

Pacific Movement: Energy Communities for Sustainable, Productive Electric River Mobility.

Contact.	Subsector	Related Entities	SDGs
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National Development Plan (NDP). Transformation / Strategy.	
Energy transition, democratization of energy generation and consumption, development of energy communities, and promotion of clean energy	National Strategy for Sustainable Mobility
	National Strategy for Electric Mobility

ESG Considerations	
Environmental:	<ul style="list-style-type: none"> - Decarbonization of the transport sector. - Electrification of communities through non-conventional renewable energy sources (NCRES).
Global amount	<ul style="list-style-type: none"> - Transformation of beneficiary communities. - Socio-environmental approach guaranteeing the right to participation, a healthy environment, and cultural integrity of ethnic populations. - Capacity building at the local level. - Strengthening of productive projects and community-based economies.
Governance:	<ul style="list-style-type: none"> - Risk identification, long-term financial planning, and implementation of public-private partnerships. - Promotion of transparency, diversity, rights protection, and community participation.

Business Overview	
Objectives.	<p>Implement a renewable energy supply program in Non-Interconnected Zones (NIZ) across the Pacific region (Chocó, Valle del Cauca, Cauca, and Nariño), leveraging water resources to electrify households and reduce fossil fuel use through electric river mobility.</p> <ul style="list-style-type: none"> • Conduct a census of the target population in terms of households, population, and number/type of outboard motors to be replaced. • Establish mechanisms and guarantees for the delivery of electric outboard motors. • Develop micro-hydroelectric plants (low-impact turbines). • Establish charging infrastructure for river vessels and distribution to households. • Fully operationalize the system following a pilot testing phase.

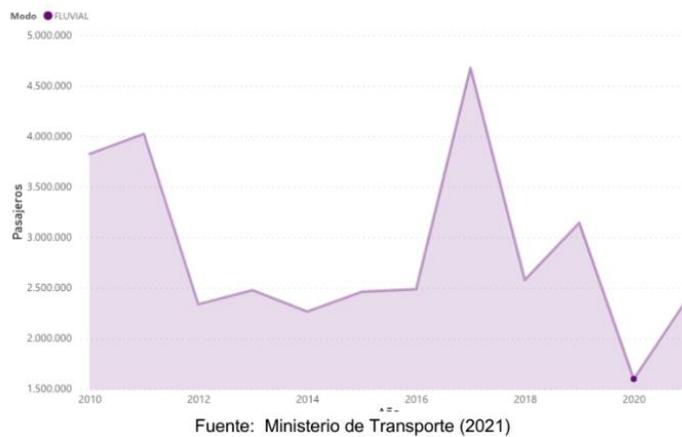
Business Overview	
<p>Scopes.</p>	<p>Includes:</p> <ul style="list-style-type: none"> • Advisory support for understanding the legal framework for energy generation. • Engagement with municipal governments and communities for project implementation. • Technology proposal for deployment. <p>Excludes:</p> <ul style="list-style-type: none"> • CAPEX or OPEX investments from other public entities.
<p>Target.</p>	<ul style="list-style-type: none"> - +100 electric outboard motors with NCRES-based charging infrastructure. - +50 charging stations. - +11 micro-hydroelectric plants with low environmental impact.
<p>Market Opportunity.</p>	<p>General Framework</p> <p>The “Pacific Movement” project seeks to promote renewable energy (NCRES) initiatives that drive territorial development in the Pacific region through electric river mobility and energy access in NIZ areas, leveraging hydropower with a socio-environmental focus and guaranteeing community rights.</p> <p>The initiative aims to go beyond technology deployment, positioning itself as a transformative solution for beneficiary communities—considering their needs and expectations, strengthening local economies and productive projects, enabling access to new services through sustainable mobility, and contributing to peacebuilding in territories most affected by Colombia’s internal armed conflict</p> <div data-bbox="509 1188 1224 1570" data-label="Diagram"> <p>Solución integral de energía y movilidad</p> <p>Movimiento pacífico</p> <p>Migración hacia movilidad eléctrica fluvial sostenible y productiva</p> <p>Comunidades energéticas</p> <p>Generación de energía basadas en fuentes hídricas</p> <ol style="list-style-type: none"> 1 Desarrollo territorial y energización Comunidades energéticas 2 Movilidad fluvial eléctrica Acceso a oportunidades Educación, salud, movilidad, etc. 3 Desarrollo productivo Aprovechamiento de recursos hídricos 4 Construcción de paz Escuela TEJ Transición Energética Justa </div> <p>Project Purpose</p> <p>To implement a program of electric mobility and energy efficiency for river transport in the Pacific region under frameworks of collective protection, productive development, and competitiveness. This includes household electrification in NIZs, installation of electric outboard motors and charging infrastructure, and energy self-generation through water resources to support artisanal fishing, tourism, sustainable mobility, and other local economies.</p> <p>Market Approach</p> <ul style="list-style-type: none"> - The transport sector represented 44.45% of national energy consumption in 2021 (588,841 TJ - UPME). - Breakdown by mode: Road transport (92.36%), Air transport (6.52%), River transport (0.15%), Maritime transport (0.92%), Rail transport (0.05%). - The sector accounts for 99% of national gasoline consumption, an average of 146.58 barrels/day since 2011.

Business Overview

- Between 2020-2021, transport energy demand grew **30.45%**, mainly due to post-COVID-19 economic recovery.
- River transport accounted for **0.042% of national energy consumption** in 2021, transporting 4.78 million tons of cargo and 2.4 million passengers (Ministry of Transport).
- Maritime transport consumed 1,347 TJ (0.16%). Both modes show a growing fleet of vessels.

In relation to energy sources, the transport sector accounts for 99% of national motor gasoline consumption; this percentage has remained stable since 2011, with an estimated 146.58 barrels of gasoline consumed daily (Ministry of Transport, 2022). In this context, energy consumption in the transport sector grew by 30.45% between 2020 and 2021. This sharp increase is largely attributable to the post-COVID-19 economic recovery in 2020, which directly affected both national and international mobility.

River transport accounted for 0.042% (351 TJ) of national energy consumption in 2021, linked to a total cargo volume of 4,777,000 tons and 2,404,672 passengers transported via this mode, as reported by the Ministry of Transport in its annual **Transport in Figures (2022)**. For the maritime subsector, energy consumption in 2021 reached 1,347 TJ, representing 0.16% of national consumption. Both river and maritime transport show a growing stock of vessels in operation.



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The business model is based on leveraging the Pacific region's water resources as a source of non-conventional renewable energy through the implementation of small-scale hydroelectric plants. The full implementation process would include the replacement of fossil-fuel-powered outboard motors with electric motors, the development of charging infrastructure for vessels, and the establishment of an interconnected grid to supply electricity to local communities.

Business Model

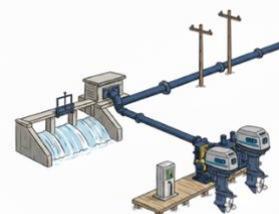
Key Partners <ul style="list-style-type: none"> - Ministry of Mines and Energy - FENOGE - Local communities - Other multilateral entities providing credit 	Key Activities <ul style="list-style-type: none"> - Installation of charging infrastructure - Specialized training - Technical assistance 	Value propositions Affordable and sustainable river mobility, access to clean energy for communities, and economic development for local populations	Customer Relationships <ul style="list-style-type: none"> - Community participation at all stages - Open communication channels - Continuous support 	Customer Segments <ul style="list-style-type: none"> - Pacific region communities - River vessel operators - Local governments
	Key Resources <ul style="list-style-type: none"> - Technical expertise in NCRES - Technical expertise in electric mobility - Financial and operational structuring - Community organizations - Local governments 		Channels <ul style="list-style-type: none"> - Community organizations - Local governments - Workshops and informational sessions 	
Cost Structure. <ul style="list-style-type: none"> - Operating costs - Maintenance costs - Training costs 		Revenue Streams <ul style="list-style-type: none"> - Mobility service fees - Sale of electricity 		

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Project Timeline				
Phase	Start	End	Predecessor	Milestone
I: Preparation	Formalization of Intentions	6 months	N/A	Cooperation agreements signed
II: Financing	Completion of preparatory activities	12 months	Phase I	Financial Close
III: Implementation	Financial close	18 months	Phase II	Charging infrastructure built & first vessels deployed
IV: Adjustment Phase	End of construction	24 months	Phase III	Operations start & service commercialization
Sustained Operations	Closure of Adjustment Phase	ongoing/perpetual	Phase IV	Stabilized Operations

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Financial Parameters - Investment		
Installed	Amount	
	COP	USD
Global Amount: Estimated for the technological replacement of current engines, the	\$ \$40.000'000.000	\$ \$ 10.000.000



Financial Parameters - Investment		
Installed	Amount	
	COP	USD
installation of the charging station network and micro-hydroelectric plants, as well as other costs associated with project development until financial sustainability is achieved.		

Financial Parameters Results		Expected Results
Cash Flow	Net present Value	Summary
The project's financial structuring is based on a detailed analysis of projected cash flows over 10 periods. In the first year, a net outflow of COP 30,060,421,313 is projected, reflecting the significant initial investment. From the second year onward, the project begins generating positive net revenues, growing steadily from COP 8,641,987,048 in the second period to COP 10,947,410,637 in the tenth.	Using a discount rate of 12% (FENOG reference for projects of this type), the Net Present Value (NPV) is calculated at COP 14,435,547,286. This positive NPV indicates that the project creates value for investors and is financially viable. It further suggests that the project not only recovers the initial investment but also generates a significant surplus in present value terms.	<ul style="list-style-type: none"> - Min FC = \$ 30.000'000.000 COP. - NPV = \$ 14.435'547.286 COP.

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Financial Parameters Results		Expected Results
Internal Rate of Return-Cost/Benefit	Payback	Summary
The project's estimated Internal Rate of Return (IRR) is 27.55%. This IRR significantly exceeds the 12% discount rate, demonstrating the project's attractive profitability	The Payback Period (PBP) is estimated at 8.22 years. This means that the initial investment is recovered in just over 8 years, which is a reasonable timeframe considering the scale and long-term impact of the project. In addition, cumulative cash flow surpasses the initial investment in the project's eighth year, aligning with the calculated PBP and demonstrating the financial soundness of the initiative.	<ul style="list-style-type: none"> - IRR = 27.55% - Benefit-Cost Ratio (B/C) = 1.38 - Payback = 8.22 years
The project's Benefit/Cost (B/C) ratio is calculated at 1.38. This indicator means that for every peso invested in the project, 1.38 pesos of benefits are generated..		

Risk Management Plan					
Event	Probability	Impact	Rating	Mitigation	Contingency
Technological complexity	Medium	High	Significant	Engage experienced suppliers and ensure technical support	Continuous technology updates
Financial and logistical challenge	Medium	High	Significant	Constant monitoring, PPPs, and long-term financial planning	Seek additional funding sources and adjust project scope

Risk Management Plan					
Event	Probability	Impact	Rating	Mitigation	Contingency
Social risk	Low	High	Manageable	Maintain open and ongoing communication with communities	Implement a crisis management and mediation plan

End of the report.