

Contact.	Subsector	Related Entities	SDGs
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National Development Plan (NDP). Transformation / Strategy.

Productive Transformation, Internationalization, and Climate Action.	1 MW photovoltaic generation infrastructure, with opportunities for private sector participation through power purchase agreements (PPAs), corporate social responsibility programs, and “Works for Taxes” schemes.
	Infrastructure for electricity generation aimed at democratizing energy access and reducing energy poverty in the country.

ESG Considerations

Environmental:	Deployment of photovoltaic power generation technologies to diversify the energy matrix and contribute to climate change mitigation.
Social:	<ul style="list-style-type: none"> - Combat multidimensional poverty. - Combat energy poverty. - Promote economic development of territories. - Improve quality of life for populations in different regions.
Governance:	<ul style="list-style-type: none"> - Strengthen energy governance for territories. - Democratize and decentralize energy access and generation.

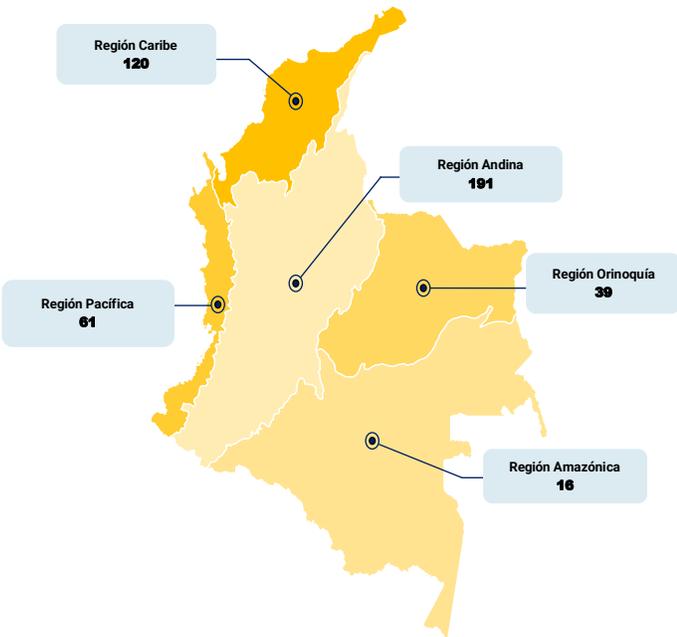
Business Overview

Objectives.	<ul style="list-style-type: none"> □ Promote energy autonomy and territorial development through the implementation of 1 MW photovoltaic systems, reducing costs and improving community quality of life. □ Supply municipalities with 1 MW photovoltaic systems, ensuring sustainability and guaranteeing technical and economic viability. □ Reduce electricity costs in target territories. □ Generate revenues from the sale of surplus energy, earmarking them to improve local quality of life. □ Maximize profitability through combined energy sales and agricultural productivity.
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Business Overview

<p>Scopes.</p>	<p>Includes:</p> <ul style="list-style-type: none"> • Deployment of 200 photovoltaic plants of 1 MW each, ensuring technical and economic viability. • 200 financial models for surplus energy commercialization. • 200 registrations and approvals under the self-generation and surplus sales scheme. • 200 impact evaluations for agrovoltaic projects. <p>Excludes:</p> <ul style="list-style-type: none"> • Purchase, acquisition, lease, or transfer of land on behalf of the Ministry of Mines and Energy (land must be owned by local entities to avoid legal disputes). • Public investment allocation; large-scale rollout depends largely on private sector participation, though some initiatives have been implemented via FENOGÉ. • Operation and Maintenance (O&M) activities, which remain the responsibility of the developer/implementer.
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<p>Target.</p>	<p>200 photovoltaic farms operational by 2026</p>
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<p>Market Opportunity.</p>	<p>Demand Growth According to the Energy Territories proposal, there is a potential of more than 427 municipalities with unmet energy needs in the country, primarily in the Andean and Caribbean regions due to high electricity tariffs.</p>  <p>On the other hand, the growth trend of distributed generation in Colombia reflects a significant market investment potential, estimated at more than USD 9.6 billion, corresponding to a projected capacity of 7,424 MWp.</p>
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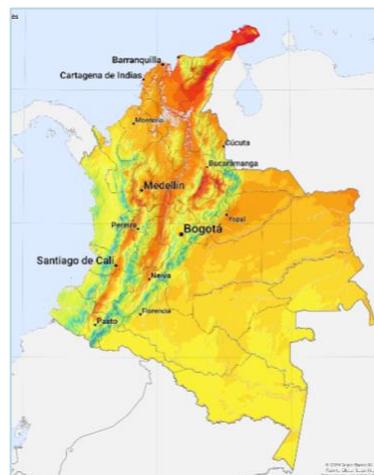
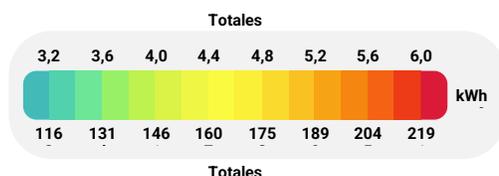
Business Overview



The sustained growth of energy demand in Colombia, particularly in rural territories and areas undergoing economic reactivation and productive transition, highlights the need for efficient, clean, and sustainable energy solutions. The increasing electrification of social infrastructure (education, health, public administration), along with the expansion of local agro-industrial activities, is adding pressure on conventional power grids.

The Energy Territories project responds to this trend through the installation of 1 MW photovoltaic systems, capable of meeting current and projected demand of approximately 600 users per system, with an estimated consumption of 90 kWh per month per user. Additionally, the model allows generation to be scaled to meet new productive and social demands, strengthening territorial energy security and preventing congestion in traditional grids

Likewise, Colombia has a high irradiation potential for electricity generation from photovoltaic sources, with an average global horizontal irradiance of approximately 4.5 kWh/m² per day.



Exceptional Conditions

- Facilitates the participation of project developers through business models based on energy purchases by local entities, secured through Power Purchase Agreements (PPAs).
- CREG Regulation 101072 enables collective self-generation and distributed generation.
- Photovoltaic projects offer a potential return on investment estimated at approximately 10 years, which may be shorter than the term of the PPA contract.

The proposed business model to drive investment in photovoltaic projects represents an opportunity for local entities that lack payment capacity or borrowing capacity. Under this scheme, and without assuming capital expenditure (CAPEX), energy is purchased through Power Purchase Agreements (PPAs). This allows public buildings to continue paying for electricity services, but with an estimated savings of 30%. These savings, projected over the project's lifecycle, will enable territories to reallocate resources

Project Timeline				
Phase	Start	End	Predecessor	Milestone
Strategy Design	Jan 22	June 23	N/A	Business model defined
Implementation	Jan 24	Dec 26	Strategy Design	Installation of energy solutions begins
Monitoring and Support	April 24	Dec 26	Implementation	Monitoring and strengthening of local capacities

Business Model				
Key Partners <ul style="list-style-type: none"> Ministry of Mines and Energy Project developers Local Governments 	Key Activities <ul style="list-style-type: none"> Maintenance of generation infrastructure Operation of generation infrastructure 	Value propositions <ul style="list-style-type: none"> Low-cost, low-emission photovoltaic electricity supplied via PPAs with regional public entities Democratization of energy through local territorial participation Economic strengthening of municipalities, enabling greater social investment and improved quality of life 	Customer Relationships <ul style="list-style-type: none"> PPAs and associated guarantees Long-term contractual frameworks 	Customer Segments <ul style="list-style-type: none"> Vulnerable municipalities with limited access and high electricity tariffs Public buildings and institutions Residential users (depending on the chosen implementation model)
	Key Resources <ul style="list-style-type: none"> Renewable Energy Generation Infrastructure Working Capital 	<ul style="list-style-type: none"> Reliable and clean energy supply Contribution to decarbonizing the national energy matrix and combating climate change 	Channels <ul style="list-style-type: none"> PPAs signed with local entities for fixed terms 	
Cost Structure. <ul style="list-style-type: none"> Structuring: COP 300M Implementation: COP 6,300M Monitoring: COP 450M Additional costs: solar system supply, transport, installation, main equipment (inverters, panels, cabling, step-up substation, spares), civil works, control facilities, fencing, communication systems, specialized labor, land preparation, logistics. 		Revenue Streams <ul style="list-style-type: none"> Energy sales to local governments for public buildings Energy sales to retail users Sale of surplus energy to the national grid Price adjustments under PPA formulas 		

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Financial Parameters

The following are the economic indicators per photovoltaic farm for the investor:

- Investment: COP 7,200M

Project Profile

Financial Parameters

- **PPA Tariff:** COP 600 per kWh
- **Annual Exchange Value:** COP 1,517,460,000
- **Number of Beneficiaries:** 600 users at 90 kWh/month
- **ROI:** 12%
- **NPV:** COP 10,500,000,000
- **Useful Life:** 25 years
- **Payback Period:** 6 to 8 years
- **OPEX:** 10% of energy generation

Risk Management Plan

Event	Probability	Impact	Rating	Mitigation	Contingency
Inability of local entity to perform O&M	Medium	High	High	Prior evaluation of administrative capacities; support request to incumbent grid operator	Assign O&M to a qualified third party via contract
Denial of connection point by grid operator	Medium	High	High	Prior meetings with operator and technical site assessment	Relocate project to viable alternative site
Political barriers & changes in administration	High	High	High	Long-term secured PPA's beyond electoral terms	Establish multi-year agreements with institutional backing
Delays in environmental permits & licenses	Medium	Medium	Medium	Technical support in permitting, strict compliance with regulations	Extend timeline with buffer periods and explore regulatory alternatives
Low irradiation or adverse climate	Low	Medium	Medium	Preliminary irradiation studies and site selection	System design adjustments or price compensation
Technical failures in PV system	Low	High	Medium	RETIE-standard design; preventive & corrective O&M	Emergency mechanisms and maintenance contracts

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End of the report.