

IDB-KIAT Collaboration Project Proposal

Project Overview

Project Title	Development of renewable mini grids to support the expansion of electricity coverage in Panama		
Sector (sub-topics)	Sector: Energy Subsectors: Micro-grid (MG) Renewable Energy Energy Storage System (ESS) Energy Access		
Country	Panama	Location	Panama
Project Duration	3 yrs 0 months (implementation)	Budget	USD \$7,800,000
Association with Other Projects	IDB (Lending or Grant Approved / Pipeline / Planned) Universal Energy Access Program (https://www.iadb.org/en/project/PN-L1155)		

Submitter's Information

IDB (country office)	
Name	(details to be provided when selected)
Position	
E-mail	
Telephone	

Partner Country's Implementing Organization(s)

Partner Country Contact 1	
Name	(details to be provided when selected)
Position	
Organization	Rural Electrification Office (OER) of Panama
E-mail	

1. Project Background

Current Situation

Statistics of Panama indicate that 93% of households had access to electricity in 2019, this is equivalent to more than 93,000 families without access to electricity in the country. These families are located mainly in rural areas, indigenous comarcas, in remote areas and areas isolated from urban centers. The lack of access to electricity limits the population from having access to quality education and health services and from developing productive activities for their economic well-being.

These areas present greater complexity in the development of electrification projects and require the use of technologies, business and management models that have not traditionally been used in Panama.

The Rural Electrification Office (OER) in Panama oversees the development of projects to expand electricity coverage in unserved and not granted concessions areas. The OER has made progress in developing of medium and low voltage power line extension projects in areas close to the current power grid. To date, the OER does not have the experience in developing renewable mini grid projects to supply areas where developing electrical grid extensions is less technically, economically, or environmentally viable.

The implementation of isolated electrical mini grids is one of the viable alternatives to provide access to electrical service in these areas. Combining these schemes with an electricity supply through renewable sources and storage systems would support progress in sustainable and reliable rural electrification for the population. These mini grids must have adequate administration, operation, and maintenance schemes that support maintaining their proper operation over time. The implementation of renewable mini grids will allow the use of local resources of the communities, as well as helping to avoid greenhouse gas emissions by expanding electricity coverage based on renewable sources.

It has been identified by the government of Panama that it is necessary to diversify and expand the sources of investment capital in electrification projects and accelerate their execution. It is

estimated that by maintaining the current rate of investment, Panama could achieve universal access to electricity in 2039.

With the support of the Knowledge Sharing Program (KSP) in coordination with the IDB and the OER, 12 mini renewable mini grids for indigenous communities in Panama were identified and budgeted. A pre-design of the mini grid was carried out and were estimated the investment needs in equipment for the development of these projects, the costs of operation and maintenance, and the costs of transportation and logistics. Additionally, the Inter-American Development Bank (IDB) has continued to support the OER in gathering information from the communities and identifying the solutions best to be implemented to advance with the country's electrification objectives.

The program will support the development of renewable mini grids for the expansion of the electricity service in Panama in isolated areas. It will help diversify the sources of capital for investment, create experiences in the country in the development of renewable mini grids and increase the pace of investment in electrification supporting to archive universal access to energy by 2030.

Relevant National Development Plans, Policies, and Strategies

The National Strategy for Universal Access to Energy (ENACU) of Panama has been published in March 2022. This strategy has the goal of achieving universal access to energy by 2030 through the implementation of 25 strategic actions. In the strategy are highlighted topics such as strengthening the planning, follow-up, monitoring and execution mechanisms of projects, the implementation of policies and regulations aimed at the development of schemes based on renewable energies, the development of mechanisms for the implementation of solar mini grids.

As one of the activities to advance electrification, the OER is executing the "Universal Access to Energy Program", financed with resources from the IDB and with a local contribution from Panama, which has the objective of supporting the socioeconomic development of the rural population in Panama through a program for universal access to rural electricity service, which is technically, economically, environmentally, and socially sustainable.

Through technical cooperation, the IDB is supporting the implementation of the ENACU. Is supporting the OER in the development of a methodology for the implementation of isolated renewable mini grids in Panama based on current regulatory schemes and the dimensioning, design, prioritization, and budgeting of these projects. Also, the IDB is supporting the National Energy Secretary (SNE) in the development of new regulation for the implementation of new business models for electrification projects in Panama.

Association with Other Projects/Programs

The proposed KIAT project would be carried out concurrently with the IDB financed US \$56 million, Universal Access to Energy Program. The Universal Access to Energy Program have the goal of expand electrification to more than 13,000 new families by the development of power line extension projects and isolated renewable mini grid projects. For the execution of the mini grids, it is necessary to have administration, operation and maintenance schemes that support their sustainability.

The KIAT project would support the development of new renewable mini grids in in areas planned by the OER in coordination with the execution of the universal energy access program and the execution of the ENACU.

2. Project Objectives

The objective of the project is supporting the government of Panama in the development of isolated renewable mini grids for the expansion of the electricity service in Panama.

The project would develop 4 isolate renewable mini grids helping to expand electricity coverage to an estimated 738 families, 5 schools, 2 health centers. The expansion of coverage will create co-benefits for the communities by providing access to better quality education and health services and providing access to electricity for the development of productive activities.

The project support would help the diversification of the sources of capital for investment in electrification projects, create experiences in the country in the development of renewable mini grids and increase the pace of investment in electrification.

3. Project Components

The proposed project will have the following components:

Component 1: Feasibility Study. The study would cover the required technical assessments for construction of 4 isolated renewable the mini grids in Panama. The final designs, capacities of the solar system and storage capacity would be determined at the feasibility study stage. The feasibility studies would be carried out with the support of the information of the pre-designs determent by KSP, other available information of OER and the IDB, field information that is necessary and considering local regulations and standards.

Component 2: Construction of solar PV and storage systems microgrids. This would include: (a) construction of electricity generation infrastructure, which will include solar micro grids and storage systems; (b) distribution infrastructure, including distribution lines and distribution transformers; and (c) connections cost and internal wiring for households.

A consultative process with project beneficiaries would be carried out before the implementation of the project. The proposed renewable micro grids will allow families to have on average 24-hour supply.

Component 3. Capacity Building for OER. Development of training on the design, monitoring, management, operation, and maintenance of renewable mini grids for the OER and other relevant actors.

4. Project Location, Period, and Estimated Cost

Project execution schedule:

- Feasibility study: 6 months
- Preparation of the bidding documents: 8 months
- Procurement of the construction contractors: 10 months
- Construction of target facilities: 18 months

Expected Project Cost: US \$7.80 millions

Component	Amount (US\$)
• Component 1: Feasibility Study	\$150,000
• Component 2: Capacity Building for OER	\$50,000

• Component 3: Construction of Solar PV and storage systems microgrids.	\$7,600,000
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The budget for the construction of the mini grids is based on information from the surveys and pre-designs developed by KSP and updated cost information of the pre-designs for mini grids developed in a consultancy by the IDB to support OER.

Location: The project locations would be in the national territory of Panama. The exact locations would be determined based on the feasibility study that would include geospatial analysis and other technical work to select the site; recommend configuration of the project based on electricity demand; and prepare the technical specifications.

5. Project Implementing Organization

The partner country implementation organization: **(to be provided when selected)**

- Rural electrification Office (OER)

The Rural Electrification Office (OER) in Panama oversees the development of projects to expand electricity coverage in unserved and not granted concessions areas. The OER is part of the Public Works in Panama.

The IDB would supervise the development process of the feasibility studies and the construction of the renewable mini grids in coordination with the OER.

6. Required Coordination at National/Regional Level

The OER will be in charge of coordinating with local organizations for the development of feasibility studies and projects. For the implementation of the projects, the OER conducts awareness workshops to provide information about the project and consults with the beneficiaries to answer their questions and determine solutions if necessary.

7. Risks and Opportunities

Risk:

- Given the COVID situation and the travel limitations, it is expected that there could be delays in the work, for which the work plan will be based on the use of virtual meetings and maximizing the use of technological tools to mitigate the risk of delays.
- Given the limited access and quantity of quality information, it is expected that there may be delays in the acquisition of relevant information for the project, due to this the plans will integrate close coordination with the OER and the communities for the acquisition of the most relevant information, anticipated the start of the activities of each job, with the aim of mitigating the risk of delays.
- The volatility of commodity prices is a risk for estimating the budget of the project. This risk can be mitigated by carrying out the feasibility study of the mini grids with current cost data.
- There are elections for government positions in Panama in May 2024. We do not foresee changes in the priority of carrying out projects to expand electricity coverage.

Opportunities

- The development of mini grid project experiences will enhance the country's ability to scale up more projects of this nature due to the need for these schemes to achieve universal access to energy by 2030. This may create an opportunity to implement other programs or operations with this scope.
- The development of mini grids presents an opportunity for the public sector to show its feasibility in the country and apply new contracting mechanisms for this type of project to promote private investment in the country electrification projects.