walking and biking, cities need to prioritize and give best conditions to deploy high standard public transport systems and with that, uses cities efficiently, promote equity, increase modal shift among other social benefits. Beside this, new climate change requires the use of zero emissions technologies to accelerate benefits in terms of CO₂ and improve air quality. Stakeholders consultations and detailed work performed in the three countries (see the 4 reports as an appendix in Feasibility Study presented , Annex 2) there are clear visions (from policy framework) to promote zero emissions technologies and prioritizing bus transport system: PA, starting with MiBus (public operator) and supported by its Electromobility strategy to deploy at least 50 BEB, also PA has the Sustainable Mobility Plan (PIMUS); PY promotes electromobility in transport sector and in public fleets/public sector; and UY has launched in 2021 and early 2022 its National Policy of Sustainable Mobility and two guides for local government that give tools to promote sustainable transport modes. These guides are very recent: (I) Sustainable Urban Mobility Planning Guide and (II) Urban Electromobility Guide. This framework will be strengthened by TA to contribute to sustainable transition.

As final exit strategy key point, from local banks long term support in EVs, E-motion will contribute to them in giving better understanding in the technology from a technical, economic and practical point of view, with real sub-projects deployed in PA, PY and UY. The foregoing will put them in a new condition to continue promoting these new technologies, autonomously and in line with the energy transition policies of each country and also. This is an important point, as stakeholder consultation revealed that there is an asymmetry of information around electromobility and therefore local banks consider it to be a high-risk sub-projects when it comes to generating financial support instruments. E-motion will work together with local and public banks, managing financial risk by providing concessional sources of funds. From the interviews carried out, it is stated that from the role of the banks it is also important to contribute to combating climate change, they have guidelines that come from the managerial levels within the entities, and therefore, E-motion has good reception as it will help them to accelerate these processes that they must develop around the VEs.

C. FINANCING INFORMATION						
C.1. Total financing						
(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)	Total amount			Currency		
	76.6			million USD (\$)		
GCF financial instrument	Amount	Tenor	Grace period	Pricing		
(i) Senior loans	66.8	15 years	3 years	0.75% – 1.10%		
(ii) Subordinated loans	Enter amount	Enter years	Enter years	Enter %		
(iii) Equity	Enter amount			Enter % equity return		
(iv) Guarantees	Enter amount	Enter years				
(v) Reimbursable grants	Enter amount					
(vi) Grants	9.8					
(vii) Results-based payments	Enter amount					
(b) Co-financing information	Total amount			Currency		
	154.4			million USD (\$)		
Name of institution	Financial instrument	Amount	Currency	Tenor & grace	Pricing	Seniority
CAF	Senior Loans	122	million USD (\$)	15 years 3 years	Enter%	pari passu
Others (Public and/or Private Sponsor)	Equity	30.4	million USD (\$)	Enter years Enter years	Enter%	Options
CAF/GIZ	In kind	2	million USD (\$)	Enter years Enter years	Enter%	Options
(c) Total financing (c) = (a)+(b)	Amount			Currency		
	231			million USD (\$)		
(d) Other financing arrangements and contributions (max. 250 words, approximately 0.5 page)						
C.2. Financing by component						



Component	Outcome	Output	Indicative cost million USD (\$)	GCF financing		Co-financing		
				Amount million USD (\$)	Financial Instrument	Amount million USD (\$)	Financial Instrument	Name of Institutions
Component 1	Outcome 1.1 - The government enhances coordination, planning and capacity for promoting electric mobility	Output 1.1.1a: A national sustainable and inclusive e-mobility strategy and implementation plan established / complemented (PY and UY)	701,500	701,500	Grants			
		Output 1.1.1b: A multi-stakeholder and gender inclusive consultation strategy is implemented and recommendations for a long-term coordination mechanism are delivered to key government actors (PA)	207,500	207,500	Grants			
		Output 1.1.2 (a and b): Key public and private stakeholders are trained	515,700	515,700	Grants			
		Output 1.1.3 (a and b): Public and private stakeholders' awareness enhanced	284,000	284,000	Grants			
	Outcome 1.2: The Government takes actions towards required regulatory standard and implementing policy frameworks for electric mobility	Output 1.2.1: Regulatory standard reform proposal that includes gender-equality policy issues for electric vehicles delivered	1,149,000	1,149,000	Grants			
	Outcome 1.3: The Government takes action towards implementing appropriate emission standards and mandates (PY)	Output 1.3.1: Standards and a policy framework for regulating the eligible emissions of road vehicles are developed and drafted for adoption by government	174,000	174,000	Grants			
		Output 1.3.2: An appropriate monitoring system for air pollutants is developed and implemented for the Metropolitan Area of Asunción, and personell is trained on its application	625,800	625,800	Grants			
	Outcome 1.4: The Government takes action towards implementing policy frameworks for ensuring the long-term sustainability of low-carbon electric mobility	Output 1.4.1: Standards and a policy framework for regulating the disposal of electric vehicles developed	132,000	132,000	Grants			
		Output 1.4.2: New business models, including the responsibility of vehicle distributors, delivered	270,000	270,000	Grants			
		Output 1.4.3: Waste management stakeholders are trained on ELV management	129,600	129,600	Grants			
Outcome 1.5: Preparing for scale-up and replication of electric mobility through fiscal incentives	Output 1.5.1: Proposal for regulatory subsidy and tax reforms for the uptake of electric vehicles developed	282,000	282,000	Grants				
	Output 1.5.2: Business models, financial schemes and procurement guidelines delivered	357,000	357,000	Grants				
	Output 1.5.3: Project sourcing and preparation delivered for project pipeline	49,000	49,000	Grants				
Contingency Component 1			487,000	487,000	Grants			
Component 2	Outcome 2.1: Finance of e-buses kick-start the mass deployment and provide evidence of technical, financial and environmental sustainability	Output 2.1. Financing of e-bus sub-projects is provided, and e-bus fleets are deployed by bus operators	168,160,000	52,970,400	Senior loans	98,373,600	Senior loans	CAF
						16,816,000	Equity (public and/or private sponsor)	Country
	Outcome 2.2: Ridership of public transport and e-buses is increased through smart infrastructure measures	Output 2.2. Smart facilities for enhanced public transport access, improved inter-modality and non-motorised transport are implemented and in operation	10,000,000			10,000,000	Equity (public and/or private sponsor)	Country (only PY and UY)
Component 3	Outcome 3: Finance of commercial EVs kick-start mass deployment and provide evidence of technical, financial and environmental sustainability	Output 3.1. LCVs (public and private) are financed and deployed.	36,270,000	11,425,050	Senior loans	21,217,950	Senior loans	CAF
						3,627,000	Equity (public and/or private sponsor)	Country
Component 4	Outcome 4: Investment in low-emission (fast) charging infrastructure lays the foundation for the deployment EVs in the commercial fleets and facilitate further	Output 4.2. Low-emission fast-charging infrastructure financed and construction of in relevant municipalities completed. (Technical preparation - Output 4.1. Technical preparations for fast charging infrastructure investments - included in Component 1)	4,800,000	2,400,000	Senior loans	2,400,000	Senior loans	CAF
Program Management			2,283,700	302,000	Grants	216,000	In-kind	GIZ
Monitoring and Evaluation and other evaluative cost			4,155,000	4,155,000	Grants	1,765,700	In-kind	CAF
Indicative total cost (USD)			231,032,800		76,616,550			154,416,250

The indicative requested GCF funding amount for each country is provided in Annex 17.

C.3 Capacity building and technology development/transfer (max. 250 words, approximately 0.5 page)

C.3.1 Does GCF funding finance capacity building activities? Yes No

C.3.2. Does GCF funding finance technology development/transfer? Yes No

Capacity Building

Capacity Building and development is delivered under Component 1. This includes specifically:

- Project specific training during design and planning stage specifically the transfer of skills for optimal technology choice, design of charging infrastructure and preparation of tender documents, design of relevant business models, financing plans, risk sharing mechanisms.
 - Training and capacity building per implemented project on knowledge in operation and technology related issues such as maintenance of EVs and charging infrastructure, ecological driving skills with EVs, optimal vehicle dispatch, planning and design as well as technology choice of EVs, safety and risk avoidance with EVs, battery management and disposal policies and regulations etc. As outlined in Output 1.1.2 the training measures will be for key public and private stakeholders are trained – Activities include training of civil servants, municipalities and public and private decision-makers on sustainable transport and e-mobility policies, standards and regulations. Furthermore, private and public stakeholder participate in E-Motion’s regional trainings activities, incl. design, operation & maintenance of e-fleets as well as on business models and financial instruments. Also, training will be provided to bus drivers, maintenance personnel, first response staff and insurance companies on how to cope with EV-related hazards.
- Capacity building and policy advice specifically for the establishment of sub-sectoral roadmaps for electric mobility in the fields of public transportation and LCVs (public and private).
- Capacity building with knowledge products and their dissemination based on the best global practices and the experiences in the different sub-projects. This is realized through different products and channels to reach a wider audience in Latin America.
- Capacity building on gender mainstreaming.

Technology Transfer

Technology Transfer be facilitated through identification and design of appropriate e-mobility technologies and sub-projects and their subsequent funding.

D. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

This section refers to the performance of the project/programme against the investment criteria as set out in the GCF's [Initial Investment Framework](#).

D.1. Impact potential (max. 500 words, approximately 1 page)

GHG emission calculations have been made per vehicle category (buses and light commercial vehicles) and per country. Whilst baseline emissions per vehicle category are comparable for different countries (variations are due to vehicle mileage, fuel type used and to a lesser extent due to different specific fuel consumption values), the grid emission factor per country influences the emissions of the EVs and therefore the emission reductions.

The GHG impact is determined based on a well-to-wheel (WTW) approach. This includes for EVs the carbon emissions from the grid including production, as well as transmission and distribution losses. With the average grid emission factors of the countries included in the Program electric vehicles targeted by the report reduce GHG emissions by 70-90%. The table below shows the carbon intensity of electricity generated of Sub-Program 2 countries. With these grid factors EVs can reduce GHG emissions on a well-to-wheel (cradle-to-grave) base by 80-100% (50-90%) compared to fossil units⁸².

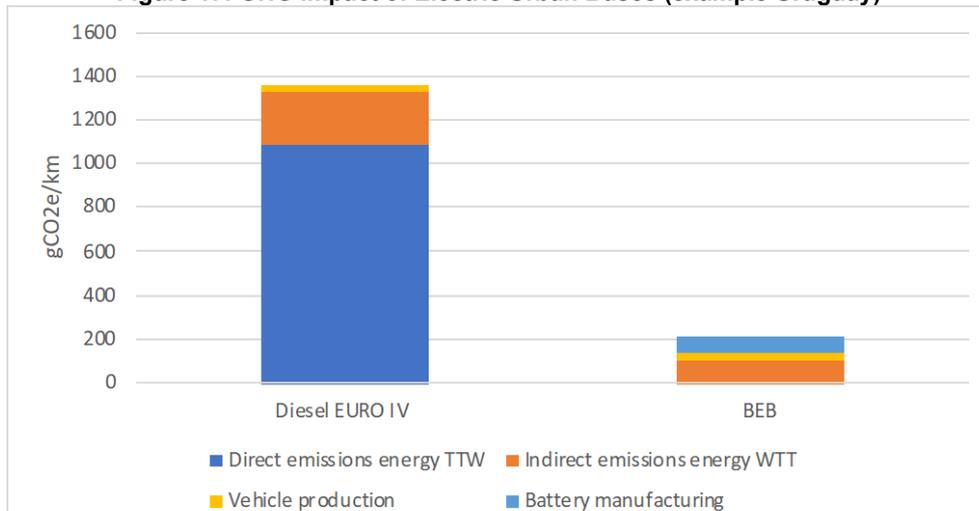
Table 16: Grid Emission Factor of Sub-Program 2 Countries

Country	Grid Emission Factor Electricity ⁸³
Panama	0.230 tCO ₂ /MWh _{el}
Paraguay	0.000 tCO ₂ /MWh _{el}
Uruguay	0.065 tCO ₂ /MWh _{el}
World average	0.475 tCO ₂ /MWh (2019)

Source: Grid emission factor based on CO₂ emissions from electricity generation in relation to net generated electricity based on country diagnostics in Annex 2; world average based on IEA⁸⁴

The methodology report on GHG reductions of the Program also includes a lifecycle or cradle-to-grave approach to determine emission reductions to assess the magnitude of leakage (see Annex 23). Inclusion of upstream emissions (vehicle manufacturing including batteries) only changes the picture marginally. The following graphs show average life-cycle emission reductions of the most important commercial EVs (buses and LCVs) included in the Program.

Figure 17: GHG Impact of Electric Urban Buses (example Uruguay)



Source: Annex 2, Quantitative Analysis; TTW = Tank to wheel, WTT = well to tank; Main assumptions: energy consumption based on values for Uruguay; annual mileage 64,500 km; Urban standard bus (diesel) 40 l/100km and BEB 1.3 kWh/km; 16-year lifespan diesel and BEB; 8-year lifespan of battery; battery set of average 300 kWh; 145kg CO₂/kWh battery (assumed average, IFEU, 2019); grid emission factor for Uruguay 0.065 tCO₂/MWh

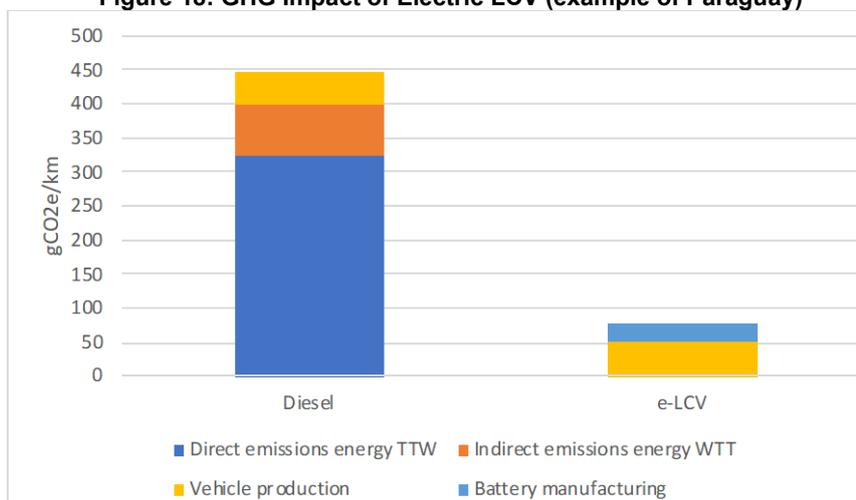
⁸² See Annex 2

⁸³ Source: Harmonized IFI Default Grid Factors 2021 (v3.1, January 2022, "Combined Margin Grid Emission Factor, gCO₂/kWh", Electricity Consumption)

⁸⁴ [Emissions – Global Energy & CO₂ Status Report 2019 – Analysis - IEA](#)

BEBs on average in the Sub-Program 2 countries Uruguay, Paraguay and Panama reduce WTW GHG emissions by approx. 95% and cradle to grave emissions by approx. 85%.

Figure 18: GHG Impact of Electric LCV (example of Paraguay)



Source: Annex 2, Quantitative Analysis; Main assumptions: energy consumption based on values for Paraguay; annual mileage 17,000 km; gasoline LCV 12 l/100km and e-LCV 0.175 kWh/km; 10-year lifespan gasoline and e-LCV; 10-year lifespan of battery; battery set of average 35 kWh; 145kg CO₂/kWh battery (IFEU, 2019); grid emission factor for Paraguay 0.0 tCO₂/MWh

E-LCVs on average in the three Program countries reduce WTW GHG emissions by 95% and cradle to grave emissions by 77%.

Direct mitigation potential from EV investments

The total projected GHG direct impact of the Sub-Program 2 in Uruguay, Paraguay and Panama due to EVs investments is estimated to 0.78 MtCO_{2e} over the lifetime of the EVs financed by the program based on the initial pipeline of sub-projects. Actual emission reductions will depend on which sub-projects are actually implemented and will be monitored by the Sub-Program 2.

Table 17: Direct emission reduction potential from Program financing of EVs

Country	Parameter	Unit	e-buses		e-LCVs		Total
			public	private	public	private	
Panama	No. of EVs	no.	150		400	50	600
	ER lifespan per EV	tCO ₂ /EV	1,250		39.4	39.4	
	ER (WTW)	tCO₂	187,500		15,760	1,970	205,000
Paraguay	No. of EVs	no.	300		300	100	700
	ER lifespan per EV	tCO ₂ /EV	984		63	63	
	ER (WTW)	tCO₂	295,200		18,900	6,300	320,000
Uruguay	No. of EVs	no.	200		200	100	500
	ER lifespan per EV	tCO ₂ /EV	1,176		57	57	
	ER (WTW)	tCO₂	235,200		11,400	5,700	252,300
Total	No. of EVs	no.	650		900	250	1,800
	Emission reduction (WTW)	tCO₂	718,000		46,000	14,000	778,000

Major environmental co-benefits are reduced emissions of pollutants and reduced noise emissions. The major concern for air pollution in the cities is PM_{2.5} and NO_x emissions. The projected reduction of pollutants of the Program in Panama, Paraguay and Uruguay is 80 tPM_{2.5} and 4,080 tNO_x.

Direct mitigation potential from mode shift to public transport

Mode shift is triggered through program investments and technical assistance from modes with high levels of carbon emissions per passenger-km to low carbon transport modes. The projected GHG impact of the Sub-Program 2 in Uruguay, Paraguay and Panama due to modal shift is estimated to 2.5 MtCO_{2e} over the lifetime of the EVs financed by the program based on the initial pipeline of sub-projects.

Parameter	Value		Unit
	PY	UY	
Projected additional ridership due to multiple measures	20%		
Additional patronage from cars	100%		
Assumed lifespan	25		years
Average occupancy rate PT	13	16	passengers
Average occupancy rate cars	1.4	1.4	passengers
EF per km diesel buses WTW	1,062	1,359	gCO2/km
EF per km electric buses WTW	115	220	gCO2/km
EF per km cars WTW	330	230	gCO2/km
EF per pkm public transport	36	46	gCO2/pkm
EF per pkm cars	236	164	gCO2/pkm
Energy usage diesel bus per pkm	0.85	0.92	MJ/pkm
Energy usage electric bus per pkm	0.35	0.30	MJ/pkm
Energy usage car per pkm	2.6	1.9	MJ/pkm
Average trip distance	8	6	km

Share of electric vehicles on PT (Share of electric buses on bus / PT fleet in the respective city (with the implementation of the projects))	10%	10%	
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PT impact	PY	UY	
PT current patronage per annum	198,000,000	243,821,376	passengers
GHG impact per annum of PT measures	63,325	36,304	tCO2
GHG impact cumulative PT measures	1,583,116	907,597	tCO2
Energy savings per annum	547	287	TJ
Energy savings cumulative	13,671	7,184	TJ

Total programme		
GHG impact per annum of PT measures	99,600	tCO2
GHG impact cumulative PT measures	2,490,700	tCO2

Source: Calculation based on Khan, 2021 and booz&co, 2009, Hincio, baseline model, 2021, Feasibility Study Task 3, See Annex 24 and Excel Sheet tgw_ER_FP_v1.4_2022-06-07 with all sources.

The total GHG impact of the programme amount to 3.3 MtCO₂ over the lifetime of the EVs and infrastructure financed.

D.2. Paradigm shift potential (max. 500 words, approximately 1 page)

The **paradigm shift** of the proposed Program is achieved by having as long-term impact through its outcomes on creating a EV conducive ecosystem, which results in investors purchasing EVs on a commercial base (scale). Barriers towards mass EV deployment have been successfully eliminated or significantly reduced through the Program interventions including FA and TA. Accelerated EV investments take place due to experiences made, business models established, reduced entry barriers, lower risks and costs and new market players. The transformative shift is possible through the uptake of commercial EVs and the improved ecosystem for EVs resultant of the concrete interventions as well as of policy assistance and capacity building. The transportation sector is transformed to a sustainable low-emission system with a dominance of public transportation and NMT. Multiple countries in the region are establishing Green Recovery Plans due to the COVID-19 crisis as a vehicle to transform the society by investing in profitable infrastructure which creates economic, environmental and social benefits, short-term jobs and a long-term greening of the economy. Electrified and sustainable public transportation systems are thereby a core feature.

The **potential for scaling up and replication** is ensured at the national and the international level through capacity created in the E-mobility ecosystem, proven cases of successful business models, improved profitability and reduced risks of EV investments and knowledge products. The experience of various countries shows that, once fleets of EVs are operational and not only pilot sub-projects, the technology is taken up quickly, if the business environment is conducive. The sub-projects financed under this Program function as trigger sub-projects demonstrating the commercial viability of EVs⁸⁵. Performance risks are reduced greatly, and business models have been introduced, which make the uptake of EVs on a purely commercial base viable. This is linked with decreasing investment costs of

⁸⁵ A second phase of the Program is not planned as we consider that after the successful implementation of the projects, EVs will be financially viable, and the electrification of buses and LCV will not need of further concessionality.

EVs reaching cost-parity to fossil units in the medium term. Scaling up and replication is also enabled through TA at policy level including the development of sectoral roadmaps, design and establishment of appropriate policy incentives and knowledge management instruments as well as capacity development.

Potential for knowledge sharing and learning: The TA Component at regional, national and local level includes capacity development, training and monitoring. Technical assistance is used to ensure delivery of adequate training from equipment suppliers or third parties for EV and charger operations and maintenance, safety trainings and capacity building in optimal management of EV fleets. Training materials, reports and knowledge products elaborated under this header in the different countries will be shared through multiple channels under the knowledge management activity. This will be realized at a national level thus removing one of the barriers to more widespread deployment of EVs in each country and also on an international level by sharing documents and experiences between countries and also with countries outside the Program. The Program will also develop professional knowledge products and share experiences and cases through channels such as webinar, electronic reports, case-studies, and workshops to disseminate experiences and build a base for replication. The Program will use existing channels within CAF, GIZ and AFD as well as those of other platforms for information dissemination. The program will ensure the transfer of the lessons learned during the execution of the E-motion, as well as taking as a basis all those lessons learned that have already taken place to a greater or lesser degree, within each country regarding electromobility⁸⁶.

Contribution to the creation of an enabling framework: The TA Component includes the support of enabling policies for EV deployment. Technical support will be provided to the relevant national and local authorities in order to set-up, improve and/or enforce enabling public policies and legal, regulatory, fiscal and/or normative frameworks for e-mobility. One of the main instruments used thereby are sector roadmaps for electrification of public transport and roadmaps for electrification of LCVs, if not existing yet. Whilst various countries have general EV roadmaps or targets these remain at a macro-level. Sectoral roadmaps combined with investment sub-projects perform a base for more specific targets, intervention instruments and actions allowing to take steps towards actual implementation. Sectorial and specific roadmaps are a tool to steer climate investments and initiatives beyond the Program's scope and will help to inform and/or further detail the countries long term mobility strategies and their NDCs.

Another focus of Component 1 aims on the establishment of an e-mobility conducive local ecosystem focusing on the financial landscape. With sub-activities related to the local environment such as business model design and development of financial institutions capacity building. Material presented to the financial sector, incl. the national bank, car distributors and leasing companies contains for instance an analysis of national experiences, client needs and global good practices on local financial institution financing of electric vehicles, recommendations for enhancing existing financial products and risk mitigation products, such as special transport loans for e-vehicles, presented to local financial institutions, car distributors, leasing companies and rental companies for application. Those activities will prepare the local private sector, including the local financial institutions, for the mid-term establishment and operation of a functional e-mobility market.

Contribution to the regulatory framework and policies: The TA Component includes activities such as roadmaps (see above) which outline an agreed-upon set of pragmatic and realistic measures to achieve EV sectoral targets. Regulatory activities realized by the Program will also include aspects such as technical standards (e.g., emission, efficiencies), battery management and disposal regulations, charging infrastructure standards, pricing policies for EV charging, public transport regulatory aspects including aspects such as concession contracts (concession length, vehicle turnover guarantees), separation of vehicle ownership and vehicle operations, tariff structure etc. Technical assistance in this area is linked up with investment sub-projects making it more credible and pragmatic.

Overall contribution to climate-resilient development pathways consistent with relevant national climate change adaptation strategies and plans: The programme will lead to significant GHG reductions in the transportation sector. Without this contribution the target countries will not be able to achieve their decarbonization plans. Fostering e-mobility and kick-starting EV deployment is thus consistent with relevant national climate -resilient development pathways. Regarding adaptation strategies and plans the programme does not specifically aim on contributions but guarantees compliance with the national plans. For instance, the charging infrastructure will be deployed in a climate resilient way, taking into account future climate hazards such as heavy rains, floods, and storms, to ensure a stable and long-term operation.

⁸⁶ From sub program 2, in Uruguay only there are electric fleets in commercial operation. Paraguay and Panama have very small or singular units (pilot projects). In Uruguay initial deployment of 30 e-buses is less than 18 months old and UTE has about 90 eLCV. From UY lesson have been learnt regarding charging infrastructure (capacity building, site selection, interoperability in electric bus depot, public infrastructure) and driving patterns and the impact on efficiency. In Paraguay electricity supply needs to be with better quality for high voltage demand. In PA they aware that electricity prices are high for emobility projects.

D.3. Sustainable development (max. 500 words, approximately 1 page)

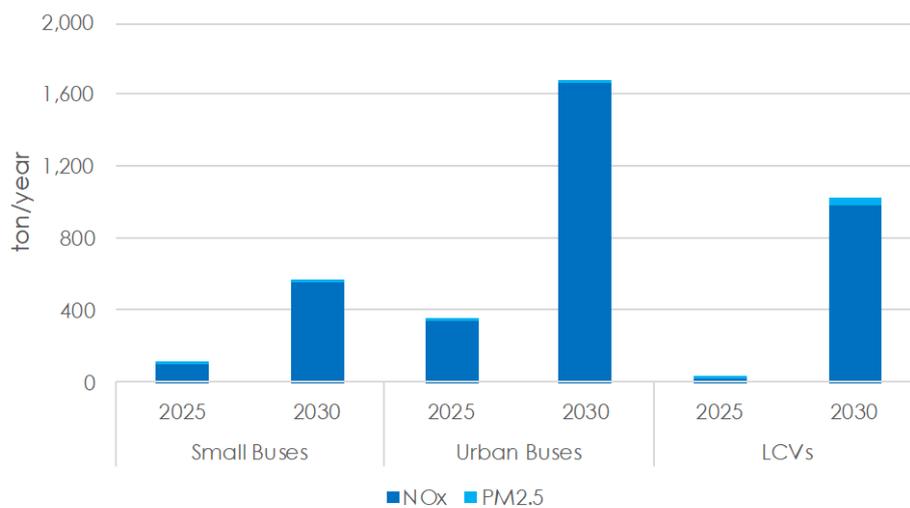
Sustainable Development Goal alignment

The Program has as main target to reduce GHG emissions. It contributes significantly to sustainable development goals (SDG) 3 (“good health and well-being”), SDG goal 7 (“affordable and clean energy”), SDG goal 9 (“industry, innovation and infrastructure”), SDG goal 11 (“sustainable cities and communities”), and SDG 13 (“climate action”).

Environmental co-benefits

Major environmental co-benefits are reduced emissions of pollutants and reduced noise emissions. The major concern for air pollution in the cities is PM_{2.5} and NO_x emissions. The impact of the Program on these pollutants has been quantified based on combustion emissions of new fossil baseline vehicles (compliant with vehicle emission standards of the country) using the EU COPERT model data i.e., this is a conservative approach as emission reductions are not based on comparing the old replaced with the new EV but on comparing a new (BAU) fossil with a new EV. For the methodology used, the database as well as calculations see Annex 23. The projected direct reduction of pollutants of the Program in Panama, Paraguay and Uruguay is 80 tPM_{2.5} and 4,080 tNO_x. The following figure shows the projected long-term reduction potential of pollutants under the high potential scenario (100% market share of EV in the targeted commercial vehicle segment for Panama to which the Program ambition will contribute).

Figure 19: Emission reduction of pollutants – High Potential Scenario in Panama



Source: Annex 2

Social co-benefits including health impacts

The major social benefit is improved air quality and reduced noise in urban areas. Air pollution is a major problem in most cities in the LAC region. Approximately 100 million people are exposed to poor air quality, exceeding WHO guidelines and affecting seriously human health. Latest data from the WHO indicate that in 2016 almost 700 people in Panama, over 1300 people in Paraguay and almost 1000 people in Uruguay died as a result of excessive exposure to fine particulate matter⁸⁷. The poor are disproportionately affected by air pollution as they tend to live and work closer to its sources⁸⁸. Children and the elderly are particularly vulnerable. Recent studies show that women are more affected by poor air quality than men⁸⁹. The transportation sector is thereby a major source of urban air pollution. Commercial fossil vehicles are a major source of air pollution in cities. Although they do not represent a majority of vehicles they are extensively used (large mileage), have high emission factors and are basically diesel powered. The diagnostic reports realized in all Program countries shows that the targeted commercial vehicles contribute in general more to air pollution than private passenger cars or motorcycles (see Annex 2). Replacing such vehicles with EVs thus has a significant impact on air quality and health of people.

The COVID-19 pandemic has created an unprecedented challenge for many Latin American countries, from the health and economic perspectives, but it is also opening new opportunities for an accelerated sustainable transformation of its energy, transport, and urban landscapes while contributing to economic recovery. A recent report prepared by the

⁸⁷ See: <https://www.who.int/data/gho/data/indicators/indicator-details/GHO/ambient-air-pollution-attributable-deaths>

⁸⁸ (Mitchell, 2013) Mitchell, G. and Dorling, D., 2013: An environmental justice analysis of British air quality. In Environment and Planning A 2003, vol. 35, 909-929

⁸⁹ Clougherty, J., 2010: A Growing Role for Gender Analysis. In Air Pollution Epidemiology, Environmental Health Perspectives, 2010 Feb., 118(2), 167-176

ILO shows that fostering of electric mobility can have a significant positive job impact primarily due to the induced impact of savings of consumers on petrol and maintenance resulting in increased spending on goods with a high-income elasticity which tend to be labour intensive service-goods⁹⁰. A report of McKinsey also reveals that with the COVID pandemic the interest in EVs has risen amongst customers due to the fact seemingly that the pandemic has raised the awareness among people of the negative impact of fossil transport modes being suddenly being able to experience clean air during lockdowns⁹¹.

Economic co-benefits

The monetary value of reduced air emissions (GHG and air pollutants) has been calculated (see Annex 23 for the methodology, dataset and results). The economic cost of pollution is calculated by assigning a monetary value to emissions of PM_{2.5} and NO_x for each country based on local levels of pollution at the ground level and the impact on health and costs caused by this type of pollution per country. This is based on the exposure of the population to contamination and how increased pollution increases mortality risks using the World Health Organization's dose response functions to concentration. The greater risk of mortality or, more precisely, the cost of premature death is valued economically on the basis of stated preference studies as performed by the OECD. The global warming externality cost is expressed through the social cost of carbon (SCC). Latter is an estimate of the economic damages associated with an increase in CO₂ emissions. A review of empirical estimates of the global social cost of carbon reported by the IPCC reports a unit value of USD 36 per ton of CO_{2e} in 2016 prices for 2016 emissions, to be increased by 2% annually in real terms to allow for the potential of increasing marginal damage of global warming over time (ADB, 2017). This results in around 40 USD per ton CO_{2e} for 2020.

EVs are more energy efficient than fossil vehicles. The direct energy savings resulting from the Program are estimated at more than 10,500 TJ over the lifetime of vehicles (using the same methodological approach as for GHG emissions). The economic benefits directly from the investment sub-projects due to reduced emissions are estimated at nearly USD 40.0 million (USD 31.1 million related to CO₂, USD 8.9 million related to NO_x and PM_{2.5}).

Gender-sensitive development impact

Gender issues and development impact will be described in the gender-disaggregated targets in sub-projects' targets. Each Program will be required to meet CAF's policy on gender equality. Individual sub-projects will also be guided by the Gender Action Plan (GAP) as included in Annex 8. The GAP includes actions and targets (i) on improved access for women to public transportation; (ii) improved sex-disaggregated data collection on urban transport; (iii) Improved women's access to jobs; (iv) interventions including awareness raising and infrastructure to reduce sexual harassment in public transport; and (v) trainings and workshops to disseminate best practices for reducing sexual harassment in public transport.

On a cross-sectoral level the GAP has as target to integrate gender considerations in transport sector activities. This includes (i) the usage of a gender lens when designing the roadmap for different EV segments and EV support policies; (ii) Increased awareness about gender equality gaps and opportunities in transport through capacity buildings and training; and (iii) Increased knowledge in how to include gender equality in Urban Transport sub-projects through specific training materials.

D.4. Needs of recipient (max. 500 words, approximately 1 page)

The market study (Annex 2) identified the following barriers hindering a take-up of EVs in the countries involved:

- **High investment costs:** The initial key barrier limiting an upscale of e-vehicles represent the high initial costs. Currently the purchase price for a 100% electric vehicle in the local market is approximately one third higher than for a comparable conventional vehicle (CRECE, 2019).
- **Limited supply of e-vehicles:** Besides high initial costs for the purchase of e-vehicles, limited supply in the national market represents an important barrier.
- **Lack of effective incentive mechanisms:** Existing incentives are limited to the imports of e-vehicles. Thus, this benefit does not result in an increase in demand by buyers because, the importer does not necessarily transfer the discount to the final price and because the attractiveness of the incentive is blurred by not being explicit.
- **Limited pollution control:** There is limited pollution control of vehicles that circulate, including old, second-hand combustion engine operated ones.
- **Lack of credit facilities:** Contrary to conventional vehicles, there are no credit facilities from banks available that allow the user to acquire loans to purchase alternative vehicles.

⁹⁰ ILO, 2020: Jobs in green and healthy transport: Making the green shift

⁹¹ [Mobility investments in the next normal | McKinsey](#)

- **Insufficient charging infrastructure:** With respect to charging infrastructure, there exist several identified drawbacks, e.g.:
 - the unavailability of easy-to-install chargers in homes and in workplaces or companies, a negative perception of the quality of electric power service by residential and commercial consumers
 - for public charging stations, there is no incentives to stimulate 3rd party investment. In addition, technical assistance is requested for technical planning and defining business models⁹².
 - national charging networks (intercity): Initial sub-projects are at pilot stage and limited in scope⁹³.
- **Lack of qualified labour and technical expertise:** Due to the scarce market for electric vehicles and the insufficient charging infrastructure installed at the national level, there is a lack of qualified labour and technical expertise regarding electromobility.
- **Inappropriate public transport subsidies:** Public transport subsidies specifically aim at covering the costs of fossil fuels for public passenger buses.
- **Inappropriate public bus system design:** The bus system needs to be strengthened and modernized. Hereby it is necessary to include complementary measures so that e-buses operate efficiently such as restricting private vehicles and motorcycles in specific areas or improving the streets, that are often in very bad condition.
- **Lack of public awareness:** Citizens often do not have an approach to new technology and its benefits, thus advantages of electromobility need to be better communicated.

CAF has also realized market costing studies on the different vehicle segments for different price ranges and countries (see Annex 2). The commercial attractiveness of EVs versus fossil vehicles has been assessed based on parameters such as the Total Cost of Ownership (TCO), capital and equity requirements, cash flow and risks. This again serves as base to structure the financial instruments required to resolve the barriers to commercial viability of EVs in the selected vehicle segments.

Contrary to renewable energy generation that is increasingly cost competitive, EVs are not yet commercially viable and remain largely underfunded. The market and benchmark studies show that, if unaddressed, commercial EV deployment on a mass scale will take place in a delayed manner. This will delay the transformation towards low carbon transport systems in the Program countries.

The EV sectors targeted have (i) limited access to commercial funding; (ii) early-mover costs and disadvantages including high performance risks; and (iii) lack of sufficient commercial viability including profitability and acceptable risk levels. Therefore, financiers are not in a position to fund such activities with commercial loans at the current stage. However, from market study E-motion had great receptivity as the program will enhance national EV ecosystem, policy framework, incentives and regulations with the TA component. These TA component makes very attractive to national banks⁹⁴ to participate as a financial executing entity as they also want to contribute with national climate goals. The Program and involved countries also depend on technical assistance that serves to enhance the viability of the sub-projects and leads to long-term transformational impacts. The program countries would not be able to source the required public funds by its own, due to current fiscal situation in the countries (e.g., economic situation coping with the impact of the COVID-19 pandemic and high global inflation rate, which required extensive policy support deployed by the authorities. These included historical cuts to monetary policy rates to help support economic activity and a sharp expansion of social support and health spending⁹⁵). Thus, the GCF grants are essential for successful implementation of the required TA activities.

Governments and transport operators also lack capacity and know-how on the appropriate technology choices and the most appropriate and conducive policies and business models to foster in a cost-effective manner EV deployment. This is clearly evident from public statements in favour of electric mobility which is however not followed up with concrete actions and implementations. Moreover, public resources for financing the envisaged activities are not sufficiently available in Panamá, Paraguay, and Uruguay due to the countries debt position. In recent years, Panamá's

⁹² In Panamá just private distribution companies can sell electricity and they do not have any incentive to “get into this business”. During the market interviews some utilities indicated their interest in EV fleet projects (e.g., for buses or private companies, hence larger projects) but not in public chargers. In Paraguay and Uruguay, distribution is a “national monopoly” and UTE (UY) declared they need TA for planning a DC fast charging network. In PY, ANDE is about to deliver its proposal to authorities to allow 3rd party to install chargers and get paid through a service model (e.g., by time, no “selling energy”), in order to stimulate public charging deployment (e.g., for residential, public/industrial, medium voltage (buses)).

⁹³ In Paraguay a 2nd green route to Yacretá (4 station with 50 kW chargers) is proposed, but funding is not yet allocated. The first green route goes to Itaipu, which is about to be launched in 2021. In Panamá exist no planning in the short term. In Uruguay initial activities on interconnection have been started.

⁹⁴ Public financial institutions: in PA would be Caja de Ahorro and Banco Nacional; in PY would be Banco Nacional de Fomento (BNF); in UY would be Banco de la República de Uruguay (BROU). All of them were interviewed

⁹⁵ IMF, 2022, 05 July; <https://www.imf.org/en/News/Articles/2022/06/29/CF-Central-America-resilient-growth>

debt position has increased significantly and is currently at about 60% of GDP. In 2020 the government's net lending/borrowing was at -9% of GDP. The most recent financial difficulties of Panamá are mainly driven by impacts of the COVID-19 pandemic. The country recently had to abandon its fiscal rule which is to limit net fiscal spending to a maximum of 3% of GDP. Paraguay currently has a government gross debt of 35.7% with a rising tendency. Recent net lending/borrowing has been -5%. Paraguay's economic losses from COVID-19 have been harsh. It's GDP shrank by 4% in 2020. Lastly, Uruguay inherits a rising government gross debt of almost 70%. Also, in Uruguay, recent net lending/borrowing has been negative at -4%. Due to the COVID-19 pandemic, Uruguay's GDP shrank by 4% in 2020. Thus, in all three countries, fiscal restrictions, current liabilities and crisis management obligations impede large government investment programmes into electromobility. Thus, investments (Financial and Technical Assistance) in deploying EVs to mitigate CO₂ emissions from the transport sector relies on international support and concessional finance.

In addition, the Program addresses bad air quality levels in cities of the program countries as a co-benefit. Latest data from the WHO indicate that in 2016 almost 700 people in Panama, over 1,300 people in Paraguay and almost 1000 people in Uruguay died as a result of excessive exposure to fine particulate matter. Air pollution has significantly increased in cities within Latin America and the Caribbean (LAC) due to the rapid increase in urban population, higher traffic and vehicle use, and industrialized zones. This development and condition can get even worse with social pressure and climate change impacts on local ecosystems. Such vulnerabilities can be addressed by the Program by shifting towards low-emissions mobility.

D.5. Country ownership (max. 500 words, approximately 1 page)

Section B1 already includes a short overview of countries including the grid emission factor, population and vehicle data, energy prices and major EV policies. This section therefore focuses on the climate policies of the involved countries (see also Figure 1 presented in B.1). All NDAs of the countries included in the Program are committed to the development of GHG mitigation policies, decarbonization of the transport sector and the development of electric mobility and all of them, or direct professional on behalf, were interviewed at least 2 times by country in the E-motion feasibility study framework.

In the framework of the elaboration of the E-Motion Concept Note until today, CAF and its partners (AFD, PROPARCO, KfW, GIZ) have hold meetings with the NDAs of the countries concerned by the Program and key actors of the e-mobility sector to ensure that the FP answers to the countries' needs (See Annex 7). These actors include development banks, private banks, municipalities and regional states, power utilities, transport operators etc.

Panamá

According to Panamá's NDC, the country's strategy is focused on mitigating particularly the energy and land use change sectors, through the implementation of measures to increase the use of renewable energies such as solar and wind, as well as reforestation and forest recovery. Taking into account the Energy Transition Agenda 2020-2030, strategies like rational and efficient use of energy, electric mobility and distributed generation strategy are proposed.

Regarding public transportation sector policies for climate change mitigation, efforts for Panama today are aimed at electrifying public transportation through the expansion of the Panama Metro network, the introduction of vehicles that use alternative energy sources that help reduce GHG emissions is also proposed, as well as guaranteeing the integration of the public transport system to encourage their use and promote non-motorized modes as walking and cycling. Among the most relevant national policies are the following:

- Panamá's NDC has set a target of reducing at least 11.5% of total emissions from the energy sector in 2030, and 24% in 2050 with transportation accounting for about 50% of the sector's emissions.
- National Strategy for Electric Mobility: 10-20% of the total fleet of private vehicles will be electric; 25-40% of private vehicle sales will be electric vehicle sales; 15-35% of the buses in the authorized concession fleets will be electric; 25-50% of the public fleets will be made up of electric vehicles by 2030.
- National Energy Plan 2015-2050 that promotes higher share of non-conventional renewable energy (39%) towards 2050 versus 4% penetration in a baseline scenario.
- Energy Transition Agenda 2020-2030 proposes, among others, to decarbonize transport sector through electromobility.
- National Electromobility Strategy sets different goals, e.g., buses will be electric between 15% to 35% of their total stock; public fleets will be electric between 25% to 50% of their total stock.
- "Plan integral de movilidad urbana sustentable para el área metropolitana de Panamá" (PIMUS). Promotes, among others, clean and more efficient sources of energy for urban transport system.
- Anteproyecto de Ley 194 (Draft Law 194), Incentives to electric mobility in on road transportation for PANAMA.

- Preferential tax rate for hybrid and electric vehicles. Preferential rate of the selective consumption tax for electric or hybrid motor vehicles, for the land transport of people, applied as follows: 0% until December 31, 2017 and 5 % as of January 1 of 2018 for electric vehicles, 10% applies for other types of vehicles (combustion). For E-motion would apply to passenger public fleet until 10 passengers / commercial fleet (not parcels or freight).

With support from CAF, Panamá submitted a readiness proposal to GCF in 2017, including establishing its GCF country programming⁹⁶. Also, Panama is part of 4 multiple country sub-projects with GCF in the field of mitigation (3) and adaptation (1). The country's National Designated Authority is the Ministry of Environment.

National and public banks see electromobility adoption requires incentives. As part of market study, banks have been interviewed in Panama and they are very interested in participating, at least, in the ebus component. Caja de Ahorro participated in the latest renewal MiBus process (diesel units, 2009) and now are following this new process with BEB. Banco General also was interested in developing special EV financial products within E-motion framework.

Paraguay

As expressed in section B1. Paraguay's NDC, based on the National Development Plan 2030, targets to achieve GHG emission reductions and aims at reducing fossil fuel consumption by 20% by 2030. The NDC is currently being updated, expected to be published soon. According to information received from the Ministry of the Environment and Sustainable Development (MADES), the mitigation goals would remain identical to the NDC's as defined above.

The legal framework in Paraguay is based on the National Climate Change Law, which establishes the National Climate Change Policy (PNCC) as the main instrument to define and achieve national climate change objectives. Also, Paraguay established a National Climate Change Commission (CNCC), the National Directorate of Climate Change (DNCC), and the Climate Change Fund for executing climate actions. Main strategic directives for combating climate change in Paraguay are the National Development Plan 2030 (updated in 2020), which encourages the use of electricity in the transport sector and reduces the consumption of fossil fuels, and the National Mitigation Plan, that includes encouraging the transformation of public transport powered by fossil fuel to an electrical system and/or biofuels. Other relevant policies in Paraguay are the following:

- Paraguay's NDC targets 10-20% emission reductions compared to the baseline scenario, including to reduce 20% of fossil fuel consumption by 2030. NDCs were updated in March 2021, transport sector would increase electromobility in on-road vehicles as a key mitigation action⁹⁷.
- The National Energy Policy "Paraguay 2040", which includes, among other action plans, the Electric Mobility Program in the public sector that aims to encourage the conversion of the public sector vehicle fleet. Paraguay has great potential in public fleets as this country has set targets (National Energy Policy) to ANDE and to public fleets in general. To 2021, 10% of renewal with EVs; to 2030, 20% of renewal with EVs and ANDE 50%; to 2040, 50% of renewal with EVs and ANDE 100%. ANDE owns 1300 vehicles.
- The Agenda for the Transition of Technology towards Electromobility is structured around five fundamental axes under a common vision of promoting the adoption of electric vehicles and 21 strategic lines that will allow the achievement of the objectives.
- The Guide for the Standardization of Electric Mobility in Paraguay, published in 2020, is intended to provide the basis to be able to legislate regulations and standards related to electric mobility.
- In the framework of "Asuncion Green City of the Americas", Municipality of Asuncion they want to implement municipal services with BEB to complement actual services (cover additional areas and overnight services) and operates with EVs its municipal fleet.
- Law N 5.183/2014 exempts new electric and hybrid vehicles from the payment of import customs tax and VAT.
- Decree for the creation of a Strategic Roundtable for Electric Mobility, Creation of a Strategic Roundtable for Electric Mobility with the power to coordinate all initiatives related to the matter and direct actions for the development of the EM.
- Green Route 1 to Ciudad del Este, construction and implementation of the green route to connect Asunción and Ciudad del Este. This project is already in operation since early 2021.
- Municipal Ordinance No. 227/19 Referring to public charging points for Electric Mobility, Regulate the charge centre facilities in public spaces in the city of Asunción.
- ANDE will publish a list of incentives for electric cost to different electromobility applications and user (end of 2021).

⁹⁶ <https://www.greenclimate.fund/document/nda-strengthening-and-country-programming-support-panama-through-caf>

⁹⁷ Updated NDCs focused on including Adaptation component as previous version didn't develop

With support from CAF, Paraguay submitted a readiness proposal to GCF in 2017, including establishing its GCF country programming⁹⁸. Also, Paraguay is part of 3 sub-projects with GCF in the field of mitigation and 1 cross-cutting project. The country's National Designated Authority is the Ministry of the Environment and Sustainable Development (MADES).

National and public banks see electromobility adoption requires incentives. As part of market study, banks have been interviewed in Paraguay and they are very interested in participating as a financial executing entity. Banco Nacional de Fomento (BNF) was interested in developing special EV financial products within E-motion framework, they do have experience in the development of mobility financial products for different segments.

Uruguay

As expressed in B1. Uruguay's NDC target certain goals towards 2025 for E-motion categories. Also, Uruguay aims at establishing a network of electric vehicle charging stations throughout the main roads across Uruguay, of which 52% have been completed in 2020 and a fast-charging network, which has not progressed yet. Most relevant policies for the country's climate change agenda are the following:

- In its NDC, Uruguay's specifically target to attain 110 units e-Buses and 900 units e-LCVs, conditional to additional means of implementation.
- The National Climate Change Policy promotes several initiatives to mitigate transport sector GHG emissions, among others, the increase share of electric vehicles, hybrids and other, in the different transport subsectors.
- The National Environmental Plan for Sustainable Development, established in 2019, brings together the main environmental strategies and lines of action in the country.
- The National Sustainable Mobility Plan is an outcome of the National Environmental Plan for Sustainable Development. The plan promotes a transition towards transport technologies with better energy efficiency, lower emissions through several initiatives (incentives, regulation, among others) until 2030. Also, it has a strategic line to improve public fleets in their renewal process and the development of a scrapping program to remove older vehicles, published in 2019.
- The Energy Policy and the approved Energy Efficiency Law establishes the need to reduce fossil fuel consumption in the transport sector.
- Decree 246/012 reduces the specific internal tax for hybrid and electric vehicles.
- Decree 325/017 reduces import tariffs from 23% to 0% for electric vehicles.
- Decree 219/019 also exempts lithium batteries for vehicle use and charging systems for electric vehicles.
- Salient points from the Strategic Transport, Logistic and Infrastructure vision 2030.
- COMAP benefits⁹⁹. From 2018, electric passenger cars are included in COMAP benefits (before that, only LCV were). Car rental included as COMAP beneficiaries, when investing in electric vehicles.
- Energy Efficiency Certificates (CEE). Monetary income to energy efficiency investments (in buses and the facilities necessary for loading batteries). In 2020, grant was about USD 24/toe, based on energy savings during project lifespan.
- Batteries handling and final disposal. Regulation for batteries, extending responsibility not only to end users, but also to manufacturers and importers (in progress at 2nd term, 2021).
- Connector standard. Regulation on charger system connector standards (in progress at 2nd term, 2021).
- Insurance conditions. Reduction on insurance fees of Banco de Seguros del Estado (BSE). 15% discount on electric passenger cars and LCV fee. 20% discount on electric bus fee.
- Technical Guide for Urban Electric Mobility Planning. A guide for local governments that are interested to develop a EV plan. The guide will include the state of the art in electric urban mobility for freight and passenger transport, and recommendations for an adequate promotion and implementation at a city level (in execution, delivered by February 2022).
- Specific tariff for public charging network. Time-of-use¹⁰⁰ electricity rates for charging vehicles in the public network. Price of electricity: i) Punta: USD 0,37/kWh; ii) Llano: USD 0,14/kWh; and iii) Valle: USD 0,07/kWh. Additional discounts: i) All EVs: 50% for charges made in Valle time.

⁹⁸ <https://www.greenclimate.fund/document/nda-strengthening-and-country-programming-support-paraguay-through-caf>

⁹⁹ COMAP is a government agency that administrates tax exemptions granted to investments made by companies (Ley 16.906). The core benefit derived from COMAP is a corporate revenue tax credit.

¹⁰⁰ Punta time from 18:00 to 22:00 hrs, Llano time from 07:00 to 18:00 and from 22:00 to 24:00 hrs, Valle time from 00:00 to 07:00 hrs.

Uruguay submitted a readiness proposal to GCF in 2017 and its second phase in 2019, including establishing its GCF country programming¹⁰¹. Also, Uruguay is part of 2 sub-projects with GCF in the field of mitigation. The country's National Designated Authority is the Ministry of Environment.

National and private banks see electromobility adoption requires incentives. As part of market study, banks have been interviewed in Uruguay and they are very interested in participating as a financial executing entity. Banco de la República de Uruguay (BROU) was interested in developing special EV financial products within E-motion framework. Private banks like HSBC and Santander have participated in the ebus subsidy (first call) by giving more years for credits and less interest rate versus conventional diesel credit lines¹⁰².

Regional Initiatives

As mentioned previously, GCF approved a readiness proposal (first submission in May 2019) for Panama, Paraguay, Uruguay, and 11 other countries across Latin America¹⁰³. The readiness programme focuses at outlining the benefits of coordinating national e-mobility efforts through regional cooperation, including building capacities for technology assessment, the establishment of enabling policies and relevant climate finance strategies. Complementarity will be ensured through close coordination with the existing programs and initiatives. The proposed Program is focused on investment sub-projects and market transformation whilst existing initiatives are more for creating readiness for electric mobility in general.

Engagement with civil society

In each country of the Sub-Program 2, CAF has performed country diagnostics and market studies study with multiple interviews and meetings realized with all major stakeholders including national and local governmental bodies, energy utilities, transport operators and civil society, such as universities. Consultations have also been carried out with stakeholders during the formulation of the Funding Proposal (see Annex 7 for details).

In the case of Panama, the community has been involved in carrying out the pilot tests of electric buses in Panama City and Colón, since these buses were tested on different routes so that users could move around on these buses and give them to know the benefits of electric mobility in terms of environment and sustainability.

In the case of Paraguay, the community in general welcomes the different electromobility initiatives, understanding that at the national level, the fact of having an obsolete vehicle fleet leads to health problems. In addition, counting on a deficient transportation system, citizens support this technological migration to an efficient and environmentally friendly transportation system.

In case of relevant NGOs will be consulted during the implementation, such Mesa de Movilidad Eléctrica (like GIEET, but private members); AUDER (Asociación Uruguaya de Energías Renovables) that started with renewables, and now includes EV in their scope; Automóvil Club del Uruguay; and Coordinadora de Usuarios y Usuarías del Transporte Colectivo (Coordinator of Public Transport Users).

Also, having the surpluses of electricity generation, the support for electromobility, can generate an important field of training and employment for the population in general.

Public Transport System

In **Panama**, The Autoridad del Tránsito y Transporte Terrestre (ATTT) is the one who has the power to administer and supervise transportation, preparing and enforcing regulations, in addition to assuming road safety competencies. It is also in charge of assigning operating permits and public transport concessions. However, this entity is not a ministry but an autonomous state entity and coordinates directly with Presidency. The largest and the only transport operator is MiBus with 1,400 buses (approx.) and is a public company. Payment method for MiBus is by card and is integrated with METRO. The rest of public transport is more informal and E-motion will start transition with MiBus as a consolidated public operator that already has pilot eBuses (2 BYD) in 2018 and was interviewed in order to understand targets of EV adoption where eMotion should contribute in phase 2 and 3 (150 eBuses).

In the case of **Paraguay**, all operators in the transport sector are private. For the Asunción area, the Metropolitan Area Passenger Transport Entrepreneurs Center was created (CETRAPAM) and also interviewed where they have declared

¹⁰¹ <https://www.greenclimate.fund/document/nda-strengthening-and-country-programming-2nd-phase-support-uruguay-through-undp>

¹⁰² Santander bank reduce 1/6 the interest rate in BEB vs Diesel Bus. In HSBC bank, interest rate was 3 points lower for BEB tan Diesel Bus.

¹⁰³ <https://www.greenclimate.fund/document/advancing-regional-approach-e-mobility-latin-america>

to have 10% of its fleet with eBuses by 2030 (about 200 buses). Transportation companies at the metropolitan level are private and their routes are regulated by the National Transportation System (SNT). The SNT also determines, through the agencies created, comprehensive transit and transportation policies and regulations at the metropolitan, municipal, inter-municipal, departmental, national and international levels. PY has a pilot at the private level with the company Magno SA (Line 12), in 2019, incorporated the first two fully electric buses (Zhongtong), both to its fleet and to the passenger transport system in Paraguay. MAGNO was interviewed and declared to be 100% electric by 2030, targeting to 100 eBuses.

In **Uruguay**, Departmental Government (DG) is responsible for service conditions, lines, routes, and service supervision. Bus fare is set in a negotiation process involving companies and DG, regarding that bus fare should represent real transport conditions, preserving business balance for the operators. The operation of bus services is reserved to legal entities who have obtained a permit from the DG. The permits are revocable, and are granted in concession by public tender (in practice, no operator was deprived of its permit, unless business balance of the company was no longer financially sustainable). Montevideo has the largest public transport system in the country, operating 1.514 buses where CUTCSA is the largest operator of the Metropolitan Transport System (STM), with up to 70% of the marketshare, and the rest is shared by COECT (15%), UCOT (11%), and COME (9%). Together they operate 144 lines, with 4.835 bus stops in Montevideo and the metropolitan area. In 2018, the Electric Bus Subsidy was approved by Law 19.670, whose beneficiaries are all bus operators of the country (if they apply for the subsidy, of course). The subsidy covers the price gap between a conventional bus and an electric bus. As the government is also compelled to subsidize diesel fuel consumption for conventional buses through de Bus Fare Subsidy, the Electric Bus Subsidy is financed, in a way, from the future savings in Bus Fare Subsidy. In 2019, the first round of the subsidy called for 50 electric buses. The Technical Committee received 34 proposals from the operators and 33 of them were accepted. Finally, 32 operators continued with the process under the conditions established by the public tender. CUTCSA was granted with 20 eBuses (BYD) from the subsidy and from interviews performed by E-motion, CUTCSA clared to increase up to 100 eBuses. COETC, UCOT, COME and CODELEST also where granted (10 Yutong and 3 Ankai).

D.6. Efficiency and effectiveness (max` . 500 words, approximately 1 page)

The Program introduces a concessional financing mechanism that addresses barriers to the uptake of commercial EVs and supports a transformative shift to low carbon transportation. GCF concessional financing is critical – in absence of concessional GCF finance, such sub-projects will not materialize in the short or medium term. The benchmark report (Annex 22) clearly shows that all countries with large fleets of commercial EVs (>100 units) have used, at least initially, financial support instruments. The market studies conducted in all countries also show that EVs are currently commercially non-viable (with different degrees of non-viability). The market studies however also reveal that in the medium term due to price decreases, particularly dropping battery prices, a commercial uptake of EVs is viable. Countries can take advantage of this circumstance from an early stage if they invest early-on in fleets of EVs to reduce prevalent risk factors associated with EV deployment.

The major financial barriers for the potential beneficiaries which prevent alternative financing options are (i) the low financial profitability of EV investments reflected in high total costs of ownership and very long payback times; (ii) the high-risk profile of EV investments due to performance risks, asset risks (e.g., re-sale value of assets), and replacement investments (batteries); and (iii) high capital and investor’s capital demand resulting in high debt and risk exposure levels of the investing entity. Commercial funding is thus not willing to enter this market. Conventional financial institutions are also not willing to enter the market due to the novelty of the technology, however, from market study (see Annex 2, T4 country reports), public and national banks in PA, PY and UY would be interested in support E-motion program as a financial executing entity as they foresee and understand that E-motion would promote EV adoption integrally through FA and TA that will reduce risk and will make this transition sustainable. Concessional GCF finance can provide for technical assistance to design and structure in an optimal manner e-mobility investment and reduce design and performance risks whilst the financial instruments reduce risk exposure and increase profitability of the investment. The financial viability and efficiency of individual sub-projects will be determined during preparation and the due diligence phase for each project. CAF will assess the financial soundness and economic viability as well as bankability of each project (see Annex 2, section 2.3 for “key criteria for E-motion implementation phase).

The total capital investment is USD 231 MM with a requested GCF finance of USD 76.6 MM and a direct GHG reduction of 3.3 MtCO₂ resulting in an effectiveness of the GCF investment in direct terms of 23 USD/tCO₂. This value is lower than applying the subsidy finance from other countries with significant EV numbers for buses which

result in average costs per tCO₂ of 140-180 USD¹⁰⁴. GHG marginal abatement costs of transport sub-projects tend to be higher than of other interventions as they are associated with high incremental costs. However, e-mobility programmes are also linked to substantial spill-over and long-term benefits, once a conducive ecosystem is in place and the market kicked-off. Hereby, the comprehensive TA component of the Program will accelerate the transition to a fully electrified vehicle market significantly, impacting not only the electrification of new vehicles but also the used-car market. Consequently, the indirect GHG impact potential, as outlined in section D.1., is much higher. According to the high potential scenario (not including decreasing emission grid factors), a total GHG reduction of the Program of 16 MtCO₂e can be achieved, resulting in an effectiveness of the Sub-Program 2 of only **4.6 USD/tCO₂**. The co-finance ratio of the total investment equalizes **67%**. In addition, it is well known that abatement cost in transport sector is challenging as less carbon-intensive and zero emission technologies are expensive, however, very effective in mitigating not only GHG but local pollutants and reduce noise pollution (these last are not accounted but are very strategic at urban level as well). The European Bank for Reconstruction and Development (EBRD) on its “green economy transition approach” also points that from its experience, transport sub-projects delivered by EBRD have a higher abatement cost of 145 Euros/tCO₂ (170 USD/tCO₂), but those are very important for their significant co-benefits at urban level.

Table 17 below presents the preliminary calculations of Economic Internal Rates of Return (EIRR) and Financial Internal Rates of Return (FIRR) based on the comparison of savings on a Total Cost of Ownership approach based on cost flow calculations. The methodology compares the impact of introducing electric vehicles: buses and light commercial vehicles for intensive use.

Table 18: Economic and Financial Internal Rates of Return

BATTERY ELECTRIC BUSES (BEB)					
Country	CAPEX MUSD	without GCF		with GCF	
		FIRR	EIRR	FIRR	EIRR
Panama	44,500	1.15%	3.84%	11.42%	14.39%
Paraguay	82,700	3.09%	4.91%	9.85%	11.80%
Uruguay	40,960	-4.80%	2.42%	8.91%	16.27%
Average rate		0%	4%	10%	14%

LIGHT COMMERCIAL VEHICLES (LCV)					
Country	CAPEX MUSD	without GCF		with GCF	
		FIRR	EIRR	FIRR	EIRR
Panama	15,800	-0.99%	0.63%	14.21%	15.90%
Paraguay	14,300	-3.11%	1.44%	10.70%	16.10%
Uruguay	6,170	2.32%	0.05%	10.28%	13.11%
Average rate		-1%	1%	12%	15%

The methodology used intends to capture two key variables: (i) the EIRR computes positive externalities from replacing high usage vehicles from an environmental perspective utilizing reasonable costs of carbon and (ii) FIRR which intends to capture the additionality for using concessional funds.

As shown in the table above, there is an importance impact in all segments and countries comprising the program from both and economic and financial perspectives. From an EIRR standpoint replacing conventional buses for BEBs could lead to an increase in returns ranging from 2% to 6%. In respect to LCV the increase in return ranges from 1.5% to 4.5%. Please refer to Annex 3: Economic and financial analyses for detailed calculations for each country and type of vehicle.

¹⁰⁴ See Grütter Consulting, 2021, Program: E-Motion: E-Mobility and Low Carbon Transportation, GHG and SD Emission Reduction Methodology and Calculations (attached to FP Sub-Program 1 as Annex 23; based on average incremental CAPEX of e-bus system versus diesel bus of USD 196,000 and average GHG lifetime reductions of 1,113 tCO₂e with a subsidy rate given by countries of 80-100% of incremental investment.

E. LOGICAL FRAMEWORK

This section refers to the project/programme’s logical framework in accordance with the GCF’s Integrated Results Management Framework to which the project/programme contributes as a whole, including in respect of any co-financing.

E.1. Project/Programme Focus

Please indicate whether this proposal is for a mitigation or adaptation project/programme. For cross-cutting proposals, select both.

Reduced emissions (mitigation)

Increased resilience (adaptation)

E.2. GCF Impact level: Paradigm shift potential (max 600 words, approximately 1-2 pages)

This section of the logical framework is meant to help a project/programme monitor and assess how it contributes to the paradigm shift described in section D.2 above by applying three assessment dimensions - scale, replicability, and sustainability.

Accordingly, for each assessment dimension (see the definition per assessment in the accompanying guidance note), describe the current state (baseline) and the potential scenario (target) and rate the current state (baseline) by using the three-point-scale rating (low, medium, and high) provided in the guidance note. Also describe how the project/programme will contribute to that shift/ transformation under respective assessment dimensions (scale, replicability and sustainability). In doing so, please refer to section B.2(a) (theory of change).

Assessment Dimension	Current state (baseline)		Potential target scenario (Description)	How the project/programme will contribute (Description)
	Description	Rating		
Scale	In all Program countries the electrification of the vehicle stock is at an infant stage. Most public transport opportunities rely on fossil fuels and show atomized ownership structures, financially weak transport operators.	<u>Low</u>	The country studies show that depending on respective scenarios the Sub-Program 2 will have significant spill-over effects that lead to an uptake and acceleration of EVs in all major vehicle segments. The high-potential scenarios show that spill over effects can lead to 100% of newly registered vehicles being electric in 2030.	Accelerated EV investments take place due to an e-mobility conducive policy environment, innovative business models, lower performance and income risks and the entrance of new market players. The Program involves the local banking sector to accustom it’s risk and opportunity perception and develop appropriate business models for electric mobility deployment finally leading to lower costs of financing EVs. Also, by supporting the development of EVs regulatory framework and EV acquisition, the program will reduce the acquisition of fossil fuel vehicles. The transformative shift is possible through the accelerated uptake of commercial EVs and electric

				<p>public transport thanks to an improved ecosystem for EVs with (i) financial assistance (FA) made available for EV investments as well as (ii) a equate technical assistance (TA) on each pre-identified scalable EV segments in each country. The use of GCF funds de-risks future investments and demonstrates the viability of e-mobility investments on a commercial scale. It closes the gap between stand-alone initial pilot ventures and mass market deployment.</p>
<p>Replicability</p>	<p>No financial models and regulatory frameworks have been developed that demonstrate an significant EV uptake for major private and public vehicle segments. Only Uruguay has started to push for E-buses on a small scale.</p>	<p><u>Low</u></p>	<ol style="list-style-type: none"> 1. EV prices are decreasing in all vehicle segments due to decreasing battery prices and increasing competition and supply of EVs. 2. Risks associated with vehicle reliability and performance, information and re-sale uncertainty, maintenance and repair capabilities, and the workability of new business models are substantially reduced. 3. Policies are more conducive for e-mobility and allow EVs to be more competitive. 	<p>The Program creates the required information for reducing risks and showcasing successful implementation. Furthermore. The Program will improve the framework conditions for EVs through Technical Assistance, lays the foundation for an EV conducive ecosystem, such that investors purchase EVs on a commercial base, and eliminates or significantly reduces barriers towards mass EV deployment, such that replicability of proposed business models and financing structures can be maintained in the long-term without concessional support from GCF. On a regional level the knowledge products and outreach events assist other countries in implementing e-mobility sub-projects and contributes towards the creation of a non-reversible dynamic towards electrification of the transport sector.</p>

<p>Sustainability</p>	<p>Initial steps have been taken by all countries and some have developed comprehensive EV targets and roadmaps. However, policies have not yet boiled down to the implementation level and require more clarity and a higher level of detail to foster mass change. As example, targets on numbers of EVs on the road in 2030 are a visible signal. However, if they are not followed up with incentives, activities and measures to actually get there, they will remain a paper tiger.</p>	<p><u>Medium</u></p>	<p>At the end of the Program (based on an implementation period of 8 years this would be 2030) there are operational large fleets of e-buses in all Program countries and in multiple countries also large LCVs fleets (public and private) including urban fast charging infrastructure. The projections of dropping EV prices point to cost-based parity (of TCO) between 2025 and 2030 for the involved vehicle segments and strongly decreasing upfront price tags. The market analysis performed per country shows that a significant share of investors would then be willing to purchase electric buses and LCVs (public and private) at standard national financial conditions without subsidies.</p>	<p>The magnitude and time of commercial uptake of EVs is accelerated in a decisive manner by the Program through the operations of large fleets and through risk reduction measures making investment in EVs feasible for investors. Lower risk profiles of EV investments are attained directly due to FA investments for example due to better information of performance and operational costs of EVs, improved maintenance and management of EVs, through the establishment of fast charging infrastructure and through TA due to improved regulatory and enabling conditions (including concession contracts) for EVs, due to proven business models more in accordance with the financial profile of EVs and due to policy roadmaps which create a conducive e-mobility surrounding. The roadmaps guide policymakers in creating a long-term enabling policy environment conducive towards increased investments in e-mobility.</p>
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E.3. GCF Outcome level: Reduced emissions and increased resilience (IRMF core indicators 1-4, quantitative indicators)

Select appropriate IRMF core and supplementary indicators to monitor project/programme progress. More than one IRMF (core and or supplementary) indicators may be selected as applicable for each GCF results area and project/programme outcome (as defined in the table in section B.2(b)). If IRMF indicators are unable to measure any given project/programme outcomes, project/programme-specific indicators should be developed under section E.5 (project/programme specific indicators).

GCF Result Area	IRMF Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions / Note
				Mid-term	Final ¹⁰⁵	
<u>MRA2 Low-emission transport</u>	<u>Core 1: GHG emissions reduced, avoided or removed/sequestered</u>	Ex-ante and ex-post analyses by third-part consultancy firm	0	300,000 tCO _{2e}	Annual: 160,000 tCO _{2e} End of implementation period: 600,000 tCO _{2e} Lifetime: 3,300,000 tCO _{2e}	Values are dependent on sub-projects actually implemented per country ¹⁰⁶ . 1. EVs have lower emissions than fossil units 2. Investments in EVs take place 3. Funding is available 4. Political willingness to promote EVs 5. Technical know-how is available
<u>MRA2 Low-emission transport</u>	<u>Supplementary 1.5 Improved low-emission vehicle fuel economy</u>	Ex-ante and ex-post analyses by third-part consultancy firm	0 TJ	1,800 TJ	Annual: 1,250 TJ End of implementation period: 6,250 TJ	Refers to energy savings (baseline- project activity energy consumption) Values dependent on sub-projects implemented per country ¹⁰⁷ : 1. EVs have lower emissions than fossil units 2. Investments in EVs take place 3. Funding is available 4. Political willingness to promote EVs

¹⁰⁵ The final target means the target at the end of project/programme implementation period. However, for core indicator 1 (GHG emission reduction), please also provide the target value at the end of the total lifespan period which is defined as the maximum number of years over which the impacts of the investment are expected to be effective.

¹⁰⁶ See Annex 23, sheet "direct ER"

¹⁰⁷ See Annex 23, sheet "direct ER"

						5. Technical know-how is available
<u>MRA2 Low-emission transport</u>	<u>Core 3: Value of physical assets made more able to reduce GHG emissions</u>	Third-part consultancy firm	USD 0	USD 125 million ¹⁰⁸	USD 209 million	Values are dependent on sub-projects actually implemented per country ¹⁰⁹ . 1. EVs have lower emissions than fossil units 2. Investments in EVs take place 3. Funding is available 4. Political willingness to promote EVs 5. Technical know-how is available

E.4. GCF Outcome level: Enabling environment (IRMF core indicators 5-8 as applicable)

Select at least two relevant IRMF core (enabling environment) indicators to monitor and elaborate the baseline context and project/programme's targeted outcome against the respective indicators. Rate the current state (baseline) vis-à-vis the target scenario and select the geographical scope of the outcome to be assessed. Describe how the project/programme will contribute towards the target scenario. Refer to a case example in the accompanying guidance to complete this section.

Core Indicator	Baseline context (description)	Rating for current state (baseline)	Target scenario (description)	How the project will contribute	Coverage
<u>Core Indicator 5: Degree to which GCF investments contribute to strengthening institutional and regulatory frameworks for low emission climate-resilient development pathways in a country-driven manner</u>	Initial steps have been taken by all countries and some have developed comprehensive EV targets and roadmaps. However, policies have not yet boiled down to the implementation level and require more clarity and a higher level of	<u>medium</u>	Set clear targets on numbers of EVs on the road in 2030 as a visible signal.	Sector-specific roadmap for electrification of public transport which identifies short-, medium- and long-term actions to be taken, funding options and responsibilities, will be developed. Business models for commercial fleets will be	<u>Multi-countries</u>

¹⁰⁸ Assumed asset value based on CAPEX for electric vehicles and charging infrastructure according to implementation plan.

¹⁰⁹ See Annex 5: Implementation timetable

	detail to foster mass change.			developed and introduced.	
<u>Core Indicator 6: Degree to which GCF investments contribute to technology deployment, dissemination, development or transfer and innovation</u>	Large charging infrastructure in the cities is missing. Perceived performance risks and related perception of EVs	<u>low</u>	Foster the large charging infrastructure in cities and the large-scale operations of EVs that generates trust in these new technologies.	The investment sub-projects will allow to gather real data on EV performance thus reducing performance risks of investing in EVs.	<u>Multi-countries</u>
<u>Core indicator 7: Degree to which GCF Investments contribute to market development/transformation at the sectoral, local, or national level</u>	There is a lack of know-how on optimal EV ecosystem design (identification of type of EVs to use, fast/slow/opportunity charging etc.), maintenance & operations, as well as on used battery management policies including options of 2nd-life usage, recycling and disposal	<u>low</u>	Effective enabling political and financial frameworks are in place that promote a vibrant commercial EV market throughout every vehicle category. There is a rising demand for public transport driven by the successful operation of e-buses.	Country and sector specific regulatory support, capacity developing and training efforts as well as knowledge materials	<u>Multi-countries</u>

E.5. Project/programme specific indicators (project outcomes and outputs)

This section should list out project/programme-specific performance indicators (outcomes and outputs) that are not covered in sections above (E.1-E.4). List down tailored indicators to monitor /track progress against relevant project/programme results (outcomes/outputs). AEs have the freedom to decide against which outcomes they would like to set project/programme specific indicators. If any co-benefits are identified in sections B.2(a)(b), and D.3, AEs are encouraged to add and monitor co-benefit indicators under the "Project/programme co-benefit indicators" section in table below. Add rows as needed.

Please number each outcome and output as shown below to indicate association of outputs to the contributing outcome. The numbering for outputs under this section should correspond to the output numbering in annex 4 (detailed budget plan).

Project/programme results (outcomes/ outputs)	Project/programme specific Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions / Note
				Mid-term	Final ¹¹⁰	
Outcome 2.1: Finance of e-buses kick-start the mass deployment and provide evidence of technical, financial and environmental sustainability (Output 2.1)	Number of e-buses financed by Program	CAF monitoring reports Finance agreements Records of operators National vehicle statistics	37 e-buses	300 e-buses,	650 e-buses,	1. Investors willing to purchase e-buses 2. Funding is available 3. Technical know-how is available Data source: 1) Finance agreements and operation records of operators; 2) national vehicle statistics
	% penetration of BEBs as a proportion of total new buses, financed by Program ¹¹²		0%	10%	11%	
	New business models implemented by PT operators		0	1	3	
Outcome 2.2: Ridership of public transport and e-buses is increased through smart infrastructure measures	Total patronage / ridership % of enhanced ridership of public transportation	PT operators data Surveys to be conducted in accordance with CDM Methodological Tool 18 ¹¹¹	UY (Montevideo): 243,800,00 pax/year (ridership) PY (Asuncion): 198,000,000 pax/year (ridership)	Projected additional patronage due to multiple measures: 10%	Projected additional patronage due to multiple measures: 20%	1. Overall willingness of people to increase the use PT 2. Perception of population of PT can be changed Data source: UY - Indicator VIA0301 Number of public transport trips (historical series) ¹¹³ PY: National public passenger transport service statistic for the Metropolitan Area of Asunción.

¹¹⁰ All final targets are set at the end of the implementation period.

¹¹¹ Tool 18: Methodological tool - Baseline emissions for modal shift measures in urban passenger transport, Version 01.0, <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-18-v1.pdf>

¹¹² Proportion of e-vehicles financed by the E-Motion programme compared to replacements and new additions to the national vehicles stocks of the three target countries.

¹¹³ Observatorio de Movilidad Montevideo, retrieved from: <http://www.montevideo.gub.uy/observatorio-de-movilidad>

						Applying the CDM Methodological Tool 18 - Baseline emissions for modal shift measures in urban passenger transport, providing a list of data and parameters to be measured to be specific procedures incl. surveys in year 1 and year 4 for determining the share of additional PT passengers ("S") which would have used vehicle category "I" in the non-project scenario.
Outcome 3: Finance of commercial EVs kick-start mass deployment and provide evidence of technical, financial and environmental sustainability (Output 3.1)	Number of e-LCVs financed by Program	CAF monitoring reports Finance agreements Records of operators National vehicle statistics	135 e-LCVs	390 e-LCVs	1,150 e-LCVs	1. Investors willing to purchase e-buses 2. Funding is available 3. Technical know how is available
	% penetration of e-LCVs as a proportion of total new LCVs, financed by Program		0%	0.2%	0.3%	Data source: 1) Finance agreements and operation records of operators / project owners; 2) national vehicle statistics

<p>Outcome 4: Investment in low-emission (fast) charging infrastructure lays the foundation for the deployment EVs in the commercial fleets and facilitate further spill-over to other vehicle segments (Output 4.2)</p>	<p>Number of fast-charging infrastructure financed by Program</p>	<p>CAF monitoring reports Finance agreements Records of operators National vehicle statistics</p>	<p>6</p>	<p>30</p>	<p>60</p>	<p>1. Political willingness to promote EVs 2. Funding is available 3. Technical know-how is available</p> <p>Data source: 1) Finance agreements and operation records of operators; 2) national / local infrastructure statistics</p>
<p>Project/programme co-benefit indicators</p>						
<p>Co-benefit 1: Improved air quality and health</p>	<p>Reduction of PM2.5 and NOx</p>	<p>Government data/records</p>	<p>0</p>	<p>40t PM2.5; 2000t NO_x</p>	<p>80t PM2.5; 4,080t NO_x</p>	<p>1. Political willingness to promote EV 2. Public willingness for switch to EV and shift of mode of transportation</p> <p>Data source: 1) National / local air quality data; 2) estimation based on vehicle number and baseline emission factor</p>
<p>Co-benefit 2: Socioeconomic benefits</p>	<p>Costs reductions due to emission and pollution reductions</p>	<p>Government data/records / Public expenditure reporting</p>	<p>0</p>	<p>15 MUSD</p>	<p>40.0 MUSD</p>	<p>1. Valid emission and pollution reduction estimates</p> <p>Data source: 1) National / local air quality data; 2) estimation based on emission reduced and cost per tonne (using IPCC estimations)</p>

	Number of newly created job opportunities related to public transport system in the three target cities	Government data/records Operator records	0	5	15 ¹¹⁴	<p>1. Political willingness to promote EV</p> <p>2. Public willingness for switch to EV and shift of mode of transportation</p> <p>Data source: 1) National / local employment statistics; 2) Operator records</p>
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E.6. Project/programme activities and deliverables

All project activities should be listed here with a description and sub-activities. Significant deliverables should be reflected in annex 5 implementation timetable. Add rows as needed. Please number the activities as shown below to indicate association of activities to the related outputs provided above in section E.5. Similarly, please number sub-activities as shown below to associate to the related activity.

Activities	Description	Sub-activities	Deliverables
Component 1: Establishment of a conducive e-mobility ecosystem			
Sub-Component 1.1a - Enhancing policies and strategies on electric mobility and Sub-Component 1.1b - Enhancing governance and stakeholder through institutionalization of electric mobility			
1.1.1a: Develop national sustainable e-mobility strategy and implementation plan	Establishment of an e-mobility conducive national ecosystem with sub-activities on design and divulgation of sectoral roadmaps (electrification of public transport, electrification of urban freight), support of national enabling policies for EV deployment, and capacity development at national level.	Undertake a comprehensive assessment of the economic, environmental and social viability of fleet electrification, renewable energy capacity penetration and electrical distribution grid stabilization	<p>Fleet electrification feasibility analysis: public and private fleets, public transport, incl. baseline assessment, national + conditions, charging infrastructure by public buildings etc.</p> <p>Study to evaluate changes in planning of public transport system in a very comprehensive approach</p> <p>Renewable energy generation capacity study addressing the implication of increased deployment of renewable power generation and e-mobility charging in the energy system</p>

¹¹⁴ The potential of newly created jobs along the broader value chain of EV deployment is probably much larger. However, this is a conservative target for jobs directly related to improve the local public transport system (probably additional employments at the municipal authority).

			National charging network analysis: Impact analysis on the electricity sector and deployment of charging points.
		Develop draft national e-mobility strategy	Draft national e-mobility strategy, consisting of a technology and policy roadmap and implementation plan (incl. deployment targets until 2030, 2035 and 2050) submitted for adoption by the Government.
1.1.1b: Implement multi-stakeholder consultation strategy and provide recommendations for a long-term coordination mechanism	Establishment of a gender-responsive e-mobility conducive national ecosystem with sub-activities on a multi-stakeholder consultation strategy and recommendations for a long-term coordination mechanism to key government actors.	Develop gender sensitive stakeholder consultation strategy	Stakeholder consultation strategy developed and implemented
		Develop recommendation on long-term coordination	Report with recommendations for a long-term coordination mechanism
		Develop public-private strategy on transition	Public-private strategy and action plan to enable a just-transition of the local work force.
1.1.2 Training of key public and private stakeholders	Gender sensitive capacity development at national level	Train civil servants, municipalities and public and private decision-makers	Training activities on sustainable transport and e-mobility policies, standards and regulations, addressing civil servants, municipalities and public and private decision-makers
		Participation of private and public stakeholder at activities of the regional E-Motion activities	Participation of public and private representative in E-Motion's regional trainings activities, incl. design, operation & maintenance of e-fleets - Business models and financial instruments.
		Conduct technical trainings on operators on EV and charger operations and maintenance, safety trainings and optimal fleet management	6 training workshops per country for public and private fleet operators on EV and charger operations and maintenance, safety trainings and optimal fleet management
1.1.3 Enhance public and private stakeholders' awareness	Public and private stakeholders' awareness on the benefits (including gender effects) of low-carbon and climate-resilient electric mobility enhanced through a communication campaign and the provision of a public information platform	Prepare communication campaign design	Design of communication campaign and outreach plan on low-carbon and climate-resilient electric mobility.
		Implement communication campaign design	Communication campaign on low-carbon and climate-resilient electric mobility.
		Develop or use existing public information platform for information dissemination	Deployment of the public information platform for electric mobility (to disseminate communication material and knowledge products)

Sub-Component 1.2 - Enhancing vehicle and charging standards			
1.2.1 Prepare regulatory standard reform proposal for electric vehicles	Technical support will be provided to the relevant national and local authorities in the countries and cities where the Program will support investments in order to set-up, improve and/or enforce enabling public policies and legal, regulatory and/or normative frameworks for e-mobility.	Analyse global good practice on standards for vehicles energy efficiency, EV charging infrastructure and RE grid integration	Report reviewing global good practices on standards for vehicles energy efficiency, EV charging infrastructure and RE grid integration and recommendations to update national regulation
		Prepare proposal on electric vehicle imports specification, licencing and periodic technical inspection requirements,	Regulatory proposal on electric vehicle imports specification, licencing and periodic technical inspection requirements, developed and presented to Ministry of Transport for adoption.
		Present regulatory proposal on technical approval and installation	Regulatory proposal on technical approval and installation, incl. standards and technical specifications, of public and private charging stations, developed and presented for adoption.
Sub-Component 1.3 - Introducing appropriate emission standards and mandates			
1.3.1: Develop standards and policy framework for regulating eligible emissions	The activities under the component will support the development of standards and a (gender -responsive) policy framework for regulating the eligible emissions of road vehicles	Analyse global good practice for standards and laws for regulating emissions of road vehicles	Report of regional and global good practices for standards and laws for regulating emissions of road vehicles and recommendations for such regulation in the national context
		Prepare proposal on emission policy, regulations and standards	Proposal of emission policy, regulations and standards submitted to the government for adoption
1.3.2: Establish an appropriate monitoring system for air pollutants for the Metropolitan Area of Asunción	In order to support the development of standards and a policy framework for the Metropolitan Area of Asunción, effective monitoring of air pollutant concentrations is a necessity.	Develop an appropriate monitoring system for the region	Implementation plan for monitoring system
		Implement air pollutants monitoring system in the Metropolitan Area of Asunción	Implemented air pollutants monitoring system
		Train relevant personnel on its application	At least 3 training with relevant personnel
Sub-Component 1.4 - Long-term environmental sustainability of electric mobility			
1.4.1: Preparation of proposal for standards and policy framework for regulating the disposal of electric vehicles	Standards and a policy framework for regulating the disposal of electric and conventional vehicles are developed and	Analyse global good practice for standards and laws for regulating the ELV disposal	Report of regional and global good practices for standards and laws for regulating the ELV disposal (including reuse and recycling) of electric vehicles

	drafted for adoption by government ministries		and recommendations for such regulation in the national context
		Prepare proposal on policy and regulations for ELV management	Proposal of policy and regulations for ELV management (including re-use and recycling) submitted to the government for adoption
1.4.2: Develop new business models, including the responsibility of vehicle distributors, on end-of-life vehicle (EVL) management	New business models, including the responsibility of vehicle distributors, delivered to the government and ELV management companies	Analyse global good practice on international successful financial and commercially viable business models on managing ELV components	Report on international successful financial and commercially viable business models on managing ELV components for all vehicles and second-life battery use, including cost benefit analysis estimating investment needs and financing schemes
		Development of a roadmap on sustainable and commercially viable ELV and battery management	Roadmap on sustainable and commercially viable ELV and battery management submitted for adoption.
1.4.3 Training of Waste management stakeholders on ELV management	Waste management stakeholders are trained on ELV management (for both conventional and electric) and electric vehicle batteries as well as related business models	Provide specific technical training on ELV management	<p>Gender-sensitive training course on reusing, recycling and disposing of used vehicles, with modules on each of the key disposal areas:</p> <ul style="list-style-type: none"> – General aspects of end-of-life vehicle disposal (conventional and electric); – Vehicle spent battery management and battery reuse; – Hazardous waste management; – Lithium-ion recycling technology; <p>Identifying and developing business models for reuse and disposal of vehicles and their components in local, regional and international markets; and catalysing finance for such business models.</p>
Sub-Component 1.5 - Preparing for scale-up and replication of electric mobility through fiscal incentives			
1.5.1 Development of regulatory subsidy and tax reforms proposals for the uptake of electric vehicles	Establishment of an e-mobility conducive local ecosystem with sub-activities related to the local environment such as business	Develop proposal for regulatory subsidy, incentives and tax reforms for the uptake of electric vehicles	Regulatory tax, subsidy and incentive ¹¹⁵ reform proposal to facilitate fiscal

¹¹⁵ Incl. availability payments etc.

	model design and development, local policy advice (e.g., preferential downtown access for e-LCVs), advice on concession contracts for bus services (e.g. concerning concession length as this is important for e-bus deployment), capacity building and training of operators.		incentives and stability for the transitions towards e-mobility.
1.5.2 Preparation of business models, financial schemes and procurement guidelines		Prepare analysis for enhancing existing financial products and risk mitigation products to promote EVs	Report presented to the financial sector, incl. the national bank, car distributors and leasing companies containing: - Analysis of national experiences, client needs and global good practices on local financial institution financing of electric vehicles Recommendations for enhancing existing financial products and risk mitigation products, such as special transport loans for e-vehicles, presented to local financial institutions, car distributors, leasing companies and rental companies for application.
		Analyse global good practice on electric vehicle incentives, such as tax and duty reduction	Report analysing regional and global good practices on electric vehicle incentives, such as tax and duty reduction, for private sector vehicles and private consumers, and recommendations for updating laws on such incentives in the local context
		Propose suitable electric vehicle incentives	Recommendation and proposal for updating legislation on electric vehicle incentives presented to Ministry of Finance and relevant line ministries for adoption
		Provide recommendation on procurement of EVs	Recommendations and procurement guidelines for e-mobility, based on regional and global good practices
1.5.3 Delivering of project sourcing and preparation for pipeline sub-projects	Source and prepare sub-projects under components 2 and 3	Project sourcing, preparation, and regular update of EV project pipeline	Project pipeline for each country
Component 2: Deployment of e-bus fleets and enhancement of public transport			
2.1.1 Preparation, financing and implementation of e-bus project	Deployment of large-scale fleets of electric buses to showcase their technical and commercial viability to operators. Public urban transport buses are the target. This includes different e-bus technologies	Preparation, financing, and implementation of e-bus fleets in 3 program countries	Sub-project with at least 150 e-buses in Panama structured and financed

	(slow-, fast-, opportunity and ultra-fast charged buses Finance covers the entire e-bus system of buses, charging infrastructure, grid connection and bus depot upgrades to accommodate e-buses.		Sub-project with at least 300 e-buses in Paraguay structured and financed
			Sub-project with at least 200 e-buses in Uruguay structured and financed
2.2.1 Implement and operate smart facilities that enhance public transport access and improve inter-modality and non-motorised transport	This activity aims at increasing public transport attractiveness through measures such as integrated ticketing systems and bus only lanes, thereby reducing travel time and making public transport faster than private means of transport. The activity is interlinked with the 2.1.1, as E-bus sub-projects are embedded in urban transport sub-projects, which include measures such as bus route restructuring, exclusive bus lanes, integrated fare systems, or inter-modal integration and change stations to increase the attractiveness and usage rate of public transport.	Implement smart facilities appropriate to enhance PT ridership (e.g., urban spaces and infrastructure for public e-transport, incl. segregated cycling lanes and bicycle parking lots at bus stations, walking areas for increased pedestrianization and improved accessibility)	Smart infrastructure in up to three program cities
		Make effective improvements to the public transport systems (e.g., integrated ticketing systems, bus only lanes, route restructuring, tariff and mode integration)	Integrated ticketing system in up to three program cities Bus only lanes and dedicated routes in up to three program cities
Component 3: Deployment of e-LCVs (public and private)			
3.1.1 Finance and deployment of e-LCV sub-projects	LCVs (public / private) sub-projects have been identified for the program countries to deploy large-scale fleets of e-LCVs	E-LCV sub-project selection according to defined criteria, preparation, Finance, and implementation	At least 1150 e-LCV financed through at least 3 sub-projects
Component 4: Deployment of fast-charging infrastructure			
4.1.1 Technical preparations for fast charging infrastructure investments	Activities will facilitate the construction of the charging infrastructure through preparing necessary steps, including the formulation of requirements and the selecting process for eligible construction companies.	Technical preparations for fast charging infrastructure investments, incl. engineering and procurement process	Technical preparations for up to 60 fast charging infrastructure investments
4.2.1 Finance fast charging infrastructure	The activity aims at financing and constructing up to 60 fast charging station networks in, at least, 3 cities. Involved municipality will provide and dedicate corresponding public space and land free of charge. The electricity supply will be delivered by the respective utility, which	Financing and implementation of fast charging infrastructure in the Program countries	Up to 60 fast charging infrastructure investments structured and financed

	will be involved in the planning and construction, therefore the establishment of adequate power supply tariffs offered by the utilities will be supported		
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E.7. Monitoring, reporting and evaluation arrangements (max. 500 words, approximately 1 page)

The programme will apply the standard procedures established and agreed by CAF and GCF for monitoring, reporting and evaluation of operations in the Accreditation Master Agreement and the Funded Activity Agreement. A Program Management Unit (PMU) will be set up. The PMU will ensure the day-to-day monitoring by overseeing the implementation of the sub-projects, meeting with the beneficiaries on a regular basis, ensuring coordination with TA, exchanging with local government, etc. Every semester, they will review sub-projects' performance and assess any potential risks. In addition, the PMU executives will visit sub-projects and meet the Project Owner on average once in a year. Following this mission, a project implementation report will be shared with all the project stakeholders. Furthermore, PMU will be responsible for overseeing project implementation and for approving funding disbursements. On a yearly basis, all sub-projects financed by CAF will be assessed through an internal quality review process based on several indicators (technical implementation, disbursement, procurement, outcomes, etc.). Red flag sub-projects that meet any kind of difficulties are subject to a specific monitoring process before returning to a regular implementation pathway.

During the implementation reporting period (starting from the date of effectiveness of the FAAs until the Programme completion date), CAF will receive regular reports from the beneficiaries, in order to track progress and identify potential issues, as well as improvement opportunities. In this document, the beneficiary will report on performance indicators, as well as qualitative information, as defined in the Credit Agreement signed with CAF. In addition, CAF will submit to the Secretariat the Annual Performance Report (APR) on an annual basis for the period ending on 31 December within 90 days after the end of the relevant annual period. The first APR will be submitted following the end of the calendar year after the Parties have entered the relevant FAA.

The mid-term and final independent evaluation of the Programme will be organized and managed by the PMU, on the same basis as any project funded under the Program in accordance with the GCF's evaluation criteria as per the GCF Evaluation Policy¹¹⁶. CAF will appoint a consultant firm to do so. In most cases, CAF would prefer to select a local consulting firm based in the country where the project is located. This allows that CAF takes advantage of deep contextual knowledge and to help develop local evaluation skills. The consultant firm will be tasked with evaluating the impact of the project (economic, environmental, etc.) and writing a report according to GCF's standards.

At the end of the implementation period, CAF will prepare project completion report summarizing the main events of the implementation phase, the results achieved, and the lessons learned. This report will also provide recommendations for future improvement.

Finally, during the implementation and repayment period, a biannual monitoring of the use of funds will be submitted to GCF.

¹¹⁶ <https://www.greenclimate.fund/document/evaluation-policy-gcf>

F. RISK ASSESSMENT AND MANAGEMENT

F.1. Risk factors and mitigations measures (max. 3 pages)

Selected Risk Factor 1: Inability of borrower to service debt

Category	Probability	Impact
<u>Credit</u>	<u>Low</u>	<u>High</u>

Description

Inability of borrower to service debt

Mitigation Measure(s)

CAF's comprehensive due diligence and technical support are designed to assess the borrower's ability to service the debt. It is envisaged that this program's interventions will not face demand risk and public entities will be the main source of repayment.

Selected Risk Factor 2: Limited market demand for commercial EVs

Category	Probability	Impact
<u>Credit</u>	<u>Medium</u>	<u>Medium</u>

Description

Limited demand for commercial EVs. No or limited commercial uptake of EVs after initial investment uptake resulting in limited indirect Program impact. The declining EV price is an external factor. Whilst the magnitude and speed of EV price decline is disputed, the trend of reduced-price differential between fossil and EVs is undisputed.

Mitigation Measure(s)

Project preparation and sourcing as well as TA activities on enhancing the market situation will held to mitigate the risk. Successful EV investment sub-projects and well implemented TA are core to reduce the investment risk levels of EVs. Investment risk levels are together with the EV price the 2 core factors which result in a commercial uptake of EVs. Good design and implementation of investment sub-projects and of TA can thus minimize this risk.

Selected Risk Factor 3: Technical underperformance

Category	Probability	Impact
<u>Technical and operational</u>	<u>Low</u>	<u>High</u>

Description

EVs do not perform as expected and the operator cannot realize standard operations.

Mitigation Measure(s)

CAF's comprehensive technical design and structuring of sub-projects minimize this risk. All technologies have been proven at least in pilot cases in Latin American countries on similar circumstances. Moreover, lease contracts, acquisition and maintenance contracts will incorporate customary performance warranties and provisions for liquidate damages.

Selected Risk Factor 4: Failure to comply with national regulations

Category	Probability	Impact
<u>Other</u>	<u>Low</u>	<u>Medium</u>

Description

Beneficiaries' failure to comply with national regulations and/or CAF and GCF environmental, social policy, gender requirements and compliance with standards, policies and procedures.

Mitigation Measure(s)

Each project will be subject to CAF's Legal, Environmental and Social Management System as well as gender assessment. Each Project will be appropriately appraised and structured to meet CAF's, GCF's and national requirements. Environmental, Social and Gender Action Plans will be developed during project appraisal to achieve this. Implementation thereof will be covenanted through financing agreements. Its implementation will be monitored by CAF. Moreover, the program envisage the deployment of TA (component 1) to ensure the conditions both commercial and regulatory are in place prior to any intervention under subprogram 2.

Selected Risk Factor 5: Limited commercial uptake

Category	Probability	Impact
<u>Other</u>	<u>Medium</u>	<u>Medium</u>

Description

No or limited commercial uptake of EVs after initial investment uptake resulting in limited indirect Program impact. The declining EV price is an external factor. Whilst the magnitude and speed of EV price decline is disputed, the trend of reduced price differential between fossil and EVs is undisputed.

Mitigation Measure(s)

Successful EV investment sub-projects and well implemented TA are core to reduce the investment risk levels of EVs. Investment risk levels are together with the EV price the 2 core factors which result in a commercial uptake of EVs. Good design and implementation of investment sub-projects and of TA can thus minimize this risk.

Selected Risk Factor 6: Money laundering, terrorist financing and prohibited practices risks

Category	Probability	Impact
<u>Prohibited practices</u>	<u>Low</u>	<u>Medium</u>

Description

Risk of sub-projects being involved in illicit practices.

Mitigation Measure(s)

CAF has developed an internal framework for the Prevention and Detection of Money Laundering and Terrorism Financing (SPDLAFT). CAF's framework is implemented in all country offices and have the following elements:

- Compliance Officer appointed by the Executive President
- Internal policies and procedures
- Risk-based due diligence
- ML/FT risk factors assessment
- Screening System against sanctions lists such as OFAC, Consolidated United Nations Security Council Sanctions List, European Union Consolidated List, etc.
- Regular Audit Revisions on AML/CFT Framework
- AML/FT Training for all-staff

<https://www.caf.com/en/about-caf/what-we-do/access-to-information/anti-money-laundering-and-counterterrorism-financing/>

The contract (legal agreement) signed among CAF and the relevant parties, there are obligations to comply with AML/CFT regulations to prevent prohibited practices. Additionally, the business manager performs due diligence through the AML/CFT risk profile and KYC checklist. They also carry out the screening related parties against the international sanctions lists. The information is updated according to the risk profile, once a year for low-risk clients and twice a year for medium risk.

Selected Risk Factor 7: COVID-19 impact

Category	Probability	Impact
<u>Other</u>	<u>Medium</u>	<u>High</u>

Description		
<p>The COVID-19 impact potentially results in a higher risk adversity of investors and therefore lower investment levels. Lower demand for public transport services reduces even more the profitability of investing in EVs.</p> <p>COVID-19 outbreak and related measures taken by the participant countries may impact programme performance. Confinement and social distance measures, as well as the economic crisis derived from the economic downturn can prevent TA activities from being carried out, may prevent beneficiaries from coming forward to apply for credit, may prevent beneficiaries from taking the risk of committing themselves to a credit, may impede providers to comply with requests.</p>		
Mitigation Measure(s)		
<p>In response, CAF has approved a USD 50 MM Emergency Loan to each of its country-members directed towards the health sector, USD 2.500 MM Emergency Credit Line, a USD 1.600 MM Countercyclical Regional Facility for Local Developments Banks and a USD 1.200 MM Countercyclical Regional Facility for providing liquidity support to public service companies (Utilities) which will allow authorities and entities to contribute to the continuity of business operations and the recovery of their economies. This decision is of great importance for helping local MSMEs to deal with the economic downturn. The GCF funding will come to provide further support and generate synergies through this programme, at a key time for fostering post-crisis low-carbon development.</p> <p>With regard to project activities, in the event of a health crisis CAF will make all means available to ensure that activities are carried out under the highest standards of prevention. In times of confinement, ways to continue with the implementation of the project will be evaluated, with the help of virtual tools where possible.</p>		
Selected Risk Factor 8: Limited capacity or experience		
Category	Probability	Impact
<u>Technical and operational</u>	<u>Medium</u>	<u>Medium</u>
Description		
<p>Limited capacity or experience to design and implement e-mobility sub-projects by beneficiaries.</p>		
Mitigation Measure(s)		
<p>Technical assistance will focus on supporting entities to identify, design and structure e-mobility sub-projects. Detailed legal and technical due diligence will be carried out by the CAF to develop robust sub-projects. Support will be provided under the Program to assist in developing favourable policies for deployment of e-mobilities.</p>		

G. GCF POLICIES AND STANDARDS

G.1. Environmental and social risk assessment (max. 750 words, approximately 1.5 pages)

The E-Mobility Program aims to enable a large-scale regional transition towards electro-mobility in Latin America focusing on intensive use vehicles leading to reduce fossil fuel consumption, greenhouse gas emissions and air pollutions. The Program will be implemented in two Subprograms and through two GCF Funding Proposals: one by AFD (Sub-Program 1) as an Accredited Entity to cover 8 countries, and one by CAF (Sub-Program 2) to cover 3 countries, all of them located in Latin America.

The E-Motion Sub-Program 2 shall contribute to overcome the barriers to mass deployment of commercial EVs in Uruguay, Paraguay and Panama. The potential segments for investment sub-projects in Uruguay, Paraguay and Panama that have been identified are:

- Segment of e-buses: Public / private bus operators with different legal regimes, which could operate 650 e-buses.
- Segment of e-LCV: A variety of LCV users, both public and private are interested in investing in this type of EV. The potential is 1,150 e-LCV to be financed under the Sub-Program 2.

Overall, it is expected that the Program presents a low to moderate risk, financing only category C and B risk sub-projects, high risk "category A" sub-projects will be excluded.

The positive impact of EVs comprises reduced GHG emissions, reduced air pollution, reduced noise levels, reduced dependence on fossil fuels and increased energy efficiency. The Program expects direct emissions reductions of 820,000 tCO_{2e} over the assets lifetime of investments co-financed by the Program, as well as 16 MtCO_{2e} of avoided GHG emissions as entire indirect Program impact. Major environmental co-benefits are reduced emissions of pollutants and reduced noise emissions. The major concern for air pollution in the cities is PM_{2,5} and NO_x emissions. The projected reduction of pollutants of the Program in Panama, Paraguay and Uruguay is 60 tPM_{2.5} and 3,940 tNO_x. The Program contributes to sustainable development goals (SDG) 3 ("good health and well-being"), SDG goal 7 ("affordable and clean energy"), SDG goal 9 ("industry, innovation and infrastructure"), SDG goal 11 ("sustainable cities and communities"), and SDG 13 ("climate action").

The main adverse impact will only manifest at the end of the EVs battery life when they no longer match the high requirements needed for electromobility. Batteries from EVs have an expected lifespan of approximately 8 to 10 years, after which they must be replaced by new ones. The disposal of old batteries can generate environmental and health hazards. As expended lithium-ion batteries, due to their chemical contents, are harmful to humans and the environment, they need to be managed accordingly. The two environmentally sustainable alternatives of recycling and second life of out-of-Use EV batteries, due to many shared supply chain elements, present technical, regulatory, and financial challenges.

Due to the implementation of activities that are part of the scope of the Program, other less significant adverse impacts can potentially occur, which include: (i) minor construction related impacts during the installation of charging stations (noise, dust, waste); (ii) soil and water contamination as a result of metal lixiviation and other sources from scrap from out-of-use vehicles (replaced vehicles) and other wastes, such as oils, lubricants, lead-acid batteries, tires, etc.; (iii) employment loss due to change in job dynamics (labor reconversion); (iv) health and safety risks during charging and maintenance operations; (v) decrease of road safety/increased accidentally (EV are less noticeable).

All Program interventions, at a country level, will be required to comply with CAF's E&S Safeguards as well as GCF's E&S Policies and Performance Standards. In this regard, all sub-projects will be subject to an environmental and social due diligence following CAF's internal policies and procedures. The goals of CAF's environmental and social due diligence are to:

- Assess the environmental and social risks and impacts of each project;
- Propose appropriate measures to avoid, minimize, and/or offset these risks and their impacts;
- Monitor the implementation execution of these measures during the implementation phase for the operation;

CAF's social and environmental safeguards are the following:

1. S01: Evaluation and management of environmental and social impacts
2. S02: Utilization of renewable natural resources
3. S03: Conservation of biological diversity
4. S04: Pollution prevention and management

5. S05: Cultural Heritage
6. S06: Ethnic Groups
7. S07: Resettlement
8. S08: Working Conditions and Training
9. S09: Gender Equity

The GCF has provisionally adopted the IFC Performance Standards of the International Financial Corporation (IFC). IFC Performance Standards are comprised of 8 standards that cover the main environmental and social considerations that must be safeguarded when designing and implementing a project or program. During CAF accreditation to the GCF, CAF's environmental and social safeguards were re-viewed by the GCF and it was confirmed that they are fully aligned with the ESS of the GCF.

The accelerated uptake of commercial EVs and electric public transport thanks to an improved ecosystem for EVs with (i) financial assistance (FA) made available for EV investments as well as (ii) an adequate technical assistance (TA) on each pre-identified scalable EV segment in each country. As a result, the following impacts shall be achieved:

- **Reduction of Greenhouse Gases (GHG):** EVs in all countries included in the Program have significantly lower lifecycle GHG emissions than fossil-fueled vehicles.
- **Improved air quality:** EVs have no combustion emissions and are a crucial instrument to achieve clean air in cities. Commercial vehicles are a major source of PM_{2.5} and NO_x emissions in cities. Replacing fossil, diesel powered commercial vehicles with EVs improves air quality significantly.
- **Reduced energy dependency:** EVs use domestic resources and reduce reliance on imported fossil fuels. They thereby also increase the resilience of the country's economy to external oil price shocks.
- **Increased energy efficiency:** EVs are up to 4 times more energy efficient than fossil-fueled vehicles. Electricity consumption, even if pursuing an ambitious EV penetration level such as proposed by the EV30@30 target supported by the International Energy Agency, is marginal compared to national production levels – however, localized grid problems need to be addressed.

G.2. Gender assessment and action plan (max. 500 words, approximately 1 page)

In Latin America, including Panama, Paraguay, and Uruguay, the gender equality agenda has gained strength from converging national agendas at every scale, particularly with social and feminist movements demanding equality and non-discrimination, and the inclusion of CEDAW principles¹¹⁷ in national legislation. However, despite new policy frameworks, the implementation and real progress on women's integration, especially into the labour market and key decision-making positions, is weak in reality.

In all 3 countries, the labour force participation of female as a share of the female population at working age is between 53-60% in 2019, which, respectively, is about 20% lower compared to men. Also, occupational segregation persists across countries and women's careers concentrate on low paid jobs and informality. Despite many laws, gender wage gaps persist across sectors and gender roles impede women's access to better economic opportunities since domestic responsibilities are mostly in their hands. While in Panama the proportion of women in managerial positions is above 42%, Paraguay and Uruguay lag in ensuring equal gender representation. Both countries reach a share of around 35%. Political representation of women, in terms of seats in parliaments at the national and local level, shows even poorer figures.

Concerning violence against women, according to UN Women, in Uruguay, 2.8% of ever-partnered women and girls at the age between 15-49 have been subjected to physical and/or sexual violence by a current or former intimate partner in the previous 12 months. This number is comparably low, as in Paraguay 8% and in Panama 10.1% of women aged 15-49 years reported that they had been subject to physical and/or sexual violence by a current or former intimate partner in the previous 12 months.

A report by CAF and the FIA Foundation shows that gender-based harassment and violence has many forms and takes place in public places, on streets, at the stations and stops used to access public transport, as well as on the vehicles themselves.¹¹⁸ All types of harassment, but in particular sexual harassment, is very emotionally distressing for the victim. The resulting fear impacts many women's ability to move freely and influences their mobility and lifestyle decisions. This, in turn, affects their access to education, leisure, and job and career opportunities. Gender-based violence is endemic in these countries and underreported; the COVID-19 pandemic is exacerbating the numbers. The urban transport system represents an environment where harassment and sexual abuses occur quotidianly in the

¹¹⁷ Convention on the Elimination of all forms of Discrimination Against Women

¹¹⁸ See: <https://scioteca.caf.com/handle/123456789/1407>

regular trips women do every day. Incidents will happen in the e-buses while waiting, walking to and from the stops or using charging stations; incidents will increase at night, in isolated vehicles and unattended places, but in crowded units as well. A highly sensitive issue considering that, women are more likely to rely on public transportation than men and to do a high proportion of their trips by foot. Women, on the other hand are underrepresented in the jobs generated by the construction and transport sector in the region. The pandemic has worsened this context, complicating the return to work for those women who lost their jobs and those whose care responsibilities have increased.

In terms of gender equality and social inclusion, there are two main goals the program should achieve:

1. Impact on the workforce: reduction of sex-segregation in employment while creating new jobs and expertise
The pandemic hit Latin American women's employment very hard: according to the UN Economic Commission for Latin America and the Caribbean (ECLAC) the unemployment rate for women in the region is currently 12%. Many of them have been pushed out of the market, but that figure rises to 22.2% if we assume the same level of labor participation for women as in 2019, which makes sense considering that they have also been pushed out of the economically active population, being forced to fully commit to care activities, they plainly aren't seeking for new jobs. Taking also into account that the transportation sector is traditionally very masculinized (e.g. about two out of ten workers in the transport sector are women in all the three countries targeted), the project represents an opportunity to shorten gender gaps related to job segregation.

2. Impact on the ridership: reduction of gender biases and exclusions from transportation while changing the system to a low-emission one.

The project may reduce or broaden (whether gender issues are taken or not into consideration) the current disparities in terms of access and usage of transportation means by women, children, the elderly, people with disabilities and other vulnerable collectives.

To ensure that current public transport ridership levels are sustained or even increased they must tackle gender and other socially constructed disparities.

There are two main reasons behind the barriers and exclusions regarding women's mobility:

- a. Routes and schedules are designed with an only-commuter universally - male model and do not take into account trip-chaining and the different patterns and needs of women and other vulnerable groups.
- b. Sexual harassment and other forms of gender- based violence in the vehicles, facilities and, in general, the public space.

So, it is expected that for the E-Motion Program, the contribution to reducing the gender gap in e-mobility and low-carbon transportation and to preventing and minimizing the harm of lacking gender equality and women's rights is three-folded. **First, the transport sector is a catalyst to change social norms.** For instance, by raising awareness on sexual harassment and violence against women and girls, by providing visibility to women working in non-traditional roles in the EV (electric vehicle) markets, and by considering the mobility of care when designing transport operations, a societal impact can be achieved. **Second, this new e-transport paradigm will lever women's access to green jobs in traditionally sex-segregated occupations or improve access to investment loans for female entrepreneurs.** **Third, the capacity building, training, and sharing of know-how to women and men designing the investment plans and the sub-projects as part of the program will systematize gender mainstreaming in the transport sector.** This three-folded approach will be address as part of the implementation of the four Components of the Program.

A gender assessment has been realized for all countries as well as a gender action plan. This serves as a guideline for each individual project to be funded under the Program (see Annex 8). Accordingly, the program will promote gender equality and women's empowerment at the project level and support the use of gender-disaggregated indicators. The investments sub-projects of the Program need to include a gender strategy with actions to increase women's mobility, promote safety and access to jobs. By establishing actions to increase women's mobility, safety, and access to jobs, this Program can improve women's agency in mobility if mainstreaming gender equality in its sub-projects becomes systematic.

The Gender Action Plan guarantees that these general recommendations are transformed into specific activities at the Program and project levels, and that they are measured and adequately monitored, and adjusted when needed. The implementation of the gender action plan including sub-activities (a) application of a gender lens when designing the roadmap for different EV segments and EV support policies; (b) increased awareness about gender equality gaps and

opportunities in transport; (c) Increased knowledge in how to include gender equality in urban transport sub-projects; (d) inclusion of gender equality in the investment plans; (e) improved access to public transportation for women; (f) improved sex-disaggregated data collection on urban transport; (g) improved women's access to jobs; (h) interventions to reduce sexual harassment in public transport; (i) trainings and workshops to disseminate best practices for reducing sexual harassment in public transport.

The activities outlined in the Gender Action Plan (see Appendix of Annex 8: Gender Assessment Report) result in the following 3 outputs:

1. Sector specific country-level gender assessments undertaken as part of the development of low-carbon electric vehicle roadmaps and policies (national level)
2. Successful knowledge exchange and collaboration on gender aspects in transportation (regional level)
3. Gender components integrated in the sub-projects financed by the Program.

G.3. Financial management and procurement (max. 500 words, approximately 1 page)

Financial Management

As per the Accreditation Master Agreement (AMA), CAF, as the Accredited Entity, shall be responsible for the overall management, implementation oversight and supervision of the program in line with its own internal rules, policies and procedures, including administering and managing the use of GCF Proceeds, as well as the monitoring, evaluation and reporting responsibilities.

CAF will enter into a Funded Activity Agreement with the GCF, for the Loan and the Grant, which will describe the specific requirements regarding the financial management of GCF's resources for the program. In addition, CAF will sign a subsidiary agreement with GIZ to channel GCF funds for the purpose of Component 1 (TA Component) implementation. GIZ will apply its own procurement guidelines¹¹⁹.

For non-sovereign borrowers, a credit risk monitoring will be carried out by CAF through the assessment, among others, of the financial statements of borrowers, monitoring of financial covenants, etc.

CAF will ensure absolute transparency in the use of GCF funds. For that purpose, CAF has internal processes and procedures that ensure a robust financial control, which were certified in the accreditation process before the GCF. According to these internal process and procedures, after the first disbursement of any investment, projects are transferred to CAF's portfolio management team. This team ensures that all conditions and covenants are met throughout the duration of the loan/investment by the borrower/investee. Portfolio managers are required to present semi-annually/annually to CAF's management the performance of their transactions undermanagement. Finally, as an assurance internal process, certain transactions are selected randomly by the Internal Audit team to assess those internal processes and procedures have been followed in accordance with existing guidelines. Portfolio functions are governed by two internal guidelines: a) Manual for the Administration of Operations (Manual De Gestión Para Operaciones de Estructuración Financiera) and b) Manual for the Revision and Risk Assessment of Operations Under Portfolio (Manual para la Revisión y Calificación de la Cartera sin Garantía Soberana).

In addition, CAF will conduct external annual audits to assess the adequate use of the GCF's funds. These audits will be undertaken by international certified auditors.

Disbursement

At CAF level, disbursement will be related to:

- Loan disbursements on sub-projects. Disbursement conditions will be defined on a project-by-project basis and will be described in the financing agreement signed between CAF and the borrower;
- Fund transfers to GIZ whose disbursements will be reported to CAF;
- Payments of the consultants in charge of providing support for sub-projects' preparation;

Loan resources will be administrated as per CAF's Manual for the Credit and Equity Investment Process (MN/VPR-080). The Manual guides the process for all the phases of the credit, including: (i) Origination; (ii) Evaluation; (iii) Approval; (iv) Formalization; and (v) Administration. GCF non-reimbursable resources will be executed by CAF, following its Manual for the Management of Technical Cooperation Operations (MN /VPP – 064).

¹¹⁹ For further details on process for the procurement, please review the annex 10 of the funding proposal.

Procurement

The procurement processes will follow the last version of CAF’s Manual of Procurement of Goods, Consulting Services and Works (NM/DFLA-038). The Chapter VIII of this Manual includes all the details and thresholds for the procurements. These thresholds for the procurement of goods and services are presented in the table below.

Overview of process thresholds for the procurement of goods and services

Threshold (Amount in USD)	Method	General procedures
0 – 5,000 (Only for the purchase of goods)	Direct contracting	1. Receive at least one offer.
5,001 – 10,000 (Only for the purchase of goods)	Market assessment	1. Market assessment; 2. Receive at least two (2) offers 3. Select the best offer based on the completion of an evaluation.
0-10,000 (Only for the purchase of services, consultancy and works)	Direct contracting	1. Receive at least one offer.
10,001 – 50,000 (For the purchase of goods, services, consultancy and works)	Market assessment	1. Market assessment; 2. Receive at least three (3) offers from different providers; and 3. Select the best offer based on the completion of an evaluation.
50,001 – 150,000 (For the purchase of goods, services, consultancy and works)	Market assessment	1. Prepare Terms of Reference; 2. Market assessment of potential providers; 3. Receive at least three (3) offers from different providers; and 4. Perform an evaluation based on the criteria indicated in the terms of reference
150,001–Until the next amount indicated below, depending on the type of purchase.	Private bidding	Private bidding to select providers – Request for Proposal. An evaluation Committee will review the offers and select the provider.
From 250,000 – For Consultancy services From 500,000 – for the purchase of goods and commercial or professional services From 2,000,000 – for the purchase of works	International Public bidding	International Public bidding process for the selection of providers – Request for Proposal. An evaluation Committee will review the offers and select the provider.

Source: CAF

G.4. Disclosure of funding proposal

No confidential information: The accredited entity confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.

With confidential information: The accredited entity declares that the funding proposal, including its annexes, may not be disclosed in full by the GCF, as certain information is being provided in confidence. Accordingly, the accredited entity is providing to the Secretariat the following two copies of the funding proposal, including all annexes:

- full copy for internal use of the GCF in which the confidential portions are marked accordingly, together with an explanatory note regarding the said portions and the corresponding reason for confidentiality under the accredited entity’s disclosure policy, and
- redacted copy for disclosure on the GCF website.

The funding proposal can only be processed upon receipt of the two copies above, if containing confidential information.

H. ANNEXES

H.1. Mandatory annexes

- Annex 1 NDA no-objection letter(s) ([template provided](#))
- Annex 2 Feasibility study - and a market study, if applicable
- Annex 3 Economic and/or financial analyses in spreadsheet format
- Annex 4 Detailed budget plan ([template provided](#))
- Annex 5 Implementation timetable including key project/programme milestones ([template provided](#))
- Annex 6 E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3):
 - Environmental and Social Impact Assessment (ESIA) or
 - Environmental and Social Management Plan (ESMP) or
 - Environmental and Social Management System (ESMS)
 - Others (please specify – e.g. Environmental and Social Management Framework)
- Annex 7 Summary of consultations and stakeholder engagement plan
- Annex 8 Gender assessment and project/programme-level action plan ([template provided](#))
- Annex 9 Legal due diligence (regulation, taxation and insurance)
- Annex 10 Procurement plan ([template provided](#))
- Annex 11 Monitoring and evaluation plan ([template provided](#))
- Annex 12 AE fee request ([template provided](#))
- Annex 13 Co-financing commitment letter, if applicable ([template provided](#))
- Annex 14 Term sheet including a detailed disbursement schedule and, if applicable, repayment schedule

H.2. Other annexes as applicable

- Annex 15 Evidence of internal approval ([template provided](#))
- Annex 16 Map(s) indicating the location of proposed interventions
- Annex 17 Multi-country project/programme information ([template provided](#))
- Annex 18 Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project
- Annex 19 Procedures for controlling procurement by third parties or executing entities undertaking sub-projects financed by the entity
- Annex 20 First level AML/CFT (KYC) assessment
- Annex 21 Operations manual (Operations and maintenance)
- Annex 22 Benchmark report prepared for E-motion Sub-Program 1
- Annex 23 Assessment of GHG emission reductions and their monitoring and reporting (for mitigation and cross cutting-sub-projects)¹²⁰ -> GHG and SD Calculations: Methodological Approach and Results
- Annex 24 Theory of Change diagram

* Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.

¹²⁰ Annex is mandatory for mitigation and cross-cutting projects.

No-objection letter issued by the national designated authority(ies) or focal point(s)

April 28, 2021
DM-0780-2021

Mrs.
LUCÍA MEZA JIMÉNEZ
Representative
CAF Panama Office

Re: Funding proposal for the GCF by CAF regarding E-Motion: E-Mobility and Low Carbon Transportation

Dear Madam, Sir,

We refer to the programme titled E-Motion: E-Mobility and Low Carbon Transportacion aiming to accelerate the transition towards e-mobility in Latin America in Panama as included in the funding proposal submitted by CAF to us on January 2021.

The undersigned is the duly authorized representative of Ministry of Environment, the National Designated Authority of Panama.

Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the programme as included in the funding proposal.

By communicating our no-objection, it is implied that:

The government of Panama has no-objection to the programme as included in the funding proposal; The programme as included in the funding proposal is in conformity with the national priorities, strategies and plans of Panama;

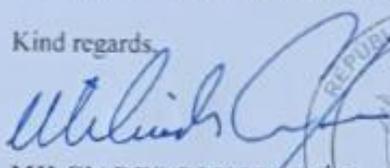
In accordance with the GCF's environmental and social safeguards, the programme as included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the programme as included in the funding proposal has been duly followed.

We also confirm that our no-objection applies to all projects or activities to be implemented within the scope of the programme

We acknowledge that this letter will be made publicly available on the GCF website.

Kind regards,


MILCIADES CONCEPCIÓN
Ministro de Ambiente

MCLC/vgjl





Albrook, Calle Broberg, Edificio 804
República de Panamá
Tel.: (507) 500-0855

www.miambiente.gob.pa



Ministerio
de Ambiente

To: **The Green Climate Fund (GCF)**

Montevideo, 29th April, 2021

Ref: "E- Motion Programme – sub programme 2" funding proposal to the GCF from CAF, AFD, GIZ y KfW

Dear Mr. Yannick Glemarec,

I refer to "E-Motion programme – subprogramme 2", submitted as a funding proposal by CAF, AFD, GIZ and KfW to the Green Climate Fund (GCF) to be considered by the GCF Board.

The undersigned is the duly authorized representative of the Ministry of Environment to the GCF, and the National Designated Authority of Uruguay.

Persuant to GCF decisión B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to E-Motion programme - sub programme 2, as included in the funding proposal.

By communicating our non-objection, it is implied that:

- (a) The Government of Uruguay has no – objection to the Programme, as included in the funding proposal
- (b) The Programme as included in the funding proposal is in conformity with Uruguay's national priorities, strategies and plans; and
- (c) In accordance to the GCF's environmental and social safeguards, the Programme as included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the Programme as included in the funding proposal has been duly followed.

We also confirm that our no-objection applies to all projects or activities to be implemented within the scope of the Programme.

We acknowledge that this letter will be made publicly available on the GCF website.

Kind regards

Ms. Natalie Pareja
National Climate Change Director; Ministry of Environment

Environmental and social safeguards report form pursuant to para. 17 of the IDP

Basic project or programme information	
Project or programme title	E-Motion: E-Mobility and Low Carbon Transportation
Existence of subproject(s) to be identified after GCF Board approval	Yes
Sector (public or private)	Public
Accredited entity	Corporación Andina de Fomento (CAF)
Environmental and social safeguards (ESS) category	Category B
Location – specific location(s) of project or target country or location(s) of programme	Panama, Paraguay, and Uruguay
Environmental and Social Impact Assessment (ESIA) (if applicable)	
Date of disclosure on accredited entity's website	Friday, September 16, 2022
Language(s) of disclosure	English and Spanish
Explanation on language	Spanish is the official language of the countries eligible under this programme.
Link to disclosure	English: https://www.caf.com/media/4019070/e-motion_e-mobility-and-low-carbon-transportation-environmental-and-social-management-framework.docx Spanish: https://www.caf.com/media/4019071/programa-de-movilidad-electrica-y-transporte-bajo-en-carbono-marco-de-gestion-ambiental-y-social.docx
Other link(s)	N/A
Remarks	An ESIA consistent with the requirements for a Category B project is contained in the “Environmental and Social Analysis and Environmental and Social Management Framework”.
Environmental and Social Management Plan (ESMP) (if applicable)	
Date of disclosure on accredited entity's website	Friday, September 16, 2022
Language(s) of disclosure	English and Spanish
Explanation on language	Spanish is the official language of the countries eligible under this Programme.
Link to disclosure	English: https://www.caf.com/media/4019070/e-motion_e-mobility-and-low-carbon-transportation-environmental-and-social-management-framework.docx

	Spanish: https://www.caf.com/media/4019071/programa-de-movilidad-electrica-y-transporte-bajo-en-carbono-marco-de-gestion-ambiental-y-social.docx
Other link(s)	N/A
Remarks	An ESMP consistent with the requirements for a Category B project is contained in the “Environmental and Social Analysis and Environmental and Social Management Framework”.
Environmental and Social Management (ESMS) (if applicable)	
Date of disclosure on accredited entity’s website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
Any other relevant ESS reports, e.g. Resettlement Action Plan (RAP), Resettlement Policy Framework (RPF), Indigenous Peoples Plan (IPP), IPP Framework (if applicable)	
Description of report/disclosure on accredited entity’s website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
Disclosure in locations convenient to affected peoples (stakeholders)	
Date	Friday, September 16, 2022
Place	Physical copies, upon request, will be available at the following CAF country offices: Panamá Mrs. Nara Vargas Principal Executive Boulevard Pacífica P.H., Oceanía Business, Plaza Torre 2000, piso 27, Punta Pacífica, Ciudad de Panamá, Panamá. Paraguay Mr. Hernan Benitez Principal Executive Avenida Santa Teresa con Herminio Maldonado, Complejo Paseo La Galería, Torre 2, piso 25, Asunción, Paraguay. Uruguay Mr. Andres Alcalá Principal Executive Ciudadela 1235 entre Reconquista y Camacúa, Montevideo, Uruguay.

Date of Board meeting in which the FP is intended to be considered	
Date of accredited entity's Board meeting	Friday, December 16, 2022
Date of GCF's Board meeting	Monday, October 17, 2022

Note: This form was prepared by the accredited entity stated above.

Secretariat's assessment of FP195

Proposal name:	E-Motion: E-Mobility and Low Carbon Transportation
Accredited entity:	Corporación Andina de Fomento (CAF)
Country/(ies) :	Panama, Paraguay, and Uruguay
Project/programme size:	Medium

I. Overall assessment of the Secretariat

1. The funding proposal is presented to the Board for consideration with the following remarks:

Strengths	Points of caution
The programme focuses comprehensively on technical assistance (TA) and subproject origination, structuring and financing in each country.	Greenhouse gas reduction impacts and favourable cost efficiency indicators attributed to an indicative pipeline that is to be finalized.
Different financing modalities and range of local partners proposed, including local financial institutions.	Uncertainties related to macroenvironment and impact on lending by participating local financial institutions.
Synergies with ongoing TA and investment initiatives for electric vehicle deployment and modal shift.	

2. The Board may wish to consider approving this funding proposal with the terms and conditions listed in the term sheet and addendum XIII, titled "List of proposed conditions and recommendations", respectively.

II. Summary of the Secretariat's assessment

2.1 Project background

3. The programme will implement interventions to kick-start mass deployment of electric vehicles (EVs) significantly earlier than under a business-as-usual scenario by reducing the risk profile of investments and by providing comprehensive technical assistance (TA). The programme functions as a market accelerator enabling a faster uptake of e-mobility, avoiding a lock-in of long-lived assets that rely on fossil fuel technology. It fills the gap between initial pilot schemes and long-term targets by thoroughly addressing TA and financial assistance. These interventions are made at a point in time where e-mobility is not yet commercially viable and thus requires initial investment support, as is the case in all countries that have achieved a significant uptake of e-mobility.

4. Transport contributes almost a quarter of the current global energy-related greenhouse gas (GHG) emissions and is growing faster than any other energy end-use sector. Latin America already accounts for 10 per cent of global GHG emissions and transportation-related GHG emissions from many countries in Latin America represent even a higher proportion than the

global average. Limiting the average global temperature increase to below 2 degrees Celsius requires changing the trajectory of transport emissions, which involves the development of an integrated electromobility ecosystem encompassing various transport modes, coupled with the low-carbon production of electricity and hydrogen (Paris Declaration on Electro-Mobility and Climate Change and Call to Action, 2015). Modelling published by the International Energy Agency suggests that EVs need to represent 35 per cent of global vehicle sales in 2030. Latin America has strong enabling conditions in terms of clean transport and e-mobility.

5. The programme focuses on commercial EVs in intensive use categories (i.e. electric buses, light commercial vehicle (LCV) fleets, public fleets and urban freight vehicles) together with the required charging infrastructure and grid upgrades. Investments are linked with new business models and service delivery structures that will enhance the attractiveness and sustainability of the public transport sector. The programme aims to become an important contribution towards modal shift in the participating countries.

6. The programme seeks a total investment USD 231 million. GCF investment is USD 76.6 million of which USD 66.8 million is in loans and USD 9.8 million in grants for TA. Mitigation impact over the lifetime of the assets is estimated at 3.3 million tonnes of carbon dioxide equivalent (MtCO₂eq) directly relating to investment subprojects. The programme envisages financing at least one project in each participating country.

2.2 Component-by-component analysis

7. The programme will be implemented in Panama, Paraguay and Uruguay, and has the following components:

Component 1: Establishment of an e-mobility conducive ecosystem (technical assistance) (total cost: USD 5.36 million; GCF cost: USD 5.36 million)

8. This component will create a policy and business framework conducive to massive deployment of EVs at the local (project design, business model design and development, city EV policies, training), regional (capacity-building, knowledge materials, outreach and dissemination, programme monitoring) and national level (sectoral electrification roadmaps, stakeholder coordination, support of national enabling policies for EV deployment, advice on battery re-usage, recycling and disposal).

9. This component addresses the barriers of lack policies conducive to EV deployment and lack of business models (barriers 1.1 and 1.2, respectively). The component and its associated activities provide TA to enable effective financial assistance and to create a (gender-responsive) policy and business framework conducive to massive deployment of EVs. Activities are coordinated and realized with the relevant national authorities to ensure complementarity of different endeavours

Component 2: Deployment of e-bus fleets and enhancement of public transport (financial assistance) (total cost: USD 178.16 million; GCF cost: USD 52.97 million)

10. Component 2, the major investment component will, when possible, be coupled with innovative business models based on a separation of asset ownership and operations, thus modernizing and increasing the attractiveness of the public transport sector while also making it financially more efficient and sustainable.

11. Component 2 addresses the barrier of higher up-front procurement costs of e-buses as well as the barrier of lower financial profitability compared with fossil-fuel units. The goal is to deploy large-scale fleets of e-buses to showcase their technical and commercial viability to operators. Public urban transport buses are the target. This includes different e-bus technologies (slow-, fast-, opportunity and ultra-fast charged buses), bus sizes of 12 m and different operational structures (mixed traffic buses as well as units operating on bus-only

routes). The targeted e-bus fleet size is 100 or more units, but for smaller cities smaller fleets can be financed. Outcome 2.2 increases ridership of public transport and e-buses through smart infrastructure measures, and establishes, implements and operationalizes facilities for enhanced public transport access, improved inter-modality and non-motorized transport. The programme seeks to use TA and investment into public transport measures to foster modal shift to low-carbon transport.

Component 3: Deployment of electric light commercial vehicles (public and private). (total cost: USD 36.27 million; GCF cost: USD 11.43 million)

12. Component 3 addresses the barrier of higher up-front procurement costs of e-LCVs as well as the barrier of lower financial profitability compared with fossil fuel-powered units. LCV (public/private) subprojects have been identified for most countries. The programme's goal is to deploy large-scale fleets of e-LCVs to make fast-charging infrastructure viable. The indicative subprojects include six subprojects for 1,150 e-LCVs (public and private) in three countries. The main output under this component is financing commercial EVs to kick-start mass deployment and provide evidence of technical, financial and environmental sustainability.

Component 4: Deployment of large-scale fast-charging and gender-aware infrastructure for the countries (total cost: USD 4.8 million; GCF cost: USD 2.4 million)

13. Investment in low-emission (fast) charging infrastructure lays the foundations for deploying EVs in commercial fleets and facilitates further spill-over to other vehicle segments. Through output 4.1 (Technical preparations for fast-charging infrastructure investments finalized, incl. engineering and procurement process) the programme will facilitate the construction of the charging infrastructure, including the formulation of requirements and the selecting process for eligible construction companies. The envisaged 20 chargers per country will have a capacity of 150 kW each, allowing fast charging. The key output under this component is linked to TA for project sourcing and structuring, and TA for design of the charging infrastructure including the business model for future commercial operations.

14. Further, output 4.2 (Low-emission fast-charging infrastructure financed and construction of in relevant municipalities completed) aims to finance and construct up to 60 fast charging station networks in at least three cities. The costs for the infrastructure are for the chargers (50 per cent) and installation (50 per cent) and will supported with loans to public entities/utilities. The municipality involved will provide and dedicate corresponding public space and land free of charge. The electricity supply will be delivered by the appropriate utility, which will be involved in the planning and construction.

Project management and evaluation: Establishing a programme management unit for project implementation and impact monitoring (total cost: USD 6.4 million; GCF cost: USD 4.46 million)

15. The programme management unit (PMU) will be responsible for the general coordination and management of the programme; managing the TA for preparation of the subprojects; preparing the reporting and monitoring reports due to the GCF and supervising the evaluation process; implementing and following up on the E-Motion subprogramme communication plan; and implementing and maintaining a knowledge and records management system.

III. Assessment of performance against investment criteria

3.1 Impact potential

Scale: Medium to high

16. GHG emission reductions amounting to 3.3 MtCO₂eq are expected to be achieved through the programme. Based on the initial pipeline of subprojects, the projected direct impact

due to investment in EVs is 0.78 MtCO₂eq over the lifetime of the EVs financed by the programme. Actual emission reductions will depend on which subprojects are implemented. Modal shift is triggered through programme investments and TA from transport modes with high levels of GHG emissions per passenger-km to low-carbon transport modes. The projected GHG impact in Panama, Paraguay and Uruguay owing to modal shift is 2.5 MtCO₂eq over the lifetime of the EVs financed by the programme based on the initial pipeline of subprojects.

3.2 Paradigm shift potential

Scale: High

17. The programme supports a paradigm shift to low-emission transportation systems. The programme aims to overcome the barriers identified to kick-start the mass deployment of commercial EVs, and also represents a turning point in how cities can influence users' mobility patterns by setting the foundations of low-emission, reliable, efficient, secure and affordable e-transportation. The programme will also work to achieve transformation of urban EV transport systems and penetration via enabling policies, infrastructure investment, technology and knowledge transfer for sustainable EV market development across Latin America.

18. The programme has potential for scaling up and replication at the national and the international level through capacity created in the e-mobility ecosystem, proven cases of successful business models, improved profitability and reduced risks of EV investments and knowledge products. It also has high potential for knowledge-sharing and learning through the TA component at the national, regional and local level. The programme also aims to contribute to the creation of an enabling framework. The TA includes support for enabling policies for EV deployment. Technical support will aim to set up, improve and/or enforce enabling public policies and legal, regulatory, fiscal and/or normative frameworks for e-mobility. The programme also aims to have an overall contribution to climate-resilient development pathways consistent with national climate change adaptation strategies and plans. It will lead to significant GHG reductions in the transportation sector. Without this contribution the target countries will not be able to achieve their decarbonization plans. Fostering e-mobility and kick-starting EV deployment is thus consistent with relevant national climate-resilient development pathways.

3.3 Sustainable development potential

Scale: High

19. The programme is well aligned with Sustainable Development Goals (SDGs) and aims to reduce GHG emissions. It contributes significantly to SDG 3 (good health and well-being), SDG 7 (affordable and clean energy), SDG 9 (industry, innovation and infrastructure), SDG 11 (sustainable cities and communities) and SDG 13 (climate action).

20. The programme also delivers environmental, social and gender co-benefits. Major environmental co-benefits are reduced emissions of pollutants and reduced noise emissions. A major concern in cities is air pollution, particularly particulate matter (PM_{2.5}) and emissions of nitrogen oxides (NO_x), which will be addressed via the shift from fossil-fuelled vehicles to EVs. The major social benefit is improved air quality and reduced noise in urban areas through the use of EVs. The programme's economic co-benefits are realized as a result of the monetary value of reduced emissions (GHGs and air pollutants). The economic cost of pollution has been calculated by assigning a monetary value to emissions of PM_{2.5} and NO_x for each country, based on local levels of pollution at the ground level and the impact on health and costs caused by this type of pollution per country. Finally, the programme aims to foster gender-sensitive transportation systems. The programme's gender action plan (GAP) and those of each subinvestment include actions and targets on (1) improving access for women to public transportation; (2) improving sex-disaggregated data collection on urban transport; (3) improving women's access to jobs; (4) interventions including awareness-raising and

infrastructure to reduce sexual harassment in public transport; and (5) training and workshops to disseminate best practices for reducing sexual harassment in public transport.

3.4 Needs of the recipient

Scale: High

21. GCF concessionality is expected to address financial and technical capacity barriers, de-risk and leverage public and private capital for the EV sector, support public finance flows and incentivize the shift to EVs in an urban context at a time when the governments of the three beneficiary countries have severe fiscal constraints and macroeconomic uncertainties.

22. The EV sectors in the targeted countries have limited access to commercial funding; early-mover costs and disadvantages including high performance risks; and lack of sufficient commercial viability, including profitability and acceptable risk levels. These constraints mean financiers are not currently able to fund such activities with commercial loans. The programme countries depend on TA to enhance the viability of the subprojects and to achieve long-term transformational impacts. The programme countries would not be able to source the required public funds on their own, due to the current fiscal situation in the countries. For example, the economic situation arising from the need to cope with the impact of the Covid-19 pandemic and high global inflation rate have required extensive policy support to be deployed by the authorities, including historical cuts to monetary policy rates to help support economic activity, and a sharp expansion of social support and health spending. Thus, the GCF grants are essential for successful implementation of the required TA activities.

3.5 Country ownership

Scale: High

23. The programme supports the governments' policy objectives on low-emission transport, urban development, and climate change commitments in their nationally determined contributions and sectoral plans. No-objection letters have been received from all countries. The national designated authorities of the countries included in the programme have committed to the development of GHG mitigation policies, decarbonization of the transport sector and the development of electric mobility. CAF and its partners (AFD, PROPARCO, KfW, GIZ) have held meetings with the national designated authorities and key actors from the e-mobility sector (including development banks, private banks, municipalities and regional states, power utilities and transport operators) to ensure that the programme responds to their needs.

3.6 Efficiency and effectiveness

Scale: Medium to high

24. The total capital investment is USD 229.1 million with a requested GCF finance of USD 74.3 million and an estimated direct GHG reduction of 3.3 MtCO₂eq, resulting in an effectiveness of the GCF investment in direct terms of USD 23 per tCO₂. This value is lower than that calculated by applying the subsidy finance from other countries with significant EV numbers for buses, which would result in average costs of USD 140–180 per tCO₂eq. GHG marginal abatement costs of transport subprojects tend to be higher than for other interventions because they are associated with high incremental costs. E-mobility programmes are also linked to substantial spill-over and long-term benefits, once a conducive ecosystem is in place and the market has been kick-started. This means that the comprehensive TA component of the programme will significantly accelerate the transition to a fully electrified vehicle market, impacting not only the uptake of new EVs but also the used car market. Consequently, the indirect GHG impact potential is much higher. According to the high potential scenario (not including decreasing emission grid factors), the programme can achieve a total GHG reduction of 16 MtCO₂eq, resulting in an effectiveness of subprogramme 2 of USD 4.6 per tCO₂eq. In addition, the programme mobilizes significant co-financing, from both public and private sources.

25. Concessional loans are expected to finance up to 90 per cent of electric buses, LCVs and public e-fleets; whereas equity from private sponsors will account for the remaining 10 per cent of financing. Concessional loans are expected to finance the total cost of urban fast-charging infrastructure. According to the estimated project pipeline, investment grants will not be used to finance investment activities for battery electric buses, e-buses, and e-LCVs. Up to 32 per cent of the GCF concessional loans are expected to be used for total financing of the three types of EV.

26. The AE estimated financial returns for e-buses and e-LCVs for the three countries. Without the GCF intervention the returns are negative, on average, and range from -5 per cent to +3 per cent. The GCF concessional increases the financial returns to an acceptable level of 11 per cent on average (ranging from 10 to 15 per cent). The analysis shows that the projects would not be bankable if financed under a structure that does not include the GCF concessional loans. The potential for scaling up the intervention will therefore mostly depend on the trajectory of the technology costs. It will need to decrease sufficiently in the future to bring the returns to a level similar to that calculated when including the GCF concessional.

27. In terms of economic returns, the AE calculates a return per technology and per country. The average value is 15 per cent with all the interventions above 12 per cent. This economic return is above the expected social discount rate for the countries under consideration.

IV. Assessment of consistency with GCF safeguards and policies

4.1 Environmental and social safeguards

28. **Programme Background.** The programme is part of the regional efforts that aims to accelerate Electric Vehicle (EV) deployment and enable a large-scale transition towards electromobility in Latin America. The programme intends to invest the deployment of electric buses (e-buses) and electric light commercial vehicles (e-LCVs) and their related infrastructure in Panama, Paraguay, and Uruguay. Main interventions proposed include providing technical assistance for establishing a sustainable mobility ecosystem for electrification and shift to public transport, financing public transport mode shift measures, and financing 650 e-buses, 1,150 e-LCVs, and up to 60 fast-charging infrastructure networks both directly and through intermediation. Among the key co-benefits of the programme includes the reduction of air pollution, noise levels and GHG emissions, and subsequently improving public health. Main social co-benefits include increased road safety as non-motorized transport and micro-mobility options tend to lower accident rates, lesser road congestion, and improved the quality of life for urban dwellers with more resilient urban transport infrastructure.

29. **Environmental and Social Risk Category.** The AE assigned the programme moderate environmental and social risk category that is equivalent to Category B as per the GCF's environmental and social risk categorization. This is rationalised by financing activities with potential limited adverse environmental and/or social risks and impacts that are few, generally site-specific, largely reversible, and readily addressed through mitigation measures. No activities with potential significant adverse environmental and social risks and impacts that would fall under Category A will be supported under the programme. The Secretariat confirms the environmental and social risk category and that this is within the AE's environmental and social risk accreditation level.

30. **Safeguard Instruments.** The AE provided an Environmental and Social Analysis and Environmental and Social Management Framework (ESMF) that presents the general context of the programme for environmental and social risk assessment, an analysis on the potential environmental and social risks and impacts likely to be associated with the programme components, and mitigation measures to address such risks and impacts with specification of roles and responsibilities for appraisal and supervision. The ESMF establishes general

guidelines including indicative outlines of subproject safeguards instruments to help implementing partners develop subproject specific environmental and social impact assessment (ESIA) and environmental and social management plan (ESMP) in accordance with AE's Environmental and Social Safeguards that are aligned with GCF's environmental and social safeguards standards.

31. **Compliance with GCF's Environmental and Social Safeguards (ESS) Standards.** The paragraphs below describe the programme's compliance with GCF's ESS standards:

32. **ESS 1: Assessment and Management of Environmental and Social Risks and Impacts.** The ESMF provides an analysis of the potential environmental and social risks based on the characteristics of the programme and suggests potential mitigation measures based on the severity of such risks and impacts identified, which focuses on EV deployment and the construction of charging infrastructure, grid connections and bus depot upgrades. All subprojects will be required to prepare an ESIA and ESMP subject to the E&S due diligence following AE's internal policies and procedures, as outlined in the ESMF. For subprojects led by the public entities, ESIA and ESMP will be evaluated by the AE to ensure compliance with applicable environmental and social safeguards of the AE. For subprojects financed through intermediation, all involved local financial institutions must have fully operational environmental and social risk assessment systems (ESRAS) or the environmental and social risk management systems (ESMS), which will be evaluated during the E&S due diligence conducted by the AE. In both cases, gaps with AE's E&S standards will be identified and the AE will depict additional measures to be taken by the implementing partner to close such gaps through an Environmental and Social Action Plan (ESAP) contractually required in the loan agreements. The implementation of the action plans will then be monitored and reported to ensure compliance with AE's applicable E&S standards. All subprojects under the programme are required to comply with the applicable national and local E&S laws and regulations in the respective target countries as well as AE's E&S Safeguards that are aligned with the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability.

33. **ESS 2: Labor and Working Conditions:** The programme identified medium adverse impacts on employment loss due to change in job dynamics and required skillset, and potential occupational health and safety risks for workers involved during the construction, maintenance and operations of EVs and charging infrastructure. The programme will provide technical assistance to implement specialized training and retraining schemes to help workers acquire the necessary new skills to transition to the new market demands, and as EV units' providers/sellers will likely provide the national dealer with training and tools operator companies will prioritize training of existing personnel. The ESMF triggers AE's E&S safeguard on working conditions and training and specifies requires on labor safety and job security applicable to all components of the programme. As set in the AE's exclusion list, the programme will not finance operations to clients or executing agencies that carry out the production or activities involving harmful or exploitative forms of labor forced and child labor. The AE is recommended to establish occupational health and safety (OHS) management guidance and procedures such as in the form of sectoral labor practices and working conditions checklist at the subproject level.

34. **ESS 3: Resource Efficiency and Pollution Prevention:** The programme's ESMF is guided with the aim of avoiding and minimizing negative impacts on human health, biodiversity, and ecosystems through the prevention of pollution. Activities under the programme will potentially generate wastewater and hazardous materials as regards the use, replacement, reuse and recycling, and disposal of EV batteries (primarily lithium batteries and the peripheral components). Additional impacts can be attributed to small-scale construction activities of grid-connected charging stations and bus depot upgrading, which may generate noise, dust particles, solid and liquid waste, and soil and water contamination from and scrapping of out-of-use vehicles, such as oils and lubricants, lead-acid batteries, tires and scrap metals. The programme

will exclude the production, trade, storage or transport of large volumes of products hazardous chemicals, or commercial scale use of hazardous chemicals, and provide technical assistance to the targeted countries and requires an integral EV Battery Waste Management Program must be developed together with the ESMP, which will need to comply with current or proposed new regulatory requirements established by each target country for the management, treatment and disposal of End-of-Life EV Batteries. The programme envisions that necessary legal framework and capacities on EV battery management will be developed and deployed during the implementation of the programme and specifies in the ESMF if the local legislation does not have specific regulations in this regard, the best international practices must be applied. Given the regulatory framework on the proper management of EV batteries in the targeting countries are yet to be developed, the AE is recommended to further elaborate the guideline on EV battery management and detail the best practice and technical standards to be followed at the subproject level.

35. **ESS 4: Community Health, Safety and Security:** The investment under the programme could potentially adversely affect the community health and safety. These could include infrastructure and equipment safety risks during the construction, maintenance and operation of the EV charging stations and upgrading related systems; increased accidentality as the low or non-existent noise of EVs are less noticeable during operation; potential for community exposure to hazardous materials and chemical substances related to EV battery disposal and scrapping conventional vehicles; and conflict risks between institutions, companies and community during the installation and cabling activities which may fluctuate the electric power service and cause power outage in the affected communities, therefore, the community may have power outage. The ESMF has provided measures to manage these risks including, among others, informing the community and road actors of the precautions needed with the circulation of vehicles with low or no noise generation, selecting manufacturers that incorporate sound alert systems in vehicles to alert pedestrians, cyclists and those in need of sound stimulus to become aware of the proximity of a vehicle, and management of intervention schedules at hours where the demand for energy by the affected community is the lowest. The AE is recommended to incorporate measures to avoid and minimize community exposure to hazardous materials in the EV battery waste management plan at subproject level.

36. **ESS 5: Land Acquisition and Involuntary Resettlement.** The programme will exclude subprojects that involves land acquisition and involuntary resettlement and construct small-scale urban charging stations and new connecting power lines located on lands of public domain and property of municipal or state authorities. The programme will build e-bus charging stations on sites belonging to the bus companies. While no resettlement processes are expected, there is a possibility that governments may propose facilitating the installation of new recycling facilities, the ESMF specifies that if a subproject requires lands for the development of any infrastructure and cannot avoid to economic and/or physical displacement, the implementing partners must structure a resettlement action plan (RAP), determining the compensation and benefits for displaced persons or livelihood restoration plan, that must be consulted and agreed upon by the affected parties. An indicative outline of the RAP is provided in the ESMF.

37. **ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.** The AE's due diligence indicates that the scope of the programme does not pose any risks on critical habitats, such as legally protected areas, natural habitats, or modified habitat with significant value for biodiversity, and no potential adverse impacts are expected in relation to land use change and deforestation. Hence the ESMF does not trigger AE's safeguard on conservation of biological diversity but highlights the programme's commitment to avoiding and minimizing impacts on biodiversity and ecosystems through the prevention of pollution, which is considered by the AE as a critical factor contributing to the degradation of natural resources and loss of biodiversity in the region. The AE also applies the precautionary principle and requires the application of protective measures on certain products or technologies where it is deemed necessary. The ESMF specifies that any subproject potentially affecting critical

habitats will be categorized as high E&S risk thus not eligible to the programme. In addition, the AE also exclude operations in protected areas and activities involving the introduction of exotic species and/ or organisms genetically modified (GMO) without the corresponding technical studies and authorization to enter the country by the relevant regulatory institutions.

38. **GCF Indigenous Peoples Policy and ESS 7: Indigenous Peoples.** The three countries where the project is being implemented have indigenous peoples who may be affected by the project. Subprojects with potentially adverse impacts on indigenous people will not be eligible to participate. The executing entities (EEs) will develop and conduct consultation and stakeholder engagement activities with indigenous peoples if necessary. For subprojects where an environmental and social assessment identifies indigenous people as stakeholders, participation and consent requirements will be implemented in accordance with the AE's safeguards. If necessary, the EE will develop and implement an ethnic group plan, which meets the requirements of the GCF Indigenous Peoples Policy, arrived at by consent, depicting the necessary measures to facilitate the positive impacts to occur, to mitigate or compensate for the negative impacts and to ensure that the benefits generated by the project are inclusive and culturally appropriate. This plan must incorporate a culturally appropriate engagement approach.

39. **ESS 8: Cultural Heritage:** The ESMF establishes specialized requirements for subproject specific ESMP, when warranted, must contain measures to ensure the protection of the cultural heritage from loss or damage and support its preservation. The ESMF also suggested measures including the design and application of a Cultural Resources Management Plan, application of field-based studies and documentation of findings as well Chance Findings Protocols during any construction activity. The ESMF also requires that the management and preservation of cultural resource findings must be undertaken by or in coordination with the competent authorities. During the preparation of subprojects, AE could require the implementing partners additional or specialized technical support to comply with these requirements, and in the event of a lack of capacity of the partners, an external evaluation team should be brought in to carry out risk and benefit enhancement analyses as well as help in the design of specialized studies required. The AE is recommended to incorporate chance finds protocol in the ESMF in case tangible cultural heritage is found at subproject level.

40. **Sexual Exploitation, Sexual Abuse, and Sexual Harassment (SEAH) safeguarding.** The ESMF has identified medium SEAH risk related to the deployment of EVs in the public transport sector and low gender-based violence (GBV) and SEAH during the construction of small-scale EV infrastructure works. Potential mitigation measures include training transport operating companies to detect SEAH incidents, raising awareness and creating spaces free of gender-based violence (GBV) and SEAH, and supporting the establishment of an adequate regulatory framework for public transport operating companies to implement gender policies preventing SEAH and GBV. The AE also incorporates in the gender action plan code of conduct establishing zero-tolerance for SEAH against community members and project workers and requires that all implementing partners must have in place a fully functional and survivor centred and gender-responsive grievance redress mechanism (GRM) for SEAH-specific complaints or incidents. The ESMF requires subprojects must be designed to minimize SEAH risks and GBV to the affected communities and subproject workers, and that GBV and SEAH risks must be identified at the E&S due diligence and corresponding mitigation measures be included in the gender action plan and be disclosed. The AE provides several avenues for individuals and communities filing complaint related to the programme, including through AE's Integrity and Ethics Committee and the Prohibited Practices Prevention Committee, and through the Accountability Mechanism for projects financed by the Green Funds. The ESMF also requires that all subprojects must establish survivor-centred and gender-responsive GRMs incorporating specific procedures to receive, register and manage SEAH complaints and incidents.

41. **Implementation arrangements.** The AE will monitor and supervise the environmental and social performance and compliance with contractual requirements of the specific subprojects financed by programme. All Loan agreements will include monitoring and reporting requirements to be fulfilled by the implementing partners on environmental and social safeguards compliance. A Project Management Unit (PMU), composed of professionals from the AE and the Executing Entity and supported by an external E&S and Gender expert, will be established to ensure the day-to-day implementation and monitoring the impacts of the programme. AE's specialists will carry out supervision mission, review level of environmental and social safeguard performance and prepare supervision reports with recommendations to address non-compliances. The AE will ensure that adequate financial and technical resources are provided to oversee and implement the requirements of the ESMF. Where needed, additional E&S specialist consultants will be engaged to assist implementing partners in conducting specialized assessments of the subproject during its operations and work with the implementing partners to improve their E&S management systems and capabilities.
42. **Stakeholder engagement and information disclosure.** The development of the programme has evolved based on consultations conducted with various stakeholders including national government representatives such as from National Designated Authorities, national companies in charge of electric energy, municipalities of the main cities in targeted countries, and main actors including those involved in capacity building and financing EV, charging infrastructure and in the battery value chain. The programme also provides for engagement of stakeholders during the implementation of the supported subprojects and capacity building activities through an ongoing process involving stakeholder analysis and planning, disclosure and dissemination of information, consultation and participation, grievance mechanism, and environmental and social performance reporting to affected communities. The ESMF provides an indicative outline of the stakeholder engagement plan required by all the subprojects.
43. **Grievance redress mechanism.** The programme provides access to grievance redress mechanisms at the AE, implementing partners and subproject levels. As part of the AE's E&S safeguards requirements, all subprojects will design and implement a GRM commensurate with the magnitude and the nature of E&S risks identified. All implementing partners will be required to implement effective GRMs to receive and assist with the resolution of any concerns and grievances of stakeholders that may arise in connection with a sub-project's gender, social and environmental performance, including survivor-centred and gender-responsive SEAH redress procedures or requirements. The programme expects subproject GRM be used to provide the fastest solutions for complaint and better management of stakeholder expectations. In addition, subprojects are required to carry out an extensive information process to publicize the subproject-level GRMs and ensure that affected people can access to it. These mechanisms will be provided in addition to AE's accountability mechanisms. While the AE is in the process of developing a centralized GRM at the institutional level that can be used to address all possible complaints related to the E&S management where AE operates, the AE is recommended to keep all relevant stakeholders informed once its corporate GRM is established and keep the ESMF and guidance to subproject GRMs updated.

4.2 Gender policy

44. The AE provided a gender assessment and GAP with the funding proposal and therefore complies with the requirements of the GCF Gender Policy.
45. While the gender equality agenda has gained strength in Latin America (including Panama, Paraguay and Uruguay) regarding social and feminist movements, and the legislative frameworks domesticating the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and others, the reality is in the actual implementation of the various commitments the countries have made, slowing progress in the realization of women's labour

market rights, meaningful participation and representation in decision-making processes, and overall curbing different forms of gender-based violence, including realization of human/women's rights in general. The gender assessment found that in all three countries the female labour force participation as a share of the total female population at working age ranges from 53 to 60 per cent in 2019, which is about 20 per cent lower than the participation rate of men. Gender wage gaps persist across sectors, and gender roles due to home-based care work (among other things) impede women's access to better economic opportunities. In addition, occupational segregation persists across countries and women's careers are concentrated around low-paid jobs and informality. With regards to violence against women, in Uruguay 2.8 per cent of women and girls between the ages of 15 and 49 have experienced some form of violence, in Paraguay the number is 8 per cent and it is 10.1 per cent in Panama (according to data for the 12 months from the time the gender assessment was undertaken).

46. There are specific actions that need to be undertaken in order to guarantee safety when using public EV transport, and as workers/users of the service. Women in the region are frequently victims of gender-based violence when using transport, and the Covid-19 pandemic has exacerbated the numbers. The urban transport system poses some risks of harassment and sexual abuse, and safety and security measures are required when designing and implementing transport programmes. In addition, women are not adequately represented in the transport sector jobs in the region, and this e-mobility programme presents an opportunity for women to access the green jobs generated by the projects to be designed with investment loans (e.g. public sector projects that will help women obtain professional driving licenses and in return they are able to opt for the direct jobs that the e-buses, e-taxis and e-vans will create). The gender assessment recommends that access to these opportunities should be facilitated through the provision of scholarships for women to receive training on professional driving.

47. The programme's GAP aims to ensure that the various recommendations presented in the gender assessment report are put into actionable items in order to enhance the gender-responsiveness of the e-mobility programme. The AE will appoint a team of four specialists who will lead implementation of the GAP, and this team will be managed under the PMU. The AE is recommended to ensure that gender specialists with experience in the targeted countries are recruited. In addition, the AE should ensure that the grievance mechanisms employed by the programme are made accessible to both women and men. The funding proposal has identified two main goals for subprogramme 2 (E-Motion: e-mobility should be achieved from a gender equality and social inclusion perspective), as follows: (1) regarding the workforce: reduction of sex-segregation in employment while creating new jobs and expertise; and (2) regarding ridership: reduction of gender biases and exclusions from transportation while changing to a low-emission system. The GAP therefore outlines three main gender-specific outputs, each with its own activities, indicators, targets, timeline and costs: output 1: sector-specific country-level gender assessments undertaken as part of the development of low-carbon EV road maps and policies (national level); output 2: successful knowledge exchange and collaboration on gender aspects in transportation (regional level); and output 3: gender components integrated in the subprojects financed by the programme.

48. Key activities that will be implemented under output 1 are (1) adoption of a transformative gender perspective, with a focus on mobility, safety and jobs, in the design and review of all three country-level/local road maps and electric mobility policies, strategies and implementation plans: design an effective advocacy strategy and action plan for mainstreaming gender in such activities; (2) facilitate/conduct a multi-stakeholder consultation strategy during the implementation of the E-Motion subprogramme 2 (Component 1); and (3) develop a country-specific GAP on the basis of the synthesis of each contextual gender assessment and the support given to design/review low-carbon EV national road maps and policies; to be reinforced by the consultation/participatory processes that will be undertaken to inform the project. In depth interviews with key gender/social actors will also be included to strengthen the diagnosis in each country.

49. The following activities have been planned under output 2: (1) include a gender perspective approach in capacity-building and training activities (e.g. workshops) targeted to key public and private stakeholders (e.g. government actors, operators) in order to increase awareness about gender equality gaps and opportunities in transport; (2) conduct online capacity-building and training (e.g. webinars) for key public and private stakeholders (e.g. government actors, operators, sector companies) in order to increase knowledge of how to include the gender perspective in urban transport projects; (3) collect locally adapted best practices (e.g. the “Bajale al acoso” in Quito) on violence and harassment prevention and treatment in public transportation. Systematized regional best practices will inform the capacity-building and training activities, and contribute to define the adapted best practices to be implemented in all three countries; and (4) design national communication campaigns about sexual harassment and protocols of attention in public transport.

50. Output 3 has six key activities: (1) mobility infrastructure design and management financed by the programme and planned to be gender-sensitive and gender-responsive (e.g. planning for care facilities, schedule changes, special fares, analysis and modification of routes, interior design of buses to accommodate older people and people travelling with infants, bags and strollers); (2) participatory and inclusive design of each project financed by the programme will include a gender-sensitive and gender-responsive approach, including the following measures: hiring female trainers and/or trainers with experience in participatory processes and women’s engagement, adapting the sessions’ schedule to women’s practical needs (women’s work and domestic responsibilities) including a brief survey to find the most suitable times, engaging participants organizations and holding training sessions during work time, choosing a venue where women feel comfortable (not a male-dominated site), providing childcare during the activities; (3) integrating measures into urban passenger transport projects financed by the programme oriented to generate and improve gender disaggregated data collection on urban transport; (4) integrating measures into projects that improve women’s access to jobs, such as training targeted at women to improve their skills, or advocacy aimed at labour unions (it is very usual that masculinized unions obstruct the incorporation of women to the field); (5) establishing interventions to address and prevent gender-based violence and sexual exploitation, sexual abuse and sexual harassment against people using public transport, including training of staff, information campaigns and awareness-raising, required infrastructure, and feedback and grievance mechanisms; and (6) promoting gender equality in the workplace, such as advertising that job vacancies are open for women, adapting working schedules to women’s care needs at home, building dressing rooms, provide childcare.

4.3 Risks

4.3.1 Overall programme assessment (medium risk)

51. GCF is requested to provide a loan of USD66 million and a grant of USD7.5 million for the deployment of the electric vehicle (EV) in Panama, Paraguay and Uruguay. CAF will co-finance a senior loan of USD122 million and raise equity of USD30.4million. CAF and GIZ are providing in-kind contribution amount to USD2.3million.

52. While mainly targeting the private sector, the programme allows for the provision of financing for both public and private sector entities. The investment may be directly made by CAF in Component 2 & 4 and intermediated through the local financial institutions in Component 3. The level of support and an individual sub-project per country and per vehicle segment will be determined during the implementation period. Different business models (e.g. separation between asset ownership and operation, financing/operating leasing, public-private partnership etc.) are envisaged depending on the needs of the sub-project in each country.

4.3.2. **Accredited entity/executing entity capability to execute the current programme (low risk)**

53. CAF is the AE and EE for the programme. CAF has a strong record in the transport sector by financing over USD2,200million in the past 10 years in Latin America. It also has an experience in implementation of EV projects. CAF benefits from preferred credit status and is rated as Aa3 by Moody's

54. GIZ is another co-EE for the programme which is responsible for executing technical assistance. GIZ has a technical expertise in the development of large TA programs and working with different financiers in the E-Mobility sector.

4.3.3. **Programme-specific execution risks (medium risk)**

55. Credit risk: GCF will assume the credit risk of sub-borrowers for direct financing in Component 2 & 4, and LFIs for intermediated financing in Component 3. The credit risk of sub-loan recipients of the LFIs will be borne by the LFIs. The risk is shared with CAF as both loans will be blended and rank pari passu.

56. Co-financing risk: the financial structure considers 90% of the sub-projects funded with loans and the remaining 10% is funded by equity from private sponsors. A minimum of 10% equity co-financing is included in the eligibility criteria. The co-financing risk can be further mitigated by the co-financing ratio at the sub-project and programme level in the term sheet.

57. Technology and market absorption risk: FP states that all technologies have been proven at least in pilot cases in Latin America with similar circumstances. Technological advancements will result in a decline in EV cost which will be creating a conducive environment for mass deployment of the EV. On the other hand, this will also lead to lowering the replacement costs of EVs leased or financed. A sub-project using the leasing model, the risk of low residual value needs to be absorbed by the market. Currently, due to the nascent market in EV sector, there are very limited business sectors to absorb the losses resulting from the low residual value of assets due to the technology obsolescence. This will affect the subsequent EV projects and investments after initial investment by GCF and CAF.

58. Project viability and Concessionality: the project viability will depend on the political willingness and support from the government. The target impact of the programme is assumed that the investment in EVs will take place as planned despite the impacts of the COVID-19 pandemic. Stable frameworks and favourable regulatory environment will help to attract new investors for commercial uptake of EVs sector which will be critical for the sustainability and scale up of the EV deployment.

59. GCF concessional financing will reduce investment risks through the investment combined with the business models and policy frameworks conducive to EV deployment. The interest rates for private and public sector borrowers will be differentiated. For the private sector investment, the AE determines the pricing on project-by-project basis. The AE is contractually required to pass down the concessionality to the end beneficiaries.

4.3.4. **Compliance risk (high risk)**

60. The beneficiary countries – Panama, Paraguay and Uruguay– are not subject to United Nations Security Council (UNSC) restrictive measures. The AE, along with GIZ, will act as the Executing Entity (EE) for this funded activity. GIZ is a GCF-accredited entity, and the AE has not raised any material issues when it comes to its ability to implement the planned activities, from a compliance standpoint. The AE has assessed money laundering, terrorist financing, prohibited practices and sanctions related risks to be of low probability and medium impact. Throughout the programme, the AE intends to implement its standard set of controls, inclusive of providing

a mechanism for reporting irregularities which may occur. The Office of Risk Management and Compliance (ORMC)/Compliance notes that Panama continues to be listed by the Financial Action Task Force (FATF) as jurisdictions with strategic deficiencies in their AML/CFT regimes. Given this exposure, ORMC/Compliance recommends performing enhanced due diligence in all project activities pertinent to this country. ORMC/Compliance has conducted a review of the project in accordance with relevant GCF Board approved policies and does not find any material issue or deviation with respect to compliance issues. Based on available information for this funding proposal, the ORMC/Compliance Team have determined a risk rating of 'high' and has no objection to this request proceeding to the next steps for processing.

4.3.5. GCF portfolio concentration risk (low risk)

61. In the case of approval, the impact of this proposal on the GCF portfolio concentration in terms of results area and single proposal is not material.

4.3.6. Recommendation

62. It is recommended that the Board consider the above factors in its decision.

Summary risk assessment	
Overall programme	Medium
Accredited entity (AE)/executing entity (EE) capability	Low
Project-specific execution	Medium
GCF portfolio concentration	Low
Compliance	High

4.4 Fiduciary

63. Corporación Andina de Fomento (CAF) will perform the dual role of AE and EE for the programme.

64. As an AE, CAF will be responsible for the overall management, implementation oversight and supervision of the programme in line with its own internal rules, policies and procedures, including administering and managing the use of GCF proceeds, as well as the monitoring, evaluation and reporting responsibilities.

65. On the other hand, as an EE, CAF will be responsible for providing governance, oversight and quality assurance in accordance with its policies, procedures and with the funded activity agreement and the accreditation master agreement (AMA). CAF project teams will be responsible for the identification, appraisal, implementation and evaluation of eligible investments of the programme. The subprojects' appraisal process will follow CAF's procedures. Business and technical teams will carry out due diligence and appraisals on each project in accordance with CAF standards and procedures. CAF will provide financial assistance targeting public and private sector project owners (Components 2, 3 and 4), and support the technical assistance dedicated to preparation of subprojects (Component 1).

66. As an EE for the project, GIZ will be responsible for implementing activities within the TA component (Component 1). GIZ will ensure the implementation of activities using a combination of its own technical staff based in partner countries, as well as independent consultants. GIZ will report to the E-Motion Steering Committee and to the CAF programme manager.

67. The PMU will oversee the general coordination and management of the programme, management of the TA, preparation of reporting and monitoring reports due to the GCF and the

supervision of the evaluation process. It will also oversee the implementation and follow up of the E-Motion communication plan for subprogramme 2.

68. CAF will enter into a funded activity agreement with the GCF for the loan and the grant. The agreement will describe the specific requirements regarding the financial management of the GCF resources for the programme. In addition, CAF will sign a subsidiary agreement with GIZ to channel GCF funds for the purpose of implementing Component 1 (TA component).

69. CAF's internal audit team will conduct internal audits and external audits will be conducted by international certified auditors, to assess the adequate use of the GCF funds.

70. At the time of this assessment, outstanding issues remain to be addressed in the funding proposal as well as in the budget. These will be reflected in the term sheet as a Condition Precedent (CP). The CP will serve as a place holder until such time as the issues have been addressed. This assessment is subject to change.

4.5 Results monitoring and reporting

71. As a mitigation programme, CAF E-Motion is expected to result in overall GHG emission reductions amounting to 3.3 MtCO₂eq over a 25-year lifespan, of which 0.78 MtCO₂eq is due to EVs investments and 2.5 MtCO₂eq is due to modal shift to public transport, based on the impact calculations available in annex 23 of the funding proposal, and as reflected in the metrics of the integrated results framework, core indicator 1.

72. The programme expects to improve air quality by avoiding emissions of 80 tonnes of PM_{2.5} and 4,080 tonnes of NO_x by the end of the implementation period, as well as saving costs related to energy consumption, pollution and global warming externalities amounting to USD 40 million, as per the environmental and socioeconomic co-benefit indicators provided in section E.5 of the funding proposal.

73. The theory of change properly depicts how the results chain will cascade from the goal statement to the project activities, and clearly articulates the relevant interlinkages between logic levels, barriers and risks. The "if, then, because" logic is adequately formulated and the proposed outputs and outcomes are defined in a manner that is adequately supportive of meeting the ultimate programme goal. As a large proportion of the GHG emission reductions are expected to be attributable to modal shift to public transport, the AE has properly incorporated relevant assumptions related to modal shift in both the theory of change and the logical framework, as requested by the Secretariat.

74. Section E.3 of the logical framework has been designed with relevant details, including the inclusion of solid means of verification and reporting on the appropriate core and supplementary indicators for the targeted results areas, as per the GCF integrated results management framework.

75. Regarding the programme-specific indicators in section E.5, the Secretariat has requested the AE to add surveys as a means of verification for outcome indicator 2.2 " % of enhanced ridership of public transportation" to be conducted in accordance with CDM Methodological Tool 18: Baseline emissions for modal shift measures in urban passenger transport, Version 01.0¹ and to submit the list of data and parameters monitored in accordance with the said tool as an attachment to the second annual performance report and the last annual performance report (the programme completion report). A corresponding covenant has been incorporated in the term sheet and agreed with the AE.

76. The monitoring and evaluation plan in annex 11 of the funding proposal has been found to follow the appropriate requirements, as it includes the entire list of the programme

¹ <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-18-v1.pdf>

integrated results management framework indicators while ensuring alignment of the data/sources with set means of verification. As recommended by the Secretariat during interdivisional review, the AE increased the monitoring and evaluation budget from 300,000 USD to 1.1 million USD to allow additional reporting requirements as described in paragraph 17 above and to comply with the GCF Evaluation Policy provisions. In order to address iTAP imposed conditions, the AE has subsequently increased the budget for monitoring and evaluation to reach USD 4.1 million or about 2% of the total programme budget, which is in alignment with the GCF Evaluation Policy recommendations. However, some of the budget lines appear inflated including the rates for international and national consultants. Therefore, further clarifications and justifications would need to be provided by the AE ahead of FAA execution and a corresponding condition has been added in the term sheet to ensure the final budget is cleared and agreed by the Secretariat ahead of FAA signing.

4.6 Legal assessment

77. The AMA was signed with the AE on 15 November 2016, and it became effective on 19 March 2018.

78. The AE has not provided a legal opinion/certificate confirming that it has obtained all internal approvals and that it has the capacity and authority to implement the programme. It is recommended that, prior to submission of the funding proposal to the Board (a) the AE has obtained all its internal approvals and (b) the GCF has received a certificate or legal opinion from the AE in form and substance satisfactory to the GCF confirming that all final internal approvals by the AE have been obtained and that it has the authority and capacity to implement the programme.

79. The proposed programme will be implemented in three countries: Panama, Paraguay and Uruguay.

80. The GCF has signed a bilateral agreement on privileges and immunities with Uruguay, which was signed on 14 November 2017 and became effective on 7 October 2021.

81. The GCF is not provided with privileges and immunities in the two other countries. This means that, among other things, GCF is not protected against litigation or expropriation in these countries, which risks need to be further assessed.

82. With respect to Panama, the GCF provided a draft agreement on privileges and immunities and a background note to the Government of the Republic of Panama on 23 April 2018, followed by an updated draft agreement on 17 February 2020. The agreement is under review by the Government.

83. With respect to Paraguay, the GCF provided a draft agreement on privileges and immunities and a background note to the Government of the Republic of Paraguay on 4 December 2015, followed by an updated draft agreement and background note on 3 August 2016. The agreement is under review by the Government.

84. The Heads of the Independent Redress Mechanism and the Independent Integrity Unit have both expressed that it would not be legally feasible to undertake their redress activities and/or investigations, as appropriate, in countries where the GCF is not provided with relevant privileges and immunities. Therefore, it is recommended that disbursements by the GCF are made only after the GCF has obtained satisfactory protection against litigation and expropriation in the countries, or has been provided with appropriate privileges and immunities.

4.7 List of proposed conditions (including legal)

85. In order to mitigate risk, it is recommended that any approval by the Board is made subject to the following conditions:

- (a) Submission by the AE to the GCF of a certificate or legal opinion, in form and substance satisfactory to the GCF Secretariat, within 120 days after Board approval, confirming that the AE has obtained all final internal approvals needed by it and has the capacity and authority to implement the proposed programme;
- (b) Signature of the funded activity agreement in a form and substance satisfactory to the GCF Secretariat within 180 days from the date of Board approval, or the date the AE has provided a certificate or legal opinion confirming that it has obtained all final internal approvals, whichever is later²; and
- (c) Completion of the legal due diligence to the satisfaction of the GCF Secretariat.

² The GCF can only execute a funded activity agreement with an Accredited Entity that has an executed and effective AMA (including an amended and restated AMA).

Independent Technical Advisory Panel's assessment of FP195

Proposal name:	E-Motion: E-Mobility and Low Carbon Transportation
Accredited entity:	Corporación Andina de Fomento (CAF)
Country/(ies) :	Panama, Paraguay, and Uruguay
Project/programme size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: Medium to high

1. A bit of background information will be necessary for this funding proposal (FP). For the past several years preceding the submission of this request for funding to the GCF, Agence Française de Développement (AFD), Kreditanstalt für Wiederaufbau (KfW), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and CAF conducted independent studies that evaluated opportunities for electric mobility (e-mobility) in Latin American countries. These studies, which were independently funded by each of these institutions, clearly drew out the big opportunity for e-mobility in countries of the Latin American region. The big opportunity in that region, as shown by the results of the independent evaluation, exists because of the endowment of clean electricity infrastructure, dominated by renewable energy including large hydropower plants in the region. For example, the three countries covered by the FP have an average grid emission factor ranging between 0 and 0.23 tCO₂/MWh.¹
2. The impressive results obtained from the independent studies by the institutions mentioned in the last paragraph led to a decision to develop a regional E-Motion concept note that was submitted to GCF. According to CAF, the accredited entity (AE) of this project, before this E-Motion's concept note, no regional pre-programme was conducted. The E-Motion concept was conceived as a regional umbrella programme with the aim of fostering e-mobility and joint efforts between all the institutions (AFD, KfW, GIZ and CAF) and avoid duplication of actions. It is expected that the E-Motion collaboration will foster e-mobility in the 11 Latin American countries covered by the concept note. At the advice of the GCF Secretariat, the E-Motion programme was broken into two subprogrammes.
3. According to information obtained from CAF during a question-and-answer interaction between the AE and independent TAP, the advice from the GCF Secretariat to break these submissions into two subprogrammes was based on the countries where the two AEs (CAF and AFD) can operate as AEs and on the best way to execute the programme. While CAF can operate in the whole region, AFD cannot operate in Panama, Paraguay and Uruguay. Given these differences in the operational scope of these two AEs, subprogrammes 1 and 2 will have the following AEs and cover the following countries:

¹ Combined Grid Emission Factor by International Financial Institutions Technical Working Group on GHG Accounting/UNFCCC (2021): Panama: 0.23 tCO₂/MWh_{el}; Paraguay: 0.00 tCO₂/MWh_{el}; Uruguay: 0.065 tCO₂/MWh_{el}. See annex 2.

- (a) Subprogramme 1 will have AFD as the AE and cover the following eight countries: Argentina, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, Mexico, and Peru; and
 - (b) Subprogramme 2 will have CAF as the AE and cover the following three countries: Panama, Paraguay, and Uruguay.
4. Subprogramme 2, with CAF as the AE, is the focus of this independent TAP assessment. The climate context of this programme can be summarized as follows:
- (a) Globally, the transport sector currently constitutes 25 per cent of global emissions. It is the fastest growing sector of greenhouse gas (GHG) emissions globally and is growing faster than any other energy use sector in most economies;
 - (b) Although Latin American countries currently contribute about 10 per cent of global GHG emissions, decarbonizing the transport sector of Latin American countries, if properly conceptualized and implemented, will deliver not only good global impacts but also sound benefits to the countries in terms of delivering modern and clean public transport rolling stock; and
 - (c) The three countries that will be covered by the proposed programme already have very green power infrastructure, with the following country grid emission factors: Panama (0.23 tCO₂/MWh_{el}); Paraguay (0.00 tCO₂/MWh_{el}); and Uruguay 0.065 tCO₂/MWh_{el}). This existing low-carbon production of electricity in the project countries of this FP is a sound requirement for a successful e-mobility system.
5. The FP provided information and evidence that e-mobility programmes have been introduced in some countries in Latin America before these current proposed interventions. Countries in the region with some forms of e-mobility experience include Chile, Colombia, and Uruguay. These e-mobility activities started as pilots that evaluated what kinds of framework and business models must be in place to allow unencumbered introduction of e-mobility in each country. These regional e-bus programmes were essentially pilot programmes promoted by each country's federal government and the conclusions of these government-led activities can be summarized as follows:
- (a) Separation of ownership and operations can be an effective instrument to promote e-buses and can bring in new financially strong players into the industry;
 - (b) Investment subsidies are critical for kick-starting the process because of the need to displace cheaper fossil fuels, which are the most common bus fuel in the baseline situation of most countries;
 - (c) In order not to thwart the realistic long-term success of the e-bus programme, these subsidies must be reduced significantly after an initial fleet of e-buses and after having established a working business model;
 - (d) Without financial incentives in the early introduction, the e-bus programme will not be commercially competitive. However, some of these pilots have shown that some large cities are willing to pay for these incremental costs due to e-buses improving air quality and reducing GHG emissions; and
 - (e) Uruguay, one of the three countries that will be covered by the FP, showed through its pilot programme that there are barriers that must be mitigated.
6. Noting the claim that this government-sponsored pilot in Uruguay was fundamentally successful, the independent TAP questions why it could not be expanded to a commercial scale. From an evaluation of the information available on this pilot, the key answer to the question above may be derived from the explanations below:

- (a) Between November and December 2013, different tests were carried out on a 100 per cent electric 12-meter bus, model K9 of the company BYD. The performance of the tests in Montevideo City, Uruguay was monitored by passenger load simulation and by replicating operational schemes;
 - (b) Later, in May 2016, the same bus was used for a longer test but in real life conditions. It was used in different lines and transported passengers over several months. The results of the successful operation indicated the need for a subsidy;
 - (c) The subsidy is expected to cover the price gap between a conventional bus and an electric bus as well as infrastructure requirements and charging management. As the Government of Uruguay is also compelled to subsidize diesel fuel consumption for conventional buses, the Electric Bus Subsidy was financed, in this first call, from the future savings in Diesel Bus Subsidy; and
 - (d) After successful operational results, the Electric Bus Subsidy was approved in 2018 by Law 19.670. This pilot in Uruguay left the following lessons that are essential for the replication of this success in a fully commercial programme in the country:
 - (i) The move from battery electric bus (BEB) pilot to a BEB commercial stage will require a subsidy from the start of the commercial stage to overcome the higher upfront cost of BEB as a replacement for the baseline system;
 - (ii) Since subsidies are easier to introduce and difficult to remove, the Government of Uruguay will prefer an implementation process that is not based on subsidy but will include a concessional fund that can eliminate the gap between the baseline and the project;
 - (iii) Without such concessional funding, the 2018 Electric Bus Subsidy will have to be continued as it will be key to providing rights and duties for operators, therefore ensuring the BEB operational scheme will continue as planned to generate impact and guarantee repayment from operators to banks; and
 - (iv) It is therefore clear that without financial incentives (such as those that will be delivered by concessional loan and grants), BEBs cannot be scaled up even though its performance was remarkable at the pilot stage as operators will not assume the financial risk alone.
7. The main barriers to electric vehicles (EV) in the three countries covered by the FP can be summarized as follows:
- (a) EVs require high capital investment (CAPEX) compared to the fossil fuelled alternatives that are used in the baseline of this intervention. According the FP, this cost may be two to three times higher than the baseline alternatives. This will result in higher capital requirements, higher finance and insurance costs, and higher risk exposure due to higher debt levels;
 - (b) The cost of capital available in these countries, like in most developing countries, is usually higher, thus making the EV programme financially unprofitable. This is the situation in many developing countries with long payback times;
 - (c) Another barrier to successful introduction of EV programmes in these countries arises from the non-alignment of existing governance structures to the business models that are conducive to EV deployment, especially for the public transport sector;
 - (d) In the three countries covered by this FP, there is limited know-how on optimal EV ecosystem design, maintenance and operations; and
 - (e) Lastly, when EV targets are established, there are usually no concrete and tangible support policies conducive to EV uptake in place in the countries.

8. The implementation methodology built into the design of subprogramme 2 of this FP is for it to deliver more than a sustainable E-motion programme, which is expected to reduce or completely eliminate the barriers presented in paragraph 7 above. The general characteristics of the business model adopted for the proposed project intervention in Panama, Paraguay, and Uruguay can be summarized as follows:
- (a) The two key components of the business model intended to enable the attractiveness and commercial viability of commercial e-bus subprojects are:
 - (i) Bulk purchase, which will be tackled through technical assistance (TA); and
 - (ii) Separation of asset ownership and operations/management;
 - (b) Bulk purchase: Bulk purchase is important not only due to significant price discounts that it can deliver but also because it enables the optimization of the e-mobility system in terms of charging infrastructure and bus types allowing, for example, the use of common chargers among buses (up to 12 buses per charger); and
 - (c) Separation of asset ownership and operation/management: Separation of asset ownership and management is critical due to high investment costs of e-buses, which require strong financial players with access to cheap long-term finance. In this token, high net worth private sector investors who are able to access better international and locally available funds with attractive fund metrics (low interest rates, grace period, long debt maturity, etc.) will purchase and own the assets (e-buses, charging stations, etc.) and make these available to operators and management of the e-bus lines along designated routes under carefully drawn agreements. This business model will remove or drastically reduce the impact of higher CAPEX of e-mobility programmes, which has inhibited its penetration over the past years.
9. Subprogramme 2 implements interventions to kick-start EV mass deployment significantly earlier than under a business as usual scenario by reducing the risk profile of investments and providing comprehensive TA. The key strategic value of the subprogramme is that it functions as market accelerator, enabling a far faster uptake of e-mobility than under a business as usual scenario and avoiding a lock-in of long-lived assets in fossil technology. Subprogramme 2 fills the gap between the existing initial pilots in some countries in the region (including Uruguay) and long-term targets. These interventions are to be made at a time when e-mobility is not yet commercially viable and thus requires initial investment support, which is the case in all countries with significant uptake of e-mobility. The programme focuses on purely electric commercial vehicles, namely buses, taxis, and urban freight vehicles together with the required charging infrastructure and grid upgrades. No private use vehicles will be financed.
10. Subprogramme 2 of the E-Motion programme will be implemented in Panama, Paraguay and Uruguay and has the following components:
- (a) **Component 1:** Establishment of an e-mobility conducive ecosystem by providing TA to create a policy and business framework conducive for massive deployment of EVs on local (project design, business model design and development, city EV policies, training, etc.), national (sectoral electrification roadmaps, stakeholder coordination, support of national enabling policies for EV deployment, advice on battery reuse, recycling and disposal) and regional levels (capacity-building, knowledge materials, outreach and dissemination, programme monitoring);
 - (b) **Component 2:** Deployment of large-scale e-bus fleets (major investment component) coupled, when possible, with innovative business models based on a separation of asset ownership and operations, modernizing and increasing the attractiveness of the public transport sector while also making it financially more efficient and sustainable;



- (c) **Component 3:** Deployment of electric light commercial vehicles (LCV) (public² and private);
 - (d) **Component 4:** Deployment of large-scale, fast-charging and gender aware infrastructure for the countries; and
 - (e) **Project management:** Establishment of a Programme Management Unit (PMU) for project implementation and impact monitoring.
11. The programme has been designed with a comprehensive and ambitious Gender Action Plan (GAP) targeting the improvement of gender equality and reduction of sexual harassment in public transport.
12. Although this FP was submitted by CAF as the AE, CAF will jointly implement this programme with GIZ. The joint arrangement will be as follows:
- (a) CAF will serve as the AE for the programme. It will also serve as the executing entity and co-financier for the financial assistance targeting public and private sector project owners (component 2, 3, and 4), and to support the TA dedicated to subproject preparation (component 1, output 1.5.3); and
 - (b) GIZ will serve as the executing entity for TA (outputs under all subcomponents under component 1).
13. Financing for the four components described in paragraph 10 above and the respective sources of funding (GCF and co-financing) for the activities are summarized in table 1.

Table 1: Project components and activities with indicative financing

Component	Outcome	Output	Indicative cost million USD (\$)	GCF financing			Co-financing		
				Amount million USD (\$)	Financial Instrument		Amount million USD (\$)	Financial Instrument	Name of Institutions
Component 1	Outcome 1.1 - The government enhances coordination, planning and capacity for promoting electric mobility	Output 1.1.1a: A national sustainable and inclusive e-mobility strategy and implementation plan established / complemented (Pv and Lv)	701.500	701.500	Grants				
		Output 1.1.1b: A multi-stakeholder and gender inclusive consultation strategy is implemented and recommendations for a long-term coordination mechanism are delivered to key government actors (PA)	207.500	207.500	Grants				
		Output 1.1.2 (a and b): Key public and private stakeholders are trained	515.700	515.700	Grants				
	Outcome 1.2: The Government takes actions towards required regulatory standard and implementing policy frameworks for electric mobility	Output 1.1.3 (a and b): Public and private stakeholders' awareness enhanced	284.000	284.000	Grants				
		Output 1.2.1: Regulatory standard reform proposal that includes gender-equality policy issues for electric vehicles delivered	1.149.000	1.149.000	Grants				
	Outcome 1.3: The Government takes action towards implementing appropriate emission standards and mandates (Pv)	Output 1.3.1: Standards and a policy framework for regulating the eligible emissions of road vehicles are developed and drafted for adoption by government	174.000	174.000	Grants				
		Output 1.3.2: An appropriate monitoring system for air pollutants is developed and implemented for the Metropolitan Area of Asunción, and personnel is trained on its application	625.800	625.800	Grants				
		Output 1.4.1: Standards and a policy framework for regulating the disposal of electric vehicles developed	132.000	132.000	Grants				
	Outcome 1.4: The Government takes action towards ensuring the long-term sustainability of low-carbon electric mobility	Output 1.4.2: New business models, including the responsibility of vehicle distributors, delivered	270.000	270.000	Grants				
		Output 1.4.3: Waste management stakeholders are trained on ELV management	127.400	127.400	Grants				
Outcome 1.5: Preparing for scale-up and replication of electric mobility through fiscal incentives	Output 1.5.1: Regulatory subsidy and tax reforms for the uptake of electric vehicles developed	282.000	282.000	Grants					
	Output 1.5.2: Business models, financial schemes and procurement guidelines delivered	357.000	357.000	Grants					
Contingency Component 1	Output 1.5.3: Project sourcing and preparation delivered for project pipeline	49.000	49.000	Grants					
		487.000	487.000	Grants					
Component 2	Outcome 2.1: Finance of e-buses kick-start the mass deployment and provide evidence of technical, financial and environmental sustainability	Output 2.1. Financing of e-bus sub-projects is provided, and e-bus fleets are deployed by bus operators	168.160.000	52.970.400	Senior loans	98.373.600	Senior loans	CAF	
	Outcome 2.2: Ridership of public transport and e-buses is increased through smart infrastructure measures	Output 2.2. Smart facilities for enhanced public transport access, improved inter-modality and non-motorised transport are implemented and in operation	10.000.000			16.816.000	Equity (public and/or private sponsor)	Country	
Component 3	Outcome 3: Finance of commercial EVs kick-start mass deployment and provide evidence of technical, financial and environmental sustainability	Output 3.1. LCVs (public and private) are financed and deployed.	36.270.000	11.425.050	Senior loans	10.000.000	Equity (public and/or private sponsor)	Country (only PY and UY)	
					21.217.950	Senior loans	CAF		
Component 4	Outcome 4: Investment in low-emission (fast) charging infrastructure lays the foundation for the deployment EVs in the commercial fleets and facilitate further	Output 1.4.3: Waste management stakeholders are trained on ELV management				3.627.000	Equity (public and/or private sponsor)	Country	
		Output 4.2. Low-emission fast-charging infrastructure financed and construction of in relevant municipalities completed. (Technical preparation - Output 4.1. Technical preparations for fast charging infrastructure investments - included in Component 1)	4.800.000	2.400.000	Senior loans	2.400.000	Senior loans	CAF	
Program Management			3.385.800	1.046.220	Grants	274.900	In-kind	GIZ	
Monitoring and Evaluation and other evaluative cost			1.115.000	1.115.000	Grants	2.064.680	In-kind	CAF	
Indicative total cost (USD)			229.092.700		74.318.570			154.774.130	

14. The indicative requested GCF funding amount for each country is provided in annex 17.
15. The total financing needed (GCF financing plus co-financing) for this project is USD 229.093 million. This is expected to be contributed as follows:
- (a) **GCF:** USD 74.319 million made up of:

² Component 3 is for both public and private fleets of light commercial or light passenger vehicles. To clarify, public e-fleets are not intended for providing public transport systems (these will be through e-buses under component 2); it is for operation of many public entities within the countries that also need to decarbonize their mobility operations.

- (i) Senior loan: USD 66.798 million with a 15-year tenor, 3-year grace period and 0.75 per cent annual interest rate; and
- (ii) Grant: USD 7.521 million; and
- (b) **Co-financing:** USD 154.8 million sourced as follows:
 - (i) CAF: USD 122 million loan with a 15-year tenor, 3-year grace period and pari-passu seniority;
 - (ii) Others (public or private): USD 30.4 million equity; and
 - (iii) CAF/GIZ: USD 2.3 million in kind.

16. The total projected GHG direct impact of subprogramme 2 in Panama, Paraguay and Uruguay due to EV investments is estimated to be 0.8 MtCO_{2e} over the lifetime of the EVs financed by the programme based on the initial pipeline of subprojects. Actual emission reductions (ER) will depend on which subprojects are implemented and monitored by subprogramme 2. Over the lifetime subprogramme 2, its projected GHG impact in Panama, Paraguay and Uruguay due to modal shift is estimated to be about 2.5 MtCO_{2e} over the lifetime of the EVs financed by the programme based on the initial pipeline of subprojects.

17. The GHG ER that will be delivered by subprogramme 2 in the three targeted countries was presented in annex 23 to the FP submitted by the AE. Under the direct emissions section of annex 23, the estimated ER was based on the pipeline of projects and, furthermore, it was stated in the report that actual ER will depend on which projects are implemented and monitored by subprogramme 2. Since the number of projects that will be implemented is not yet certain, the independent TAP decided to rate the mitigation impact of this programme as medium to high.

18. The independent TAP considers that the expected mitigation impacts of this programme could be high, as estimated. However, since the number of projects that will be implemented may be greater or fewer than the ones in the pipeline that was used for the estimation of GHG ER, we have ranked the mitigation potential as medium to high. Proper monitoring of results will help the AE in the results-based management of processes and the achievement of the actual mitigation benefits that will be delivered by this intervention.

1.2 Paradigm shift potential

Scale: High

19. The programme will deliver a paradigm shift as it will catalyse the shift of the public transport system from the fossil fuel system dominant in the three countries to a low carbon transport sector in the medium to long term. Not only will the programme deliver this shift over the medium to long term, it will also catalyse and engender the development of electric charging stations, which will proliferate along the corridors of the projects of subprogramme 2 in Panama, Paraguay and Uruguay. As stated in the FP, the programme will lead to the creation of an EV conducive ecosystem, which will also encourage the penetration of EV into other modes of the transport sector in each of the three countries. In addition, the entire programme design and implementation is geared towards reducing or completely eliminating barriers that, over the years, have been known to impede the penetration of mass EV deployment into the transportation sector of the three countries.

20. The successful delivery of products from subprogramme 2 will also contribute to increasing the potential for scaling up the programme at the national and international levels. The scaling-up potential will be created by the programme through capacity created in the e-mobility ecosystem, proven cases of successful business models, improved profitability and reduced risks of EV investments, and knowledge products. This has been the experience in many countries where such intervention has succeeded; the technology, business models, and modes of delivering this success are replicated quickly in these nations and internationally.

21. The fact that subprogramme 2 will provide TA and financial assistance for the design of the business model, the development of all the appurtenances of the e-mobility infrastructure (including the charging stations, etc.), and the operation and maintenance of the infrastructure will deliver documentations, which will aid replication in all three countries as well as internationally. Another equally important characteristic of subprogramme 2 is that some of the TA has been set up to improve and/or enforce enabling public policies and legal, regulatory, fiscal and/or normative frameworks for e-mobility. These are important to enabling the paradigm shift potential of such programmes in the three countries and could perhaps provide a learning by doing experience that can facilitate replication quickly.

22. Some of the TA components of the programme have been developed for the training of project stakeholders from both the private and public sectors, such as equipment suppliers or third parties for EV and charger operations and maintenance. Topics cover safety training and capacity-building in optimal management of EV fleets. Key documents that will be generated by these capacity-building components will become available through multiple channels under the knowledge management activity in-country, thus enabling replicability of the success of the programme in other parts of the three countries. The programme will also provide webinars, electronic reports, case studies and workshops to disseminate experiences and build a base for replication. This is a strong base for the paradigm shift potential of subprogramme 2.

23. The programme will also be able to demonstrate paradigm shift potential by ensuring an effective monitoring, reporting and verification system as well as coordination during implementation and, more importantly, during the operation of the relevant projects in each country covered by this programme. This will enhance knowledge of the programme content and the potential to foreclose a “locking-in” of fossil fuel options as well as actively promote the use of low carbon transport alternatives.

24. Many of the points presented in the previous paragraphs highlight that subprogramme 2 has very robust implementation components that will ensure high paradigm shift potential is delivered by this programme.

1.3 Sustainable development potential

Scale: High

25. The programme is well-aligned with Sustainable Development Goals (SDGs) and aims to reduce GHG emissions. It will contribute significantly to SDG 3 (good health and well-being), SDG 7 (affordable and clean energy), SDG 9 (industry, innovation and infrastructure), SDG 11 (sustainable cities and communities), and SDG 13 (climate action).

26. Major environmental co-benefits from this programme include reduced noise emissions and reduced emissions of air pollutants from the reduction or complete elimination of fossil fuel combustion in the programme transport facilities. The major concern for air pollution in the cities is particulate matter 2.5 (PM_{2.5}) and NO_x emissions. Using a conservative approach (the EU COPERT model data)³, it has been estimated that the projected direct reduction of pollutants of subprogramme 2 in Panama, Paraguay and Uruguay is 80 tPM_{2.5} and 4,080 tNO_x. Information available in the FP also indicated that the poor are disproportionately affected by air pollution as they tend to live and work closer to its sources.⁴ Children and the elderly are particularly vulnerable. In addition, recent studies show that women are more affected by poor air quality than men. Therefore, replacing diesel-fueled buses with e-buses will deliver significant impact on air quality and health of people.

³ COPERT is a software tool used world-wide to calculate air pollutant and greenhouse gas emissions from road transport

⁴ Mitchell G and Dorling D. 2003. An environmental justice analysis of British air quality. *Environment and Planning A: Economy and Space*. 35(5): pp.909–929.

27. Apart from the environmental co-benefits discussed above, the programme is also expected to deliver economic, social, and gender co-benefits. The major social benefit is improved air quality and reduced noise in urban areas through use of EVs. Economic co-benefit will be delivered through the monetary value of reduced air emissions (GHG and air pollutants). The programme includes a Gender Action Plan (GAP) that is expected to be applied to all activities in the programme. According to the FP, the programme's GAP includes actions and targets on: (i) improved access for women to public transportation; (ii) improved sex-disaggregated data collection on urban transport; (iii) improved women's access to jobs; (iv) interventions including awareness raising and infrastructure to reduce sexual harassment in public transport; and (v) trainings and workshops to disseminate best practices for reducing sexual harassment in public transport. The programme implementation will therefore deliver gender co-benefits.

28. With the alignment of the programme to the various SDGs discussed in paragraph 24 and the various co-benefits that will be delivered, the independent TAP concluded that the potential of subprogramme 2 to significantly contribute to the sustainable development of Panama, Paraguay and Uruguay is very high.

1.4 Needs of the recipient

Scale: High

29. The need for an EV dominated transport sector is recognized by each of the three countries covered by subprogramme 2. Therefore, Uruguay had commenced an investigation of the potential of a pilot EV programme in the country even before subprogramme 2 was launched. A key conclusion of the Uruguay pilot EV initiative is that there exist barriers to the successful launch of the E-motion project in the country. One such barrier was the need to financially support the incremental cost difference between the cost of the baseline diesel bus and the e-bus.

30. A market study (annex 2), which was a part of the front-end work carried out for the origination of subprogramme 2, identified the following barriers that are hindering and will hinder future EV uptake in the three programme countries (Panama, Paraguay, and Uruguay):

- (a) High investment costs: The key limiting barrier to upscaling EVs is the higher initial capital costs;
- (b) Limited supply of EVs: Besides high initial costs for the purchase of EVs, limited supply in the national market is another significant barrier;
- (c) Lack of effective incentive mechanisms: Existing incentives are limited to the importation of EVs. They are not transferred to the final price seen by the buyer; hence, the incentive is blurred;
- (d) Limited pollution control: There is limited pollution control of vehicles in circulation, including old, secondhand combustion engine operated ones;
- (e) Lack of credit facilities: Contrary to conventional vehicles, there are no available credit facilities from banks that provide loans for the purchase of alternative vehicles;
- (f) Insufficient charging infrastructure: With respect to charging infrastructure, there exist several identified drawbacks, such as the lack of easy-to-install chargers at home and in workplaces or companies and lack of incentives for third part investment in chargers, among others;
- (g) Lack of qualified labour and technical expertise: Due to the scarce market for EVs and the insufficient charging infrastructure installed at the national level, there is a lack of qualified labour and technical expertise in e-mobility;

- (h) Inappropriate public transport subsidies: Public transport subsidies specifically aim at covering the costs of fossil fuels for public passenger buses; and
- (i) Inappropriate public bus system design: The existing bus system needs to be strengthened and modernized. The modernization should deliver clean and comfortable cabins, very structured rail routes, efficient e-buses, and restriction of private vehicles and motorcycles in specific routes and areas. This will catalyse modal shifts.
31. The design of subprogramme 2 consists of modules developed to eliminate these barriers. Thus, it can be concluded that subprogramme 2 as conceptualized will assist the three countries in this programme to meet their needs for the transportation system desired.
32. Viable commercial market environment in-country is needed in each of the three countries. A viable commercial market must have investors that are able to raise the CAPEX for this new e-mobility system (rolling stocks and, where necessary, charging station costs). CAF carried out market costing studies on the different vehicle segments for different price ranges and countries (see annex 2 of the FP submitted to the GCF Secretariat). The CAF study also evaluated the commercial attractiveness of EVs versus fossil fuel vehicles. Two of the results of the study showed that:
- (a) The big incremental gap between the cost of the fossil fuel option and the EV option will require an investor who is able to raise this fund from the money market at very good fund rates; and
- (b) A viable commercial market can be created if the ownership of the assets is separated from the management and operation of the EV system.
33. The structure of the business model that is built into the operationalization of subprogramme 2 thus satisfied what must be done to ensure that the EV system, when introduced, will succeed. The operators of the baseline public bus system do not have the financial capabilities to fund the CAPEX of the EV alternative, nor do they have the wherewithal to obtain funds from international sources, where the cost and terms of debt funds are low enough to ensure that the three countries are able to have the kind of infrastructure that will be delivered by a successful subprogramme 2. This is a further attestation to the fact that the intervention will deliver a product that meets the need of the three nations covered.
34. The programme as conceptualized and presented in the FP is seeking debt and grant funding from GCF. The debt funding from GCF, if approved, will be at a very concessional rate of 0.75 per cent per annum. This will have a positive impact on the CAPEX of the programme and ensure that the barrier of high incremental cost between the baseline system that is being replaced and the new EV system is mitigated, further contributing to the impact of the programme in each of the three countries.
35. The independent TAP concluded that if subprogramme 2 is not implemented as submitted in the FP, many, if not all, of the barriers to the implementation of a successful and robust EV programme in the three countries covered will continue to make it impossible. The independent TAP therefore concluded that this programme will highly meet the needs of the recipients in the three countries targeted.

1.4 Country ownership

Scale: Medium to high

36. Country ownership of the programme intervention in each of the three countries is established by how many key national policies in each country are considered in the design of the programme. According to information contained in the FP and its annex 7, in the framework of the elaboration of the E-Motion concept note, CAF and its partners (AFD, Proparco, KfW, GIZ) held meetings with the national designated authorities (NDAs) of the countries concerned and

key actors in the e-mobility sector to ensure that the FP responds to the countries' needs (see annex 7). The interaction was at two levels. At the first level, an E-motion presentation was made to technical entities within public entities directly related to e-mobility in each country, typically: Ministry of Transportation, Ministry of Energy, Ministry of Environment, national companies in charge of electric energy, and municipalities of the main cities. During this first interaction, discussion was centered on identifying synergies with current policies of each country to promote e-mobility and to work from the beginning with these entities on how to adapt E-motion to the reality of each country to achieve the greatest impact.

37. This is a good start to building strong country ownership into this programme. This first round of interaction with public entities associated with country-level decisions on the transport sector was followed by regular interactions with these public sector stakeholders to update them on each stage of the project. The third round of interactions occurred when interviews were conducted as part of the market study framework. Thereafter, stakeholders mapping was carried out to firmly identify each of the entities that will be needed to enhance the success of the programme. The following entity classification was arrived at after the mapping:

- (a) NDA: obtaining the letter of no objection from the NDA of the country;
- (b) E-motion vehicle segment: national entities that are connected to or identify with one or more vehicle segments (e-bus, e-taxi, e-LCV, electric public fleet);
- (c) Charging infrastructure: all actors related to chargers to the extent that they are part of the value chain or require support for the implementation of their e-mobility project;
- (d) Financial role: associated with actors who already provide financing for e-mobility or the executing entities of E-motion funds;
- (e) Batteries: actors linked to the battery value chain; and
- (f) Capacity-building: actors linked to creating capacities in e-mobility subjects.

38. The six attributes listed above were further broken into the following nine attributes that was utilized in further interactions with the AE, which resulted in identifying critical issues that must be built into the operational model of subprogramme 2. The nine decision attributes include:

- (a) NDA;
- (b) e-bus;
- (c) e-taxi;
- (d) e-LCV;
- (e) e-Public Fleet;
- (f) Charging infrastructure;
- (g) Financial role;
- (h) Battery management; and
- (i) EV capacity-building.

39. It is important to note at this point that none of the nine attributes above are focused on how the transport sector policies and regulations will evolve over the years and how it will impact subprogramme 2 activities into the future. In spite of this very important missing focus, the nine attributes were used in selecting entities that were considered in the market study and for the future implementation stage of the programme (useful information for CAF). The classification above was utilized to map important national entities from each of the three

countries. In-depth discussions on each country were had with these entities, resulting in the structure and implementation plan for subprogramme 2 in the three countries. A summary of the classifications in the three countries can be summarized as follows:

40. **For Panama:**

- (a) Key classifications of the stakeholders' interactions in this country can be summarized as follows:
- (i) The result of the stakeholder map identified 47 entities relevant to e-mobility in Panama. 19 of these entities were interviewed;
 - (ii) Of the 19 entities (who played a role in the evolution of the approach to deliver subprogramme 2 activities in this country), 8 were public while 11 were private; and
 - (iii) The only international entity interviewed was the Zero Emission Bus Rapid-Deployment Accelerator (ZEBRA) Project, co-led by C40 Cities and the International Council on Clean Transportation, which aims to help countries in Latin America restructure public transport systems, connect with battery electric bus (BEB) investors and stimulate BEB supply in Latin America to accelerate e-mobility adoption. In phase 1 (2020), ZEBRA worked with Mexico City, Bogotá, Medellín and Santiago, cities that have the biggest BEB fleets and new generation of trolleybuses in the region;⁵ and
- (b) Specific country conclusions reached can be summarized as follows:
- (i) E-mobility incentives are under review in Panama's Electric Mobility Interinstitutional Committee (CIME's proposal) within the National Strategy for Electric Mobility (ENME) framework. The Ministry of Economy and Finance is aware of the need to promote EV by incentives; however, it needs further knowledge about the impact these potential incentives could have on public collection (incomes) in Panama.

41. **For Paraguay:**

- (a) Key classifications of the stakeholders' interactions in this country can be summarized as follows:
- (i) The result of the stakeholder map identified 31 entities relevant to e-mobility in Paraguay. 19 of these entities were interviewed;⁶ and
 - (ii) Of the 19 entities (who played a role in the evolution of the approach to deliver subprogramme 2 activities in this country), 10 were public while 9 were private; and
- (b) Specific country conclusions reached can be summarized as follows:
- (i) The National Electricity Administration (ANDE) is developing incentives for electricity cost to different Electric Mobility (EM) users and also analysing how to change regulation to let third parties implement public chargers and sell electricity by time, for example;
 - (ii) The Ministry of Transport (VMT) has been working through Inter-American Development (IDB) support mainly on defining the National Electromobility Strategy. The other main TA stream with IDB is the public transport

⁵ See <https://www.ebusradar.org/en/>

⁶ See annex 1 for the detailed stakeholder map.

restructuring and the potential BEB pilot (30 units) that would be implemented with an operational lease model in the Municipality of Asunción;

- (iii) VMT has implemented a scrapping programme for old buses. This programme was very successful, and VMT/ (Ministerio de Hacienda (MH) provided subsidies to bus operators. This framework can be replicated into a BEB-only bus replacement with E-motion financial assistance; and
- (iv) Asunción is promoting their local programme called “Green City” and, for that, the Municipality of Asunción would be implementing their own fleet with EVs (buses and passenger cars).

42. **For Uruguay:**

- (a) Key classifications of the stakeholders’ interactions in this country can be summarized as follows:
 - (i) The result of the stakeholder map identified 61 entities relevant to electromobility in Uruguay. 22 of these entities were interviewed;⁷ and
 - (ii) Of the 22 entities (who played a role in the evolution of the approach to deliver subprogramme 2 activities in this country), 10 were public while 12 were private; and
- (b) Specific country conclusions reached can be summarized as follows:
 - (i) In Uruguay, the National Administration of Power Plants and Transmission (UTE) is analysing mechanisms to let third parties implement public chargers and sell electricity as an “electromobility service”;
 - (ii) UTE is planning to develop a national plan for implementing a public fast charging network; and
 - (iii) Operators have been adopting EV mainly because the government has made the effort to implement gap subsidies. However, without incentives no EV investment would escalate as EV CAPEX is still quite expensive and the main barrier to e-mobility adoption.

43. Common key conclusions reached in the three country studies include:

- (a) EV CAPEX is still quite expensive and is the main barrier to e-mobility adoption;
- (b) EV supply is restricted, and more models/range (km) are required;
- (c) Electricity is perceived as expensive and requires incentives as well;
- (d) There is a lack of public charging infrastructure;
- (e) There is a need for transport authorities to be more involved and take the lead in the actions needed to articulate the ecosystem to reach ENME goals; and
- (f) There is a need for incentives, and regulation is key for banks to work with several transport operators.

44. While all the stakeholder engagements described in paragraphs 34 to 40 above sound like strong programme interaction that will ensure that the programme is effectively designed, it is very weak in its alignment with the policies and regulatory frameworks in each of the three countries. Despite the fact that this programme was designed as a private sector intervention, it must consider that a successful transport sector intervention, even when privately funded, must be aligned with the evolution of public policy, which is the purview of the government of the

⁷ See annex 1 for the detailed stakeholder map.

country. Without this alignment, the risk of failure will be high. The way this private sector intervention was originated did not build a strong public sector engagement on transport policy and regulatory framework, in spite of the fact that public funding will not be utilized in the project. To reduce the associated risk, it is necessary that public policy and sector regulatory institutions in the country are involved in the entire project cycle, from planning to implementation and operation, to ensure these entities are on the same page as the project investors, infrastructure managers and operators, even when public funds are not involved in the funding of the infrastructure. In this way, country ownership will be strongly delivered.

45. Given the observation in paragraph 43 above, the independent TAP scored this programme intervention as medium to high. To move this programme to a high score on the country ownership scale, there should be a set of activities after GCF approval to address the risk of failure resulting from the gaps discussed above.

1.5 Efficiency and effectiveness

Scale: Medium to high

46. **Financial structure:**

(a) The project seeks debt and grant financing from GCF that will be complemented by co-financing from CAF (debt), equity financing from other private and public sources, and in-kind contributions from CAF and GIZ. The funds will be used to implement e-bus infrastructures in three countries namely Panama, Paraguay and Uruguay, which have diesel-fuelled buses in its baseline public transport system. The investment programme will cover the following key components and characteristics:

- (i) Electric commercial vehicles with highly intensive use, namely buses, light commercial vehicles fleets, public fleets and urban freight vehicles;
- (ii) Investment in charging infrastructure along the routes of these public vehicles;
- (iii) Upgrades of existing electricity grids that will supply electricity to the charging infrastructure;
- (iv) No private usage vehicles will be funded in the programme;
- (v) Investments in the E-motion programme in the three countries will be via a new business model and service delivery structures, which have been designed to enhance the attractiveness and sustainability of the public transport sector and thereby enable mode shift to modern public transport compared to the status quo ante; and
- (vi) The programme is also expected to reduce or even eliminate existing socially constructed disparities in its workforce and ridership through the implementation of new business models, such as ownership splitting, that may transform the transport sector.

(b) The breakdown of funding contribution from the sources described above, the types of fund and the total that will be provided for the project are presented in table 2 below:

Table 2: Project Funding Details

	Source	Type of Fund	Amount (in million USD)
1.	GCF	Senior loan	66.8
		Grant	7.5
2.	CAF	Senior loan	122.0
3.	Others (public or private)	Equity	30.4

4.	CAF/GIZ	In kind	2.3
Total			229.0

- (c) About 29.2 per cent of the total funding for the project is requested from GCF as a senior loan (USD 66.8 million) while about 3.3 per cent (USD 7.5 million) is requested as grant funding. The senior loan from GCF will come with a 15-year tenor, 3-year grace period and 0.75 per cent annual interest rate. The requested grant funding (USD 7.5 million, about 3.3 per cent of total project funding) has been earmarked to fund the activities of component 1, namely TA to create the policy and business framework for the deployment of EVs at the local and country levels. Some of this grant funding has been earmarked to mitigate many of the earlier identified barriers to the penetration of EVs in the three countries covered.

47. **Co-financing/leveraging:**

- (a) The effectiveness of the concessional loan from GCF can be measured by the fact that every USD 1 from GCF will crowd in about USD 1.8 of co-financing. The co-financing that will be crowded in will be a concessional senior loan (USD 122 million) from CAF with a 15-year tenor, 3-year grace period and pari-passu seniority.
- (b) Although not used to calculate the efficiency metrics of this programme, it is important to note that equity and in-kind funding for this programme will also come from public and private sources and from CAF/GIZ sources.

48. **Financial viability and best practices:**

- (a) The financial viability of the project during and beyond GCF support has been designed around the proper implementation of the outputs/activities for building a paradigm shifting e-mobility programme that will replace and prevent the lock-in of a fossil fuel public transportation system. The project intends to deliver a sustainable e-mobility programme in the three project countries and build the capacities needed in-country for different aspects of project planning and implementation.
- (b) At face value, the financial metrics reported above point to the fact that if the proposed project can be successfully implemented to deliver the main project target—which is to deliver an e-mobility programme in Panama, Paraguay and Uruguay—the effectiveness and efficiency of this proposed project will score very well. However, there are two major risks that prevent the project from receiving a high score in effectiveness and efficiency.

49. Until the identified weaknesses are mitigated and a better project architecture is put in place, the independent TAP will score the effectiveness and efficiency metrics as medium.

50. The risks of the programme can be summarized as follows:

- (a) The first project risk is that the eventual GHG ER delivered by the project would not be up to the volume estimated because the one presented in the FP is based on the pipeline of projects that may not be implemented. Actual ER will depend on which projects are implemented and monitored by subprogramme 2. Since the number of projects that will be implemented is not certain, the independent TAP rated the mitigation impact of this programme as medium to high. The way to mitigate this risk is to ensure that elaborate GHG ER monitoring is carried out annually in each country to yield real measurable ER. If this is included in programme implementation, the mitigation impact metrics can be scored as high; and
- (b) The country ownership metrics were also scored as medium to high because there was no evidence that relevant government agencies were engaged beyond interviewing

them during project design. The engagement was more focused on getting the no-objection letter, a mandatory document needed for requesting project funding from GCF. There was also minimal engagement of public sector stakeholders, who are relevant to the technical and management aspects of this private sector funded and led initiative. A public transportation system, whether funded with public or private sources, stands the risk of failure if it is not aligned with national transportation policy right from the inception stage. It is also important that relevant institutions in the country are included right from start of the development of the project. The development and implementation of regulatory framework guiding the functioning of the sector must also be engaged. This was not focally built into the programme and as such stands as a risk to successful programme implementation. This can be cost-effectively added to the programme as presented without a delay in project timeline.

II. Overall remarks from the independent Technical Advisory Panel

51. The independent TAP recommends this funding proposal for approval by the Board subject to the following conditions being met prior to the execution of the funded activity agreement:

- (a) Delivery by the accredited entity to the Fund, in a form and substance satisfactory to the GCF Secretariat of:
 - (i) A stakeholder engagement plan documenting how specific public institutions responsible for transport sector policy, relevant subject matters, and monitoring⁸ will be engaged during the implementation of the proposed programme in each of the three countries for the purposes of aligning on an annual basis the policy and regulatory framework for the transport sector in each of the three countries with the development and implementation of the programme (the “SEP”).
 - (ii) An updated monitoring and evaluation plan (“Updated M&E Plan”) to include data⁹ that can be used for annual verification of the greenhouse gas emission reductions (“GHG ER”) from e-bus, eLCV, charging infra etc. projects financed under the programme. The Updated M&E Plan shall be available for the verification of the programme at the end of the first year of the programme in each of the three countries.

⁸ Relevant department in each country that is saddled with the monitoring of the performance of transport infrastructure

⁹ Explicit variables and assumption used in the estimation of CERs and adaptation benefits

Response from the accredited entity to the independent Technical Advisory Panel's assessment (FP195)

Proposal name:	E-Motion: E-Mobility and Low Carbon Transportation
Accredited entity:	Corporación Andina de Fomento (CAF)
Country/(ies) :	Panama, Paraguay, and Uruguay
Project/programme size:	Medium

Impact potential (medium to high)

We thank the iTAP for the assessment.

Regarding paragraph 16, it is kindly suggests specifying in the text that the total projected GHG direct impact of Emotion programme in Panama, Paraguay and Uruguay is estimated to be **3.3 MtCO₂e**, based on the initial pipeline of projects and over the lifetime of the EVs and infrastructure. This will help to avoid misunderstandings regarding the total GCH direct impact of the programme.

Regarding paragraph 17 and 18, the AE would like to highlight that Emotion program has defined specific targets and indicators to measure the impact of the programme and has committed to finance at least 650 BEBs, 1,150 e-LCVs and 60 charging infrastructure. Moreover, please noted that due to the strong interest of involved stakeholders in implementing e-mobility solutions, Emotion expects that the demand will rather exaggerate the resources provided through the programme. Thus, it is expected that the ER potential will be fully exploited.

Paradigm shift potential (High)

Thanks for considering the programme's paradigm shift potential as "high".

Sustainable development potential (High)

Thanks for considering the programme's Sustainable development potential as "high".

Needs of the recipient (High)

Thanks for considering the programme's Needs of the recipient as "high".

Country ownership (medium to high)

We thank the iTAP for the assessment.

AE recognizes the importance of the alignment of the Programme with the policies and regulatory frameworks of each of the three countries. Therefore, the initial activities performed in the 3 countries was to review, analyse and align E-motion with policies and regulatory framework (see figure 1 in FP and more detail in annex 2, appendix). Moreover, since the first approach, the AE has been keeping track of the evolution of the regulatory framework on each country and has established a direct dialogue with authorities of the GIETT in the case of Uruguay and being part of the cooperants table for e-mobility in Paraguay. In addition, please noted that National Authorities will play a crucial role during the execution of Emotion, for instance, as stated in the page 41 of the FP, all the activities related to TA component (establishment of a conducive e-mobility ecosystem) will be coordinated and realized together with national authorities to ensure complementarity of different endeavours. For that purpose, it will create a **public sector committee** in each of the three countries that include from planning to implementation and operation. These committees will be certainly useful to establish a formal instance with each government to ensure alignment.

Efficiency and effectiveness (medium to high)

We thank the iTAP for the assessment.

As indicated already in the “Impact potential” section above, Emotion has defined specific targets and indicators to measure the impact of the programme and has committed to finance at least 650 BEBs, 1,150 e-LCVs, 60 charging infrastructure, among others. Moreover, the AE agrees to the iTAP recommendation to GHG ER monitoring is carried out annually in each country to yield real measurable ER.

Regarding country ownership, Emotion programme will create a **public sector committee** in each of the three countries that include from planning to implementation and operation. These committees will be certainly useful to establish a formal instance with each government to ensure alignment. Moreover, National Authorities will play a crucial role during the execution of Emotion, all the activities related to TA component (establishment of a conducive e-mobility ecosystem) will be coordinated through the public sector committee and realized together with national authorities to ensure complementarity of different endeavours.

Overall remarks from the independent Technical Advisory Panel:

CAF appreciates the iTAP endorsement of the funding proposal for approval by the GCF Board. In that sense, CAF commits to provide:

- i) A Stakeholder Engagement Plan (SEP) documenting how specific public institutions responsible for transport sector policy, relevant subject matters, and monitoring will be engaged during the implementation of the proposed programme in each of the three countries; and
- ii) An updated Monitoring and Evaluation Plan (“Updated M&E Plan”) to include data that can be used for annual monitoring of GHG ER from e-bus projects and eLCVs that were financed under programme. The Updated M&E Plan shall be available at the end of the first year of the programme implementation in each of the three countries.

Gender Assessment Report E-Motion programme

E-Mobility and Low Carbon Transportation Sub-Program 2

– Panamá, Paraguay, Uruguay –

Version: 4

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Summary

In Latin America, including Panamá, Paraguay, and Uruguay, the gender equality agenda has gained strength from converging national agendas at every scale, particularly with social and feminist movements demanding equality and non-discrimination, and the inclusion of CEDAW principles in national legislation. The reality, however, is that despite new policy frameworks, the implementation and real progress on women's integration, especially into the labour market and key decision-making positions, is weak.

In all 3 countries, the female labour force participation as a share of the total female population at working age is between 53-60% in 2019, which, respectively, is about 20% lower compared to men. Also, occupational segregation persists across countries and women's careers concentrate on low paid jobs and informality. Despite many laws, gender wage gaps persist across sectors and gender roles impede women's access to better economic opportunities since they are mainly forced to take over domestic responsibilities within the households, such as childcare. While in Panamá the proportion of women in managerial positions is above 42%, Paraguay and Uruguay lag in ensuring equal gender representation. Both countries reach a share of around 35%. Regarding the representation of women in political seats at the national and local level, all 3 countries reach poor results. At the national level, Uruguay has the highest level of women representation with 22.2% of seats held by women in parliament. Among the 3 countries, Paraguay reaches the lowest level with 15% of seats represented by women in their national parliament. At the local level proportions vary from 10% in Panamá to 26% in Uruguay of elected seats held by women in deliberative bodies of local government.

Concerning violence against women, 2.8% of ever-partnered women and girls between the age of 15-49 have been subjected to physical and/or sexual violence by a current or former intimate partner in the previous 12 months in Uruguay. This number is comparably low, as in Paraguay 8% and in Panamá 10.1% of women aged 15-49 years reported that they had been subject to physical and/or sexual violence by a current or former intimate partner in the previous 12 months.

The outlook to both keeping the progress and continue reducing the gaps in gender equality is challenging after the COVID-19 pandemic. UN Women and other international organizations fear that recent gains in gender equality might be lost. The COVID-19 pandemic has worsened women's situation and has aggravated differences amongst groups.

Specific actions to guarantee that women feel safe when using public EV transportation, as workers and as users, are imperative in the region. Women in the region are frequently victims of gender-based violence in the transport sector, and the COVID-19 pandemic is exacerbating the numbers. The urban transport system represents an environment where harassment and sexual abuses occur quotidianly in the regular trips women do every day. Incidents can happen in the e-buses, in the e-taxis, while waiting, walking to and from the stops or using charging stations. Incidents increase at night, in isolated vehicles and unattended places, but crowded units as well. Safety and security measures not only benefit women but all the users. The recent study "Ella se mueve segura" (She moves safe) represents a timely and adequate guide from the region that will be used by the program to build capacity and learn at the project level, thanks to online training. Successful ongoing initiatives such as "Bajalé al acoso" in Quito, will be shared within the training. This initiative stands from others because it put together different institutions (police, justice), and it is very accessible by the poor. It has been successful in reducing harassment in the buses in Quito, which in the end, can change social norms towards respect to women's bodies and lives. The program should include communication campaigns to raise awareness and prevent sexual harassment in the public transport sector.

Women are not represented in the jobs generated by the transport sector in the region. The pandemic complicates the return to work for those women who lost their jobs and those whose care responsibilities have increased. The E-Motion Programme can be an opportunity for women in the programme countries to access the jobs generated by the projects to be designed with investment loans. For instance, the public sector projects will help women obtain professional driving licenses to be able to opt for the direct jobs that the e-buses, e-taxis and e-vans will create. This can be done via scholarships for women to receive training on professional driving.

The Gender Action Plan guarantees that recommendations presented in this report are gender responsive and transformative, and translating into specific actions included in the E-Motion Program. Furthermore, the Gender Action Plan will set a budget and ensure a strategy for measuring, monitoring, and adjusting activities when needed. Finally, this report outlines that data collection is crucial to learn, share, and improve transport systems and recommends including an activity that supports the collection of sex-disaggregate data for operating e-buses and e-taxis.

1. Introduction

This Gender Assessment Report refers to sub-programme 2 of “E-Motion: E-Mobility and Low Carbon Transportation” (hereinafter referred to as “the Programme”), which includes the countries Panamá, Paraguay, and Uruguay under the accredited entity Corporación Andina de Fomento (CAF – Development Bank of Latin America). The prevailing report was created in cooperation with AFD and grütter consulting.

This document as well as the Gender Action Plan for the Program forms part of GCF’s requirements for all Funding Proposals.

As expressed by the United Nations Sustainable Development Goal 5, achieving gender equality and the empowerment of women is an important goal in itself and also cuts across the rest of the SDGs. However, the world is not on track to achieve gender equality by 2030 and has been pushed further off track by the socioeconomic fallout of the pandemic. Furthermore, the Green Climate Fund (GCF) acknowledges in its Updated Gender Policy (UGP) that climate change can exacerbate existing gender inequalities. CAF as well on the other hand promotes sustainable development and regional integration and in order to contribute to a more inclusive development, through the gender approach, it seeks to ensure that the services provided integrate and meet the needs and interests of all people, especially women from their diversity, and those who face obstacles to benefit from the fruits of development with equal opportunities.

Due to an imbalanced division of labour, lower incomes, and lesser livelihood opportunities, less access and control over land and other productive assets, fewer legal rights, lesser mobility and lesser political and professional representation, women inherit a greater vulnerability to climate change. Women (as well as vulnerable communities) are a vital part of the solution to climate change, thus, need to be equally included in discussions and decisions.

Regarding daily mobility patterns, women are more likely to rely on public transportation than men but they face the following two main barriers and exclusions: (a) Routes and schedules are designed with an only-commuter universally - male model and do not take into account trip-chaining and the different patterns and needs of women and other vulnerable groups; (b) Sexual harassment and other forms of gender- based violence in the vehicles, facilities and, in general, the public space.

In addition, women are not represented in the jobs generated by the construction and transport sector in the region. A fact that could be consider central as the pandemic complicates the return to work for those women who lost their jobs and those whose care responsibilities have increased.

To ensure that current public transport ridership levels are sustained or even increased as part as the transition towards electro-mobility understood as a paradigm change, the gender and other socially constructed disparities must be tackle.

In general, for the Latin American and the Caribbean region, Gender Based Violence (GBV) is endemic and underreported, and before 2006 no country in LAC established femicide as a crime, while by 2015 16 countries already did. Likewise, in many parts of the world, civil society has raised strongly against GBV and Argentina, Chile, México, Perú, and Uruguay have marched under the motto “Ni una menos” (Not one woman less). Nevertheless, enforcement of policies has been weak so far.

The three countries have included quotas for political representation and have reached shares of 20-30%, but still lag behind for an equal representation (UN ECLAC, 2021). The countries have advanced in maternal health, but inside every country, disparity persists geographically and by ethnic group or race. Parity in education is mostly reached in all countries at the primary and secondary levels, and in many cases, girls are outperforming boys; whereas in tertiary education attainment varies by

country, and careers in STEM (Science, Technology, Engineering and Maths) remain predominantly masculine. Occupational segregation persists across countries and women's careers concentrates in low paid jobs and informality, which moreover, have little and low benefits, resulting in lower earnings and well-being. Despite many laws, gender wage gaps persist across sectors and gender roles impede women's access to better economic opportunities since domestic responsibilities are mostly in their hands.

Education in girls is affected by adolescent pregnancy, which is still high and despite the downward regional tendency in fertility rates, it is only exceeded by Sub-Saharan Africa. Marriage and sex are illegal for minors in all these countries, yet teenage pregnancies and minors living in union occur. Plans, strategies, and entities (Ministries or agencies) have been given more power or have been recently created. These entities are not funded enough to carry on, enforce, and follow up with all the gender equality agenda.

Governments in the region of Latin America and the Caribbean (LAC) are making efforts to advance on the path towards gender equality. The last two decades brought significant advances for women in Latin American Countries. All of the countries in this program ratified the Inter-American Convention on the Prevention, Punishment, and Eradication of Violence against Women (Convention of Belém do Pará), an international human rights instrument adopted by the Inter-American Commission of Women (CIM) of the Organization of American States, whose main achievement was to incorporate specific legislation to include "femicide" as a specific aggravated crime. Since its ratification in 1994, countries have been advancing to prevent, sanction, and eradicate violence against women. In October 2004, the Follow-Up Mechanism (MESECVI) agency was established to ensure the State parties' compliance with the Convention.

According to the Economic Commission for Latin America and the Caribbean, guaranteeing sexual and reproductive rights and promoting sexual and reproductive health have been integral components of the Regional Gender Agenda over the past 40 years (Economic Commission for Latin America and the Caribbean (ECLAC), 2021). Specifically, since 2000, this has been reflected in the agreements adopted by ECLAC Member States at each of the meetings of the Regional Conference on Women in Latin America and the Caribbean.

For the E-Motion Program, the contribution to reducing the gender gap in e-mobility and low-carbon transportation and to preventing and minimizing the harm of lacking gender equality and women's rights is three-folded. **First, the transport sector is a catalyst to change social norms.** For instance, by raising awareness on sexual harassment and violence against women and girls, by providing visibility to women working in non-traditional roles in the EV (electric vehicle) markets, and by considering the mobility of care¹ when designing transport operations, a societal impact can be achieved. **Second, this new e-transport paradigm will lever women's access to green jobs in traditionally sex-segregated occupations or improve access to investment loans for female entrepreneurs.** **Third, the capacity building, training, and sharing of know-how to women and men designing the investment plans in the program will systematize gender mainstreaming in the transport sector.**

This gender assessment report provides information about gender equality and women empowerment in Panamá, Paraguay, and Uruguay. It aims at presenting the key gender gaps and opportunities in the e-mobility sector in the 3 targeted countries as well as providing recommendations on gender aspects to be included in the project design and proposed Gender Action Plan (GAP). The report is organized into three relevant sections. The following section covers the most relevant data and analyses found in ad hoc country studies on gender or data sources from

¹ The mobility of care refers to travel implications of daily tasks performed by individuals with care responsibilities, which are mainly performed by women. For more information see (De Madariaga, 2021)

reliable international entities. These indicators regard maternal mortality, adolescent pregnancy, gender-based violence, as well as gender gaps in education, economic autonomy, political representation, and legal frameworks. Based on the general situation of women and girls' situation and rights, the third section examines information on the links between gender equality in urban transportation for the three countries. This section also includes best practices of global initiatives in the transport sector. The section is structured in four interrelated topics, namely mobility, safety and security, jobs, and impacts of the COVID-19 pandemic. The fourth section of the report presents the details of Methodology. While the section 5 details the way the three-folded approach mentioned above links the Program Components, this Gender Assessment and the proposed Gender Action Plan to incorporate the gender equality and social inclusive perspective in all the phases of the Program. Finally, the fifth section concludes with recommendations drawn to guide the Gender Action Plan.

2. Gender assessment by country

Gender equality in the region of Latin America

Countries in the region of Latin America and the Caribbean (LAC) show large discrepancies with regards to political will and policy enforcement concerning gender equality. The region has progressive and comprehensive legislation on violence against women, including domestic violence, harassment, rape and honour crimes. Like all countries of the region, Panamá, Paraguay, and Uruguay have ratified several initiatives, e.g., the Convention Belem do Pará in 1994, the Beijing Declaration and Platform for Action (BPfA) in 1995, the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) or the Regional Programme of Action for the Women of Latin America and the Caribbean 1995-2001. LAC countries developed national strategies and action plans to promote inter-institutional coordination and support services for victims of violence against women. According to the SIGI 2020 Regional Report for Latin America and the Caribbean, 15 countries in the region achieved very low to low levels of gender-based discrimination in social institutions, while no country is classified as having high or very high levels of discrimination. Uruguay accomplished a low SIGI score of 22.2 – the SIGI level ranges from 0 to 100, with 0 indicating no discrimination and 100 indicating absolute discrimination. Paraguay only reached a medium score of 32.8, while for Panama no score could be indicated as the country lacks sufficient data.

Despite increasing political commitments, the implementation of ambitious laws and regulations remains uneven. Weak enforcement by governments, discriminatory social institutions, formal and informal laws, as well as social norms and practices continue to constrain women and girls' empowerment and restrict their access to opportunities and rights in the region. Opinions and behaviours are still influenced by patriarchal norms that affect many fields. The most challenging dimension is discrimination in the household, leading for example to a traditional distribution of household chores between women and men. The lockdown and mobility restrictions, as responses to the prevailing Covid-19 pandemic, probably exacerbates current imbalances. As a consequence, women and girls across LAC countries experience some form of discrimination every day, including violence. The LAC region continues to have the highest femicide rates in the world. Various types of discrimination restrict women's involvement in decision making in the private and public spheres.²

Panamá

Panama has been one of the fastest-growing economies in the world, with an average annual growth rate of 4.6%. Panamanian growth in 2020 has suffered a contraction, due to COVID-19's impact, where many employment areas have been affected especially those related to services and transportation. A recovery is expected during 2021 by trade improvement, reopening of main

² (OECD, 2020)

services such as transport, logistics, as well as construction and mining sectors. Social inequities remain high, especially when compared to countries of similar income. Progress in poverty reduction has been significant in recent years, however, important gaps remain.³

According to the Global Gender Gap Index, Panama scored 0.737, this means that women are 26.7% less likely than men to have equal opportunities. In 2021, Panama ranked 44th place out of 153 surveyed countries.⁴

According to UN Women, in Panama 70% of legal frameworks that promote, enforce, and monitor gender equality, with a focus on violence against women, are in place. Frameworks that focus on employment and economic benefits are only achieved by 83.3% and 72.7% of frameworks that focus on marriage and family are in place.⁵

As of February 2019, there are only 18.3% of parliamentary seats held by women in the national parliament, while only 10% of seats in local governments are held by women. In Panama, 44.8% of indicators needed to monitor the SDGs from a gender perspective are available, with gaps in key areas.⁶ The maternal mortality ratio⁷ is 52 deaths per 100,000 live births in 2017, according to the UN Maternal Mortality Estimation Inter-agency Group (MMEIG).⁸ The ratio is relatively low compared to LAC countries and below the world average of 211 deaths per 100,000 live births.⁹ Also, evidence suggests that indigenous women and women in rural areas face higher rates of maternal mortality.¹⁰ 26.4% of women aged 20-24 years old were married or in union before age 18. The adolescent birth rate was 78.8 per 1000 women aged 15-19 as of 2016, coming down from 84.1 per 1000 women aged 15-19 in 2015. Panama remains one of the Latin American countries with the highest teen pregnancy rates.¹¹

According to the most recent data from UN ECLAC, 20 women died of gender violence, of which 6 were killed by their intimate partner or former partner in 2018 (0.3 per 100.000 women).¹² 14.1% of women with only a primary education experienced violence compared to 4.8% of women with some tertiary education. However, it should be mentioned that data are scarce, data collection presents challenges and numbers are often underestimated. Despite having various institutions collecting data, the protocols differ, variables are not harmonized, and victims lack confidence and economic autonomy, have mistrust in authorities, or are unfamiliar with the processes. In Panama, only 5% of women who experienced physical violence sought institutional help and only 8% of the women turned to family or friends.¹³ The COVID-19 pandemic has significantly worsened the situation of violence against women. Statistical data corroborate that in 2020 incoming calls on the violence against women helplines were much higher than in 2019 with an instant increase after the start of the lockdown.¹⁴

³ (IMF, 2020)

⁴ (World Economic Forum, 2021)

⁵ (UN Women, 2021)

⁶ (UN Women, 2021)

⁷ The ratio includes women who die from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy.

⁸ (UN ECLAC, 2021)

⁹ (UNICEF, 2019)

¹⁰ (World Bank Group, 2018)

¹¹ (UN Women, 2021)

¹² (UN ECLAC, 2021)

¹³ (World Bank Group, 2018)

¹⁴ (López-Calva, 2020)

Data indicate that school attendance of girls is significantly influenced by water and sanitation services, as girls have higher needs for sanitation because of menstruation. In schools with inadequate sanitation, girls in sixth grade were 6 to 10 percentage points more likely to have missed at least one day of school during the previous six months than both boys in sixth grade and girls in third grade. However, in general, most indicators suggest that girls and women in Central America do not face disproportionate barriers in accessing education. According to a report of the World Bank Group, girls seem to outperform boys in many indicators.¹⁵ For instance, the enrolment rate in secondary (72% vs 67%) and tertiary education (58% vs 37%) is much higher for females than for males. With regard to participation in science, numbers seem to be different. Women participate less than men in the knowledge society and are significantly less numerous in scientific areas, linked to technology, computing, physics or mathematics, as well as in positions of decision making or high hierarchy and recognition in science technology and innovation.¹⁶

Access to basic services is not universal and remains linked to factors such as geographic location, education levels, ethnicity and income levels of households. In Panama, 57.4% of women participate in the labour force, compared to 85.1% of men, i.e. the ratio of women to men is 0.67 and far from being close to parity.¹⁷ For younger adults (15-24), the rate drops to 34% for female and 58% for male (data refer to 2017).¹⁸ The job market in Panama, and LAC in general, is characterised by structural heterogeneity and strong job market segmentation, which result in income inequalities within households. There is a distinction between employment in high and low productivity sectors. High productivity sectors are related to new technology, higher education, and better working conditions, while low productivity sectors are linked to workers with lower incomes, less level of education, instability, limited social security coverage and an absence of work contracts. 77.5% of all women in the workforce work in the low productivity sector, including agriculture, commerce, and services, compared to 54% of all men in the labour force that work in this sector.¹⁹ Nevertheless, in very high segments, women are more equally integrated. Women in rural areas are significantly less likely to be in the labour force, however, participation rates have increased since the early 2000s.²⁰ When women joined the labour force, they are more likely to be unemployed than men. Among those particularly young women have weak job prospects. Furthermore, more than one in four employed women and most employed rural women are working part-time. In comparison to other LAC countries, the gender income gap in Panama was the lowest in Latin America in 2010 at 0.90.

According to a World Bank report, the public sector is an important source for jobs for women, for example, public sector employment accounts for more wage employment among women than men. Also, in the public sector wages and working conditions are usually better for women. This can be an indicator that also the E-Motion programme can enhance employment opportunities for Women in Panama.

Paraguay

The COVID-19 outbreak hit the Paraguayan economy in a moment of economic recovery after a stagnant scenario in 2019. Unemployment and underemployment increased in the commerce, services and construction sectors. Labour incomes dropped, especially for workers in the informal sector of the urban areas. The performance of family-based agriculture activities is crucial for the protection of those most vulnerable in rural areas.

¹⁵ (World Bank Group, 2018)

¹⁶ (Blanco, De León, Serra, & Cañizares)

¹⁷ (World Economic Forum, 2020)

¹⁸ (World Bank Group, 2019)

¹⁹ (UN ECLAC, 2021)

²⁰ (World Bank Group, 2018)

According to the Global Gender Gap Index, Paraguay scored 0.702, this means that women are 29.8% less likely than men to have equal opportunities. In 2021, Paraguay ranked 86th place out of 153 surveyed countries.²¹

According to UN Women, in Paraguay 91.7% of legal frameworks that promote, enforce, and monitor gender equality, with a focus on violence against women, are in place. Frameworks that focus on employment and economic benefits are achieved by 100% and 81.8% of frameworks that focus on marriage and family are in place.²²

As of February 2019, there are only 15% of parliament seats held by women in the national parliament, while 21% of seats in local governments are held by women. Although legislation has collaborated through participation quotas, these do not guarantee equal representation. Nevertheless, women's participation has been increasing. Female politicians and indigenous women established their own associations through which they formulate demands and obtain guidance. In Paraguay, 42.8% of indicators needed to monitor the SDGs from a gender perspective are available, with gaps in key areas such as information and communication technology (ICT).²³

In Paraguay, the maternal mortality ratio²⁴ is 129 deaths per 100,000 live births in 2017, according to the UN Maternal Mortality Estimation Inter-agency Group (MMEIG).²⁵ The ratio is high compared to LAC countries but below the world average of 211 deaths per 100,000 live births.²⁶ 21.6% of women aged 20-24 years old were married or in union before age 18. The adolescent birth rate was 72 per 1000 women aged 15-19 as of 2016, coming from 61.8 per 1000 women aged 15-19 in 2008.²⁷ This figure is significantly higher for the poorest population (28.7%) and indigenous people (69.1%).²⁸ Moreover, Abortion is the third most frequent cause of maternal deaths and maternal and infant mortality rates in Paraguay are among the highest in Latin America.²⁹

According to the most recent data from UN ECLAC, 37 women died of gender violence, of which 34 were killed by their intimate partner or former partner in 2019 (1.0 per 100.000 women).³⁰ 8% of women aged 15-49 years reported that they had been subject to physical and/or sexual violence by a current or former intimate partner in the previous 12 months in 2008.³¹ It should be mentioned that data are scarce, data collection presents challenges and numbers are often underestimated. Despite having various institutions collecting data, the protocols differ, variables are not harmonized, and victims lack confidence and economic autonomy, have mistrust in authorities, or are unfamiliar with the processes. According to an IDB report, there is generally limited access to services and a decent quality of life for women in Paraguay.³²

²¹ (World Economic Forum, 2021)

²² (UN Women, 2021)

²³ (UN Women, 2021)

²⁴ The ratio includes women who die from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy.

²⁵ (UN ECLAC, 2021)

²⁶ (UNICEF, 2019)

²⁷ (UN Women, 2021)

²⁸ (IDB, 2019)

²⁹ (UN Womenwatch)

³⁰ (UN ECLAC, 2021)

³¹ (UN Women, 2021)

³² (IDB, 2019)

Regarding literacy, most indicators suggest that girls and women do not face disproportionate barriers in accessing education. According to the World Economic Forum, girls seem to outperform boys in many indicators.³³ For instance, in 2020 the enrolment rate in primary and secondary education has been pretty equal for boys and girls, around 87% and 66% respectively. Only in rural areas, the proportion between girls and boys enrolled in basic and secondary education is 86 girls per 100 boys.³⁴ Moreover, the enrolment rate in tertiary education for women is much higher than the rate for male. 41% of female enrol in tertiary education compared to only 29% of male.³⁵ Nevertheless, it is estimated that 40% of investments in female education are not capitalized upon by labour force participation, whereas this number is close to 20% for males.³⁶ Generally, approximately 40% of the indigenous population is illiterate, in comparison to 5.4% of the nonindigenous population.³⁷

In Paraguay, 60.5% of women participate in the labour force, compared to 87.1% of men, i.e. the ratio of women to men is 0.69 and far from being close to parity.³⁸ For younger adults (15-24), the rate drops to 43% for female and 69% for male (data refer to 2017).³⁹ Although labour participation of women in Paraguay is rather high compared to other LAC countries, continuing to reduce barriers of entry could not even promote gender equality but also result in large economic results. Estimates suggest that a higher labour force participation of those women who completed some level of education could increase Paraguay's GDP by a least 6.7%.⁴⁰ Also, women still face difficulties arising from the sexual division of labour to support their economic activity. According to UN Womenwatch, the majority of women are concentrated in three occupational categories: own-account, domestic service and unpaid family work, which translates into vulnerable and precarious employment, no access to credit or social security, and low pay rate.⁴¹ According to a survey by DGEEC, about 51% of women reported housekeeping as their main reason for being outside the labour force, while men spend most of their weekly hours at their main occupation and only 16.3 % of their time on housework and childcare. Over 50% of males reported education as the reason for their labour inactivity.⁴² Also, women and girls aged 15+ spend 14.5% of their time on unpaid care and domestic work compared to 4.3% for men.⁴³ Figure 1 displays the reasons for labour inactivity for women and men in Paraguay for the year 2016.

³³ (World Economic Forum, 2020)

³⁴ (UN Womenwatch)

³⁵ (World Economic Forum, 2020)

³⁶ (World Bank Group, 2018)

³⁷ (IDB, 2019)

³⁸ (World Economic Forum, 2020)

³⁹ (World Bank Group, 2019)

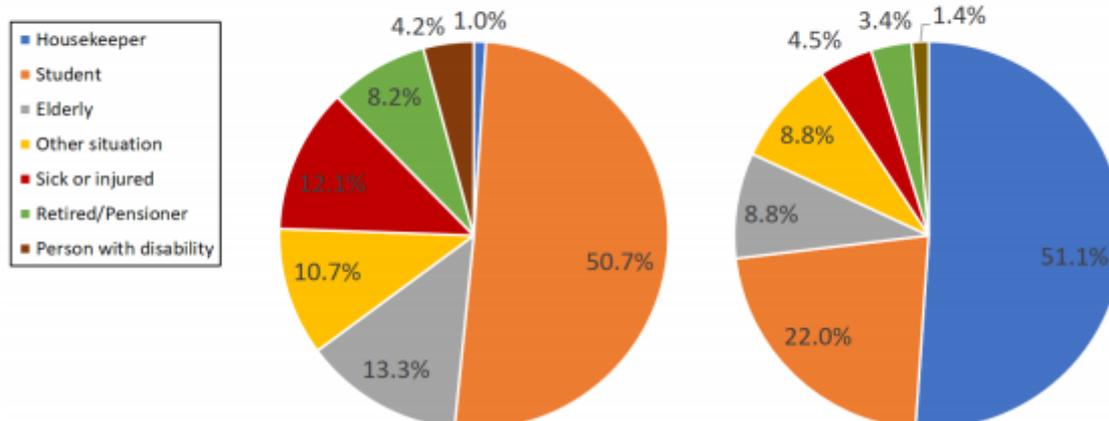
⁴⁰ (World Bank Group, 2018)

⁴¹ (UN Womenwatch)

⁴² (World Bank Group, 2018)

⁴³ (UN Women, 2021)

Figure 1: Reason for labour inactivity in Paraguay by gender, 2016:
 (a) Males (b) Females



Source: (World Bank Group, 2018, S. 84)

Among those participating in the labour force, women face only marginally higher unemployment and informality rates. However, women face significant wage discrimination, as reflected in the large male-to-female wage ratio. Holding individual characteristics fixed, the wage gap in monthly earnings is 43%. When restricting the sample to full-time workers the gap goes down to 27%, still a high gender difference in income payments. In comparison to other LAC countries, the gender income gap in Paraguay is slightly below average.⁴⁴ In terms of the structural participation of women in the labour market, after retail, many entered government jobs (relatively high productivity) followed by financial services and manufacturing. Even though other services lost some female employment share, nearly a fifth of new jobs for women were in other services, the least productive sector.⁴⁵ According to a World Bank report, the public sector is an important source for jobs for women, for example, public sector employment accounts for more wage employment among women than men. Also, in the public sector wages and working conditions are usually better for women. This can be an indicator that also the E-Motion programme can enhance employment opportunities for women in Paraguay.

In the UNDP's Human Development Gender Inequality Index, Paraguay only ranks 4th out of 22 countries in the LAC region. The poor performance is related to high maternal mortality rates and a low share of women in parliament.⁴⁶

Uruguay

Uruguay is positioned among the first places in the region in relation to various well-being indexes. Institutional stability and low levels of corruption are reflected in the high level of public trust in government. According to the Human Opportunity Index, Uruguay has managed to attain a high level of equal opportunities in terms of access to basic services such as education, water flow, electricity and sanitation.⁴⁷

⁴⁴ (World Bank Group, 2018)

⁴⁵ (Bulmer, Scarpari, & Garlati, 2019)

⁴⁶ (UN Women, 2021)

⁴⁷ (World Bank, 2019)

Gender inequality is still an issue and seems to be a difficult problem to solve, even though the country has made some improvements over the last few years. The country bears a value of 0.702 in the Global Gender Gap Index, ranking 85th place out of 153 surveyed countries.⁴⁸

In Uruguay, the maternal mortality ratio⁴⁹ is 17 deaths per 100,000 live births in 2017, according to the UN Maternal Mortality Estimation Inter-agency Group (MMEIG).⁵⁰ The ratio is very low compared to LAC countries as well as compared to the world average of 211 deaths per 100,000 live births.⁵¹ 24.6% of women aged 20-24 years old were married or in union before age 18. The adolescent birth rate was 35.8 per 1000 women aged 15-19 as of 2018, coming down from 41.6 per 1000 women aged 15-19 in 2017.⁵²

According to the most recent data from UN ECLAC, 25 women died of gender violence, of which 22 were killed by their intimate partner or former partner in 2019 (1.2 per 100.000 women).⁵³ Also, in 2013, 2% of women aged 15-49 years reported that they had been subject to physical and/or sexual violence by a current or former intimate partner in the previous 12 months.⁵⁴ Recent publication data reveal that the proportion of women who have experienced some form of gender-based violence in all areas during their lifetime is as high as 77%. More specifically, nearly 1 in 2 women have experienced some form of violence from their partner or ex-partner, throughout their lives. The most common is psychological violence. Gender-based violence outside the family sphere is also very common: 54.4% of women reported having experienced some episode of violence in public places at some point in their lives. The proportion of women who have experienced violence during childhood has also increased, from 34.2% in 2013 to 37.1% in 2019.⁵⁵ It should be mentioned that data are scarce, data collection presents challenges and numbers are often underestimated. Despite having various institutions collecting data, the protocols differ, variables are not harmonized, and victims lack confidence and economic autonomy, have mistrust in authorities, or are unfamiliar with the processes.⁵⁶

Regarding literacy, most indicators suggest that girls and women do not face disproportionate barriers in accessing education. According to the World Economic Forum, girls seem to outperform boys in many indicators.⁵⁷ For instance, in 2020 the enrolment rate in primary education has been rather equal for boys and girls, at around 97%. Concerning secondary education, enrolment differs already a bit in favour of girls, with 91% and 85% respectively. Lastly, the enrolment rate in tertiary education for women is much higher than the rate for men. 58% of female enrol in tertiary education compared to only 35% of male.⁵⁸ However, women are also less likely to pursue careers in the field of science and technology. The participation of college graduate women in the field of industry, construction, engineering, ICT, natural sciences, mathematics, or statistics was 12%.⁵⁹

⁴⁸ (World Economic Forum, 2021)

⁴⁹ The ratio includes women who die from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy.

⁵⁰ (UN ECLAC, 2021)

⁵¹ (UNICEF, 2019)

⁵² (UN Women, 2021)

⁵³ (UN ECLAC, 2021)

⁵⁴ (UN Women, 2021)

⁵⁵ (National Statistical Institute, 2019)

⁵⁶ (World Bank Group, 2018)

⁵⁷ (World Economic Forum, 2020)

⁵⁸ (World Economic Forum, 2020)

⁵⁹ (The World Bank, 2017)

In Uruguay, 68%⁶⁰ of women participate in the labour force, compared to 83% of men, i.e. the ratio of women to men is 0.82.⁶¹ For younger adults (15-24), the rate drops to 37% for female and 58% for male (data refer to 2017).⁶² Also, the percentage of 15- to 29-year-olds in the lowest income quintile who were functionally disengaged, i.e not attending school or working outside the home, was 22% in the case of men and 41% in the case of women in 2014. This gender disparity is a result of the high proportion of young women who work doing household chores. For instance, 22% of all 15- to 29-year-old women in the bottom income quintile do not study and only work in the home.⁶³ Also, women and girls aged 15+ spend 19.9% of their time on unpaid care and domestic work compared to 8.4% spent by men.⁶⁴ Among those joining the labour force, the unemployment rate remains comparably low, averaging 7.8% between 2006 and 2021.⁶⁵ However, high unemployment rates persist among young people under 25 (19%), while this issue is even more significant in the case of women, with an unemployment rate of 24% among women under 25.⁶⁶ Furthermore, gaps can be observed in the labour market, as women are under-represented in business management. In 2017, only 10.6% of senior management business positions were occupied by women.⁶⁷ In comparison to other LAC countries, the gender income gap in Uruguay is at a medium level of 0.81.⁶⁸

According to a World Bank report, the public sector is an important source for jobs for women, for example, public sector employment accounts for more wage employment among women than men. Also, in the public sector wages and working conditions are usually better for women. This can be an indicator that also the E-Motion programme can enhance employment opportunities for women in Uruguay.

As of February 2019, there are only 22.2% of parliament seats held by women in the national parliament, while 26% of seats in local governments are held by women. In Uruguay, 36.7% of indicators needed to monitor the SDGs from a gender perspective are available, with gaps in key areas.⁶⁹ There is no assessment available of UN Women with regard to indicators of Uruguay's legal frameworks. Also, many areas such as gender and poverty, women's access to assets including land, physical and sexual harassment, and gender and the environment currently lack comparable methodologies for comprehensive and periodic monitoring.⁷⁰ In addition, the gender equality index prepared by the World Economic Forum (2014) ranks Uruguay in 82nd place among 142 countries, one of the worst rankings in Latin America. The worst subindex is that of political empowerment, where the country is ranked in 112th place.⁷¹

3. Assessment of gender equality and women empowerment in urban transportation

According to the UN, two-thirds of the population will be living in cities by 2050, exacerbating overcrowding and insufficiencies in urban mobility.⁷² Together with pollution, overcrowding, lack of modal integration, are some of the problems that the increase of urban population is exacerbating. While legislative structures in the Program countries are moving forward to address gender issues,

⁶⁰ Other sources report lower levels, around 53%, e.g. (World Bank Group, 2019)

⁶¹ (World Economic Forum, 2020)

⁶² (World Bank Group, 2019)

⁶³ (IDB, 2015)

⁶⁴ (UN Women, 2021)

⁶⁵ (CEIC, 2021)

⁶⁶ (IDB, 2015)

⁶⁷ (The World Bank, 2017)

⁶⁸ (Catalán, Cardarelli, & Cavallero, 2012)

⁶⁹ (UN Women, 2021)

⁷⁰ (UN Women, 2021)

⁷¹ (IDB, 2015)

⁷² (UN News, 2018)

considering freedom of movements strongly differ between men and women when considering their agency. Agency in mobility can be defined as the ability to make and choices related to one's mobility and make full use of public transport systems.⁷³ Using the agency concept under a gender lens to analyse urban transportation, it becomes clear that the conditions, priorities, roles and beliefs about urban transport infrastructure and services vary between women and men. The lack of certain safety and security features in the design of the transport system can constrain a woman's decision to choose a certain mode of transportation, sometimes in ways that are innocuous to men, such as dark bus stops or overcrowded buses. When it comes to the design of the transport infrastructures, the realities of women, children, minorities, the elderly, and people with disabilities are many times alike and need to be taken into account when designing a transport operation. Assuming that when they serve women, they are adequate for the overall population and enhances the quality of the system.

As a consequence, lack of access to transportation and safety and security issues limits women's participation in the labour market and reduces their participation in the economy by 16.5% globally.⁷⁴ Women turn away working opportunities depending on the travelling conditions to the workstation (time spent, return timing, expenses, safety and security). Besides providing access to education, health and jobs, the sector generates jobs itself but traditionally most opportunities are likely to remain in men's hands.

There is a myriad of links between gender and urban transportation, and these links have been deeply studied in the last years. There are gender differences in the purpose, time, distance, mode of transportation, or perceptions on safety and security that affect women's mobility agency and access to economic opportunities, and the differences comprised in this section are shared among the countries in the region, even in the three countries included in the Program. For the purpose of organizing the information for this gender assessment, three interrelated dimensions can be distinguished: (i) mobility, (ii) safety and security, and (iii) jobs. Additionally, this report covers the impact of the pandemic with a gender lens in a fourth section.

Mobility in urban transport

One has to be aware that an electromobility project generally impacts everyone accessing the transportation services, however impacts are often stronger on women as well as on poorer social classes. A project might reduce or broaden the current disparities in terms of access and usage of transportation means by women, children, the elderly, people with disabilities and other vulnerable collectives, dependent on whether gender issues are taken into consideration or not. To enhance women's ridership, hence also to increase public transport ridership levels, it is imperative to tackle gender and other socially constructed disparities.

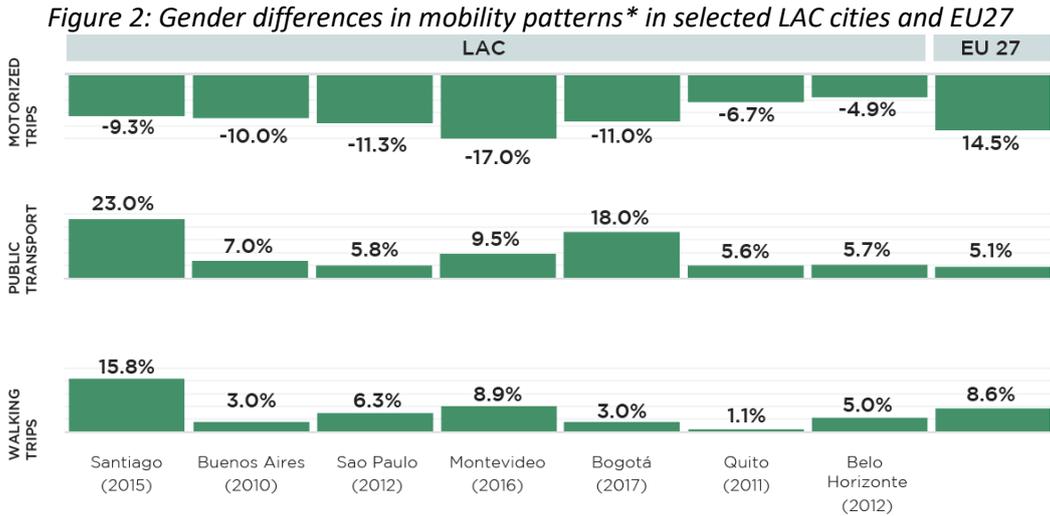
A World Bank report ("Why Does She Moves?") reveals that in Latin American cities female urban transport ridership characteristics differ from that of men. Women rely more on public transportation than men; women chain different destinations in a single trip (e.g. drop kids at school, buy food, visit relatives in need, or get to work), and many times they travel off-peak hours. They are often accompanied by others (e.g. children or elderly family members) and carry bags, strollers or purchases. Their commuter times are often longer and more expensive. This is because women combine multiple wage jobs and care responsibilities (family errands, care for the elderly, the ill, the kids, and their community) in one trip. Sometimes, the nature of the wage work (as part-time nannies, providers of cleaning services, domestic work) requires getting on and off in multiple destinations, and when a multimodal fare is not in place, they have to buy a new ticket every time or just walk more. Nevertheless, routers are designed with an only-commuter universally – male worker

⁷³ (World Bank Group, 2020)

⁷⁴ (ILO, 2017)

model, which does not take into account the different patterns and needs of women. If there is no public transportation available, they just walk or decide not to travel. Women in these countries use occasionally official taxis when travelling with heavy bags or children, but most times they use informal taxis or taxi-buses (called “colectivos” in some countries) which have several benefits for women: they fill route gaps, their price is shared by passengers, they provide safety, security and comfort and, reduce stress from the trip. Some taxi drivers discriminate against women with bags, and some cities have subsidies to reduce taxis’ fare for certain passengers (women, students, or elderly). In Lima, women who live in the high hills feel discriminated against by moto-taxi drivers when asked to pay higher fares.⁷⁵

Figure 2 below shows the differences in the percentage of women and men in their mobility patterns (motorized trips, public transportation, and walking trips) in seven LAC countries compared to the EU27. Common mobility patterns are found in the region and they are similar to developed countries in the EU for women: women do more trips by foot than men, they use more public transportation and they do fewer motorized trips compare to men. However, when women are in higher-income groups, they show similar mobility patterns than men, especially when they can buy a private car. Women are more susceptible to a modal change to individual modes of transportation if perceived safer or they can choose not to travel if perceived unsafe. Additionally, women can transfer their fears and perceptions of public transportation to other generations.⁷⁶

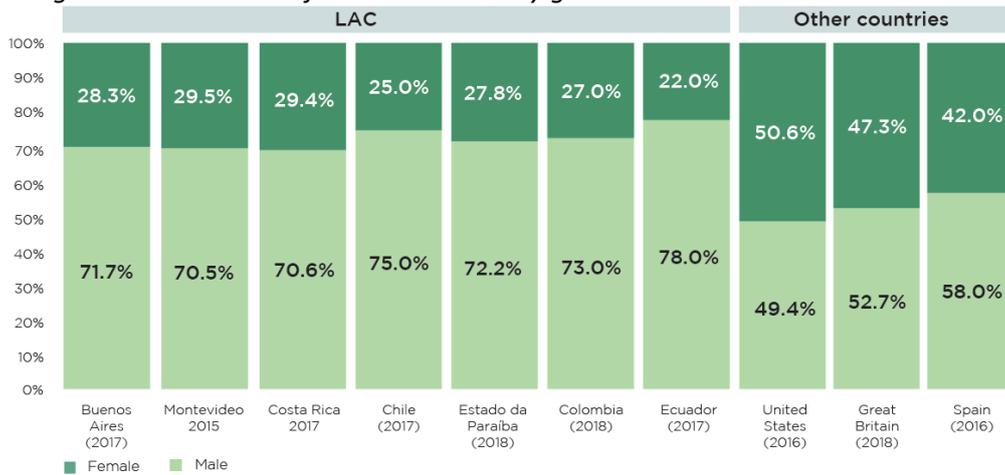


* Differences in the percentage of female – male
 Source: (Rivas, Suárez-Alemán, & Serebrisky, 2019, p. 14)

The growth of motorization rates in the LAC region and its negative consequences on public transportation have a direct impact on women’s mobility. Women use significantly more public transportation and walk more, whereas men drive more cars. This is observed in the distribution of drivers’ licenses by gender, where female drivers’ licenses represent merely 30% of the total licenses in the region, as displayed in Figure 3. In contrast, some developed countries are in the process of closing or have closed the gender gap among drivers⁷⁷. In Costa Rica, driving licenses for men double those of women, but when analysing the type of license the gender gap is even bigger for productive activities. Only 10% are authorized bus drivers, and between 7% and 12% of taxi concessions of airports and regular taxis are owned by women (it might not reflect women taxi drivers, only ownership).⁷⁸ Data on freight and women have not been found.

⁷⁵ (World Bank Group, 2020)
⁷⁶ (CAF, 2019)
⁷⁷ (Rivas, Suárez-Alemán, & Serebrisky, 2019)
⁷⁸ (Cosevi, 2020)

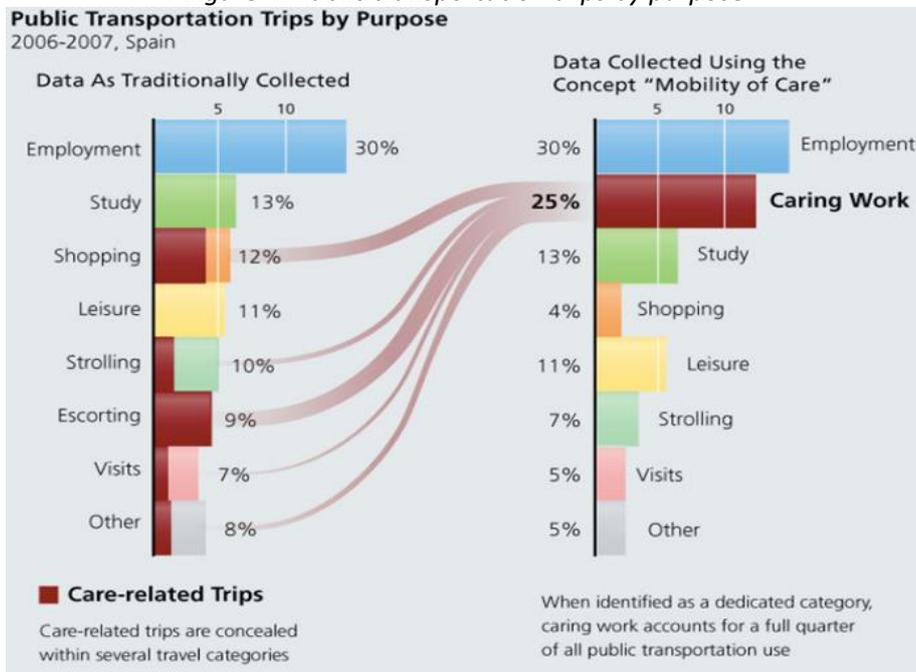
Figure 3: Distribution of driver's licenses by gender in LAC and selected countries



Source: (Rivas, Suárez-Alemán, & Serebrisky, 2019, p. 14)

The mobility of care⁷⁹ is unnoticed by data collection methods. To design and calculate ridership, data collection methods focus traditionally on one trip pattern (e.g. travel to and from work or to and from the study) while the mobility-related to care responsibilities is overlooked because it is fractured in a multitude of purposes and fall into different categories (e.g. shopping or escorting). Figure 4 below, visualize the traditional way on the left and the new concept which groups trips for activities related to care on the right (maintenance of the household and care for others). The number of trips for care work and those for paid work is similar for this example's data. Traditionally, surveys have undervalued the "reproductive" trips, considering only the "productive" trips for the design of transport systems. This gender bias underestimates others ridership than commuting, and a poor urban transport design has negative consequences for the agency of women.

Figure 4: Public transportation trips by purpose



Source: Sanchez de Madariaga research 2009, 2010, 2013a, 2013b, Image by Eric Steiner

⁷⁹ (De Madariaga, 2021)

To give visibility to mobility patterns, the IDB has a Client Map Methodology⁸⁰ which breaks into 12 segments of a trip's experience in Bogotá, Santiago and Medellín. Then different profiles of riders (women, elderly, people with disabilities) are assessed and the results help to design better urban transport.

Fare schemes can foster women's use of public transportation. Women have more price sensitivity than men because of their unique mobility pattern (chain trips, with family members, off-peak hours) and the poor suffer the most with unregulated tariffs.⁸¹ Urban transportation must promote a fare structure that subsidize short trips or propose an integrated fare system. Women's value of time differs from men's as they plan their trips to accommodate a busy agenda of care activities and are very concerned about the time of their return home, so besides safety and security, waiting time and fare are key to their decisions. Further, because most women's trips are not related to income-generating activities, women might give up convenient modes of transportation and walk to save money.⁸² As examples from the LAC region show, there is a flat rate that allows people to travel long distances at the same price as shorter ones in Quito. Buenos Aires decided to increase transport tariff in 2016 and la Defensoría del Pueblo⁸³ (Office of the Ombudsman) received considerable claims from vulnerable riders, of which 90% are women with small kids, and specifically domestic workers.

Ride-hailing has become an alternative for women to increase their urban mobility in safer conditions than other modes. The main characteristics of ride-hailing, many times match women's unique needs. Its on-demand services are convenient for women's off-peak mobility, the service can cover gaps in public transportation given that public transportation mostly covers masculine trips (from home to work/study centres) and tend to connect mostly the residential areas with the CBD, and women's perception of security augments when ride-hailing at night, especially when the supplier of the services has an app with safety and security features to monitor and share the ride and to know about the driver's reputation.

Gender-segregated ride-hailing benefits female passengers and drivers. Safety and security are the most limiting or facilitating factor for female's agency in mobility and access to jobs and other opportunities offered by the cities. In 2018, a survey carried out in 6 countries for the IFC found that 20% of women riders reported that the lack of women drivers reduces the trip they would make, whereas 44% said that they would be more likely to use a ride-hailing service if they could select a woman as a driver.⁸⁴ Ride-hailing is an alternative for women when there are gaps in the public transport system since women's trips are chained because it has become a safer mode of transportation thanks to technology. At Uber Brazil, more than half of women started driving more when gender segregated transport was offered, which manifests how women can get jobs as drivers in taxis when they perceive a safe environment at work.

Regarding the situation in the three target countries, a briefly daily mobility context is presented below:

The data from the Socioeconomic Survey of Urban Transport (2006) which fixes the study area as the Metropolitan Area of Panama, shows that two main trip purposes, those for work (35.4%) and study (39.3%) stand out. The rest of the purposes were grouped in the survey report as "private reasons"

⁸⁰ (IDB, 2011)

⁸¹ (CAF, 2019)

⁸² (Allen, 2018)

⁸³ The Defensoría del Pueblo was created in the city of Buenos Aires to protect human rights from administration or public services actions or omissions. Its work on gender and its Observatorio de Género were promoted by the movement "Ni una menos".

⁸⁴ (IFC, 2018)

and reached 25.3%, including the reason for grocery shopping and errands that showed the highest participation with 9%. While regarding the modes of transport, a high percentage of the trips are made by public transport (50.3%) and walking (19.9%). However, it was not even possible to find public information to characterize the gender mobility patterns of the main metropolitan area of Panama. This fact highlights the importance of generating information on mobility and transport disaggregated by gender.

For the case of Uruguay, information obtained through the Mobility Survey of the Montevideo Metropolitan Area developed in 2016 is presented. According to this survey, the main trip purpose in the Metropolitan Area of Montevideo is going to and from work. Considering the three trip purposes that follow it in percentage (study, accompanying kids and grocery shopping and errands, oriented to the subsistence of the household): a total of four purposes constitutes the main generators of mobility in the city. Analyzing the data according to gender, it is observed that there is a slight difference in terms of trips to work (male mobility seems to be more related to "labor"), reaching 34,5% among men and 27,6% among women. There is also a gender difference in the case of "mobility of care", data collected in this case as it was mentioned before by following the traditional way, including trips for grocery shopping and errands and accompanying kids. While among women accompanying kids trips represent a 15,8%, of the trips, among men this trip purpose is close, reaching a 14,7%. The same occurs with grocery shopping and errands trips, which are preferably by women (representing a 12.9% of their total trips), among men this purpose reaches a 9.1% of the total of their trips. This should be reflecting a more equitable distribution of tasks within the household between women and men than observed in other surveys in the region.

Regarding modes of transport, the survey shows a modal share of slightly less than two thirds of motorized trips (car, motorcycle, bus, etc.) and one third of active mobility (walking and riding a bicycle), of which the vast majority are walking trips. In particular, bus trips reached a 25%. In terms of gender, women have a higher proportion of trips by bus (29,8%) and walking (37,8%), while among men prevail a private motorized mobility (including private car and motorcycle). Most important gender differences emerge when the proportions of private motorized trips as drivers is analyzed: 30,7% among men and just 13,1% among women.

Paraguay has not published yet an official Household Mobility Survey. In fact, during 2021 the first survey of this kind was carried out for the Metropolitan area of Asunción within the framework of a project supported by the United Nations (UN). However, in 2016, the IDB published a study which aims to characterize the perception of safety and security in public transport in the Metropolitan Area of Asunción. It included a quantitative survey that allowed characterizing the mobility of women and showing the relevant role of public transport among women, since 54% of them use it for their daily trips. On the other hand, 17% of women walk, 23% use a car, 4% use motorcycles, and 2% use taxis. And as for the reasons, they use public transport mainly on trips for shopping, work or health reasons.

Safety and security in urban transport

Six out of 10 women reported having been harassed in public transportation in Latin American countries. In 2014, a survey in 15 out of the 20 largest cities in the world, asked 6550 women and experts in urban planning, about their perceptions when travelling in public transportation.⁸⁵ Women's perceptions were collected around the following concepts: How safe women felt travelling alone at night, the risk of being verbally or physically harassed, the likelihood that other passengers

⁸⁵ The survey was carried out by YouGov and The Thomson Reuters Foundation. Not all the cities in the world were surveyed, so the results ranked the cities surveyed. See: <https://news.trust.org//spotlight/most-dangerous-transport-systems-for-women/>

would come to their assistance, the trust that authorities would investigate reports of harassment or violence, and the availability of safe public transport. Figure 5 below reveals the ranking of the most dangerous transport systems for women found by this study:

Figure 5: The most dangerous transport systems for women



*1 indicates the most dangerous, while 16 is the least dangerous
 Source: (World Bank Group, 2015, p. 2)

Bogota, the world’s 16th largest capital, was ranked as the most unsafe city for women to travel alone at night. More than six out of 10 women in Mexico City, 64%, polled online by YouGov said they had been groped or experienced physical harassment on public transport. Lima ranked 3rd capital perceived as dangerous by women riders, and Buenos Aires came as 6th. The 2018 study “Ella se mueve segura” (“she moves safe”) from CAF presented results of a survey carried out to women in different public transport systems of Latin América. 67% of respondents in Quito suffered sexual verbal aggression. In Guadalajara, 62% of women reported being afraid of suffering a sexual attack, and 60% and 64% of women reported being victims of sexual harassment in Lima and Bogota, respectively. Most of these events are not reported to authorities nor shared with relatives or friends, and many times happens travelling from and to the transport systems.⁸⁶ In Costa Rica, 80% of women report being victims of the violent situation in public spaces.⁸⁷

Perception of transport systems safety and security, shapes women’s agency in mobility in such a way that they rather pay higher fares and spend longer journeys than face exposure to risks. In Rio de Janeiro, minivans are more expensive, their trips are more delayed, and queues are longer than trains for long-distance commutes. Nonetheless, young women choose to travel in minivans because they feel protected from harassment thanks to the seats for passengers that minivans have installed.⁸⁸

Adequate urban transport infrastructure can boost women’s participation in the sector, both as passengers and providers. Good lighting and vigilance cameras can transform women’s perception of safety and security and discourage perpetrators from committing crimes. Both simple solutions prevent crimes, not only crimes against women. Cameras are common in subways and intermodal and main stations, and recently they are installed in buses to protect both passengers and drivers. Installation, operation, and maintenance are costly and can’t detect harassments, only aggressions. Combining security agents and cameras is the most effective solution.⁸⁹ Since 2014, Buenos Aires

⁸⁶ Ella se mueve segura. Un estudio sobre la seguridad personal en las mujeres, CAF & Fia Foundation. (2018)

⁸⁷ Sexual and Reproductive Health Survey 2016 Costa Rica (2016).

⁸⁸ (World Bank Group, 2020)

⁸⁹ (CAF, 2019)

installed cameras and GPS in public transportation units to monitor traffic registered inside and outside the bus. These kinds of tools can potentially be used for safety and security as well.⁹⁰ Particularly at dawn and dusk, isolated bus stops, empty or too crowded buses, poorly lighted park-and-ride lots represent stressful settings for women that limit their mobility agency. The surroundings of the transport infrastructure play a role in creating travelling stress for women.⁹¹ Further, measures easy to implement, such as allowing women to get off the bus between bus stops at night. These random bus stop locations might be better lit or be closer to women's destinations, which can radically change their perception of safety and security at night. In Montreal and Toronto (Canada) these stops are permitted.⁹²

Women adopt specific strategies, which can work or not, but make women feel safer in the public transport system. Sexual harassment in public transport includes leering, winking, offensive gestures, unwanted touching, groping, pressing against the body, indecent exposure, and sexual assault.⁹³ Women change clothing, take long detours to avoid unsafe places, avoid boarding crowded buses or stay near the walls, and even carry non-lethal weapons. They feel safer when travelling in a group, during off-peak hours, in well-known and familiar environments and when they develop friendly relationships with drivers. In Manizales (Colombia), a medium-sized city where trips usually need only one mode of transportation, 73% of women have suffered at least one incident of harassment, sexual violence, or street abuse, and 47% changed their routines because of them. These women chose longer and safer routes changed transport modes (to taxi or motorcycle) and changed the way they dress, travel with others, or select a determined seat in the bus.⁹⁴

Campaigns to raise awareness about harassment together with safety and security protocols to report abuses can protect women and reduce incidents. In Quito, the 2017 campaign Bajale al Acoso (Stop Harassment) is active in the public transportation system. Videos and information campaigns in the bus raise awareness to passengers about the harassments in the transport system. The victim sends a free SMS with the word "Acoso" ("Harassment") together with the bus number; then a protocol is activated in a central office which has the bus georeferenced: a team of security, legal, psychological and social professionals start working on the case. The bus speakers alert the passengers about the incident, a police patrol waits at the following bus stop, and the victim receives information and chooses whether to report in situ or later. Complaints and lawsuits have increased with this initiative. In February 2017, more than 2700 reports on sexual violence were received, 71 went to court, and 21 received a sentence of 1 and 9 years of jail.⁹⁵ Two years later, reporting fell 34.5%.⁹⁶

Sex segregation in massive urban transport is a temporary measure that increases mobility and protects women from harassment. Women-only buses or carriages on trains have been operating for decades in many cities worldwide (Brazil, Mexico, Japan, India, Indonesia, Nepal, United Arab Emirates, Thailand) and have received praises and critics. Women feel safer when using exclusive spaces, but segregating women does not solve the problem. Moreover, women passengers on non-segregated modes are perceived as open to sexual advances, even though the initiative reduces incidences.⁹⁷ In 2008, Mexico DF launched Viajemos Seguras ("Let's we women travel safely") sex-segregating units in its transport system and was implemented in other estates later. But the

⁹⁰ (IDB, 2020)

⁹¹ (IFC, 2020)

⁹² (CAF, 2019)

⁹³ (World Bank Group, 2015)

⁹⁴ (IDB, 2020)

⁹⁵ (IDB, 2020)

⁹⁶ According to Plural Consultora

⁹⁷ (World Bank Group, 2019)

program did more than that, it located booths in transport stations to file complaints, transportation staff received training on violence against women and girls, vehicles and stations displayed prevention campaigns, and bus systems and trains had women-only cars. In 2015, Mexico DF responded to women's groups' claims and implemented a more ambitious program, which installed emergency buttons in 90% of the Atenea buses (drivers can make a silent alarm call to an operative) and 271 buses had cameras installed.

Mobile applications facilitate women protection and contribute to gathering data, which supply information to design safer transport infrastructure and raise awareness on harassment. Digital technology helps women track and share their location with family and friends. Ride-hailing companies have developed applications for passengers to share additional information on their trip and identify both the driver and the car's plates. Passengers can leave comments after their journey and quantify a driver's professionalism, cleanliness of the vehicle, and quality of their trip. In Brazil, "Chega de FiuFiu" (Enough whistling) is an initiative created by an NGO to geo-localise and foster reporting of harassment. The video documented the women's regular interaction when walking and using public transportation to raise awareness of the harassment that women suffer routinely. In 2018, Bogota under the "Me nuevo Segura" study, adapted the Indian application Safetipin to measure the index of safety and security perception at night of different routes and places by women. Safetipin is based on nine variables to obtain a safety and security score: Level of lighting, Openness (sightlines), Visibility (overhanging trees, high walls etc), Level of crowding or emptiness, Security (agents), Walk/ footpath, Availability of public transport, Usage of the public space (for instance is it male-dominated or mixed) and, Feeling/ emotional response to space (sometimes also called "eyes on the street"). While analysing the personal data of respondents, 65% of the study participants were below 35 years old and 78 % work or study, and 50 % finished tertiary education.⁹⁸ Age, sex, education, and poverty are variables to consider when implementing technology to protect women in public transport since affordability (costs of telephones or internet) and user knowledge can be barriers for many women, especially the poorest.⁹⁹

The transport sector can serve as a catalyst to the promotion of women's rights and inclusion. The Via Lilas program¹⁰⁰ was launched in 2015 in Rio de Janeiro as part of the implementation of the Maria da Penha's law on gender-based violence. Electronic kiosks, "totems" were installed in the Supervia Rio's suburban rail lines, which serve around 700,000 daily users. Anonymously, women seek data on the health network, women's rights laws, and gender-based violence protocols.

Sensitization and prevention campaigns on Gender-Based Violence (GBV), including Sexual Exploitation, Abuse and Sexual Harassment (SEAH), can equip public transport workers with tools to understand the various gender dynamics and address the same. In the Dominican Republic, a gender-based violence campaign delivered workshops to drivers' trade unions working in buses and "motoconchistas" (drivers of private cars that operate as public transport). The workshops included topics such as new masculinities and gender-based violence in the domestic spaces and with passengers in the transport environment.¹⁰¹

Feedback and grievance mechanisms located in the transport systems help women and girls to inform authorities when they are victims of violence. In 2015 the UN Women Safe Cities Program installed booths in some of Quito's more crowded transport stations. Women could report acts of violence and file complaints. Staff was trained on how to attend to victims, even drivers were trained

⁹⁸ (CAF, 2019)

⁹⁹ (Aguero, Bustelo, & Viollaz, 2020)

¹⁰⁰ See: <https://blogs.worldbank.org/transport/rio-lilas-initiative-using-transport-infrastructure-help-reduce-gender-based-violence>

¹⁰¹ (IDB, 2019)

to inform women on how and where to report incidents.¹⁰² Capacity building and coordination among different bodies (police, judiciary system, staff) is essential to provide useful and appropriate assistance to victims. Often, survivors of abuse perceive authorities in charge of taking care of them as lacking credibility.¹⁰³

Lack of trust in authorities is common to prevent women from reporting abuses. In a survey in 2016 in Lima, 35 % of public transport users don't trust police arriving at the scene when reporting the rape of a woman in the public transport system. For 41.5 % their trust is low, 18.9 % reported some trust, and 3.9 % trust a lot that police will arrive.¹⁰⁴

Overall in all the 3 targeted countries, there is a lack of local data regarding safety and security in the urban transport sector in Panama. However, as part of the contextual situation, in 2017 a national law project that originally sought to prevent, prohibit and punish street harassment, sexual harassment, stalking, sexism and racism in all daily spheres, was presented to the National Assembly. That constituted an important opportunity to address the perception of insecurity in transport because street harassment was considered as "the most common forms of violence experienced by women in public spaces, whether in parks, streets, bus stops, or on the subway".

But when the law was approved in 2018, the particular reference to the street harassment was not included arguing that street harassment is considered "a cultural and popular issue that cannot be avoided or regulated".

Currently, several women's and civil society organizations are working to develop campaigns to raise awareness about street harassment, showing that it is a recurring social phenomenon that implies a violation of women's human rights by restricting their freedom of mobility.

Although there is a scarce data available that allows to do an specific diagnostic of the nexus between safety and security in transport in Uruguay, there is an official Plan developed by the Montevideo Government (called "Plan Montevideo Libre de Acoso Sexual en los Espacios Públicos 2018-2020"). This Plan presents evidence on transport, as it is considered part of the public space citizen experience. Using in-depth interviews, the Plan argues that street harassment also occurs in public transport and mentions as an example that women tend to fear taxi drivers, mostly men, of experiencing a situation of harassment.

Regarding the mobility of younger women, who are the ones who usually go out at night, the Plan mentions that they perceive mobility as a problem: "walking is not a possible option, buses do not respect the schedules, taxis are expensive, the bicycle presents risks". For these reasons some young women avoid going out alone.

Given that it is understood that mobility at night becomes a restriction for all women, with greater intensity according to intersections of gender, class, disability. These experiences reveal the daily inequalities and violence to which women are exposed. As a response women display a set of prevention and self-care strategies, for example, plan to be accompanied at the bus stop or while walking, take a taxi or Uber -those who have economic access-, and often use the mobile phone during the trip to pretend to be accompanied. Changes in women's behavior that have a relevant impact on their routines to move around cities freely and autonomously.

¹⁰² (Aguero, Bustelo, & Viollaz, 2020)

¹⁰³ (Kondylis, Legovini, Vyborny, Zwager, & Andrade, 2020)

¹⁰⁴ (Galiani & Jaitman, 2016)

The IDB study (2016) already mentioned shows that the perception of insecurity in public transport is relatively high in Asunción Metropolitan Area: on average 6 out of 10 women felt public transport is unsafe or very unsafe, and this perception is higher among non-users of this service.

Moreover, the survey reveals that 24% of women who regularly use public transport were victims or witnesses of a crime while using transport or waiting for it at the bus station in the last 12 months. These results show that the perception of insecurity is greater than the effective victimization.

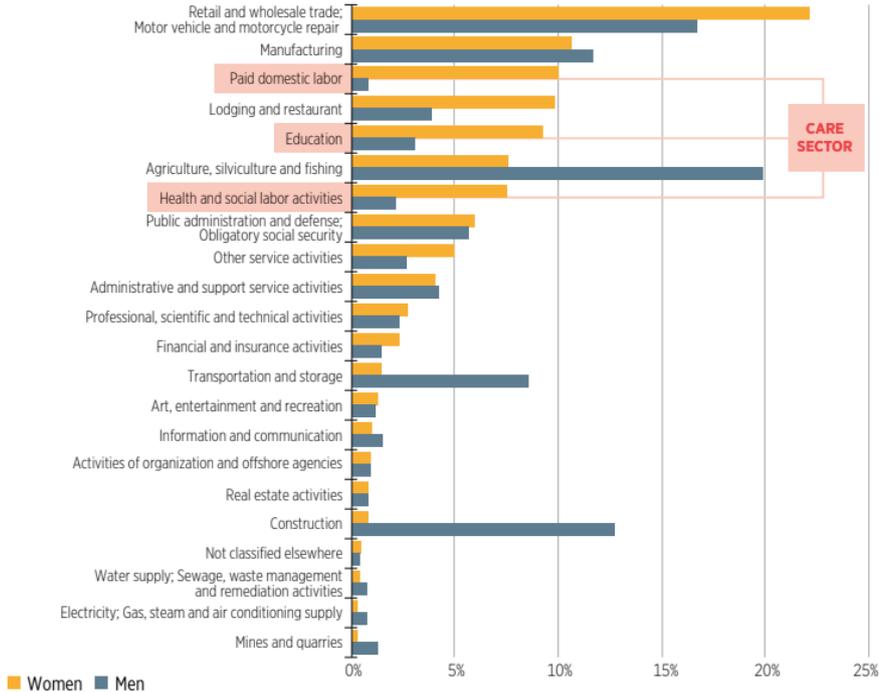
Likewise, the perception of insecurity has led 35% of women to make some modification to their travel routine by changing the means of transport used.

It is also observed that around 80% of women have little or no confidence that the police will respond to the report that a woman was sexually assaulted on public transport.

Jobs and urban transport

Around 30% of the female workforce in Latin America and the Caribbean is occupied in the care sector (a sector traditionally dominated by women), compared to 6% of the male workforce, see Figure 6 below. Regarding the regional wage gap, women earn between 5% and 30% less than men with similar educational level and demographic characteristics.¹⁰⁵

Figure 6: Occupational Segregation in Latin America: women care, men build



Source: (Bustelo, Suaya, & Viollaz, 2019, p. 14)

Generally, the transport sector provides men and women access to education, health and economic opportunities. Investments in infrastructure are common to boost the economy and, if done right in the aftermath of the covid-19 crisis, this is a chance to enhance labour market opportunities for women and reduce gender inequalities in the labour market. Transport sector jobs can be generated during the design and at the construction of the transport infrastructure, and during its operations and maintenance. In this program, most jobs will be generated during the operation and maintenance of the e-buses, e-taxis and e-vans and at the charging station’s maintenance.

¹⁰⁵ (Bustelo, Suaya, & Viollaz, 2019)

Following recent legislation to grant and enforce equal opportunities, most countries in the region have carried out initiatives to extend women's employment opportunities in the transport sector. However, the current gender gap in jobs in the transport sector of the program countries is enormous. Typically, women work in feminized and low-paid tasks such as cleaning or administration, while men work as drivers, mechanics, or supervisors. Thus, both the number of women hired or trained and the quality of their contracts are low. Stereotypes, lack of family support, low rates of girls studying STEM, are some of the traditional barriers for women to work in sex-segregated jobs, sometimes perceived as unsafe. Reshaping women's tasks when pregnant for their protection, expensive professional driving licenses, and stigma hinder more equality workforce in the sector. The power of labour unions can both ease or impede women's access to jobs in the sector.

Specific efforts need to be made to reach greater diversity in the sector. To bridge the job's gender gap, it is important to advertise that all the vacancies are open for women, i.e job description and terms of references will be gender sensitive, job posting will encourage women for applications and will be posted at platforms frequently visited by women, adapt working schedules to women's care needs at home, respect national quota regulations, building dressing rooms and provide childcare, offer scholarships to train women are incentives for the sector to attract them. Working with trade unions is also vital in masculinized occupations to allow women to enter. Still, in 2017 in Argentina, one the train labour union La Fraternidad do not allow women to be drivers.¹⁰⁶ Moreover, the Gender Action Plan includes trainings specific to women in order to enhance their skill set in accordance with newly created jobs.

In Chile, women drivers said that the visibility of women carrying a diversity of tasks and positions incentivises other women to push into higher labour market positions. From 2012 on, in Santiago, new regulation prompted the private companies to collaborate with municipalities to help B1 drivers to obtain professional driving licenses. Women participation in the courses were supported by scholarships (which were mostly given to women). Participants were more successful in entering a job. The price of professional licenses is a barrier as well for women willing to work as drivers. Moreover, it is difficult for female heads of households to attend these courses since they don't have the time to leave their jobs or can't leave their family responsibilities. Women drivers in Santiago were perceived as more compromised with the job, more responsible, have less sinistrality than men, or the accidents are less severe. Also, most women drivers were perceived as more kind, empathic, calm, they treat the passengers better and resolved conflict situations without escalating problems. After women started working, many men colleagues changed their behaviours and became more respectful.¹⁰⁷

A growing body of evidence shows how companies can benefit from investing in women as employees, entrepreneurs, customers, and community partners. Such investments benefit companies in several ways, from broadening the talent pool to increasing productivity, providing an opportunity to transform local and global markets.¹⁰⁸ Even though the data is scarce¹⁰⁹, women drivers tend to have fewer traffic accidents than men. Economically, the savings derived from the reduction in traffic accidents can benefit transport operators when hiring women drivers.

For example, in Mexico DF, in 2008, the program Atenea was created to reduce traffic to and from schools by hiring women bus drivers, who would offer more confidence to parents in the school routes. In 2017 there were 136 buses for the program, and 75 drivers were women. In the state of

¹⁰⁶ (CAF, 2019)

¹⁰⁷ (IDB, 2019)

¹⁰⁸ (IFC, 2017)

¹⁰⁹ World Health Organization Factsheet, 2002. Gender and Road Traffic Injuries

Jalisco where the police were linked to corruption and high rates of alcoholism were considered the leading cause of traffic deaths, the government renovated the traffic police with a call for women named “Buscamos a las mejores” (We are seeking the best women) to attract women to work as traffic officers.

As a summary note on the current status about jobs and urban transport in the three target countries it is important to highlight that data are scarce, representing a central constraint to prepare a particular framework per country and particularly to do a comparative analysis between the three countries.

However, a recent IDB study¹¹⁰ analyzes official data from household surveys, which shows the percentage of the employed population by gender and sector, aggregating the data from Costa Rica, Panama and the Dominican Republic. This data shows that the participation of women in the Transport and Storage sector is 18% compared to 82% of male participation.

Women in Uruguay participate in 22% of the transportation sector while represent only 5% of the workers employed in the Construction sector and 6% in the Road sector¹¹¹.

In Paraguay, and IDB study¹¹² shows that only 1.7% of the entire female labor force is concentrated in the area of transportation, storage and communications; and among those employed in this sector, women represent barely 14% of the total number of employees (compared to 86% of male occupation).

But particularly in this country a pioneer initiative highlights. In 2015, the Ministry of Public Works and Communications (MOPC) initiates the implementation of a special program with the support of IDB began. Its objective the improvement of *Caminos rurales* (“Rural Roads”) and as part of the works it was also included the training of women in non-traditional jobs. Given the success of the experience, it will be replicated both in the rest of the planned neighborhood road works as well as in other areas of action of the MOPC, such as the case of Water and Sanitation.

The information and analysis presented before for each country aligns with what has already been presented at the regional level about the masculinization of the Transport sector and possibly also the Construction sector.

Women, Jobs and Covid-19

Women’s labour force participation¹¹³ has been steadily rising in the last decade for each of the countries until the pandemic. The devastating impact of COVID-19 has affected disproportionately women’s labour force participation. According to the UN Economic Commission for Latin America and the Caribbean (ECLAC), the unemployment rate for women in the region is currently 12%. Many of them have been pushed out of the market, but that figure rises to 22.2% if assuming the same level of labour participation for women as in 2019. One should consider that women have been pushed out of the economically active population, being forced to fully commit to caring activities,

¹¹⁰ López Marmolejo, Ruiz-Arranz y Ochoa (2021)

¹¹¹ Capurro, A, Harguindeguy, S, Rubinstein da Silva, E. (2018)

¹¹² Caldo A., Sosa, M., Monje, A. Granada, I. (2019)

¹¹³ The labour force participation rate is a measure of the proportion of a country’s working-age population that engages actively in the labour market, either by working or looking for work; it provides an indication of the size of the supply of labour available to engage in the production of goods and services, relative to the population at working age. In contrast, employment comprise all persons above a specified age who during a specified brief period, either one week or one day, were in the following categories: paid employment or self-employment.

they plainly aren't seeking new jobs. Taking also into account that the transportation sector is traditionally very masculinized (e.g. women participate in 22% of the transportation sector in Uruguay), the project represents an opportunity to shorten gender gaps related to job segregation.

The sex-desegregated Table 1 below provides a glimpse of the labour supply for the last years, which in the second quarter of 2020 has dropped around 10 points in Argentina, Colombia, Dominica Republic, and Mexico, 7 in Brazil, 5 in Ecuador and 27 points in Peru. For Argentina, Brazil, and Colombia, the difference between men and women's labour force participation was narrowing from around 20-25 difference points to 20 in the first quarter of 2019, but in the Dominican Republic and Ecuador, the women-men gap narrowed from around 30 to 20 points. In Costa Rica, the women's rate in the 2nd quarter of 2020 is almost the same as that of 2011. In contrast with these dropping numbers globally, 70%¹¹⁴ of nurses, front-line care workers, midwives, and community health workers are women, whose jobs have been vital for controlling the health crisis. Women working in the health sector are more affected by COVID-19, and studies from the USA and European countries have revealed that positive COVID-19 cases are two to three times higher for women than for their male colleagues.

Table 1: Annual average national labour force participation rates by sex, 2011–2020

Annual average national labour force participation rates by sex, 2011–2020 (M: Men, W: Women)										1 st quarter	1 st quarter	2 nd quarter	2 nd quarter
Country	2011	2012	2013	2014	2015	2016	2017	2018	2019a	2019a	2020a	2019a	2020a
Argentina	59.5	59.3	58.9	58.3	57.7	57.5	57.8	58.5	59.1	58.9	58.6	59.5	49.2
M	72.9	72.2	72.0	70.9	70.1	69.4	69.7	69.6	69.9	69.8	68.7	70.2	58.0
W	47.4	47.6	47.1	46.9	46.4	46.9	47.6	48.7	49.4	49.0	49.5	49.9	41.2
Brazil	60.0	61.4	61.3	61.0	61.3	61.4	61.7	61.6	62.0	61.7	61.0	62.1	55.3
M	70.8	73.1	72.9	72.5	72.4	72.3	72.0	71.7	71.7	71.6	70.8	71.7	65.5
W	50.1	50.8	50.7	50.6	51.2	51.4	52.3	52.5	53.2	52.8	52.1	53.4	46.3
Colombia	63.7	64.5	64.2	64.2	64.7	64.5	64.4	64.0	63.3	63.5	61.6	62.9	54.8
M	75.1	75.4	74.9	74.9	75.2	74.9	74.8	74.6	73.9	74.2	72.7	73.4	66.2
W	52.8	54.1	53.9	54.0	54.8	54.5	54.5	53.8	53.1	53.3	50.9	52.9	43.9
Costa Rica	58.4	62.5	62.2	62.6	61.2	58.4	58.8	60.7	62.5	62.4	63.4	63	57.6
M	73.6	76.2	75.5	75.9	74.3	72.4	73	74.3	74.4	74.4	74.7	75.1	70.5
W	44.2	48.4	48.6	49.2	48.1	44.3	44.5	46.9	50.6	50.3	52.1	50.8	44.6
D. Republic	57.8	59.0	58.7	59.1	61.8	62.3	62.2	63.6	65.1	64.9	63.4	65.2	56.7
M	73.1	74.4	74.1	74.6	76.3	76.6	76.1	77.8	78.4	78.8	76.3	78.5	70.6
W	43.7	44.0	43.7	44.0	48.1	48.9	49.0	50.4	52.7	52.0	51.5	52.7	43.9
Ecuador	62.5	63.0	62.9	63.2	66.2	68.2	68.8	67.0	66.6	...	...	66.8	60.9
M	77.9	78.1	77.6	78.8	80.5	81.0	81.0	79.7	78.7	...	...	78.6	73.8
W	48.1	48.8	48.9	48.5	52.7	56.2	56.9	55.0	55.0	...	...	55.5	48.5
Mexico	59.8	60.4	60.3	59.8	59.8	59.7	59.3	59.6	60.1	59.5	59.9	60.2	49.4
M	78.5	78.8	78.5	78.3	78.0	77.7	77.6	77.4	77.2	76.9	76.4	77.1	63.5
W	42.8	43.9	43.9	43.1	43.4	43.4	43.0	43.5	44.7	43.7	44.9	44.9	36.7
Panamá	61.9	63.4	64.1	64.0	64.2	64.4	64.0	65.4	66.5	...	...	...	...
M	79.2	80.1	79.7	79.4	78.4	78.6	77.6	78.8	78.8	...	...	...	...
W	45.8	48.2	49.4	49.8	50.8	51.1	51.2	52.8	55.0	...	...	...	...
Paraguay	61.1	64.4	63.3	62.3	62.1	62.6	71.0	71.9	72.4	73.6	71.2	71.2	66.7
M	73.2	75.1	74.0	74.6	74.1	74.5	84.4	84.6	84.8	86.2	83.8	83.8	81.3
W	49.0	53.7	52.7	50.1	50.2	50.8	57.8	59.4	60.2	61.3	59.1	58.9	52.6
Peru	73.9	73.6	73.2	72.3	71.6	72.2	72.4	72.3	72.7	72.9	70.2	72.0	45.3
M	82.7	82.4	82.0	81.4	81.0	81.2	81.0	80.7	81.1	81.5	78.3	79.6	54.7
W	65.2	64.8	64.5	63.3	62.3	63.3	64.0	64.0	64.5	64.4	62.2	64.5	36.1
Uruguay	64.8	64.0	63.6	64.7	63.8	63.4	62.9	62.4	62.2	62.4	61.6	61.7	58.8
M	74.7	73.5	73.9	74.3	73.0	72.2	71.6	70.7	70.1	70.2	68.4	70.0	66.5
W	55.8	55.6	54.4	55.9	55.4	55.4	55.0	54.9	54.9	55.2	55.4	54.0	51.7

¹¹⁴ (Butler, 2020)

Source: (ECLAC & ILO, 2020)¹¹⁵

In the second quarter of 2020, there have been significant drops in employment rates that have affected both women and men, and the progress of the pandemic's devastation will worsen the figures. ILO says that women's employment dropped by 18.1% compared to men's, which dropped by 15.1%. Women's workforce is more extensive in the third sector, which is most affected by the pandemic (domestic services, restaurants and hotels, commercial activities). 40% of all employed women in the world (estimated at 510 million women) work in hard-hit sectors, compared to 36.6% of employed men. Women's paid labour and women-run businesses are being hit hardest. One of the occupational categories more affected is that of wage earners employed by households, most of them are women of relatively low-income households, who lack essential work benefits (health leave, notice period, severance pay). In Latin America, 93% of the 11 to 18 million domestic workers are women.¹¹⁶

This pandemic affects women, young people, and immigrants the most for a variety of reasons (For instance: they mostly work in the informal market, no new positions being created for young people or lack of legal papers to work). The global pandemic impacted employment rates in many ways; many companies have ceased operations or remain on stand-by due to country restrictions. Absenteeism has been a consequence of the pandemic since workers have not been able to attend their jobs' locations. Companies and countries have been designing ways to adapt to the temporary situation without firing workers (Ex: income support mechanisms or early leave).¹¹⁷

The open unemployment rate¹¹⁸ is larger in women because the household care responsibilities have increased with the pandemic. Table 2 below clearly shows tendencies. According to ILO, Dominican Republic's open unemployment rate drastically decreased to 3.2 in the second quarter of 2020 from 6.4 in the same period of 2019. Both people who were unemployed before the pandemic and those who lost their jobs because of COVID-19 are not looking for jobs. Figures are similar for both sexes in the Dominican Republic. The number of people in open unemployment in this health crisis increased less among women (by 7.7%) than among men (29.4%); the contrary is expected in an economic crisis. Female open employment has increased less than expected, probably due not only to the loss of jobs but also to the increase in care work, resulting in women not looking for paid work. While for men, who are still considered the breadwinners of the family, looking for jobs is easier after they lost them during the pandemic.¹¹⁹ Women hold themselves responsible for the family care burden, while men are still seen as "help" in the region.¹²⁰ The fact that open unemployment has risen more for men (in all the eight countries) does not mean that the crisis has more hit men compared to women; it means that further research on open employment is required.

¹¹⁵ Own elaboration from data from: ILO & ECLAC (Nov 10, 2020). "Employment Situation in LAC (Number 23): Employment trends in an unprecedented crisis: Policy challenges". Data comes from household surveys. Some data are preliminary figures or new series, please visit the document to know more about these figures.

¹¹⁶ (UN Women, 2020)

¹¹⁷ (ECLAC & ILO, 2020)

¹¹⁸ Open unemployment refers to those looking for a job that cannot find one because of the economic conditions.

¹¹⁹ (ECLAC & ILO, 2020)

¹²⁰ (World Bank Group, 2020)

Table 2: Average annual national open unemployment rate by sex, 2011–2020

Average annual national open unemployment rate by sex, 2011–2020 (M: Men, W: Women)										1 st quarter	1 st quarter	2 nd quarter	2 nd quarter
Country	2011	2012	2013	2014	2015	2016	2017	2018	2019	2019	2020	2019	2020
Argentina	7.2	7.2	7.1	7.3	6.5	8.5	8.4	9.2	9.8	10.1	10.4	10.6	13.1
M	6.3	6.1	6.1	6.5	5.7	7.8	7.5	8.2	9.2	9.2	9.7	10.2	12.8
W	8.5	8.8	8.5	8.4	7.6	9.4	9.5	10.5	10.7	11.2	11.2	11.2	13.5
Brazil	6.7	7.3	7.1	6.8	8.5	11.5	12.7	12.3	11.9	12.7	12.2	12.0	13.3
M	4.9	6.0	5.8	5.7	7.3	10.1	11.3	10.8	10.1	10.9	10.4	10.3	12.0
W	9.1	9.2	8.9	8.2	10.1	13.3	14.6	14.1	14.0	14.9	14.5	14.1	14.9
Colombia	10.0	9.7	9.0	8.5	8.3	8.6	8.8	9.0	9.9	11.2	11.8	9.5	18.3
M	7.8	7.5	7.0	6.7	6.4	6.7	6.8	7.1	7.8	8.8	9.4	7.7	16.0
W	12.9	12.5	11.6	10.9	10.7	11.0	11.3	11.6	12.6	14.4	15.1	11.8	21.6
Costa Rica	7.7	10.2	9.4	9.6	9.6	9.5	9.1	10.3	11.8	11.3	12.5	11.9	24
M	6	8.9	8.3	8.1	8	8	7.5	8.4	9.3	9.3	8.6	9.9	20
W	10.3	12.2	11.1	11.9	12.2	12.1	11.6	13.2	15.3	14.2	18	15	30.4
D. Republic	6.1	6.7	7.4	6.7	7.3	7.1	5.5	5.7	6.2	5.8	5.7	6.4	3.2
M	4.7	5.1	5.3	4.8	5.2	4.8	4.0	3.5	3.9	3.7	3.6	4.2	2.4
W	8.3	9.2	10.5	9.7	10.5	10.5	7.8	8.8	9.3	8.9	8.6	9.5	4.3
Ecuador	3.4	3.2	3.0	3.4	3.6	4.5	3.8	3.5	3.8	...	...	4.4	13.3
M	2.9	2.8	2.7	3.0	3.0	3.7	3.0	2.9	3.2	...	...	3.7	11.6
W	4.2	3.8	3.6	4.1	4.4	5.7	4.8	4.3	4.5	...	...	5.5	15.7
Mexico	5.2	4.9	4.9	4.8	4.3	3.9	3.4	3.3	3.5	3.4	3.4	3.5	4.8
M	5.2	4.9	4.9	4.8	4.3	3.9	3.3	3.2	3.5	3.3	3.5	3.5	5.3
W	5.2	4.9	5.0	4.9	4.5	3.9	3.6	3.4	3.5	3.5	3.4	3.6	3.9
Panama	2.9	3.0	3.1	3.5	3.8	4.4	4.8	4.9	5.8				
M	2.6	2.5	2.5	2.7	3.1	3.7	3.7	3.9	4.7				
W	3.5	3.9	4.1	4.6	4.9	5.3	6.3	6.3	7.2				
Paraguay	5.5	4.6	5.0	6.0	5.4	6.0	6.1	6.2	6.6	6.9	7.9	7.4	7.6
M	4.3	3.7	4.5	4.6	4.9	5.0	5.1	5.5	5.5	5.5	6.3	7.2	6.7
W	7.3	5.8	5.7	8.1	6.1	7.5	7.6	7.4	8.0	8.9	10.1	7.8	8.8
Peru	4.0	3.7	4.0	3.7	3.5	4.2	4.1	3.9	3.9	5.2	5.1	3.6	8.8
M	3.7	3.2	3.4	3.4	3.4	3.9	3.8	3.5	3.5	4.4	4.5	3.3	9.7
W	4.4	4.4	4.7	4.0	3.6	4.6	4.4	4.4	4.5	6.2	5.8	4.0	7.5
Uruguay	6.3	6.5	6.5	6.6	7.5	7.8	7.9	8.3	8.9	8.8	9.7	8.9	10.0
M	4.8	4.9	5.0	5.1	6.4	6.5	6.6	6.9	7.3	7.2	8.6	7.4	8.9
W	8.1	8.3	8.2	8.3	8.9	9.4	9.5	10.1	10.7	10.6	10.9	10.7	11.4

Source: (ECLAC & ILO, 2020)*¹²¹

This situation negatively influences younger women, particularly younger mothers who, when facing long periods of inactivity, experience shows that their career paths are drastically altered. The more time absent from school or work, the greater the risks of exclusion from the labour market, the precariousness of jobs, or the informality. This latter happens to young men as well.

Cleaning, cooking, and serving meals, teaching children and shopping for the family are the major workloads that have been intensified recently. The pandemic has made a point in the care work, which traditionally governments have ignored, and the economic markets have devaluated. In all of

¹²¹ Own elaboration from data from: Employment Situation in Latin America and the Caribbean (Number 23): Employment trends in an unprecedented crisis: ECLAC&ILO, Nov 2020. Data comes from household surveys. Some data are preliminary figures or new series, please visit the document to know more about these figures.

Latin American and the Caribbean region's countries, and globally, the burden of the economy of care falls entirely into women's responsibility. Despite the well-timed and record measures taken by governments to tackle COVID-19's economic outcomes, the few social protection measures were lacking a gender lens. Reconciliation of paid and unpaid work and family's care must be addressed to allow women to go back to paid work.¹²²

4. GESI approach in the E-Motion Program

Based on the findings of this assessment, there are two main goals that sub-programme 2 of "E-Motion: E-Mobility should achieve in terms of gender equality and social inclusion:

1. Impact on the workforce: reduction of sex-segregation in employment while creating new jobs and expertise
2. Impact on the ridership: reduction of gender biases and exclusions from transportation while changing the system to a low-emission one.

So, it is expected that for the E-Motion Program, the contribution to reducing the gender gap in e-mobility and low-carbon transportation and to preventing and minimizing the harm of lacking gender equality and women's rights is three-folded. **First, the transport sector is a catalyst to change social norms.** For instance, by raising awareness on sexual harassment and violence against women and girls, by providing visibility to women working in non-traditional roles in the EV (electric vehicle) markets, and by considering the mobility of care when designing transport operations, a societal impact can be achieved. **Second, this new e-transport paradigm will lever women's access to green jobs in traditionally sex-segregated occupations or improve access to investment loans for female entrepreneurs.** **Third, the capacity building, training, and sharing of know-how to women and men designing the investment plans and the sub-projects as part of the program will systematize gender mainstreaming in the transport sector.**

This three-folded approach will be mainly address as part of the Component 1 and its associated activities which will provide technical assistance to enable effective financial assistance and to create a (gender-responsive) policy and business framework conducive for massive deployment of EVs. Activities will be coordinated and realized together with national authorities to ensure complementarity of different endeavours. In addition, through the implementation of some activities as part of the Components 2, 3 and 4 this three-folded approach will reach all phases of the sub-projects and a wide profile of stakeholders.

Accordingly, the program will promote gender equality and women's empowerment at the project and sub-project level and support the use of gender-disaggregated indicators. The investments and sub-projects of the Program need to include a gender strategy with actions to increase women's mobility, promote safety and access to jobs. By establishing actions to increase women's mobility, safety, and access to jobs, this Program can improve women's agency in mobility if mainstreaming gender equality in its sub-projects becomes systematic.

In turn the proposed Action Plan, which organizes this approach in particular sub-activities aggregated by outputs, guarantees that general recommendations presented in this report are gender responsive and transformative, and translating into specific actions included in the E-Motion Program and project levels. Additionally, the Gender Action Plan ensures the specific actions are measured and adequately monitored, and adjusted when needed.

¹²² (UN Women, 2020)

It's also important to highlight that all the activities outlined in the proposed Gender Action Plan emerge from and also provide order to socioeconomic, legal, institutional and mobility diagnosis developed in this Gender Assessment (particularly the four interrelated topics: mobility, safety and security, jobs, and impacts of the COVID-19 pandemic), as well as the general recommendations presented. Below there are presented the three detailed outputs that structure the Gender Action Plan, closely related with the Components of the Program:

- Sector specific country-level gender assessments undertaken as part of the development of low-carbon electric vehicle roadmaps and policies (national level)
- Successful knowledge exchange and collaboration on gender aspects in transportation (regional level)
- Gender components integrated in the sub-projects financed by the Program.

5. Methodology

In this section is presented the methodology that has been used to come up with the Gender Assessment.

A desk-based research of aspects related to women in the region of Latin America and particularly in the three countries included in the Program (Panama, Paraguay, Uruguay) has been undertaken. This diagnosis covers two main aspects that let understand the gender gap in general terms as well as the gender equality and women empowerment in urban transportation.

- Gender equality in the region of Latin America

As part of the first aspect, secondary and quantitative data has been used to analyze women situation regarding the following indicators: political representation, health, education, employment, domestic responsibilities, gender wage gaps, gender-based violence. The data and analyses was found in ad hoc country studies on gender or data sources from reliable international entities.

This chapter also includes the review of legal and institutional framework addressing gender-based violence at national level. Other public policy documents were reviewed as well as the main international agreements ratified as part of the national legislation.

- Assessment of gender equality and women empowerment in urban transportation

Mainly secondary and quantitative data has been used to analyze each of the three interrelated dimensions that this Assessment has distinguished in order to organize the information: (i) mobility, (ii) safety and security, and (iii) jobs. The data and analyses was found in ad hoc country studies on gender or data sources from reliable international entities.

Consistent with some studies that consider the availability of data in the sector, it is observed that in the last years there is more official and public information in the Region referring to women as transport users than as workers in the sector, although in some cases (e.g. Panama) it is not yet possible to analyze mobility patterns disaggregated by sex or gender. Furthermore, when mobility information is available, it usually refers to the main cities or urban areas of each country. Consequentially, a lack of data on gender and e-mobility was identified, as occurs in other developing countries. So this report has relied on secondary review, data and analysis available for gender and transportation sector in general.

There was also identified an information gap about safety and security in urban transport. This kind of sensitive data needs to be collected through quali-quantitative strategies which implies specific professional abilities to be produce and analyzed. In addition, it is important to highlight that initiatives to collect data about safety in urban transport, many times come from civil society or women organizations with the aim of making visible a gender problem that has not been well addressed. Which could be an economic constrain for the data to be systematically produced. In the lat few years some national and local governments with the support of international agencies have already started to work on generating primary data. The study about safety and security in urban transport in Asunción (Paraguay) included in this report is an example of this lasted advances.

Specific consultations or in-depth interviews with key social actors were not carried out during the preparation of this gender assessment, however it is foreseen to implement a brief qualitative fieldwork as part of the Action Plan in order to complement the diagnosis in each country.

6. Key areas of intervention and recommendations to strengthen gender aspects in the e-motion programme

In the programme countries, gender equality has been improving in recent years, but the COVID-19 pandemic has worsened it. In light of the country snapshots on gender and the assessment of (i) mobility, (ii) safety and security, and (iii) jobs, this report concludes with the following recommendations to strengthen gender mainstreaming into the E-Motion Subprogram2 components:

The review of public policies at the country level will integrate gender aspects, this means that the technical assistance will help find obstacles and risks in the policies being reviewed that may impede women from benefiting from the EV mass adoption. The themes covered by the topics in chapter 3 of this assessment (mobility, safety and security, and jobs) constitute a guide that the technical assistance will use when providing support to the investment plans. The public and private sector investment plans will receive technical assistance to systematically include a gender assessment and gender action plan with concrete measures, activities and products that will ensure that women benefit equally from the massive adoption of EV through direct jobs.

Specific actions to guarantee women feel safe when using EV transportation, as workers and as users, are imperative in the region. Gender-based violence is endemic in these countries and underreported. Women in the region are frequently victims in the transport sector, and the COVID-19 pandemic is exacerbating the numbers. The urban transport system represents an environment where harassment and sexual abuses occur quotidianly in the regular trips women do every day. Incidents can happen in the e-buses, in the e-taxis, while waiting, walking to and from the stops or using charging stations. Incidents increase at night, in isolated vehicles and unattended places, but crowded units as well. Safety and security measures not only benefit women but all the users. The recent study “Ella se mueve segura” (She’s moving safely) represents a timely and adequate guide from the region that will be used by the program to build capacity and learn at the project level, thanks to online training. Successful ongoing initiatives such as “Bajalé al acoso” in Quito, will be shared within the training. This initiative stands from others because it put together different institutions (police, justice), and it is very accessible by the poor. It has been successful in reducing harassment in the buses in Quito, which in the end, can change social norms towards respect to women’s bodies and lives. The program will include communication campaigns to raise awareness and prevent sexual harassment in the public transport sector.

Moreover, efforts should include, for instance, to enhance accessibility of jobs related to the E-motion programme for women (advertise that all the vacancies are open for women, i.e. job description and terms of references will be gender sensitive, job posting will encourage women for applications and will be posted at platforms frequently visited by women), adjusting work places

towards the needs of women (adapt working schedules to women’s care needs at home, respect national quota regulations, building dressing rooms and provide childcare), and offer scholarships in order to enhance women’s skill set in accordance with newly created jobs in the mobility sector. Working with trade unions is also vital in masculinized occupations to allow women to enter.

Women are not represented in the jobs generated by the transport sector in the region. The pandemic complicates the return to work for those women who lost their jobs and those whose care responsibilities have increased. The E-Motion Program is an opportunity for women in the program countries to access the jobs generated by the projects to be designed with investment loans. For instance, the public sector projects will help women obtain professional driving licenses to be able to opt for the direct jobs that the e-buses, e-taxis and e-vans will create. This can be done via scholarships for women to receive training on professional driving. The technical assistance will also support investment projects for e-taxis adoption on how to include segregated ride-hailing from the market that is already present and growing in the region. The technical assistance will help the adopters to consider vulnerable groups who do not have access to technology. To prevent female turnover and retain women workers in the projects, activity is focused on the promotion of work-life balance for the projects. Data collection is crucial to learn, share and improve transport systems, an activity will help e-buses and e-taxis to sex-disaggregate data.

Based on this Gender Assessment, the following areas for gender mainstreaming have been identified. These may be updated over time as the sector develops and the E-Motion Program is active in identifying further areas to incorporate gender mainstreaming.

Table 3: Key areas of interventions

Key issue identified in gender assessment	Description of issue or risk	Actions to address issues identified
Mobility: Inadequate transportation infrastructure to reach services (work, education, training)	Limited number of services designed for women incorporating women’s specific needs	Identify opportunities to work with bus companies or corporates which support women-focused services (such school services etc), or working with the counterparties to develop initiatives.
	Women’s specific requirements not adequately incorporated into project-design	Upfront gender assessment to identify whether there are opportunities to optimise the placement of charging points for increased use of EVs by women wherever applicable (e.g., considering well-lit areas, public areas). Periodic consultation with women’s groups (e.g., women drivers associations, self-help groups for women from low income background, NGOs working on women employment) to identify potential risks and opportunities.
	Limited sex- disaggregated data to improve gender	

	sensitivity in the sector or sub-sectors	
<u>Safety</u> and security: Gender Based Violence and Harassment	Facilities around transport hubs and vehicles (e.g., poor lighting, unsupervised spaces, absence of emergency buttons, etc.)	Conduct training to counterparties to review their existing policies and procedures for management of GBVH issues, including existing education programs, safety and security measures, trainings, and grievance mechanisms.
		Require projects to include adequate design and maintenance of lighting and CCTV cameras (or other relevant safety and security features at charging infrastructure points).
		Require reporting/representation from counterparties that the vehicles are aligned with safety and security requirements as mandated by authorities/relevant concession agreements.
		Conduct stakeholder consultations with public and private entities around the design of projects to provide views and data on relevant and improved safety and security features.
	Behavioural aspects (e.g. physical violence and sexual harassment, lack of clear codes of conduct for employees, etc.)	Review training programs periodically delivered by counterparties to drivers and transport workers on gender sensitivity and how to report and refer incidents of GBVH. Where counterparties do not have existing training programs, offer relevant training for drivers and other employees on gender sensitivity and how to manage incidents of GBVH.
<u>Jobs</u> : Women’s involvement in transport related jobs	Due to societal and cultural practices, women are less likely to be involved in decision making which may exacerbate gender blindness in project design	Ensure women and vulnerable groups have an active role in project and sector level stakeholder consultations.
		Enhance accessibility of jobs related to the E-motion

		programme for women
Need for capacity building and knowledge dissemination for gender considerations in the e-mobility sector	Awareness of gender mainstreaming may be limited in the transportation, e-mobility and financing sectors	Capacity building through trainings and workshops to increase awareness of gender sensitivity. Promote multi-stakeholder discussions to integrate gender considerations across the sector.
	Limited availability of sex-disaggregated data in the e-mobility space	Ensure each sub-project collects sex-disaggregated data which can be used to identify risks, mitigants and opportunities.
	Knowledge sharing of lessons learned is limited	Promote examples of lessons learned through data collection or sub-project implementation through thought leadership or otherwise to contribute to developing best practice.

The Gender Action Plan guarantees that these general recommendations are transformed into specific activities by the E-Motion Program and that they have a budget and are measured, monitored, and adjusted when needed. If suitable the key interventions are also directly integrated in the Outputs of the E-Motion Program, e.g., related to the requirements for the sub-projects.

Gender stakeholder engagement

Once the project's implementation phase begins, the National Mechanisms for the Advancement of Women (Inmujeres in the case of Uruguay, INAMU in Panama and the Ministry of Women in Paraguay) will be invited to assume a role as stakeholders, in their quality of the responsible national institutions for gender policies.

The same will be done with all the institutional organisms responsible for gender equality policies within the Ministries of Industry (i.e. the Unidad Especializada en Género of the Uruguayan Office), within the Ministries of Economy, the Ministries of Transport (or Authority of Transport in the case of Panama), the Ministries of Public Works (i.e. the Project Implementation Unit¹²³ of the Ministry of Public Works and Communications in Paraguay; the Office for Equal Opportunities and Gender of the Ministry of Public Works in Panama), and in the Electricity Companies involved. It is the case of UTE, Uruguay's government-owned power company, which has a Gender Unit and has been certified in gender equality ([Folleto Tríptico v2 \(ute.com.uy\)](http://Folleto_Tríptico_v2(ute.com.uy))). The Stakeholders Engagement Framework (SEF) to be implemented classifies the actors' engagement levels and types in four categories. They might be some that should only be informed of the project's interventions; others would need to be consulted, while a third group will be accountable for collaboration actions and a fourth type for empowerment actions, as the following table resumes:

¹²³ This Project Unit has implemented the pioneer initiative mentioned in section 3.

Engagement level/type	Inform		Consult		Collaborate		Empower	
	Expected	Executed	Expected	Executed	Expected	Executed	Expected	Executed
Stakeholder 1	-action 1 -action 2							
Stakeholder 2	-action x -action y							

When completing the SEF document, the commitments of all stakeholders will be stated as well as their expected actions, establishing clearly roles and responsibilities. Every “expected action” will relate with the Operations Chronogram where the activities of the Gender Action Plan will be disaggregated, and each “executed action” will be linked to the verification means corresponding to each of the indicators included in the chronogram.

Institutionalization of gender equality in CAF and its partners

CAF undertook organizational restructuring from late 2021 to mid-2022 that has seen its commitment and strengthening of its Gender Unit. This Unit went up a level on the organizational ladder from being an area among a Direction of Climate Change and Inclusion to become the Gender, Inclusion and Diversity Management, directly dependent of the Corporate Vice President of Strategic Programming. The political will to address gender inequality is thus more explicit. Regarding its human resources, it currently engages four specialists

There are three documents that frame CAF’s approach towards gender equality: the Gender Equality Strategy, the Gender Equality Guidelines and a specific Gender Equity Safeguard (S09) among the social and environmental procedures that intend to reduce, mitigate and/or compensate for the unintended negative impacts of development projects.

CAF’s 2022-2026 Gender Equality Strategy aims to facilitate women's access to financial resources, dignified job opportunities, basic and care services, and productive development. As well, it will contribute to strengthen its member countries' capacities against gender-based violence, femicide and teen pregnancy and to promote and strengthen the capacities, skills and competence for women's leadership and their participation in decision-making spaces.

The Gender Equality Guidelines are an instrument aimed to guide the implementation of actions that promote gender equality, rights and empowerment of women in the region. They are implemented through three guidelines: (i) direct action, to develop activities whose main objective is to reduce inequality and expand access to opportunities; (ii) gender mainstreaming, to include the gender perspective in CAF's actions; and (iii) preventive action, whose purpose is to avoid the deepening of gaps or inequality that may result from CAF's operations.

The Gender Equity Safeguard in force since 2016 applies to all projects and operations financed by CAF and constitutes the main preventive action of the Gender Equality Guidelines. Its applicability is determined during all phases of CAF's credit cycle. The Safeguard seeks to ensure that both women and men benefit equally from projects and programs financed by CAF, as well as that they participate equitably in the design and execution. It also seeks to prevent the projects and programs from deepening pre-existing gender gaps or producing adverse impacts.

Regarding its partners, it must be noted that GIZ, the German Agency for International Cooperation, approved in 2012 a Gender Strategy that was updated in 2016, which is considered as an internal and external positioning of the organization. The Strategy aims to ensure that all activities, strategies and processes undertaken by GIZ are oriented towards gender equality and the elimination of discrimination and disadvantages based on gender.

A GAP implementation team of four will be appointed: a coordinator and three country-based specialists. It will belong to the PMU.

A Grievance Redress Mechanism (GRM) gender sensitive

It is expected that as part of compliance with the Environmental and Social Safeguards of CAF, the respective GRMs will be prepared for each sub-project. This requirement will be part of the TOR or the technical specifications included as part of the procurement documents.

However, the request to prepare the GRM must ensure that they are adapted in order to cover, among their contents, the specific aspects related to the attention of complaints about gender violence (SEA/SH) that which could come from the influx of labor or from any other situation.

The process of adaptation of the GRM to be gender sensitive will include significant emphasis on clarifying concepts of gender base violence and specificizing what are the risks of gender base violence in Program and sub-project, why do gender base violence complaints require a different approach, the principles of confidentiality and anonymity, informed consent, security, data recording, referral pathways.

Even if the GRM for a sub-project is planned to be articulated with a government mechanism in place (national or local), it will be needed to detail how it works (roles, responsibilities, complaints form, channels available, the procedures for grievance management, communication strategy, etc.).

This kind of systems must be serviced by trained personnel who can receive complaints with empathy and professionalism. In the case the GRM include a Community Grievance Focal Person it is recommended to be a women, hopefully part of the same community where the sub-project is based, that must receive training, particularly on how to handle SEA/SH complaints.

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Gender Action Plan

E-Mobility and Low Carbon Transportation Sub-Program 2

– Panamá, Paraguay, Uruguay –

Version: 4

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Gender Assessment and the E-Mobility Program

The E-Mobility and Low Carbon Transportation Program (E-Motion) aims to enable a large-scale regional transition towards electro-mobility in Latin America focusing on intensive use vehicles leading to reduced fossil fuel consumption, greenhouse gas emissions and air pollutions. E-Motion will be implemented through two Funding Proposals: one by AFD (Sub-Program 1) as an Accredited Entity to cover 8 countries in Latin America, and one by CAF (Sub-Program 2) to cover the following 3 countries: Panama, Paraguay and Uruguay. The Program and its Sub-Program 2 have a comprehensive approach to establish an e-mobility conducive ecosystem at the local, national and regional level, including activities such as targeted policy advice, business model development, stakeholder management and capacity building (all of which gender mainstreamed) to ensure a favorable e-mobility environment combined with financial instruments to ensure deployment of large-scale fleets thereby de-risking future investments into e-mobility of investors. The Program can significantly reduce investment risks through the investment interventions combined with the implementation of business models and a policy framework conducive to EV deployment.

To ensure that the E-Motion Program is mainstreaming a gender perspective into its investment decisions, a Gender Assessment Report has been conducted (Annex 8 of the GCF Funding Proposal). The Gender Assessment Report evaluates the situation of women in the respective Subprogram 2 countries and outlines the importance as well as the impact potential of the Program to enhance mobility, safety and access to jobs for women in urban transportation. Based on its findings, the report states specific recommendations on including a gender perspective for the Program implementation. These recommendations are the basis for the development of the following Gender Action Plan of the E-Motion Program.

For the E-Motion Program, the contribution to reducing the gender gap in e-mobility and low-carbon transportation and to preventing and minimizing the harm of lacking gender equality and women's rights is three-folded. **First, the transport sector is a catalyst to change social norms.** For instance, by raising awareness on sexual harassment and violence against women and girls, by providing visibility to women working in non-traditional roles in the EV (electric vehicle) markets, and by considering the mobility of care¹ when designing transport operations, a societal impact can be achieved. **Second, this new e-transport paradigm will lever women's access to green jobs in traditionally sex-segregated occupations or improve access to investment loans for female entrepreneurs.** **Third, the capacity building, training, and sharing of know-how to women and men designing the investment plans in the program will systematize gender mainstreaming in the transport sector.** This three-folded approach will be mainly addressed as part of the Component 1 and its associated activities which will provide technical assistance to enable effective financial assistance and to create a (gender-responsive) policy and business framework conducive for massive deployment of EVs. Activities will be coordinated and realized together with national authorities to ensure complementarity of different endeavors. In addition, through the implementation of some activities as part of the Components 2, 3 and 4 this three-folded approach will reach all phases of the sub-projects and a wide profile of stakeholders.

The activities outlined in the present Gender Action Plan result in the three following outputs which will be specified below, including activities, indicators and targets, timeline, responsibilities and costs:

1. Sector specific country-level gender assessments undertaken as part of the development of low-carbon electric vehicle roadmaps and policies (national level)
2. Successful knowledge exchange and collaboration on gender aspects in transportation (regional level)
3. Gender components integrated in the sub-projects financed by the Program.

¹ The mobility of care refers to travel implications of daily tasks performed by individuals with care responsibilities, which are mainly performed by women. For more information see (De Madariaga, 2021).

Gender Action Plan

Action	Indicators and Targets	Timeline	Responsibilities	Costs in USD
Impact Statement: Gender considerations are systemically mainstreamed into the whole E-Motion Subprogram2				
Outcome Statement: The targeted transportation sub-sectors are more gender-responsive and provide equal opportunities for men and women				
Output 1: Sector specific country-level gender assessments undertaken as part of the development of low-carbon electric vehicle roadmaps and policies (national level) ²				
Activity 1.1. Adoption of a transformative gender perspective, with a focus on mobility, safety, and jobs, in the design and review of all three country-level/local roadmaps and electric mobility policies, strategies, and implementation plans: design an effective advocacy strategy and action plan for mainstreaming gender in such activities. ³	Indicator: proportion of the policies and roadmaps supported that adopt a transformative gender perspective (gender neutral language, tariff integration with gender focus, women-targeted incentives, gender-related risks and impacts identified and mitigated, consideration of the care mobility, etc.) ⁴ Target: 100% of policies and roadmaps supported by the Program use a gender perspective	During year 1-2, on a rolling basis	GIZ	46.500
Activity 1.2. Facilitate/Conduct multi-stakeholder consultation strategy that will take part during the implementation of the E-Motion Subprogram 2 (Component 1)	Indicator 1: Gender expert facilitates women's participation and enables them to make their voices heard Baseline: 0 per consultation process Target: Participation and input of at least one (local) gender expert per multi-stakeholder consultation process	During year 1-5	GIZ Gender Specialist	14.000
Activity 1.3. Develop a country specific Gender Action Plan that will emerge from the synthesis of each contextual gender assessment and the	Indicator: Country specific Gender Action Plan Baseline: 0 Country specific Gender Action Plan	During year 2-5	GIZ Gender Specialist	14.500

² Sex-disaggregated data will be reported for all activities in the program.

³ Multistakeholder consultations will be taking place during the implementation of the program. Based on those, information on contextualized gendered needs of different countries and diverse needs of the population in terms of e-mobility in the public transport sector will be provided.

⁴ The program will support the design of new roadmaps and policies and will review current policies to recommend how to adapt them to create a e-mobility conducive ecosystem. This activity seeks to include a gender perspective in the process to provide recommendations to policies to be inclusive (Ex: gender neutral language, consideration of the care mobility, etc.)

<p>support given to design/review of low-carbon electric vehicle national roadmaps and policies; to be reinforced by the consultation/participatory processes that will be undertaken to inform the project. In depth interviews with key social actor will also be included to strengthen the diagnosis in each country.</p>	<p>Target: 3 Gender Action Plan developed</p>			
<p>Output 2: Successful knowledge exchange and collaboration on gender aspects in transportation (regional level)</p>				
<p>Activity 2.1. Include a gender perspective approach in capacity building and training activities (workshops, etc.) targeted to key public and private stakeholders (government actors, operators) in order to increase awareness about gender equality gaps and opportunities in transport</p>	<p>Indicator 1: proportion of capacity building and training activities developed during the E-Motion Subprogram 2 that include effective awareness building on gender equality and urban transport (mobility, safety, jobs)⁵</p> <p>Baseline: 0%</p> <p>Target: 50%</p> <p>Indicator 2: proportion of women members (among the key public and private stakeholders) attending trainings (also to empower their perspective)</p> <p>Baseline: 0%</p> <p>Target: 30-50%⁶</p> <p>Indicator 3: Regional active network on women in e-mobility to share and exchange experiences, promote mentorship, and produce knowledge on a regular basis</p> <p>Baseline: 0 networks are available</p> <p>Target: 1 network that is actively used</p>	<p>Year 1-5</p>	<p>GIZ</p>	<p>100.000</p>

⁵ This activity guarantees that gender equality is learned and integrated into the capacity building. It is expected that in some capacity building activities it will not be feasible to integrate gender aspects. Besides, this activity will monitor women's participation on the capacity building activities.

⁶ In reality in the program countries decision makers and people in powerful positions are mostly male. Although the optimal target would be 50% women and men (in line with the representation in society) it is suggested to keep the target more flexible to particularly train decision makers on gender perspective.

<p>Activity 2.2. Conduct online capacity building and training (webinars, etc. to key public and private stakeholders (government actors, operators, sector companies, etc.) in order to increase knowledge in how to include gender perspective in urban transport projects.</p>	<p>Indicator: online module⁷ of training on gender and urban transport</p> <p>Baseline 0 online modules</p> <p>Target: 1</p> <p>Indicator 2: attendees of the trainings</p> <p>Baseline: 0</p> <p>Target: 1 representative from the local public authority in each city where an investment of the program is foreseen</p>	<p>Year 2</p>	<p>GIZ</p>	<p>45.000</p>
<p>Activity 2.3. Collection of locally adapted best practices (an example could be “Bajale al acoso” in Quito) on violence and harassment prevention and treatment in public transportation. Systematized regional best practices will inform the capacity building and training activities and contribute to define the adapted best practices to be implemented in all three countries.</p>	<p>Indicator 1: Systematic collection of regional practices and identification of best practices</p> <p>Baseline: 0</p> <p>Target: 1 map of regional best practices</p> <p>Indicator 2: number of best practices to the local cultures adapted</p> <p>Baseline: 0</p> <p>Target: 12 best practices locally adapted</p> <p>Indicator 3: Developed guidelines on how to mainstream gender into urban transport projects</p> <p>Baseline: 0</p> <p>Target: 1 guidelines developed</p>	<p>Year 1</p>	<p>GIZ</p>	<p>14.000</p>

⁷ The online module will have verification means of attendance. The training will be practical with initiatives on the region (no theoretical), 3 hours max by day. 1 Module on mobility (1 day), 1 Module on Jobs (2 days), 1 module on Safety (3 days), 1 Module on how to prepare a gender assessment in a real project and preparing a gender action plan (1 day).

<p>Activity 2.4 Design of national communication campaigns about sexual harassment and protocols of attention in public transport</p>	<p>Indicator 1: Public communication campaigns about sexual harassment and protocols of attention in public transportation⁸</p> <p>Baseline: 0</p> <p>Target: 1</p>	<p>Year 3</p>	<p>GIZ</p>	<p>7.000</p>
<p>Output 3: Locally adapted best practices on gender in public transportation are integrated in the projects financed by the Program</p>				
<p>Activity 3.1. Mobility infrastructure design and management financed by the Program is planned to be gender-sensitive and gender responsive, e.g. planning for care facilities, schedules changes, special fares, analysis and modification of routes, interior design of buses accommodate for people travelling with infants, bags, strollers, elders, etc.</p>	<p>Indicator 1: proportion of mobility infrastructure projects that include a Gender Equality Strategy</p> <p>Baseline: 0%</p> <p>Target:100%</p> <p>Indicator 2: proportion of projects that established a GAP, which contains specific and measurable activities and a respective budget⁹</p> <p>Baseline: 0</p> <p>Target: 100%</p> <p>Indicator 3: proportion of projects that include in the TOR a specific requirement for including a GAP, a gender specialist as a responsible and a gender sensitive GRM.</p> <p>Baseline: 0</p> <p>Target: 100%</p>	<p>Year 1-5</p>	<p>Project owners (public / private companies) with support of gender consultant</p>	<p>29.000</p>

⁸ The public communication campaigns will be designed with consultations addressing specific perceptions and risks those different gender identities face, with significant attention to mitigate indigenous peoples and afro descendants' potential risks. The protocols of attention will develop/enhance safe, confidential, and ethical grievance reporting mechanisms for survivors and monitoring mechanisms to identify, respond and address risks of sexual harassment. This technical assistance will guide the adopters to develop protocols of attention that are inclusive and safe for different gender identities present in each country/city of the new e-transport system.

⁹ The project owners will learn and be helped on how to draft a gender assessment and GAP in the online module, in this activity they will get support from consultants to implement gender in their own investment plans.

<p>Activity 3.2 Participatory and inclusive Designing of each project financed by the Program will include a gender-sensitive and gender-responsive approach, including the following measures: hiring female trainers and/or trainers with experiences in participatory processes and women’s engagement, adapt the sessions schedule to women’s practical needs (women’s work and domestic responsibilities), incl. a brief survey to find the most suitable times, engage participants organizations and hold training sessions during worktime, chose a venue where women feel comfortable (not a male-dominated site), provide childcare arrangements, etc.</p>	<p>Indicator 1: proportion of Participatory Design activities (workshops, community meetings, etc.) that are gender-sensitive.</p> <p>Baseline: 0%</p> <p>Target: 100% of the Participatory Designing activities</p>	<p>Year 1-5</p>	<p>GIZ / CAF</p>	<p>10.000¹⁰</p>
<p>Activity 3.3. Integrating measures into urban passenger transport projects financed by the Program oriented to generate and improve gender disaggregated data collection on urban transport</p>	<p>Indicator 1: proportion of urban passenger transport projects collecting and presenting gender disaggregated data</p> <p>Baseline: 0%</p> <p>Target:100% of the urban passenger transport projects financed by the Program</p> <p>Indicator 2: proportion of projects that include in the TOR a specific requirement for including a GAP with their particular measurable activities and a respective budget</p> <p>Baseline: 0</p> <p>Target: 100%</p>	<p>Year 1-5</p>	<p>Public transport authority with support of gender consultants</p>	<p>7.000</p>
<p>Activity 3.4. Integrating measures into projects that improve women’s access to jobs, such as - training targeted at women to improve their skills</p>	<p>Indicator 1: proportion of projects (with direct finance by the Program) that reserve by requesting it in the TOR a share of at least 35%</p>	<p>Year 5</p>	<p>Project owners (public / private companies)</p>	<p>81.000</p>

¹⁰ It is estimated that per training/workshop USD400 times 20 trainings/workshops are needed extra to established respective measures as mentioned.

<p>or advocacy aimed at labor unions (it is very usual that masculinized unions obstruct the incorporation of women to the field)</p>	<p>of non-skilled jobs, that are related directly to the project, for women¹¹</p> <p>Baseline: 0</p> <p>Target: 80%</p> <p>Indicator 2: proportion of projects (with direct finance by the Program) that reserve by requesting it in the TOR a share of at least 35% of skilled jobs, that are related directly to the project, for women</p> <p>Baseline: 0</p> <p>Target: 80%</p> <p>Indicator 3: 1 educational programme targeted at women to improve their skills for the mobility sector</p> <p>Baseline: 0</p> <p>Target: 1</p> <p>Indicator 4: advocacy sessions, campaigns and events conducted aimed to eradicate the sector's labor unions gender biases</p> <p>Baseline: 0</p> <p>Target: at least 5 events</p>			
<p>Activity 3.5. Establishing interventions to address and prevent GBV and SEAH in public transport, including training of staff, information campaigns and awareness raising, required infrastructure,</p>	<p>Indicator 1: 70% of the projects include a sexual harassment protocol</p> <p>Baseline: 0</p> <p>Target: 100%</p> <p>Indicator 2: 100% of the projects that include a harassment protocol implement them through</p>	<p>Year 1-5</p>	<p>CAF</p>	<p>93.000</p>

¹¹ This is monitoring that the GAP of the investment's plans are reserving a minimum of jobs to women. The target is set to 80% because is expected that some investments plans might not generate jobs.

<p>and feedback and grievance mechanisms, among others.</p>	<p>a surveillance system that considers both technological and human resources.</p> <p>Baseline: 0%</p> <p>Target: 100%</p> <p>Indicator 3: 100% of the above develop a coordination strategy with the police and the local Mechanism for Women's Advancement</p> <p>Baseline: 0%</p> <p>Target: 100%</p>			
<p>Activity 3.6. Promotion of gender equality at the workplace, such as advertising that job vacancies are open for women, adapt working schedules to women's care needs at home, building dressing rooms, provide childcare, etc.</p>	<p>Indicator 1: Training for the staff of public transport projects (workers, managerial and administrative staff, etc.) on gender equality and work-life balance issues via workshops¹²</p> <p>Baseline: 0 Workshops conducted</p> <p>Target: one workshop for each public transport project</p> <p>Indicator 2: proportion of projects/companies including annual surveys on work-life balance to their staff and sharing the results</p> <p>Baseline: 0</p> <p>Target: 100%</p> <p>Indicator 3: proportion of projects/companies with one focal point in charge of gender equality</p> <p>Baseline: 0</p> <p>Target: 100%</p>	<p>Year 1-5</p>	<p>Project owners (public / private companies) with support of gender consultant</p>	<p>124.000</p>

¹² Target learners are workers of the system (drivers, cashiers, etc) as well as managerial and administrative staff. A model of survey will be shared in the workshop to be used by the agency/company adopter of the technology

<p>GAP Implementation Team: a four-specialists team will be appointed to effectively implement the GAP. The team will belong to the PMU.</p>	<p>Indicator 1: Employment of 3 Country-Based Gender specialist, including time spent on various activities outlined in Gender Action Plan</p> <p>Baseline: 0 Country-Based Gender specialist hired</p> <p>Target: 3 Country-Based Gender specialist effectively hired</p> <p>Indicator 2: Employment of 1 Coordinator Gender Specialist, including time spent on various activities outlined in Gender Action Plan</p> <p>Baseline: 0 Coordinator Gender Specialist hired</p> <p>Target: 1 Coordinator Gender Specialist effectively hired</p>	<p>Year 1-5</p>	<p>Program Management Unit (PMU)</p>	<p>36.000</p>
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Budget

Item	Quantity	Unit cost (USD)/month or unit	Total cost (USD)
International Consultants	10	15,000	150,000
National consultants	17	7,000	119,000
Trainings and workshops average 30 participants (Venue, buses, and caregiver)	36	1,500	54,000
International Trainers/Speaker	2	15,000	30,000
International travel	6	4,000	24,000
Per diems international	15	300	4,500
Communication Material	3	60,000	180,000
Scholarships	90	550	49,500
Various measures to make workshops gender-sensitive	1	10,000	10,000
Total			621,000
