ENERGY TERRITORIES		
Sector	Ministry of Mines and Energy	
Thematic axis/sub-sector	Energy	
Entities/Areas	Ministry of Mines and Energy (MME), Fund for Unconventional Energies and Efficient Energy Management (FENOGE)	
National development plan strategy, which aims to	Article 235. Energy Communities. Users or potential users of energy services may form Energy Communities to generate, market and/or use energy efficiently through the use of non-conventional renewable energy sources -CNCER-, renewable fuels and distributed energy resources.	
ODS to which it points	End poverty Health and well-being Affordable and clean energy Industry, renovation and infrastructure Reducing inequalities Sustainable cities and communities Climate action	
Description of the Project	Purpose of the project	The Energy Territories seek to promote development by implementing renewable energy systems that facilitate energy autonomy and active participation of territorial authorities in the Just Energy Transition. This strategy allows savings in the electricity bills of local authorities and frees up resources to be used to improve the quality of life and reduce poverty among their inhabitants, Allowing the crossing of the energy generated with the energy required by the infrastructure at the expense of the territorial entity. This project will benefit schools, hospitals, libraries, administrative headquarters, etc. as well as users of strata 1, 2 and 3 of the territories.
	Objectives	**General objective:** Energy territories are a proposal to promote energy autonomy in the territories. In such a way that the Just Energy Transition contributes to overcoming poverty, improving quality of life and developing the potential we have in regions with renewable energies. **Specific objectives: To** 1. Autonomy and Energy Sovereignty. 2. Active role of local authorities in the Just Energy Transition. 3. Increasing the competitiveness of local and regional authorities. 4. Diversification of productive activities throughout the national territory. 5. Reduce the Net Energy Payments for local authorities. 6. Productivity of public land.

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	Geographical area of influence	National.
	Included within the DND goals are:	Yes _x_ No__
	The Structuring Phase	The project structure includes the formation of an interdisciplinary team responsible for electrical, telecommunications, civil, financial and economic engineering, environmental, legal and administrative responsible for analyzing the possible locations for the implementation of the photovoltaic solar solution. The process includes field visits where aerial imagery is taken with drones, topography, soil studies, soil resistivity analysis, lightning discharges assessments and others, as well as support for certification to different entities (network operator, regional environmental corporations, curatorships, prior consultation with Min Interior if required, etc.) to obtain the permits required at the time of construction. The analysis of generation capacity versus the possibility of savings during the useful life for users who integrate into the project is also carried out, highlighting in principle that the aim is to reduce the billing of the electric energy service, estimating the amount of energy generated to be connected with the network operator.
	Target: (km), (panels etc.)	15 energy territories by 2024
	Located in a protected area or with indigenous communities/ afro-descendants:	Yes ____No _x__ which ____
Duration by Phases	Postulation: Open Primary diagnosis: 1 month Structuring: 1-4 months Implementation: 5-12 months Follow-up and monitoring: 12 months	

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Contributions	Total value	For 15 energy municipalities, an estimated CAPEX of 90 billion COP
	Contribution Nation	FENOGE
	Contribution to Territorial Entities	General System of Royalties, Incentives for the use and integral exploitation of non-renewable natural resources.
	Private Contribution	Works for tax.
Opportunity to Investment	1. An initial investment of close to $1,500,000 is expected to yield annual savings of around $504,711. The return on investment is estimated to be around 6 years for the prototype of Agrovoltaic Solar Farms. 2. Implementation of solar farms with around 1.3 MWp installed capacity. 3. For 20 energy municipalities, CAPEX is estimated at $21.6 million. 4. Social investment per energy municipality: 500 to 600 users. 5. Lots of 2 hectares located in flat and clear areas, close to the electrical networks of municipality. 6. Promoting the productivity of territories and popular economies.	
Market analysis	The Colombian wholesale energy market needs to adapt to changes in the energy matrix, in order to increase the flexibility of the system by remunerating new services needed in a scenario of high variability. The market for ancillary services should also be open to new entrants, such as renewable energy generators. The electricity market requires reforms that allow sustainable integration of renewable energies into intra-daily markets and binding dispatches, facilitating the operation of both large-scale and small-scale projects (below 20 MW). It is crucial that these reforms do not jeopardize the future of smaller scale projects, as they are essential to diversify the energy matrix and promote the transition towards cleaner and more sustainable sources of energy.	
Financial Projections	**Agroindustrial solar farms** The energy production revenue of a solar farm agrovoltaica system amounts to USD 504,711, taking into account that per project is estimated to be USD 1,082,314 in total direct costs and a total value per project of USD 1.5 million. These revenues depend on the energy generation of the system according to the energy demand of the territories where the projects are implemented, also, as part of the total income of the agrovoltaic system should be considered what is generated by the production systems related to the territory, for agrotourism projects, agricultural production according to the soil and climate conditions of each municipality. **Cost and return estimates**	

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	Structure: Engineering and studies: 72,237 USD Implementation: Agroindustrial solar farms 1. CAPEX: 1 MW solar farms, 1,082,314 USD, Total direct cost per project. 2. TIR:17% 3. ROI: Return on investment in year 5. Sustainability: Annual OPEX estimated for each SFV 1MWp: 60,000 USD approx.
Sustainability and ESG considerations	In terms of sustainability, the programme considers environmental benefit, estimating that the operation of the solar photovoltaic system, with a capacity of 1 MW, would reduce the emission of about 311 tons of CO2eq. per year. This estimate varies depending on the location of implementation and the power source to be replaced by the plant operation. In the social and governance areas, the programme promotes decentralization of energy generation by involving the territories in energy governance. This brings with it multiple benefits, such as reduced payment for the electric power service, diversification of the national energy matrix and of the productive activities of the territorial authorities. The socio-economic analysis carried out to estimate benefits in the territory allows us to observe the generation of unskilled rural labor during the implementation of the project (year 0) for approximately USD 166 thousand. The system includes preventive and corrective maintenance that is part of AOM, generates employment and stimulates the development of technical skills in the population of the territory that wishes to be linked with these processes.
Risk Assessment and Mitigation	**Risk in execution of FOD**: the projects of energy territories whose scenario of FOD is directly executed by the territorial entity and/or energy community to the territory, since this is due to the administrative capacities of the actors involved, therefore, to mitigate this situation, a socio-economic and administrative analysis is carried out on the person interested in performing the AOM, which in case of not having a concept of viability is requested to accompany the incumbent network operator to ensure the operation, maintenance and administration. **Risk at the connection point**: there is a possibility that the land available when making a connection point request to the Network Operator, does not have a positive concept due to the capacity of the existing infrastructure, is a latent risk that is intended to be mitigated by having prior meetings with the RO. Risk of political barriers: the political division may pose a risk to the sustainability of energy territories. Thus, through national and international

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<tr><td></td><td>private cooperation, the aim is to ensure its long-term sustainability by mitigating the potential risks associated with political changes.</td></tr>
<tr><td>Project Team and Experience</td><td>The Institute for Energy Solutions Planning and Promotion8

For the Non-interconnected Zones - IPSE under the Inter-Administrative Agreement Contract 141 of 2022, I will execute in 2023 the first three (3) agrovoltaic projects in Colombia. The systems were installed in the localities of Carpintero, Chatare and Venado.
Locality Value (direct cost) Power (kW)
1 Carpenter $ 2,837,362,465 88
2 Chatare $ 2,596,599,276 71

3 Deer $ 2,295,530,405 62

The projects mentioned included the installation of generation, transmission and distribution systems, taking into account that they were installed in isolated or remote localities. The energy supplied by the project meets the demand for residential, social and productive infrastructure in the communities.</td></tr>
<tr><td>Contact details</td><td>Overall strategy coordinator:
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Technical structuring:
Gianmarco Serrano Cabarcas: gserrano@minenergia.gov.co</td></tr>
<tr><td>Additional Information</td><td>Structured projects include technical, social, environmental, economic and financial information. The technical component includes the development of documents corresponding to electrical and civil calculations, plans, plans, connection availability, as well as related memorials. For environmental documents, the environmental management plan, the disaster risk matrix and certificates of environmental permits issued by CAR and National Natural Parks shall be submitted. With regard to the social aspect, the socialization records, the permits for use of the premises, the socio-economic analysis of the beneficiary communities and the corresponding procedure for the non-receipt of prior consultation will be provided. The project will include calculations of corresponding amounts with developed APUs, as well as the schedule and projected flow of funds for implementation. Finally, the financial scheme with calculations supporting the sustainability of the project shall be submitted.</td></tr>
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