

IDB-KIAT Collaboration Project Proposal

Project Overview

Project Title	Development of Solar Energy in Haitian Communities		
Sector (sub-topics)	Micro-grid (MG) Smart Meters Solar Household System		
Country	Haiti	Location	Center Department: Cerca-la-Source
Project Duration	3 years	Budget	USD 6,000,000
Association with Other Projects	- IDB - Emergency Program in Response to Hurricane Matthew (HA-L1130 3882/GR-HA) - IDB – PHARES (HA-L1140, 4900/GR-HA, component 1) - World Bank - Renewable Energies for All – SREP project (Grant TF0A5191)		

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	Autorité Nationale de Régulation du Secteur de l'Energie (National Regulatory Authority for the Energy Sector) - ANARSE
E-mail	
Partner Country Contact 2	
Name	(details to be provided when selected)
Position	
Organization	Cellule Energie (MTPTC)
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1. Project Background

Current Situation

Haiti is a Caribbean country with a population of approximately 11.3 million people (2019) and located on the eastern part of the island of Hispaniola, a territory it shares with the Dominican Republic. Haiti's energy landscape is characterized by (i) low level of electricity access and consumption; and (ii) heavy dependence on fossil fuels and biomass. Electricity coverage in the country is around 30%. High capital costs and electricity tariff (US\$0.33/kWh for residential customers) partly explain the low electrification rate. Furthermore, decades of poor management and regulation have hindered Haiti's capacity to meet the needs of 8 million Haitians who still lack access to basic, modern energy services.

In February 2016, the country adopted a new legal and regulatory framework that ended the public utility's monopoly on the generation, distribution, and the sale of electricity. Government strategies to increase access to electricity tend to focus on national grid extension, with options such as decentralized off-grid solutions being secondary to it. As such, and with the objective of filling the electricity access gap, the Haitian Government (GoH) is committed to supporting sustainable energy services through renewable energy-based mini grids, to be deployed and operated in areas that will not be connected to a regional grid in the short term.

To close the access gap, the GoH has been working in several initiatives including, among others, (i) the development of decentralized off-grid renewable (RE) solutions like mini grids; (ii) the installation of household solar panel systems for remote areas; (iii) the development of RE for electricity generation in the Industrial Park of Caracol (PIC) located in the North East of the country; and (iv) strengthening of the planning and management capacities of the main sector institutions such as the Autorité Nationale de Régulation du Secteur de l'Energie (ANARSE) and the Ministère des Travaux Publics, Transports et Communications (MTPTC).

One of the existing mini grids in Haiti is CEAC (*Coopérative électrique de l'arrondissement des Côteaux*). CEAC is based in the southern part of the country and was heavily impacted by hurricane Matthew in 2016. As a response, IDB supported its rehabilitation as well as its extension with additional solar panels and a smart metering system. As of March 2022, the mini grid has a nominal capacity of 142 kW in solar, 320 kW in thermal generation and 120 kW of battery with a power transformer of 400 kW.

The GoH, with support from IDB (operation HA-L1140, *Improving Electricity Access in Haiti*), and the World Bank (WB), created PHARES (*Programme Haïtien d'Accès Rural à l'Énergie Solaire*) to foster sustainable energy services in the country, through municipal mini grids based on photovoltaic (PV) and other renewable energy technologies. The executing agency is UTE (*Unité Technique de Coordination*, reporting to the Ministry of Economy and Finance) which implements the program in coordination with

the Energy Cell (on behalf of the MTPTC) and ANARSE, managing a transparent two-stage bottom-up selection process for awarding grants.

Additionally to the mini grid deployment, and as part of its strategy to accelerate electrification throughout the country, the GoH plans to deploy stand-alone solar home systems in remote areas where conventional microgrids or utility grids are not financially viable.

Despite the GoH's efforts, the country is currently struggling to attract private and public investments at the scale needed. Several developers have shown interest, some of them have participated and won recent calls for proposals, but the investors are not following at the expected pace. International partners have provided technical assistance for capacity building and policy & regulatory framework improvement, but more efforts are needed to develop solutions that will mitigate the key risks to attract more capital, particularly in the form of concessional loans. More efforts are also required to identify and implement measures to facilitate access to key fiscal and financial incentives, to mobilize local and commercial financing, and to further streamline the process to grant concessions and contracts.

Relevant National Development Plans, Policies, and Strategies

The Haitian State has a vision to scale-up the current solar-powered mini grid program to provide access to clean energy services to 500,000 Haitians in conjunction with productive uses of energy (PUE) in agriculture and commercial sectors. The goal is to transform the underdeveloped, unreliable, and expensive fossil fuel-based electricity generation mix into a modern and sustainable energy system relying on diverse sources of power, mainly domestic renewable energy. The transformation of the electricity generation mix should improve the quality of electricity services throughout the country. This transformation is currently sought through the Haitian Program for Access of Rural Communities to Solar Energy (PHARES).

A new regulatory framework has been developed with the support and collaboration from the World Bank, IDB, CDB, etc. to ensure the success of PHARES. This new framework regulates the public-private relationship via concessions through a contract between the Developer and the MTPTC. The tariff provisions are approved by the regulatory authority and included in the concession contract. Smart metering technology is also promoted in the process to support sustainability.

These measures follow a new legal landscape favoring private investments in the energy sector with:

- A decree opening the power sector and its entire value chain to private investments;
- A decree creating the Regulatory Authority of the Energy Sector;
- The regulation by 20-year concession contract for private developers to operate mini grids;
- The elaboration of a national mini grids regulation;
- The removal or reduction of custom duties on solar panels and other equipment related to renewable energy.

The first eight mini grid projects of the PHARES program are in the final stage of negotiating the concession contract and are expected to provide electricity access to 16,000 new connections. In parallel, DFIs and other partners are providing technical assistance (TA) to support the generation of reliable data to improve the next set of mini grid transactions. These TA activities include (i) an ongoing geospatial assessment supported by the World Bank, the IDB and the CDB to help identify and map key geographical areas prone for mini grids, (ii) a survey to assess the willingness of households and businesses to pay for energy services in cities being considered for mini grids, (iii) a productive uses of electricity pilot led by the Rockefeller Foundation in off-grid communities to be served by mini grids that seeks to incentivize small enterprises and microenterprises to acquire appliances that can lead to increased income generation and improved mini grid bankability, and (iv) a study financed by the IDB to support the development of a national plan for productive uses of electricity in Haiti.

Association with Other Projects/Programs

Designed as an umbrella program, able to accommodate various contributions and funds to the mini grid sector in Haiti, PHARES works to increase the access of rural and peri-urban communities to solar energy. The proposed project will support the scale up of PHARES while deploying complementary solutions essential to the enhancement of livelihoods and jobs.

The Off Grid Electricity Fund (OGEF) of Haiti, established in 2019 by the GoH with support from the World Bank, is also being leveraged for the program. OGEF has been established to accelerate electrification of Haiti through grants and investments to local commercial companies. Led by a team in Haiti and supported by international experts, OGEF has developed a pipeline of opportunities, and worked with local companies to strengthen their internal structure, their operations and improve their investment readiness. OGEF's available capital is now fully committed, and the fund is ready to financially support some exciting opportunities that could transform Haiti. OGEF complements public interventions by providing financial instruments to support PHARES mini grids, DRE/Diesel Genset replacement particularly in C&I sector, and Mesh Grids as a way to accelerate the provision of affordable electricity for both domestic and productive use in a faster and more cost-effective way to rural communities.

Besides OGEF, the Government will continue, through the proposed program, the successful collaboration with (i) The World Bank and IDB who are already providing financial and technical assistance to PHARES, (ii) The Rockefeller Foundation who is conducting a pilot of PUE for mini grids and (iii) IFC and IDB Invest who have been showing interest in financing mini grids.

2. Project Objectives

The objective of this program is to increase electricity access in Haiti by providing renewable and affordable energy to isolated communities. The specific objective of the program is to develop an

Electric COOP in the District (Arrondissement) of Cerca-la-Source which will be supplied by a solar PV-based community micro grid and by solar home systems for households that cannot be connected to the micro grid.

In the long-term, the project aims at providing access to affordable, more accessible, sustainable, and high-quality electricity supply to rural and peri-urban communities, in line with Sustainable Development Goal 7.

Previous experiences - in EarthSparks' Les Anglais system, for instance - have shown that rural access to electricity can positively affect productivity, income, and economic growth. It can also help reduce indoor pollution by breaking an overreliance on solid fuels for cooking and lighting, resulting in substantial emissions reduction of air pollutants that negatively affect human mortality and morbidity rates.

The following text was added at the end of section 2. "Project objective": The District of Cerca-la-Source in the central region of Haiti is chosen for this project since is located in an area without access to electricity and without the possibility to be covered by Haiti's public utility in the near future. This community is considered as sufficiently organized to develop a community-based cooperative as this project is aiming at. Furthermore, the demand of existing small enterprises and health centers as well as the potential of future local businesses increase its needs and chances of success. Finally, this project will have the potential to be replicated in other areas of the country.

Anticipated outcomes:

- Social dimensions
 - Employment: During the implementation and operation phase of the project, local labor will be hired to carry out start-up activities and maintenance tasks required for the implemented technologies in the community.
 - Education and technology: Girls and boys will be able to carry out school activities in the evenings in safe conditions and eventually experience the benefits of education such as higher earnings.
 - Health and nutrition: The project will contribute to the reduction of gastrointestinal and stomach diseases caused by the inadequate refrigeration and preservation of foods such as meat or vegetables. It will also help improve health outcomes and reduce mortality through improved indoor air quality. Communities are also expected to see reduced fertility at lower costs, achieved through information channels that use electricity.
 - Security: Families will be able to count on lighting systems in open spaces, which increases safety.
 - Leisure and domestic benefits from lighting and TV/radio.
- Economic dimensions
 - Savings: Savings are projected in the reduction of the use of diesel fuels, firewood and candles that are currently used to illuminate homes and in spending less time on long trips to charge cell phones in places other than home.

- Income generation and entrepreneurship: Currently, several family production initiatives are limited by the lack of energy. With the project, the economy of these areas has the potential to be improved and the communities could see income benefits through new opportunities of work, especially in nonfarm activities.
- Productivity: Increased productivity of home businesses and the creation of new home businesses. Increased agricultural productivity through higher revenues.
- Environmental dimensions
 - The project contributes directly to the fulfillment of climate change mitigation actions, specifically in sustainability, low-carbon and climate-resilient development. The project will reduce greenhouse gas emissions from electricity generation and from burning of biomass in rural areas.
 - Haiti's greenhouse gas emission is relatively low, with the country emitting 8 million metric tons of carbon dioxide equivalent (MtCO₂e) - less than 0.03 per cent of global carbon emissions. The agriculture sector is responsible for 49 percent of those emissions, followed by the energy sector at 39 percent, waste sector at 7 percent, industrial processes at 4 percent and land-use change and forestry at 2 percent. The project addresses the two biggest sources of pollution - agriculture and energy - by promoting the use of clean energy and thus reducing emissions and resulting in public goods benefits, such as increased security and lower environmental contamination.

3. Project Components

The proposed project will have one component.

Development of an electric cooperative that supplies affordable and sustainable electricity through a PV-based micro grid and solar home systems

This component aims at developing an Electric Cooperative for the District of Cerca-la-Source, namely in French "*Coopérative d'Électricité de l'Arrondissement de Cerca-la-Source (CEACE)*" that supplies electricity to that community through a solar PV-based micro grid and solar home systems (SHS). This community micro grid will bring electricity services to the municipalities of Cerca-La-Source including Saltadère (rural section of Cerca-La-Source) and Thomassique. In parallel, the beneficiaries that cannot be connected to that micro grid (due to the density of their population, their geographical distribution, and their potential ability to pay for electricity services) will have then access to electricity through SHS or mesh-grid technologies. A preliminary study shows that the electricity demand for 5,300 households and small businesses could be around 750 kW. This electric cooperative will serve as a model in electrifying remote communities with low energy generation costs, as well as a contribution to the reduction of their carbon footprint and lessening the current energy crisis to achieve a sustainable future. This component will finance: (i) technical assistance to ANARSE and Energy Cell to strengthen their planning and managerial capacities for energy access project management and monitoring, and (ii) technical assistance to develop the appropriate business model and to launch CEACE operations (develop HR plan, recruit, and train core staff, prepare operational manuals, provide limited office

equipment, and develop several regulatory tools and systems - tariff method, metering, commercial management system).

4. Project Location, Period, and Estimated Cost

The project will be executed in a maximum of 36 months, following the estimated planning hereunder, starting in January 2024.

- Preparation of the bidding documents: January-June 2024
- Call for proposals and selection of the firm: July-December 2024
- Procurement and delivery of goods: January-December 2025
- Installation: January-June 2026
- Commissioning and Acceptance: July-October 2026

Expected project cost: 6,000,000

Components	Amount (US\$)
Develop an Electric Cooperative	6,000,000
TOTAL	6,000,000

5. Project Implementing Organization

The role of IDB:

- Facilitate coordination and communication between the implementing Korean firms retained by KIAT and the client country Haiti;
- Monitor project progress;
- Provide guidance when needed;
- Cover in-kind expenses such as meeting venues and administrative support.
- Contact information: **(to be provided when selected)**

The role of the Beneficiary:

- Provide agreed and required input;
- Facilitate coordination on site;
- Contribute to in-kind such as land on which the system is to be constructed, administrative support (permits, environmental impact analysis, etc.).

Contact Information: **(to be provided when selected)**

6. Risks and Opportunities

As Haiti has experienced socio-political instability these past years, and more intensively since the assassination of the President in July 2021, and as the Presidential election is not scheduled yet, travel restrictions could be raised from the awarded construction firms and delivery of goods on site could be delayed due to demonstrations at the custom clearance or due to insecurity on the way to the sites.

The site itself is relatively safe and the micro grid model has proven to be a robust solution to rural electrification in Haiti, notably due to its application at any scale and its ability to be expanded later. Pilot experiences demonstrate that in rural areas, the demand for electricity can be matched with consumer willingness to pay for the service at or above supply cost.