

Cover Page for CTF Project/Program Approval Request ^[a] Dedicated Private Sector Programs (DPSP-III)			
1. Country/Region	Peru	2. CIF Project ID#	XCTFPE748A
3. Public or Private	Public	✓	
	Private		
4. Project/Program Title	Financing Sustainable Electric Transport Solutions		
5. Is this a private sector program composed of sub-projects?	Yes		
	No	✓	
6. Financial Products, Terms and Amounts			
Financial Product		USD (million)	EUR (million)^[b]
Grant		0.477	
Fee on grant		0.023	
MPIS (for private sector only)			
Public sector loan	Harder terms	9.500	
	Softer terms		
Senior loan			
Senior loans in local currency hedged			
Subordinated debt / mezzanine instruments with income participation			
Second loss guarantees			
Equity			
Subordinated debt/mezzanine instruments with convertible features			
Convertible grants and contingent recovery grants			
Contingent recovery loans			
First loss guarantees			
Other (please specify)			
Total		10.000	
7. Implementing MDB(s)	Inter-American Development Bank		
8. National Implementing Agency	Corporación Financiera de Desarrollo S.A. (COFIDE)		
9. MDB Focal Point	Claudio Alatorre (calatorre@iadb.org)		

10. Brief Description of Project/Program (including objectives and expected outcomes)^[c]

Electric Vehicles (EV) have emerged as one of the key technologies with the potential of contributing to the decarbonization of the transport sector, as well as increasing energy efficiency and thus productivity. Electric mobility is not only an additional argument to promote renewable sources of energy but also a critical component in energy security by reducing oil dependency.

The upfront investment required for EV is higher than for conventional vehicles. The purchase price of EVs in Peru is estimated to be 11% and 25% higher than for internal combustion engine vehicles (ICEVs) for taxis and moto-taxis, respectively. In the case of buses, the price is 76% higher.¹ Moreover, the introduction of EV technology also involves investing capital in other elements that are essential to its operation, such as charging infrastructure and associated reinforcements in electric distribution grids. As with other green technologies, these incremental costs, together with the lack of appropriate policy and regulatory frameworks, are the main barriers that have prevented EV markets from materializing in most developing markets.

By providing access to long-term concessional loans, the program intends to ease the impact of the higher CAPEX (including investments in infrastructure, when applicable) on overall project return profile, thus ensuring a better match between project cash flows and the repayments of the financing.

Despite its robustness, the local financial system is still underdeveloped, and its deposit structure is mainly short term (overnight deposits and savings account for a 29.3% and 29% share of deposits, respectively).² This directly affects the general ability of the banking system to provide long-term credit, as its core funding is mainly short-term. In addition, more rigorous financial regulation increases aversion by banks to allocate capital on riskier, longer-term assets.

The general objective of the program is to reduce fossil fuel consumption and GHG emissions through the promotion of low-carbon mobility solutions in Peru. The specific objective is to stimulate and demonstrate the financial viability of private investments in EVs. To this end, the program will provide access to long-term financing for private-led EV projects,³ channeled by Peru's National Development Bank, COFIDE. COFIDE will use Clean Technology Fund (CTF) concessional loan resources blended with IDB resources to provide long-term financing for EV projects, including: (i) replacement of ICEVs with EVs, with particular emphasis on passenger transport operated by private actors (mainly buses, taxis and three-wheeled moto-taxis); and (ii) EV charging stations, preferably renewable-energy-powered.⁴ This twofold target of the financing aims to offer a holistic support, addressing demand and supply of clean electricity in the EV market in unison.

¹ Hincio Latino America (2017a).

² SBS, "[Evolución del Sistema Financiero](#)", December 2018, last updated May 2019.

³ Private-led projects are those developed by private operators, concessionaires, technology providers, energy utilities or other private firms.

⁴ To fully unlock the potential to reduce emissions, electrification of the transport sector requires additional measures to decarbonize power generation. Like the vehicle itself, renewable energy charging infrastructure for EVs is dependent on the mobilization of adequate funding for investment and the provision of financial support.

In line with the above, the program will provide long-term credit through individual sub-loans to finance EV projects that will result in the migration to EV technology of a number of vehicles in the national fleet. Financing will be delivered to final beneficiaries through COFIDE to financial institutions and dedicated Special Purpose Vehicles. Financing to eligible projects will be provided up to 100% and may or may not include investments other than the vehicle itself, such as charging infrastructure.⁵

Program funding will help improve terms and conditions of the sub-loans (interest and tenor at which the sub-loan has to be repaid), thus lowering the cost of borrowing for beneficiaries and helping reduce risks associated to the project. Project revenue sources and lower operating costs should then provide enough cash streams to repay the loan. In conclusion, funding will make it possible for an EV investment to be comparable to the investment in an ICEV.

The program will be structured so that existing risk transfer mechanisms at COFIDE may be used to complement the concessional loan instrument. In particular, a guarantee from the CRECER Fund, developed and managed by COFIDE, may be used to cover the financial risk of borrowers that meet the fund's eligibility criteria.⁶ Sub-loans under the program will not be subject to the use of a guarantee and its suitability will be determined by assessing risks and eligibility on a project-by-project basis.⁷

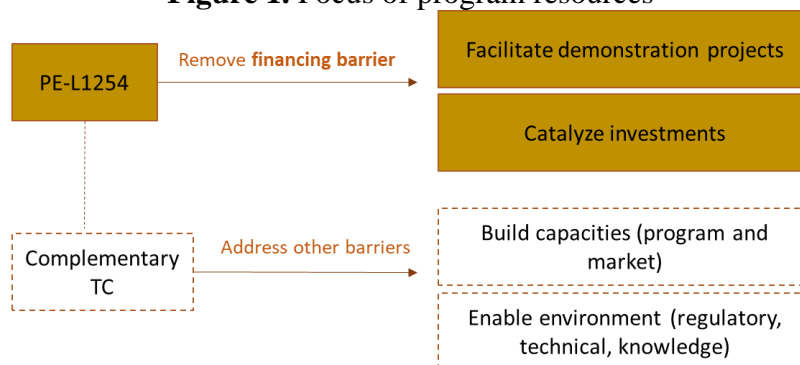
CTF grant resources will finance complementary technical cooperation (TC) activities to support the overall implementation of the program and address barriers other than financial (institutional, knowledge, regulatory). These include: (i) awareness and capacity building for vehicle producers, operators, electric utilities and regulators, financial institutions (FIs) and other market actors, (ii) improving the regulatory framework related to EV technology and electric charging and tariffs, (iii) development of financial, business and risk sharing models for the incorporation of EV fleets in specific areas, and (iv) enhancing competences related to execution, monitoring, and reporting within COFIDE.

⁵ Program resources are intended to facilitate the provision of financing adapted to the needs and operational dynamics of EVs for the specific type of vehicle and its use. While a particular good or service eligible may be part of a larger investment project, its financing is administered as an isolated credit transaction, thus providing the beneficiary with flexibility and promptness in accessing credit for up to 100% of the asset.

⁶ Created by Law Decree No. 1399 in 2018, CRECER aims to support productive development of MSMEs, promote formalization, increase the development of sustainable projects, and contribute to regional and sector-targeted development, by offering loans and credit enhancement instruments to the local financial system. The environmental factor, i.e., contributing to the reduction of GHG emissions in Peru, is among CRECER's expected impacts. Total resources available in CRECER are US\$50 million, which represents the total amount up to which aggregated liabilities of lenders under the program could be covered, depending on the guarantee structure. The definition of MSME follows the sales-based categorization from the Ministry of Production (DS-013-2013-Produce): micro up to 150 UIT or PEN 630,000, small up to 1,700 UIT or PEN 7.14 million and medium up to 2,300 UIT or PEN 9.66 million.

⁷ The IDB currently works with COFIDE under the TC [RG-X1258 Regional Energy Savings Insurance \(ESI\) and risk management program](#) to assess the applicability of guarantee mechanisms in the moto-taxi sector. The [ESI](#) is an innovative risk transfer mechanism that is being piloted in Colombia, Mexico and El Salvador, and could eventually accompany financing from the program. The IDB has been building experience and supporting development banks in the region in the development of this model since 2016 with the support of the CTF. For an analysis of the ESI, see Micale, V., et al., "[Energy Savings Insurance: Pilot Progress, Lessons Learned, and Replication Plan](#)", Global Innovation Lab for Climate Finance Lab, April 2015.

Figure 1. Focus of program resources



Source: Authors' elaboration

Removing the financial barrier to investment is expected to have a dual effect: first, to catalyze investments in EV projects, and second to produce demonstration projects to prove the financial viability of the technology, locally. If sufficient lending momentum is developed, the financing scheme could be expanded to enable more investment in EVs in the future.

11. Consistency with CTF investment criteria

(1) Potential GHG emissions savings	The program should result in total emissions reduction of about: 4,470 tons of CO _{2e} per year, on the maximum year over the course of the program; 14,780 tons of CO _{2e} accumulated over the 5 years of execution of the program; and about 57,350 tons of CO _{2e} over the lifetime of the projects (17 years: 5 years of execution and 12 years of lifetime for the electric vehicles financed the last year of execution).
(2) Cost-effectiveness	Based on GHG emission reductions of 57,350 tons of CO _{2e} over 17 years, the unit abatement cost of the Program is estimated at: (i) USD 174 per ton of CO_{2e} considering only CTF financing (USD 10 million); and (ii) USD 357 per ton of CO_{2e} , when total project investment costs are considered (USD 10 million from CTF + USD 10 million co-finance by IDB) A Cost Benefit Analysis (CBA) (see Annex) undertaken for this Program indicates that the expected Net Present Value (NPV) of the Program is USD 0.58 million.
(3) Demonstration potential at scale	It is expected that the financing and business model proposed by the Program will remove some important barriers to investment in electromobility in Peru, especially in public transport buses, taxis and charging infrastructure, particularly in terms of increasing the attractiveness (reduced risk and efficient returns) of projects to engage private investors, reducing the risk

perception of the local financial system, and promoting good contractual practices and schemes.

The business models developed under the Program present a great opportunity to demonstrate the commercial viability of financing and structuring investments in electromobility, allowing for the Peruvian banking system and potential private investors to reduce their investment risk perceptions and engage further in investing in electromobility solutions in Peru in the long term. If the model is successful, it could be scaled up to support more electromobility projects in Peru, and in the region.

Magnitude of resources needed. Immediate private funding needed only in the purchase of vehicles for bus-based integrated public transport systems in Lima is estimated at USD 150 to USD 230 million.⁸ Lima's integrated mass transit system needs approximately 1,400 buses to renew its fleet for routes already under concession, the *corredores complementarios*, by 2020. This opens a window of opportunity to encourage the adoption of EV technologies by developing innovative business models and offering financial support. Moreover, there is a commitment by the government to gradually formalize additional routes in Lima and some other major cities, which will expand the need for replacing buses. Another 3,500 buses are expected to be needed to operate the new concessions for *corredores complementarios*, to be granted by 2020, and some 5,000 more for other lines, known as *corredores de integración* or *rutas de aproximación*.

While bus concessions are expected to constitute the most imminent demand for program funding, there are other business models for EVs where potential has been identified. These include fleets of buses for private firms (for their workforce transport or logistics), taxis that are affiliated to a private taxi service company or taxi application, and three-wheeled moto-taxis, operating individually or as part of a cooperative for passenger transport. A market study carried out in preparation for the program estimates the 5-year demand that is more likely to be met if resources are made readily available to support the financing of the sector. Based on an average

⁸ MTC, GIZ, "[TRANSPeru – Sustainable Urban Transport NAMA Peru](#)", 2015.

	<p>investment of USD 372,500, USD 43,000 and USD 5,310 per electric bus, taxi and three-wheeled moto-taxi, respectively, this demand adds up to a total of USD 94.6 million, of which almost 90% correspond to buses.</p> <p><u>Transformation Potential.</u> The proposed actions of the Program are expected to have a transformational impact as they would help overcoming some of the key barriers such as lack of appropriate financing, lack of regulatory visibility and a better understanding of the business opportunity with electromobility projects in Peru. The availability of appropriate financing will improve the electromobility project economics and this in turn would raise interest from additional private investors and technology suppliers⁹.</p> <p>Finally, the Program may have a high potential for replication in other countries in the Latin American region where barriers to electromobility projects are similar, i.e. difficulty of access, little participation of FIs due to high risk perceptions, and inadequate regulatory and risk management frameworks and instruments.</p>
(4) Development impact	<p>The improvement of the emissions standards of the fleet is one of the 3 top priorities for public transportation in Peru (PUCP, 2018). The proposed program will not only contribute to this goal but also to the reduction of local pollutants and noise levels, and therefore, to reduce the number of deaths and respiratory diseases in the areas of influence of the projects. The World Health Organization estimates 4,239 deaths per year in Peru caused by air pollution; other estimates indicate around 6,000 deaths annually as a consequence of exposure to particles and urban air pollution.¹⁰</p> <p>The initiatives and standards prepared by the Ministry of Energy and Mines (MINEM)¹¹ aimed to facilitate the development of the markets for EVs and hybrid vehicles and their charging infrastructure, constitute a key step</p>

⁹ UNDESA, 2012. Synthesis of energy-related issues highlighted in national reports of Rio+20 [online]. Rio de Janeiro: UN-Energy.

¹⁰ Inicio Latino America for MINEM, “[Estudio de Diagnóstico, Evaluación, Análisis y Propuesta para Apoyar la NAMA de Preparación del Sector Energético para la Transformación hacia una Matriz Energética Limpia a Través del uso de Transporte Limpio en el Perú](#)”, 2017a; MTC, GIZ, “[TRANSPerú – Sustainable Urban Transport NAMA Peru](#)”, 2015.

¹¹ [Proyecto de Decreto Supremo que aprueba “Disposiciones para facilitar el desarrollo del mercado de vehículos eléctricos e híbridos y su infraestructura de Abastecimiento”](#)

	<p>forward in setting the enabling environment for the uptake of the EV technology in the country. The implementation of the program will help to operationalize these regulations, mainly in public transportation, while the introduction of the fleet of EV and its infrastructure will assist in the creation of local capacity for the maintenance and operation of this new technology in the long-term and promote the increase in productivity.</p>
<p>(5) Implementation potential</p>	<p>COFIDE, the National Implementing Agency for the program, is Peru’s state-owned development bank. Its mission is to contribute to Peru’s decentralized sustainable development by financing investment and contributing to the development of the local financial and capital markets. COFIDE is widely recognized for its execution of <i>Cofigas</i>, a program that financed the conversion of vehicles to natural gas (<i>gas natural vehicular</i>, or GNV). <i>Cofigas</i> was facilitated via partnerships between institutions in the public and private sector and has promoted the conversion of some 240,000 vehicles and supported the financing of gas supply infrastructure, machinery and equipment. Moreover, COFIDE is one of partners that will aid in the implementation of the NAMA for Electric Road Transport (<i>NAMA de Transporte Eléctrico Terrestre</i>), specifically in its role of development bank to support the financing of EV projects.</p> <p>Electric utilities like Engie and Enel are currently performing tests with EV buses and taxis in Lima and Arequipa and creating partnerships with EV providers, bus concessionaries and fleet operators to design schemes for the supply of the charging infrastructure and long-term power supply contracts. The involvement of these players with international experience in the EV market and services has accelerated the learning curve on its complexities, prepared the field for the upcoming line of credit and facilitated the identification of a portfolio of potential projects. Furthermore, a local assembling company (MODASA) has delivered two electric buses that will be tested in the Lima roads. The company also has an agreement with a Spanish manufacturer for the mass assembly and supply of buses.</p>

<p>(6) Additional costs and risk premium</p>	<p>Despite lower lifetime operating costs,¹² higher energy efficiency, and the worldwide reduction of the cost of the technology over the last years,¹³ in Peru the EV technology is still nascent and therefore faces technical, social, and economic barriers to its widespread adoption. Key challenges are the initial investment which may be significantly higher compared with traditional vehicles, and the availability of appropriate infrastructure for the charging and maintenance of EVs, mainly charging stations and the associated reinforcements in electric distribution grids.¹⁴</p> <p>The higher CAPEX of EVs compared to ICEVs imply longer payback periods (10 to 12 years vs 7 to 8 in buses); therefore, EV investments require funding that matches their payback structure, and minimize the impact of financial costs in the overall costs of the projects. The willingness of the local financial system to provide long-term financing is very low, as its core funding is mainly short-term and FIs perceive EVs as too risky or as not being able to yield enough financial return in the terms in which they are willing to lend.</p>
<p>Additional CTF investment criteria for private sector projects/ programs</p>	
<p>(7) Financial sustainability</p>	<p>Approximately 10,000 buses are expected to enter into the Peruvian market over the next five years: 4,900 in the <i>corredores complementarios</i> (1,400 to renew the fleet for routes under concession by 2020 and 3,500 to operate the new concessions to be granted by 2020) and some 5,000 more for the <i>corredores de integración</i> or <i>rutas de aproximación</i>. Moreover, there is a commitment by the government to gradually formalize additional routes in Lima and other major cities. By 2030, it is estimated that 5% to 10% of bus and light vehicle fleet in Peru will be electric; therefore, it is expected a steady demand for EV financing in the near term.</p>

¹² United States Environmental Protection Agency (2018).

¹³ Innovation in battery technologies is driving a rapid adoption of EVs. New batteries will offer more resiliency to changes in temperature and a longer life cycle. Some studies suggest that Li-ion batteries of the NMC Family will offer more than 8,000 cycles before the battery reaches 80% of its original capacity, a property that would allow for a massive deployment of electric buses that can circulate for more than 10 years without the replacement of the battery components (Cano et al. 2019).

¹⁴ In some cases, incremental initial cost can be up to three times higher. However, the difference in investment and operational costs of an EV compared to an ICEV are market-specific, i.e. they depend on factors that are particular to each country/region, such as the cost of energy/fuel, the tax regimes, the availability of local supply, geographical features that may affect the efficiencies of the vehicles, etc.

	<p>The availability of appropriate financing is expected to raise interest from additional private investors and technology suppliers. Also, the involvement of COFIDE as implementing agency is expected to give confidence in the sustainability of long-term financing and to guarantee the competitiveness of the credit conditions by local financing institutions.</p> <p>The Program would be mobilizing additional private sector resources as intermediary FIs (IFIs) and other relevant private sector actors become more knowledgeable about the risk and returns of investments in the technology. It is expected that prior to the disbursement of the full amount of the loan, COFIDE will establish a new line of credit for financing additional EV projects funded either with its own capital or with an IDB loan.</p>
<p>(8) Effective utilization of concessional finance (including a detailed analysis on how the proposal meets the minimum concessionality principles, and on how it is aligned with the blended concessional finance principles)</p>	<p>A preliminary EV market study concluded that under the current conditions the electric buses and taxis in Peru¹⁵ are not competitive with the ones operated by natural gas mainly due to the low price of the fuel and wide acceptance of the technology for its local manufacture and supply chain network. It also concludes that concessional finance, with lines of credit below 10% will be needed to overcome some of these barriers and make the EV competitive. Furthermore, the study suggests the need for a special incentive by eliminating the sales tax and local tax, especially in taxis. Based on this scenario it is estimated that the level of concessionality that will be provided is enough to meet the market's demands, and that a lower level of concessionality would be insufficient.</p> <p>The concessional finance will be focused in creating the conditions for long-term financing and the program will be structured so that existing risk transfer mechanisms at COFIDE may be used to complement the concessional loan instrument. In particular, a guarantee from the CRECER Fund, developed and managed by COFIDE, may be used to cover the financial risk of borrowers that meet the fund's eligibility criteria. The transference of concessional finance will be verified by requesting the IFI to declare an average rate in similar conditions of tenure and purpose and the rate of the product, which should be lower than the average.</p>

¹⁵ Demanda de vehículos eléctricos en Perú. Collantes Gustavo. Octubre 2019.

(9) Mitigation of market distortions	There is currently no active market for financing EVs in Peru, so no potential distortions are foreseen. The program is expected to crowd in private investment, to develop business models to overcome current barriers, and to contribute to the strengthening of the fiscal, regulatory and institutional framework for EVs.
(10) Risks	<p>Consistent with the approach to financial intermediation operations, the IDB will conduct the environmental and social (E&S) risks analysis of the proposed program at two levels. First, a corporate level analysis will determine COFIDE’s institutional capacity to manage and apply the IDB’s environmental and social safeguards, identifying specific expertise of areas within the entity in this regard. Second, a project-level analysis on investments to be financed under the program.</p> <p>The results will be described in the Environmental & Social Management Framework (ESMF), which will be fully integrated in the program’s Operating Regulations. The ESMF will provide a framework for the assessment, monitoring and management of individual subprojects and overall portfolio to be financed. At the project level, technical support will be provided to COFIDE and IFIs to conduct a thorough assessment of the financial and technical aspects of the EV proposed projects.</p>
12. For DPSP projects/programs in non-CTF countries, explain consistency with FIP, PPCR, or SREP Investment Criteria and/or national energy policy and strategy	
<p>The government of Peru has recognized electric mobility as one of the priorities in regard to mitigation actions in several international commitments, national decrees, and current Law Proposals. Peru’s NDC identifies the transport sector as one of the main sources of GHG emissions.</p> <p>The government of Peru is making progress towards decarbonizing the transport sector. This is evidenced in a number of plans and strategies, namely: (i) the <i>Plan Energético Nacional 2014-2025</i>, which addresses the need to expand EV technology in transport as one of the requirements for the development of an energy efficient policy in the transport sector; (ii) MINEM’s <i>Plan Estratégico Sectorial Multianual (PESEM) 2016-2021</i>, which identifies among the country’s envisioned changes for the future of the energy sector the “massive migration to EVs for transport”; and (iii) MINEM’s resolution to promote infrastructure investment and market development for EVs, which constitutes a key step forward in setting the enabling environment for the uptake of EV technology in Peru. A clear example of the boosting that the government is giving to electric mobility in Peru is the recent publication of the draft Supreme Decree that aims to facilitate the development of the EV and hybrid vehicle market and their charging infrastructure.¹⁶</p>	

¹⁶ [Proyecto de Decreto Supremo que aprueba “Disposiciones para facilitar el desarrollo del mercado de vehículos eléctricos e híbridos y su infraestructura de Abastecimiento”](#)

Moreover, the government has issued two Supreme Decrees related to energy efficiency in the transport sector: (i) N 95-2018-EF establishes a purchase tax exemption for electric vehicles and (ii) N 19-2018-MT identifies as priority the incorporation of high efficiency vehicles in public transport fleet. A current law proposal is under review in the congress of Peru that seeks to implement financial incentives (circulation fees exemptions and other discounts) and non-financial incentives (exemption to circulation restrictions, preferred parking places, among others) (Congress of the Republic of Peru, 2019).

At a regional and municipal level, Peru is making progress in the institutional arrangements that will facilitate the implementation of programs and incentives in the transport sector. In September 2018, the Peruvian Congress approved the creation of a single Transport Authority for the Metropolitan area of Lima and Callao (ATU), seeking to address the long-lived problems in the efficiency and coordination of the transport service, due to the existing atomization of public authorities in the city. Among its roles, the ATU will be in charge of promoting public and private investment, granting concessions, and establishing the guidelines for the development of an integrated and sustainable transport system. The creation of the ATU is expected to improve the enforcement of regulation and provide better guarantees for ongoing and foreseen concessions of bus services. More recently, in July 2019, the government officially approved the creation of the *Programa Nacional de Transporte Urbano Sostenible* (Promovilidad), adjunct to the MTC (D.S. No. 027-2019-MTC). The program will support cities with over 100,000 inhabitants and regional capitals (except for those under jurisdiction of the ATU) in developing integrated transport systems, looking to reduce GHG emissions.

13. Stakeholder Engagement

The proposal follows sectoral dialogue with relevant actors, public and private, local and national, including banks, operators, concessionaires, EV providers, utilities, the *Instituto Metropolitano Protransporte de Lima* (Protransporte), Lima's Urban Transport Department (GTU), and sector ministries, including prior IDB engagement with the national government and the Municipality of Lima to support the adoption of electric buses by private operators.¹⁷ It also piggybacks on the advances made by the country with their transport-related NAMAs and MINEM's resolution to promote infrastructure investment and market development for EVs, which offer a more comprehensive strategy for the sector and recommendations on structural changes (regulatory framework, institutional arrangements, public infrastructure) for the transition to an environmentally-friendly transport system.

¹⁷ See [“RG-T3078: Accelerating NDC implementation. Unlocking clean buses in LAC”](#). The general objective of this technical cooperation is to improve public transportation in LAC cities through the replacement of diesel buses with low-carbon hybrid or electric alternatives.

14. Gender Considerations

The project will consider the differences between men and women to invest in electromobility. Women face different barriers in accessing clean technologies as well as financial credit due to socioeconomic constraints: lack of technical and financial knowledge, bigger risk aversion, lower asset value, access to smaller or informal credits, etc.

The project will map women-led businesses in public transport buses, taxis, and charging infrastructure in Lima. It will identify specific barriers these companies find to access credit or to transition to electric vehicles. Likewise, it will help to overcome these barriers using communication tools, capacity building activities, and evaluation of business models, among others.

15. For projects/programs with activities in countries assessed as being at moderate or high risk of debt distress, macro-economic analysis to evaluate the potential for the CTF project or program to impact the country's debt sustainability

Not applicable

16. For public sector projects/programs, analysis of how the project/program facilitates private sector investment

The Program will take advantage of the regulatory actions and institutional arrangements the Peruvian government has initiated in the public transport sector, mainly the creation of ATU (to promote public and private investment, grant concessions, and establish guidelines for sustainable transport); the creation of the Promovilidad Program, aimed to support major cities in developing integrated transport systems; the enforcement of the exception on the excise tax (*Impuesto Selectivo al Consumo*) for EVs; and the ongoing discussions on regulation for service and charging stations.

The Program will facilitate the dialogue among stakeholders familiar with this framework, including current concessionaires, COFIDE, local financing institutions, electric utilities and technology providers in order to familiarize them with the opportunities and requirements of the line of credit. It will also facilitate the proper technical and financial evaluation of the proposed projects through the technical cooperation as well as to promote good contractual practices and schemes.

The Program will work with a group of potential private investors and IFIs to reduce their investment risk perceptions by developing business models that demonstrate the commercial viability of financing in electromobility and engage them further in investing in EV solutions in Peru in the long term.

17. Indicators and Targets

Project/Program Timeline

Expected start date of implementation ^[d]	January 2020
Expected end date of implementation ^[d]	December 2025
Expected investment lifetime in years (for estimating lifetime targets)	12 years

Core Indicators		Targets ^[e]
GHG emissions reduced or avoided over lifetime (tons of CO ₂ -eq)		57,350
Annual GHG emissions reduced or avoided (tons of CO ₂ -eq/year) (specify: upon completion of the project/program / on the maximum year / on a representative year)	On the maximum year	4,470
Installed capacity of renewable energy (MW)		TBD
Number of additional passengers using low-carbon transport per day		TBD
Energy savings cumulative over lifetime of investment (MWh)		TBD
Annual energy savings (MWh/year) (specify: upon completion of the project/program / on the maximum year / on a representative year)		TBD
Identify relevant development impact indicator(s)		Targets
Jobs to be created		TBD
18. Co-financing		
	Please specify as appropriate	Amount (in million USD)
MDB 1	IDB	10.5
MDB 2 (if any)		
Government		
Private Sector		2.1
Bilateral		
Others (please specify)		
Total		12.6
19. Expected Date of MDB Approval		
TBD		

NOTES:

[a] This cover page is to be completed and submitted together with the MDB project/program proposal when requesting CTF funding approval by the Trust Fund Committee.

[b] For products denominated in EUR, please also provide USD equivalent in the column to the left.

[c] Please provide the information in the cover page or indicate page/section numbers in the accompanying project/program proposal where such information can be found.

[d] Insert “not applicable” (N/A) if dates cannot be determined at the time of submission (e.g. private sector programs)

[e] Insert value N/A if indicator is not applicable to the project/program.

PROJECT PROFILE

PERU

I. BASIC DATA

Project Name:	Financing Sustainable Electric Transport Solutions in Peru		
Project Number:	PE-L1254		
Project Team:	Maria Netto (IFD/CMF), Team Leader; Benoit Lefevre (CSD/CCS), Alternate Team Leader; Agustina Calatayud, Alternate Team Leader (INE/TSP); Rafael Capristán (INE/TSP); Enrique Nieto, Rodrigo Chaparro, Francisco Demichelis, Isabelle Braly-Cartillier, Cecilia Bernedo, (IFD/CMF); Jose Carlos Echeverria, (INE/ENE); Jaime Fernandez (CSD/CCS); Claudio Alatorre y Javier Jimenez (LEG/SGO); Bernardo Deregibus (ORP/ORP); Andres Suarez (FMP/CPE).		
Borrower	Republic of Peru		
Executing Agency:	<i>Corporación Financiera de Desarrollo S.A. (COFIDE)</i>		
Financial Plan:	IDB (CTF) ¹ – Loan:	US\$ 9.5	million
	IDB (CTF) – Grant:	US\$ 0.477	million
	IDB (Ordinary Capital) – Loan:	<u>US\$10.5</u>	<u>million</u>
	Total:	US\$20.477	million
Safeguards:	Policies triggered: OP-102, OP-703 (B1, B2, B3, B7, B.10, B.11, B13). Classification: B.13 – FI-2 to be confirmed during due diligence.		

II. GENERAL JUSTIFICATION AND OBJECTIVES

A. Background and justification

- 2.1 Transport accounts for 23% of global energy-related Greenhouse Gas (GHG) emissions.² In Latin America and the Caribbean (LAC), this share is 36%.³ The decarbonization of the transport systems will require widespread adoption of available clean technologies, as well as strong policies to ensure full utilization of these advances and rapid uptake at a scale.
- 2.2 Innovations in low-emission technologies for urban transport offer the potential to achieve environmental objectives, with economic gains. Improving the fuel and vehicle efficiency of the transport system is a key action assisting LAC countries in

¹ Clean Technology Fund (CTF) funding for this program is expected to be submitted for approval by November 2019, and will be subject to the Financial Procedures Agreement between IDB and CTF.

² [Mobilizing Sustainable Transport for Development](#), Analysis and Policy Recommendations from the United Nations Secretary-General's High-Level Advisory Group on Sustainable Transport, United Nations, 2016.

³ Martinez, H. [El Desafío del Sector Transporte en el Contexto del Cumplimiento de las Contribuciones Determinadas a Nivel Nacional de América Latina](#). Economic Commission for Latin America and the Caribbean (ECLAC), 2018.

- meeting their Paris Climate Agreement objectives (Nationally Determined Contributions or NDCs).⁴
- 2.3 Electric Vehicles (EV) have emerged as one of the key technologies contributing to decarbonization and lowering local pollution. These benefits can be extended to increasing energy security, as reducing the use of fuel oils can guarantee the stability of energy supplies, ever more relevant in countries dependent on imports. Existing literature suggests that operating an EV should be far less expensive than a conventional vehicle. The problem remains the initial investment, which may be significantly higher. In emerging economies where EV technology is still nascent, its financial viability is more likely to be contingent to the existence of incentives that can offset the incremental investment vis-à-vis a conventional vehicle, and to various technical, economic, cultural and regulatory factors prevailing in the context in which the technology is being introduced. Technological migration of vehicles must overcome these barriers, if the path to sustainable mobility is to be achieved in the near future.
- 2.4 **Macroeconomic context and the transport sector in Peru.** Energy and GHG emission in the transport sector are strongly linked to rising population and income. Over the past decade, Peru's economic outlook has been promising. Amidst recent difficulties in the political context, GDP grew 2.5% in 2017, followed by an economy recovery in 2018 with a 4% growth rate.⁵
- 2.5 Alas, CO₂ emissions have also increased in the past five years, with a 18% increase in 2016 compared to 2012. In a Business-As-Usual scenario, emissions from road transport in Peru are expected to rise fivefold by 2050, from 15.8 million of tCO₂e in 2010 to 79 million tCO₂e in 2050.⁶ Compared to its regional peers, Peru has the highest concentration of atmospheric Particulate Matter in both urban and rural areas.⁷
- 2.6 Mini-buses and other small-capacity vehicles are the primary mode of urban public transport in Peru. These are mostly unregulated, informally operated by private companies or individuals, with little coordination of services and poor vehicle standards. Three-wheeled vehicles (moto-taxis) are often used for short distances in many municipalities of Lima and provinces throughout the country.
- 2.7 In order to improve urban mobility and reduce GHG emissions, the Government of Peru has been giving high priority to electromobility solutions including reference to it as a public policy in its recently approved the Competitiveness National Plan, as well as adopting new legislation allowing for transportation subsidies. It has also developed a [Nationally Appropriate Mitigation Actions \(NAMA\)](#) for the transformation to a clean energy matrix through the use of clean transport, setting

⁴ GHG emissions reduction and energy efficiency in the transport sector is stated in NDCs from these countries: Argentina, Brazil, Colombia, Mexico, Paraguay and Peru.

⁵ [Instituto Nacional de Estadística e Información](#) (INEI), accessed on June 2019; [Peru 2018 -Article IV Consultation Staff Report](#), International Monetary Fund (IMF), July 2018; *Perspectivas de la Economía Mundial* (IMF), July 2019.

⁶ *Proyecto Planificación ante el Cambio Climático*, 2014.

⁷ *Estudio de Diagnóstico, Evaluación, Análisis y Propuesta para Apoyar la NAMA de Preparación del Sector Energético para la Transformación hacia una Matriz Energética Limpia a través del uso de Transporte Limpio en el Perú*, Hincio Latin America, commissioned by MEM, July 2017.

- specific goals and actions to promote electromobility.⁸ Finally, specific actions are also being taken by the government to improve situations in cities such as Lima and Callao, by creating the *Autoridad de Transporte Única* to manage all city transport.
- 2.8 From a financial point of view, the introduction of EV technology in urban transport can have important operational savings potential. This is particularly relevant in the case of buses, as fuel constitutes a substantial part of the annual costs of owning and operating a bus. An analysis with support from IDB commissioned by the Ministry of Energy and Mines⁹, found that fuel savings can be around 37% and 18% for taxis and moto-taxis, respectively, and as much as 72% for buses, when compared to gasoline or diesel operated vehicles. Although actual savings will vary depending on the distance traveled and fuel used, the results of analysis undertaken suggest that the economic case for taxis, moto-taxis and buses is strong.
- 2.9 Further, another essential factor to consider for the implementation of EVs, is the way in which electricity is produced. Peru's energy matrix is relatively clean, with a 52% share of renewable energy (including large hydro) and the relatively low cost of electricity might be sufficient to allow EVs to achieve commercial success locally, if coupled with incentives associated to reducing the cost of capital and capacity building.¹⁰
- 2.10 Despite its environmental benefits, efficiency and technical viability, upfront investment of EV compared to conventional vehicles is high. The acquisition price of an EV in Peru is estimated to be 11% and 25% higher for taxis and moto-taxis, respectively. In the case of buses, the price results 76% more costly.¹¹ Moreover, the introduction of EV technology also involves investing capital in other essential elements to its operation, such as charging infrastructure, to guarantee similar operating conditions with the replaced technologies. These incremental costs are one of the main barriers to its uptake, especially in developing markets where an EV market at scale has not yet materialized. As public passenger transport services rely on private actors, promoting their migration to EV technology also requires maintaining the profitability of the economic model for the private party, for whom operating these vehicles is its business.
- 2.11 **The financial barrier to EV development.** As described above, one of the most significant factors limiting the uptake of the EV technology is its high initial cost. Even though the lower Operational Cost (OPEX) of an EV is sufficient to payback the investment, the Capital Expenditure (CAPEX) is much higher compared to a conventional vehicle, which means the payback period of an EV is comparatively much longer, between 10 to 14 years in average, compared to 7 to 8 years in conventional vehicles.¹² Consistently, to compete with the latter, EV investments

⁸ The UNFCCC defines NAMAs as “any action that reduces emissions in developing countries and is prepared under the umbrella of a national governmental initiative.”

⁹ The Basel Agency for Sustainable Energy. [Análisis y Diseños de Modelo de Negocio y Mecanismo de Financiación para Buses Eléctricos en Lima](#), Perú. July 2019.

¹⁰ Ibid [9], BASE (2019).

¹¹ Ibid [9]. Hincio Latin America (2017).

¹² Ibid [9], BASE (2019) and Ibid [7] Hincio Latin America (2017).

- require funding that can be repaid at terms that match their payback structure and that minimize the impact of financial costs in the overall costs of the project, so that financial viability can be achieved without risking profitability.
- 2.12 The Peruvian banking system is considered to be highly resilient, well capitalized and profitable. Credit to the private sector (as a percentage of Gross Domestic Product) has been expanding from 28% in 2000 to 40% in 2017.¹³
- 2.13 Despite its robustness, the local financial system is still underdeveloped, and its deposit structure is mainly short term (overnight deposits and savings account for a 29.3% and 29% share of deposits, respectively), with aversion by banks to allocate capital on riskier, longer-term assets.¹⁴ This directly affects the general ability of the banking system to provide long-term credit, as their core funding is mainly short-term. In addition, more rigorous financial regulation increases aversion by banks to allocate capital on riskier, longer-term assets.
- 2.14 Moreover, risk analysis and financing decisions for EVs must be based on a holistic understanding of the complex nature of these investments and the long-term benefits associated to them, which the financial system is yet to acquire due to the nascent stage of the market. Besides the lack of familiarity with the performance of this technology other factors accentuate perceptions of risk, such as the potential impact of regulation in tariffs and project returns, the still limited number of suppliers of EV products and services and uncertainty about the future development of EV infrastructure and services, due to the current dominance of diesel/gas technology in the sector. All these can further hinder the provision of credit or, at any rate, increase its costs.
- 2.15 In sum, long-term private credit does not currently exist for EV, which has to do with both the funding structure of the financial system and risk characteristics inherent to the EV investment itself.
- 2.16 The program intends to ease the impact of the higher CAPEX on overall project return profile, better matching project cash flows to the repayments of the financing. In parallel to the financing of the projects per se, complementary Technical Cooperation (TC) activities (see ¶2.20) will support the enhancement of regulation and business models, as well as the building of capacities, to reduce perception of risk.

B. Intervention proposed and program objectives

- 2.17 The general objective of the program is to reduce fossil fuel consumption and GHG emissions through the promotion of low-carbon mobility solutions in Peru.¹⁵ The specific objective is to stimulate and demonstrate financial viability private investments in EVs.

¹³ [Peru 2018 Article IV Consultation Staff Report](#), IMF, July 2018; [Sistema Financiero Peruano](#), SBS, February 2019.

¹⁴ [Evolución del Sistema Financiero](#), December 2018, SBS, last updated in May 2019.

¹⁵ Private-led projects are those developed by private operators, concessionaires, technology providers or other private firms.

- 2.18 [Clean Technology Fund](#) (CTF)¹⁶ concessional loan resources will be channeled by IDB via COFIDE, Peru's second-tier national development bank, and blended with IDB's resources to provide long-term financing for EV projects, including: (i) replacement of diesel/gasoline operated vehicles and new fleets with EVs;¹⁷ and (ii) power generation for green mobility solutions, mainly EV charging stations (preferably solar-powered). Financing will be delivered to final beneficiaries through first-tier FIs. Studies have already identified potential projects and operators, technology providers and concessionaries for buses, taxis and moto-taxis.¹⁸
- 2.19 The program will combine the concessional loan instrument with the use of adapted risk transfer mechanisms, such as guarantees and insurance¹⁹. The employment of these mechanisms will be discretionary, and loans will not be subject to its use.
- 2.20 CTF resources will also finance complementary TC activities to support the overall implementation of the program, including awareness, capacity building, evaluation of business models, monitoring, and reporting within COFIDE, and knowledge sharing.
- 2.21 The program is expected to have a transformational and long-term impact since FIs and vehicle operators will be encouraged to further support these investments, once its viability and profitability has been demonstrated²⁰. Program activities can also contribute to ongoing government efforts towards formalizing and improving public transport.

III. TECHNICAL ISSUES AND SECTOR KNOWLEDGE

- 3.1 The program will be executed under a sole financing component by which COFIDE will use IDB (US\$10.5 million) and CTF (US\$9.5 million) loan resources²¹ to provide long-term financial support to private-led EV projects for urban transport.²² Funds will be channeled via second-tier loans.
- 3.2 The program intends to demonstrate the financial viability of these projects and the potential of scaling up public and private efforts to develop green mobility solutions, familiarizing market actors (operators, banks and financial intermediaries,

¹⁶ CTF funding for this program was approved under the 3rd phase of the Dedicated Private Sector Programs, which is intended to make use of a range of financing instruments taking risks that commercial lenders are not able to bear.

¹⁷ For the purpose of the program, EVs include buses, taxis, and three-wheeled vehicles (moto-taxis). The program does not consider private light vehicles. The disposal of vehicles replaced will be treated in the safeguards of the program.

¹⁸ See Ibid [9], BASE (2019) and Ibid [7]. Hincio Latin America (2017), these assessments will be further detailed in additional market analysis underway.

¹⁹ Guarantees can be provided from CRECER Fund (Law Decree No. 1399, 2018) managed by COFIDE. Local insurance is supported with TC [Regional Energy Savings Insurance and Risk Management Program \(ATN/CF-15453-RG\)](#).

²⁰ Ibid [9], BASE (2019).

²¹ The leverage ratio of the component requires that the CTF resources be matched with at least equal amounts from the IDB and from local resources.

²² Projects will be deemed eligible based on conditions established in the Operating Regulations, to be agreed between IDB and COFIDE.

- insurers) with EV investments, and mobilizing capital to expand the industry in the long term (demonstration and sustainability effect).
- 3.3 The proposal builds on prior engagement of IDB with the national government and the Municipality of Lima to support the adoption of electric buses by private operators²³ and a dialogue with relevant actors, public and private, including banks, operators, concessionaires, the *Instituto Metropolitano Protransporte de Lima* and sector ministries. It also builds on existing IDB initiatives with COFIDE in assessing the potential of investments in electric taxis and moto-taxis,²⁴ as well as IDB experience with similar programs with National Development Banks in the region.²⁵ In this context, the program benefits from previous studies considering: (i) market assessment of potential financiers: evaluations of possible opportunities and restrictions for financing the acquisition and incorporation of electric vehicles; (ii) technical and economic feasibility on operation: profitability analysis of electric vehicles; (iii) business models and potential financing mechanisms; and (iv) risk matrix and implementation strategy. A detailed market assessment, considering previous studies and findings, will be developed in support to the program preparation. The program will be executed by COFIDE, a second-tier development bank that promotes and finances productive investment and infrastructure throughout Peru, including initiatives with social and environmental impact.²⁶
- 3.4 **Program alignment.** The program is consistent with the Update to the Institutional Strategy (UIS) 2010-2020 (AB-3008), with the challenge of Productivity and Innovation through the financing of investments from third parties mobilized by the project, and with the crosscutting theme of Climate Change (CC) and Environmental Sustainability through promotion of the EV relaying on renewable energy projects. Following the joint MDB approach on climate finance tracking, an estimated 100% of IDB funding for this program will be invested in CC mitigation activities and will contribute to the IDB Group's climate finance goal of 30% of operational approvals by year's end 2020. Additionally, it will contribute to the Corporate Results Framework (CRF) 2016-2019 (GN-2727-6) in the performance indicators of reduction of emissions, and MSMEs financed. The program is also aligned with the objectives of improvement of productivity, institutional strengthening and environmental sustainability and climate change of the IDB Country Strategy for Peru 2017-2021 (GN-2889). It is consistent with the Support to SMEs and Financial Access/Supervision Sector Framework Document (GN-2768-7), the Sustainable Infrastructure for Competitiveness and Inclusive Growth Strategy (GN-2710-5), and the Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and RE (GN-2609-1). The operation will be in the Operational Program Report for 2020.

²³ See TC [Accelerating NDC implementation. Unlocking clean buses in LAC \(ATN/AC-16601-RG, ATN/OC-16602-RG, ATN/OC-16603-RG\)](#).

²⁴ See TC [ATN/CF-15453-RG](#).

²⁵ In 2013, IDB approved the "Bogota's Integrated Public Transit System Transformation Program" (3003/TC-CO), funded with CTF resources, to support the financing of low carbon buses for Bogota's *Sistema Integrado de Transporte Público* via Colombia's national development bank, Bancóldex.

²⁶ Such as the COFIGAS program.

IV. ENVIRONMENTAL SAFEGUARDS AND FIDUCIARY SCREENING

- 4.1 As per IDB Directive B.13 of the Environment and Safeguards Compliance Policy (OP-703), the program does not require classification ex ante. Consistent with the approach to financial intermediation operations, the IDB will conduct the analysis of the proposed program at two levels: (i) corporate level, specifically COFIDE's ability to manage and apply IDB's environmental and social safeguards, identifying the capacity of areas within the entity to allow safeguards to be applied to investments to be financed with IDB resources; and (ii) in the analysis of specific sub-projects or investments. The results of the analysis of the operation will be summarized in the Environmental and Social Management Report that will define the environmental and social requirements of the program. This set of requirements will be integrate into the program's Operating Regulations.
- 4.2 A fiduciary institutional assessment of COFIDE will be undertaken in preparation of the program.

V. RESOURCES AND TIMETABLE

- 5.1 Distribution of the POD for Quality and Risk Review (QRR) is expected on October 17, 2019; the approval of the Draft Loan Proposal by the Operations Policy Committee (OPC) on February 14, 2020, and the consideration of the Loan Proposal by the Executive Board of Directors is expected by March 25, 2020. An estimated budget of US\$120,000 (US\$65,510 from administrative funds and US\$54,490 from CTF) and 1.244 FTEs are required to complete preparation of the proposal (see Annex V).