PACIFIC MOVEMENT: ENERGY COMMUNITIES FOR ELECTRIC, SUSTAINABLE AND PRODUCTIVE MOBILITY		
Sector	Ministry of Mines and Energy	
Thematic axis/sub-sector	Electrical energy	
Entities/Areas	Ministry of Mines and Energy, FENOGE	
National development plan strategy, which aims to	- FAIR ENERGY TRANSITION - NATIONAL SUSTAINABLE MOBILITY STRATEGY - National Electric Mobility Strategy - NDC	
ODS to which it points	Gender equality Affordable and clean energy Decent work and economic growth Reducing inequalities Sustainable cities and communities Climate action Peace, justice and strong institutions	
Description of the Project	Purpose of the project	Implement a programme of electric mobility -electromobility- and energy efficiency in river transport in the Pacific region within the framework of collective protection commitments, productive development and competitiveness, by electrifying homes in ZNI and installing electric motors for outboard boats and their electrical charging infrastructure, through self-generating energy with the use of water sources, for artisanal fishing, tourism and the promotion of sustainable mobility, including other local and popular economies.
	Objectives	***General objective: to*** Implement a comprehensive electric mobility program and electrify non-interconnected areas (ZNI) using renewable and unconventional energy sources. ***Specific objectives: To*** - Increase the renewable energies of the Colombian energy matrix and decrease the consumption of gasoline and diesel in the transport sector, through technological advancement of boats with electric motors. - Reducing greenhouse gas emissions.

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		- Reduce imports of crude oil derivatives to meet current and projected demand. - Enhancing the e-mobility value chain through reindustrialization and promotion of the domestic industry of boats, spare parts and electrical components. - Promotion of productive activities surrounding tourism, ecotourism, artisanal fishing, and all those economic and commercial activities that are driven by an accessible, sustainable, efficient, electric and competitive transport system for the people of the region. - To develop a national strategy with a territorial approach for the electrification of river transport in various basins of the country.
	Geographical area of influence	Pacific region (Chocó, Valle del Cauca, Cauca and Nariño)
	Included within the DND goals are:	Yes_x_ No__
	The Structuring Phase	Phase 1: Data collection. List Phase 2: Design of the solution. List - project with technical, economic and socio-environmental feasibility. Phase 3: Implementation and testing. Running. Phase 4: Capacity building
	Target: (km), (panels etc.)	+100 electric motors with energy-based charging infrastructure with FNCER +11 micro hydro power plants (turbines with low environmental impact)
	Located in a protected area or with indigenous communities/ afro-descendants:	Yes_x__No_____Which: Second Law, Community Councils. ___

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Duration by Phases	Implementation phase (current): 12 months	
Contributions	Valor Total	US$ 7,600,000.00
	Contribution Nation	** *seeking funding* Forms of participation: Capital investment, joint ventures, public private partnerships, companies in the sector and companies from other sectors.
	Contribution to Territorial Entities	** *seeking funding*
	Private Contribution	** *seeking funding*

Opportunity to Investment

- Boost domestic production of electric motors, batteries and electromobility inputs.
- Development of the value chain of goods and associated services including administration, operation and maintenance of electrical equipment, oriented to energy efficiency, decarbonization of transport and diversification of the energy matrix.
- Potential development of turbines and technologies for self-generation of energy from renewable water sources (rivers and tributaries).
- Stimulating demand for electric boats as part of the drive for sustainable mobility and energy efficiency.
- Promotion of demand for machinery, goods and services for the productive sector, fisheries and tourism.
- Drive business models around the generation and sale of energy, charging infrastructure as an asset with return.
- Potential development of turbines and technologies for self-generation of energy from water sources.

Table 1. Transformative axes of the peaceful movement initiative

Axis	**Needs**	**Peace Movement Strategy**	**Gap closure and impact**
Collective	Organizational strengthening	Electric and community passenger mobility	− Possibility of meeting and associativity

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				− Support for communities made vulnerable by the armed conflict
	Human Development	Access to education, health, work and welfare	Accessibility to transportation and decent transportation	− School transportation routes, for health services and employment opportunities
	Economic	Empowering popular economies	Energy for productive development and electric mobility for: -Transportation (fuel saving). -Tourism -Transportation of goods -Artisanal and small-scale	− Improving employment conditions − Reducing monetary and energy poverty − Sustainable rural development
	Environmental	Protection of the environment from gas emissions and fuel releases	Zero GHG emissions power generation through HCM and electric mobility (electric motors).	− Reduction of GHG emissions − Elimination of polluting agents dumped into rivers − Environmentally friendly technologies
	Cultural	Preservation of culture	Electric and community passenger mobility	− Development of community and cultural activities

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				− Integration of local knowledge into the initiative

source: own elaboration (MME, 2024)

Market analysis

Expected to increase demand for:
- Electric outboard motors
- Electrical charge connectors
- Batteries and storage systems
- Infrastructure for water-based energy generation
- Electrical systems and components
- E-mobility value chain

The transport sector represents 44.45% of the country's energy consumption, with a total of 588,841 TJ for 2021 (UPME, 2021). Their share of final energy consumption is the highest in relation to other economic sectors. This consumption includes passenger and freight transport for all modes, energy consumption for 2021 is shown below: road transport 543,845 TJ (92.36%), air transport 38,380 TJ (6.52%), inland waterway transport 876 TJ (0.15%), maritime 5,417 TJ (0.92%) and rail transport 321 TJ (0.05%). In relation to energy, the transport sector accounts for 99% of motor gasoline consumption at national level; This percentage has been maintained since 2011, estimated at 146.58 barrels of gasoline per day (Ministry of Transport, 2022). In this context, the growth of energy consumption in the transport sector between 2020 and 2021 was 30.45%. This high growth is largely attributable to the economic recovery related to the COVID-19 pandemic of 2020, which for that year directly impacted national and international mobility.

The fluvial mode reported a 0.042% (351 TJ) of the national energy consumption for 2021, associated with a total load of 4,777,000 tons and 2,404,672 passengers mobilized by this mode, recorded by the Ministry of Transport in its annual report (Ministry of Transport, 2022), shown in Figure 2. For the maritime subsector, energy consumption for 2021 was 1,347 TJ, corresponding to 0.16% of national consumption. For the river and maritime mode, there is a growth in the stock of historic vessels, shown in Figure 3.

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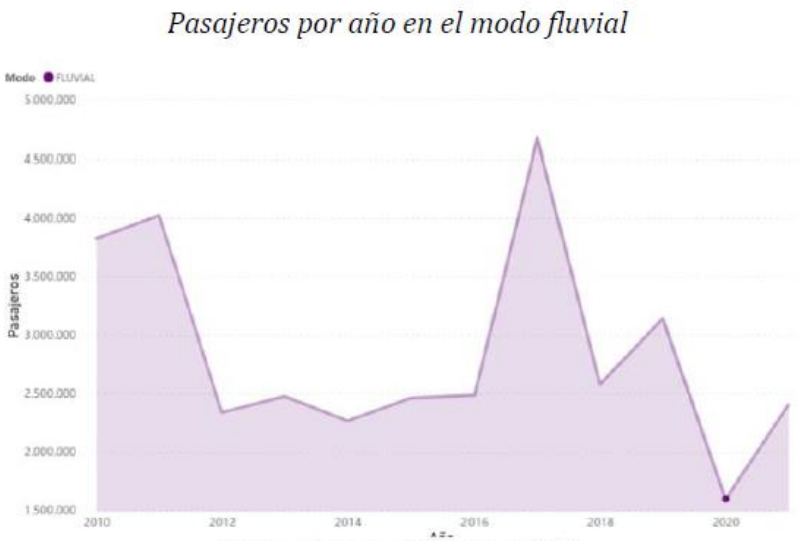
	Passengers per year in river mode  Source: Ministry of Transport
Financial Projections	- **Cash flow and financial indicators** The financial structuring of the project is based on a detailed analysis of projected cash flows over 10 periods. In the first year, net outflows of $30,060,421,312.17 are projected, reflecting significant initial investment. Starting in year two, the project begins to generate positive net income that grows steadily from $8,641,987,048.47 in the second period to $10,947,410,636.74 in the tenth. These positive cash flows demonstrate the economic viability and potential for return on investment of the project. - **Net Present Value VPN** Using a discount rate of 12% (FENOGE reference for projects of this type), the Net Present Value (NPV) is calculated at $14,435,547,286. This positive VPN indicates that the project generates value for investors and is financially viable. The positive VPN suggests that the

project not only recovers the initial investment, but also generates a significant surplus in terms of current value.

- **Internal TIR Return Rate**

The estimated Internal Rate of Return (IRR) for the project is 27.55%. This IRR significantly exceeds the 12% discount rate, demonstrating the attractive profitability of the project. Such a high IRR indicates that the project is not only viable but also offers a very competitive return compared to other potential investments in energy or infrastructure.

- **Cost benefit ratio**

The project's Benefit/Cost (B/C) ratio is estimated at 1.38. This indicator means that for each weight invested in the project, 1.38 pesos of profits are generated. A B/C ratio of more than 1 indicates that the benefits of the project outweigh its costs, which reinforces the economic viability and financial attractiveness of the initiative.

- **Period of Recovery of the PRI Investment**

The Investment Recovery Period (IRP) is estimated at 8.22 years. This means that the initial investment is recouped in just over 8 years, which is a reasonable time-frame considering the scale and long term impact of the project. In addition, the cumulative cash flow exceeds the initial investment in the eighth year of the project, which is consistent with the calculated PRI and demonstrates the financial soundness of the initiative.

The financial structuring of this river electromobility project in the Colombian Pacific demonstrates not only its economic viability, but also its potential to generate significant returns and a transformative impact in the region. Effectively combines the objectives of energy transition, sustainable development and improvement of quality of life for vulnerable communities.

Beyond the quantifiable financial benefits, the project promises to generate significant social and environmental impacts such as reducing greenhouse gas emissions, improving air and water quality, strengthening the energy resilience of communities, boosting local economies and improving access to essential services.

This holistic approach positions the project as a promising model for future sustainable development projects in similar regions, demonstrating how technological and financial innovation can drive social and environmental progress in an economically viable way.

Transformative axes of the Pacific Movement project: moving towards electric, sustainable and productive mobility of river transport in the Pacific

Axis	Needs	Ministry of Energy Strategy	Closing gaps and impact

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	Collective	Association	Electric passenger mobility	Freedom of assembly and association
	Human development	Education, health, work and well-being	Accessibility to transport and decent transport	Education Health services Recreation Job opportunities
	Economic	Production transportation	Electric mobility for: -Transport -Tourism -Artisanal fishing	Employment, monetary poverty
	Environmental	Environmental protection from gas emissions and fuel releases	Electric mobility (electric motors) with zero GHG emissions	-Reduction of GHG emissions -Elimination of pollutants dumped into rivers -Improvement in air quality
	Cultural	Social welfare	Electric passenger mobility	Participation in cultural life Recreation and well-being Cultural opportunities
	Source: own elaboration.			
Sustainability and ESG considerations				
Risk Assessment and Mitigation	- Complexity in the availability and reliability of specific technologies and equipment for inland navigation influencing the efficiency and social security of the service: Survey of reliable and diverse suppliers with case studies in other similar initiatives providing efficient technical support - Financial and logistical challenge for infrastructure construction and maintenance: Constant monitoring to identify problems and take corrective action efficiently, consider the implementation of public - private partnerships and long-term financial planning taking into account initial and operational costs of the infrastructure life cycle. - Social: Maintaining open channels of communication with communities			

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Project Team and Experience	
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Additional Information	**Differentiating factor:** High impact in decarbonization of the transport sector and boost to the development of economies given the electrification of homes with FNCER energy.