

E-Mobility for Two- and Three-Wheeled Vehicles

Contact.	Subsector	Related Entities	SDGs.
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National Development Plan (NDP). Transformation / Strategy.	
Decarbonization of the transport sector through the electrification of two- and three-wheeled vehicles, fostering a just and sustainable energy transition.	National Strategy for Sustainable Mobility
	National Strategy for Electric Mobility

ESG Considerations	
Environmental:	<ul style="list-style-type: none"> - Decarbonization of the transport sector. - Reduction of environmental impact through renewable energy use. - Battery recycling programs to minimize end-of-life contamination.
Social:	<ul style="list-style-type: none"> - Democratization of energy access. - Job creation in local communities. - Promotion of grassroots and popular economies.
Governance:	<ul style="list-style-type: none"> - Education and awareness campaigns fostering community ownership. - Strategic partnerships between government, industry, and communities as a model of collaborative governance.

Business Overview	
Objectives.	<ul style="list-style-type: none"> - Deploy an alternative mobility system based on electric two- and three-wheeled vehicles, supported by charging stations for e-bicycles, e-motorcycles, and e-cargo tricycles within a defined area of influence. - Model demand by identifying beneficiaries and consumption structures within the selected area. - Establish financing mechanisms and guarantees to support access to electric vehicles. - Develop charging infrastructure for two- and three-wheeled vehicles and household distribution. - Operationalize the complete system, integrating vehicles and charging stations.
Scopes.	<p>Includes:</p> <ul style="list-style-type: none"> - Advisory support on the applicable legal framework. - Engagement with municipal governments and communities for implementation. - Deployment of proven technology based on a successful pilot program. <p>Excludes:</p> <ul style="list-style-type: none"> - CAPEX or OPEX investments from other public entities.

Business Overview	
Target.	Over 10,000 electric two- and three-wheeled vehicles deployed, each supported by charging stations.
Market Opportunity.	<p>General Framework</p> <p>The project seeks to democratize access to clean energy by establishing charging infrastructure and decarbonizing transport through the electrification of two- and three-wheeled vehicles powered by renewable sources.</p> <p>It includes a technology-upgrading program that replaces fossil-fuel-based vehicles with electric alternatives through subsidized credit schemes and down payment support, targeting private, public, and commercial users</p> <p>Project Development</p> <p>The project begins with data collection and baseline definition to objectively assess the status of the two- and three-wheeled transport system and the dynamics of energy consumption. This baseline will serve as the foundation for energy demand modeling (vehicles, mobility patterns and uses, charging stations), enabling a comprehensive understanding of community needs, barriers, and requirements regarding new energy technologies, sustainable transport, and green economies (clean transport for tourism, mobility, and agriculture).</p> <p>Subsequently, the project advances to the implementation of energy systems (which may align with community energy initiatives, shared charging stations, among others), followed by the deployment of eco-friendly transport systems (two- and three-wheeled vehicles) to support productivity and local economies, under the established credit framework.</p> <p>Finally, the project includes continuous monitoring and reporting of results.</p> <p>Market Approach</p> <p>In 2023, the Colombian Petroleum Association (ACP) reported that fuel consumption from registered two-wheeled vehicles alone accounted for 30% of total fossil fuel consumption in the land transport sector.</p> <p>In the country's main cities, individuals working in delivery and courier services primarily use motorcycles, mopeds, and bicycles. Currently, the Rappi platform—an intermediary between businesses and consumers that enables product delivery via couriers—has 60,000 registered independent couriers nationwide, with the majority concentrated in Bogotá (33,530), Medellín (16,675), and Cali (9,496). This trend is expected to continue, particularly with the support of public policies promoting the use of non-motorized modes of transport in urban areas.</p> <p>According to the National Association for Electric Mobility of Colombia (ANDEMEC), the e-bike market in Colombia has experienced significant growth in recent years. It is estimated that around 30,000 e-bikes were sold in 2020, representing a 150% increase compared to the previous year.</p> <p>Looking ahead, the Colombian e-bike market is expected to continue expanding, potentially surpassing 50,000 units sold annually in the coming years. Major cities such as Bogotá, Medellín, and Cali remain the most important markets for e-bike sales. On the supply side, both international and domestic brands are actively competing in Colombia's e-bike market.</p>

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The business opportunity arises from the high fossil fuel consumption of two- and three-wheeled vehicles, a segment with a steadily increasing share of the national vehicle fleet. The project aims to replace a significant portion of these fossil-fuel-powered vehicles through direct credit facilities for current owners to acquire electric alternatives, while simultaneously establishing the necessary charging infrastructure to support their operation.



Project Timeline				
Phase	Start	End	Predecessor	Milestone
I: Planning, Data Collection, and Baseline Definition.	Formalization of Intentions	3 months	N/A	Baseline Report
II: Energy Demand Modeling	Baseline	4 months	Phase I	Energy Demand Model
III: Implementation of Energy Systems	Demand Model	12 months	Phase II	Charging Systems Operational
IV: Vehicle Delivery.	Demand Model	12 months	Phase II	Vehicles Delivered
Monitoring and Reporting of Results.	Installed and Operational Capacity	In perpetuity	Phase III and Phase IV	Stabilized Operations

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Business Model				
Key Partners	Key Activities	Value propositions	Customer Relationships	Customer Segments
<ul style="list-style-type: none"> - Ministry of Mines and Energy - FENOGÉ - Ministry of Transport - Ministry of Environment - Local communities 	<ul style="list-style-type: none"> - Charging infrastructure deployment - Credit allocation for vehicle replacement 	<ul style="list-style-type: none"> - Affordable access to e-mobility for grassroots economies - Efficient, sustainable mobility - Job creation and community development - Carbon footprint reduction in transport 	<ul style="list-style-type: none"> - Subsidized credit schemes - Down payment support - Environmental awareness campaigns 	<ul style="list-style-type: none"> - Owners of two- and three-wheeled vehicles - Urban and rural communities - Companies seeking decarbonization
	<p>Key Resources</p> <ul style="list-style-type: none"> - Technical expertise in e-mobility - Financial and operational structuring - Banking partnerships for credit lines - Industry collaboration 		<p>Channels</p> <ul style="list-style-type: none"> - Technical expertise in electric mobility technologies - Financial and operational structuring - Partnerships with the banking sector for credit lines - Collaboration with industry 	

Cost Structure.

- Implementation & maintenance
- Credit program management
- Operation of charging stations

Revenue Streams

- Credit program repayments
- Energy sales from charging stations

Financial Parameters			Expected Results
Installed Capacity	Amount		Approx. NPV \$ 1.447.516 USD. Discount Rate: 9%
	COP	USD	
Photovoltaic Energy Stations + E-Bikes:	\$ 16.000'000.000	\$ 4.000.000	
Energy Stations + E-Motorcycles:	\$ 16.000'000.000	\$ 4.000.000	
Energy Stations + E-Tuk-Tuks / 3-Wheelers:	\$ 16.000'000.000	\$ 4.000.000	

Risk Management Plan					
Event	Probability	Impact	Rating	Mitigation	Contingency
Technological complexity	Medium	High	Significant	Contract suppliers with proven experience and technical support	Continuous technology updates
Financial and logistical challenge	Medium	High	Significant	Constant monitoring, creation of public-private partnerships, and long-term financial planning	Seek additional funding sources and adjust project scope
Social risk	Low	High	Manageable	Maintain open and ongoing communication with communities	Implement a crisis management and mediation plan

End of the report.