

Development a financial instrument to promote the mobilization of re-sources for the development of energy communities in Colombia

Strengthening the financial architecture for energy communities in Colombia

Background, context, and project partners

Energy Communities (ECs) are emerging as a strategic pillar of Colombia's Just Energy Transition (JET), combining climate mitigation, energy access, territorial development, and community participation within a single implementation framework. In recent years, Colombia has made significant regulatory progress to enable ECs. Despite these advances, major implementation and financing barriers remain. Existing financing mechanisms are still largely focused on capital expenditure (CAPEX), while operational sustainability, risk management, governance structures, and long-term financial viability remain insufficiently addressed. Community-based projects frequently lack conventional collateral structures, credit histories, and institutional capacities required by traditional financial institutions, limiting their ability to scale beyond isolated pilot initiatives.

Beyond renewable energy deployment, ECs represent a territorial governance and development model capable of strengthening local resilience, improving energy access, reducing energy costs, and supporting productive activities in underserved regions. International experience demonstrates that the long-term sustainability of ECs depends not only on technology deployment, but also on governance quality, operational capacity, financial management, and risk mitigation mechanisms. The relevance of scalable EC models is particularly high in Colombia due to:

- significant territorial disparities in energy access and infrastructure between grid-connected (SIN) and non-interconnected zones (ZNI);
- persistent energy access gaps in rural and remote territories;
- the need for financing models adapted to community-based renewable energy projects; and
- the importance of mobilizing inclusive and decentralized climate finance solutions under Colombia's JET agenda (public and private Sector).

Within this context, the GIZ projects *Transformative Climate Finance – Shifting Financial Flows and Private Sector Mobilisation (TCF)* and *Interface IKI II* jointly supported the development of an integrated financial and structuring approach for EC in Colombia in coordination with the Ministry of Mines and Energy (Minenergía). Since 2023, TCF, commissioned by the German Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN) and financed through the International Climate Initiative (IKI), has supported the alignment of financial systems with the goals of the Paris Agreement under Article 2.1(c) and the mobilization of private climate finance. Interface IKI II supports Colombia's implementation of climate, energy, and biodiversity objectives in cooperation with national institutions and contributes to frameworks such as the NDCs, LTS, Climate Action Law, and SDGs.

The work was implemented in collaboration with Amplo Kaya and in coordination with relevant Colombian stakeholders in the energy and climate policy ecosystem.

The initiative aimed to strengthen the enabling conditions for mobilizing public, private, and international climate finance for ECs while supporting Colombia's national climate and energy goals, incl. the NDCs, Long-Term Strategy (LTS), and broader Just Energy Transition agenda. The project therefore sought to address both financing gaps and the broader structural conditions required to make Energy Communities scalable and financially sustainable under Colombian conditions.

Project objective and approach

The initiative aimed to strengthen the financial architecture for EC in Colombia by developing scalable and replicable approaches for structuring, financing, and implementing community-based renewable energy projects.

The work combined comprehensive analysis of Colombia's EC ecosystem, modular financial modeling to assess bankability and long-term sustainability stakeholder consultations, replicable financing instrument combining blended finance and results-based payment mechanisms, and strategic recommendations for policy makers, financial institutions, and implementation partners to improve enabling conditions for mobilizing public, private, and international climate finance.

The project followed a multi-stakeholder approach involving public institutions, financial actors, academia, international cooperation partners, technical experts, and civil society organizations, including bilateral consultations and a multi-stakeholder validation workshop held in Bogotá.

Main outputs and strategic findings

1. Analysis of the EC ecosystem

The project conducted a comprehensive assessment of the Colombian ecosystem for EC, covering regulatory, institutional, technical, organizational, and financial dimensions. It confirmed that Colombia has established an increasingly robust regulatory foundation for ECs, but operational implementation still faces important challenges related to institutional coordination, financing structures, governance capacities, and long-term operational sustainability.

A key finding was that governance quality, operation and maintenance financing, and payment discipline are often more decisive for long-term sustainability than technology choice alone. The analysis also highlighted the need for differentiated implementation pathways between grid-connected territories (SIN) and non-interconnected zones (ZNI), given their fundamentally different operational and financial conditions.

To support future implementation, the project developed a decision tree framework that structures implementation pathways according to territorial conditions, community characteristics, technical configurations, and financing requirements.

2. Development of a modular financial model

Building on the analysis, the project developed a modular financial model designed to evaluate economic viability, payment capacity, operational sustainability, cash flow generation, and long-term bankability of EC. The model integrates productive activities, energy demand, governance assumptions, operational costs, financing structures, and technical system characteristics into a consolidated analytical framework.

A central finding was that productive activities are critical to the financial sustainability of ECs because they generate stable demand and more reliable cash flows. Linking energy systems to productive uses such as agriculture, tourism, or local enterprises significantly strengthens repayment capacity and long-term operational resilience.

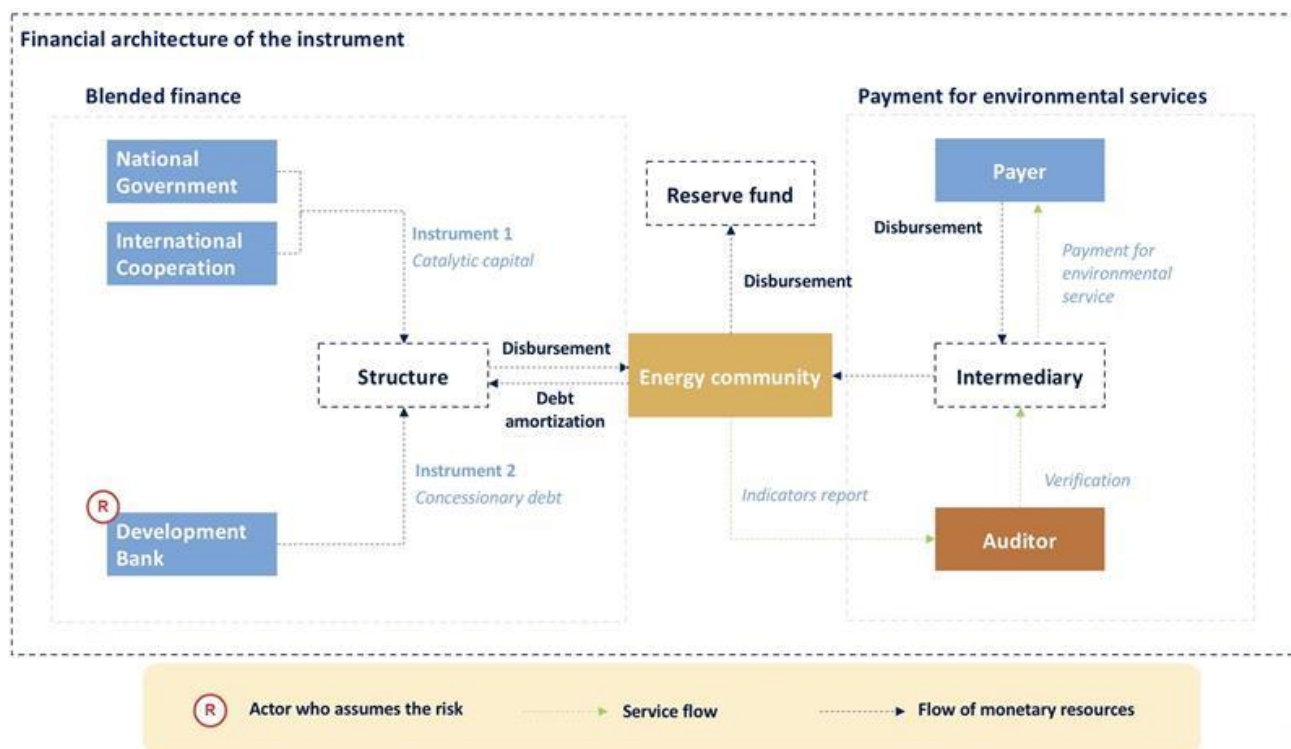
The model was designed as a flexible planning and decision-making tool adaptable to different territorial and regulatory contexts and was complemented by a user-oriented handbook to support practical application and future scaling.

3. Development of an integrated financing instrument

The analysis showed that the main barrier for scaling ECs is not necessarily the lack of capital, but rather the absence of financing structures adapted to projects with gradual revenue generation, limited collateral, and high dependence on governance quality and operational discipline.

To address the challenges, the project developed a replicable financing instrument tailored to the realities of community-based renewable energy projects in Colombia. The integrated financing architecture of the instrument combines blended finance structures (catalytic capital, concessional financing, and community and local contributions) with a results-based payment mechanism to improve access to finance and strengthen the financial sustainability and bankability of EC.

Figure 1- Financial architecture of the instrument



The approach adopts a cash flow-based financing logic (rather than a collateral-based) where the financial sustainability of ECs depends on the project's ability to generate stable, transparent, and disciplined operational cash flows over time and in which governance structures become a core component of bankability. The instrument therefore places strong emphasis on collection discipline, payment prioritization structures and reserve mechanisms, transparent governance arrangement, monitoring, and independent verification processes.

The results-based payment component complements the financing structure by providing performance-linked incentives tied to verifiable operational, financial, or climate-related outcomes. These payments can contribute to strengthening liquidity, reinforcing reserve structures, and improving solvency indicators during early operational phases.

The financing architecture includes potential roles of different actors within the financing ecosystem (such as public entities, local governance structures, international climate finance providers, development finance institutions, commercial financial actors, technical operators, community organizations) and demonstrates how public, private, and international climate finance can be combined to improve the viability and scalability of Energy Communities under Colombian conditions. Its successful operationalization depends on stakeholders with the necessary capacities and resources.

Together, these components were designed as complementary building blocks for strengthening the financial architecture and long-term scalability of ECs in Colombia.

Lessons learned and strategic recommendations

Strategic Lessons

- **Institutional maturity and governance as a condition for sustainability:** Institutional maturity, governance quality, and operational discipline emerged as fundamental preconditions for sustainable EC implementation. In many cases, governance weaknesses and insufficient operation and maintenance structures represent greater risks than technical challenges themselves.
- **Bankability and relationship with the financial system:** Conventional financing approaches are often poorly adapted to community-based renewable energy projects, which frequently do not meet traditional banking requirements. Improving bankability therefore requires financing structures based on stable cash flows, transparent governance arrangements, and long-term operational sustainability rather than conventional collateral structures alone. COL's financial sector is increasingly adopting differentiated criteria and assessments frameworks for biodiversity, climate, and JET projects.
- **Risk management, mitigation, and allocation in community projects:** The project highlighted the importance of integrated risk mitigation mechanisms, incl. blended finance approaches, reserve structures, technical assistance, monitoring systems, and clearly defined operational responsibilities among stakeholders.
- **Integration between energy and economic activity as a condition for sustainability:** The integration of productive economic activities such as agriculture, tourism, or local enterprises proved critical for strengthening demand stability, cash-flow generation, and long-term financial viability.

Strategic Recommendations

- **Strengthening the public policy framework:** Policymakers and regulators should further strengthen the operational and institutional framework for ECs, incl. clearer implementation guidance for SIN/ZNI contexts, stronger inter-institutional coordination, and improved integration of ECs into climate, energy, and territorial development planning.
- **Advancing regulatory and financial innovation:** Financial institutions, development banks, and public actors should promote financing approaches adapted to community-based renewable energy projects, incl. blended finance structures, concessional financing, results-based payment mechanisms, and cash flow-based financing models.
- **Strengthening territorial and institutional capacities:** Implementing organizations, local governments, and community actors should strengthen governance structures, technical capacities, financial management, and long-term operation and maintenance mechanisms to improve project sustainability and operational resilience.
- **Enhancing coordination with international cooperation and climate finance actors:** Public institutions, international cooperation partners, and climate finance providers should strengthen coordination mechanisms to improve access to technical assistance, project preparation and capacity development, catalytic capital, and climate finance instruments that support replication and scaling of ECs in Colombia.

EC can evolve from isolated pilot initiatives into scalable instruments of Colombia's JET if supported by appropriate governance structures, financial mechanisms, institutional coordination, and long-term territorial capacity development. Strengthening the enabling conditions for mobilizing public, private, and international climate finance supports aligning financial flows with Colombia's climate and development objectives while advancing a more inclusive, decentralized, and territorially grounded energy transition. The developed approaches, tools, and recommendations provide a practical and strategic foundation for scaling financially sustainable ECs models for decentralized renewable energy development in Colombia.