

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

REPUBLIC OF HAITI

IMPROVING ELECTRICITY ACCESS IN HAITI

(HA-L1140)

AND

NON-REIMBURSABLE INVESTMENT FINANCING

(HA-G1045)

GRANT PROPOSAL

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OEL#3	Component II. Technical Evaluation and CBA
OEL#4	Public Utilities Policy Analysis (PUP)
OEL#5	Support to Persons with Disabilities
OEL#6	Gender Analysis
OEL#7	Sustainability of Rural Electrification
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OEL#11	Safeguard Policy Filter (SPF) and Safeguard Screening Form (SSF)

ABBREVIATIONS	
ANARSE	<i>Autorité Nationale de Régulation du Secteur de l'Energie</i>
AOP	Annual Operational Plan
ARE	Alliance for Rural Electrification
CAPEX	Capital Expenses
CBA	Cost Benefit Analysis CBA
CTF	Clean Technology Fund
DESCO	Distributed Energy Services Company
EA	Executing Agency
EDH	<i>Electricité d'Haiti</i>
ENPV	Net Present Value
ESMAP	Energy Sector Management Assistance Program
ESMR	Environmental and Social Management Report
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GOH	Government of Haiti
HFO	Heavy Fuel Oil
ICB	International Competitive Bidding
IPP	Independent Power Producer
IRENA	International Renewable Energy Agency
IRR	Internal Rate of Return
kW	Kilowatt
MEF	Ministry of Economy and Finance
MTPTC	Ministry of Public Works, Transport and Communication
MW	Megawatts
O&M	Operation & Maintenance
OII	Office of Institutional Integrity
OGEF	Off-Grid Electricity Fund
PAP	Port-au-Prince
PAYG	Pay-As-You-Go
PCR	Project Completion Report
PEP	Pluri-annual Execution Plan
PIC	<i>Parc Industriel de Caracol</i> (PIC for its abbreviations in French)
POM	Program Operation Manual
PP	Procurement Plan
PPA	Power Purchase Agreements
PSG	Project Specific Grant
PUP	Public Utility Policy
PV	Photovoltaic
RE	Renewable Energy
RFP	Request for Proposal

ABBREVIATIONS	
SESA	Strategic Environmental and Social Assessment
SREP	Scaling Up Renewable Energy Program Investment Plan
TEP	Thermal Energy Plant
T&D	Transmission & Distribution
UTE	<i>Unité Technique d'Execution</i> of the Ministry of Economy and Finance
USAID	United States Agency for International Development
WB	World Bank

PROJECT SUMMARY
HAITI
IMPROVING ELECTRICITY ACCESS IN HAITI
(HA-L1140; HA-G1045)

Financial Terms and Conditions				
Beneficiary: Republic of Haiti			Amortization Period:	N/A
Executing Agency: Ministry of Economy and Finance (MEF) with technical support of the Sector Regulatory Authority (ANARSE) and the Ministry of Public Works, Transport and Communication (MTPTC)			Disbursement Period:	5 years
			Grace Period:	N/A
Source	Amount (US\$)	%	Interest rate:	N/A
IDB (Grant Facility for Haiti-GRF) (HA-L1140):	31,500,000	83	Credit Fee:	N/A
U.S Agency for International Development (USAID) (HA-G1045) ^(a)	6,500,000	17	Inspection and supervision fee:	N/A
Total:	38,000,000	100	Weighted Average Life (WAL):	N/A
			Currency of Approval:	Dollars of the United States of America
Project at a Glance				
Project Objective/Description: The general objective is to increase reliable electricity access in Haiti that promotes economic development and the strengthening of the sector's governance. The specific objectives are: (i) development of decentralized electrical minigrids with private sector participation; (ii) foster the supply of electricity with Renewable Energy (RE) in the <i>Parc Industriel de Caracol</i> (PIC); and (iii) strengthening sector regulatory and planning capabilities.				
Special contractual clauses prior to the first disbursement: The Beneficiary will provide evidence to the satisfaction of the Bank of: (i) the entry into force of the Program Operation Manual (POM) pursuant to the terms previously agreed upon with the Bank; (ii) the entry into force of regulations issued by the MEF and accepted by MTPTC and ANARSE, specifying the responsibilities and coordination between the parties for the execution of the program activities; and (iii) the hiring or appointment of program's key personnel, including a project coordinator, two electrical engineers, a project monitoring analyst, a procurement specialist, a financial specialist, an environmental specialist, and a social specialist (¶3.2).				
Special contractual clauses of execution: See additional special contractual conditions in Annex B of the ESMR .				
Exceptions to Bank Policies: None.				
Strategic Alignment				
Challenges ^(b) :	SI	<input checked="" type="checkbox"/>	PI	<input checked="" type="checkbox"/>
			EI	<input type="checkbox"/>
Cross-Cutting Themes ^(c) :	GD	<input checked="" type="checkbox"/>	CC	<input checked="" type="checkbox"/>
			IC	<input checked="" type="checkbox"/>

^(a) Co-funding (Project Specific Grant - PSG) is expected from USAID for up to the amount of US\$6,500,000, subject to USAID's approval (§2.1). Under the PSG Administrative Agreement with USAID, the IDB will charge and deduct a non-reimbursable Administrative Fee of 5% of the contribution to defray administration costs. The Administrative Fee will be distributed to IDB departments as applicable, in relation to the workload due to preparation, execution and monitoring of the operation as well as administration of the PSG Agreement.

^(b) SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

^(c) GD (Gender Equality and Diversity); CC (Climate Change and Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).

I. DESCRIPTION AND RESULTS MONITORING

A. Background, Problem Addressed, and Justification

- 1.1 **Socioeconomic context.** With a population of 10.4 million people in an area of 27,750 square kilometers, the Republic of Haiti is the most populated country in the Caribbean and one of the most densely inhabited. About 2.5 million people live in the capital Port-au-Prince (PAP) metropolitan area. Other main municipalities are Cap Haitien, Gonaives and Les Cayes. The country is divided in ten administrative departments.
- 1.2 Gross domestic product (GDP) is US\$8.41 billion, equivalent to US\$857 per capita. Since 2013, the economy has grown at an average rate of 2.1% per year and average annual inflation is 10%. Economic performance has weakened since mid-2018 due to reduced access to external financing, fuel shortages, poor conditions for agriculture, and social unrest. Growth is expected to be under 1% for fiscal year 2019 and inflation over the last 12 months was 16.3%, mostly driven by monetary financing of the fiscal deficit. The tertiary sector accounts for 58% of GDP (2015) including informal commercial activities. Industry is gradually gaining weight (21% of GDP). The primary sector employs about 70% of the active population but contributes only 22% of GDP as nearly half of the population (48.1%) is rural relying on subsistence farming.¹ Average fiscal expenditure was 29.5% of GDP between 2014-2017 generating an annual fiscal deficit of 4.0% average, to be covered by debt financing. Per capita income remains among the lowest in the Caribbean with a national poverty rate of 59% (6.3 million people) and extreme poverty 24% (2.5 million people). Haiti is one of the most unequal countries in the world (Gini index 0.61).²
- 1.3 Although social and economic indicators have improved over the last decade, significant challenges remain. Haiti's Human Development Index score stands at 0.64, compared to 0.75 for Latin America and the Caribbean. However, the improvements are mostly in urban areas as rural poverty is still 75%.³ Food insecurity affects 23% of population (2.6 million people) and informal urban settlements are being formed lacking security and access to basic services, including electricity.
- 1.4 Limited institutional development and government capacities are among the pivotal structural problems inhibiting Haiti's human and economic development. Haiti is also poorly prepared to cope with frequent hurricanes, floods and earthquakes, such as the earthquake in 2010 and hurricane Mathew.
- 1.5 **The Electricity Sector.** Electricity generation, transmission and distribution in Haiti has historically been the realm of *Electricité d'Haiti* (EDH), a vertically integrated utility founded in 1971. EDH responds to Ministry of Public Works, Transport and Communication (MTPTC), which is the responsible authority for planning and supervision of the energy sector. EDH owns and operates sector assets and is responsible for delivery and sales of electricity throughout Haiti.

¹ However, the urbanized population is steadily growing, from 31.4% (1990) to 51.9% (2015).

² IDB Country Strategy 2017-2021.

³ For more data, see for example: <https://data.worldbank.org/>.

A decree issued in February 2016 ended EDH's monopoly and created the *Autorité Nationale de Régulation du Secteur de l'Energie* (ANARSE). ANARSE was established in 2017 as Haiti's energy sector regulatory agency. The Decree also allows parties other than EDH to operate in generation, transmission, and distribution. However, it has yet to be operationalized and specific regulations implemented to address the following: (i) service quality; (ii) conditions for concessions; (iii) definition of tariffs; (iv) legal status of grid assets and modalities for transfer thereof; and (v) eligibility for subsidies.

- 1.6 EDH's electricity service primarily covers the PAP metropolitan area, ten small regional grids plus about 30 village-level grids. EDH owns approximately 1,700 km transmission and distribution lines across the entire country. Due to technical, managerial and financial limitations, the service is far below international utility standards. Along with political instability, economic setbacks and frequent natural disasters (hurricanes, earthquakes) striking the country, investment in infrastructure expansion has been inadequate to match (latent) demand. EDH has a formal customer base of just 250,000 connections, although informal connections are presumably twice as high.⁴ Annual electricity sales in 2014 are estimated at 500 GWh, yielding a revenue stream of approximately US\$ 50MM/yr. To cover the operational deficit, EDH receives annual financial injections from the Government of Haiti (GOH) of about US\$250-300MM representing about 1.9% of the GDP.
- 1.7 **Electricity generation.** The power matrix in Haiti has increasingly become thermal-based (diesel and heavy fuel oil). While hydropower from EDH Péligre power station made up 76.5% of total production in 1990, this had dropped to just 6.5% in 2016.⁵ Recently, the share of hydropower has increased to about 15% after a refurbishment of the 54 MW Péligre plant with IDB, OPEC Fund for International Development, and KFW financing. EDH owns the diesel-fired plants Carrefour I, II and III (totaling 67.8 MW) supplying the PAP grid, while Independent Power Producers (IPP) Sogener and E-Power own 81.9 MW and 33.6 MW respectively under Power Purchase Agreements (PPA) with EDH. The production capacity in the PAP grid is about 140MW. The dispatch system is outdated and limits EDH delivery capacity to about 120 MW of the total installed capacity.
- 1.8 The estimated sales volume of 500 GWh/yr is about half of the total electricity production (1,000 GWh/yr). Technical losses during Transmission & Distribution (T&D), theft by unauthorized consumers, payment default by formal EDH customers, as well as collection of payments by delinquents who impersonate EDH officers, amount to a reported 65% combined losses; hence EDH recovery rate is as low as 35%. The resulting electricity sales per capita estimated at 36 KWh/yr are one of the lowest in the world. EDH's average costs for electricity generation (both EDH-owned and purchased from the IPP) have been recently estimated at

⁴ Assessment of Haiti's Electricity Sector, Boston University, March 2018.

⁵ In 1990, total production was 597 GWh (123 GWh oil-based, 17 GWh biomass, and 457 GWh hydro). By 2016, this was 1,013 GWh oil-based and 71 GWh hydropower, totaling 1,084 GWh. <https://www.iea.org/statistics/?country=HAITI>.

\$0.32-0.39/kWh.⁶ This reflects the high share of imported fuels, which is paid for through annual fiscal expenditures of about 4% of GDP.⁷

- 1.9 **Haiti's Renewable Energy (RE) potential.** Given Haiti's abundant solar, wind and hydro energy resources, modern Renewable Energy (RE) technologies provide an opportunity to reduce generating costs, thereby improving sector sustainability. The National Energy Policy for Haiti draft (2012) calls for increasing the share of RE-based electricity to 50%. The 2015 Scaling up Renewable Energy Investment Plan (SREP) sets Haiti on a path towards a modern and sustainable sector with a diversified energy matrix. According to Worldwatch (2014), over 100 MW additional hydropower can be developed in Haiti at a levelized cost of about US\$0.05/kWh, and grid-connected Photovoltaic (PV) plants and wind farms at US\$0.11/kWh. There is a strong business case for RE in Haiti provided that the T&D infrastructure is upgraded. Distributed RE technologies in combination with diesel and battery storage can also be instrumental for improving grid stability and control voltage in the regional grids with current low demands.⁸
- 1.10 **Rural electrification.** Most rural electrification projects have been constructed by EDH. After construction, asset ownership is transferred to the municipalities. In some places, community involvement is high, and a volunteer committee is appointed by the Mayor's office for O&M. In most cases this task is assumed by the Mayor's staff or a local non-governmental organizations. Occasionally, an EDH technician living in the area performs these functions. In the absence of proper demand assessments, the diesel generators tend to be oversized by a factor 2-3, resulting in poor fuel efficiency and unnecessary high costs for repairing and maintenance. Average generating costs typically vary between US\$0.40-US\$2.0 per kWh. Poor availability of spare parts and fuel supplies affects reliability, undermining customers' willingness to pay for the service. It is noted that an average rural household spends about US\$10/month on kerosene and candles for home lighting; fuelwood for cooking is still by far the main energy source in rural Haiti.
- 1.11 **Electricity access.** Electricity coverage in the country is around 38% (72% in urban areas and 28% in rural areas).^{9,10} [Haiti' Sustainable Energy Roadmap from 2014](#)¹¹ recommended the creation of a Rural Electrification Agency within the GOH to develop electrification programs and monitor quality of the service in specific sites.¹² Since 2017, MTPTC's Energy Cell and ANARSE are taking up this role to some extent through its schedule of planned investments and concessions with technical and financial support from the WB SREP program.

⁶ Which is substantially higher than the regional average of US\$0.33/kWh for the Caribbean.

⁷ At a thermal production of 1,013 GWh/yr (2016), EDH fuel costs can be estimated between US\$325 and US\$395 MM per year. EDH revenues are in Haitian Gourde while fuel purchases in US\$. [Assessment of Haiti's Electricity Sector, Boston University, March 2018.](#)

⁸ [Assessment of Haiti's Electricity Sector, Boston University, March 2018.](#)

⁹ <https://www.export.gov/article?id=Haiti-Energy>.

¹⁰ In comparison, Dominican Republic national electrification rate is 96%.

¹¹ [Haiti Roadmap](#), Worldwatch Institute for the MTPTC, 2014.

¹² The Roadmap further recommends adaptation of the Haiti Investment Code and the Investment Facility (*Centre de Facilitation d'Investissement*) to direct private capital towards rural minigrids.

- 1.12 In 2017, IDB commissioned a study for the GOH by Navigant Consulting.¹³ A classification was made of communities near an EDH grid (typically within 2 km distance) and those not near (greater than 2 km distance). The EDH grids considered are: *Cap Haitien, Jacmel, Ley Cayes, Nord-Est, Petit Goave, PAP, Port-de-Paix, l'Archaie, and l'Artibonite*. The survey found that households and institutions connected to the EDH grid typically have electricity available for 8 to 16 hours (Energy Sector Management Assistance Program- ESMAP Tier ¾ service level). The study shows that there is a strong correlation between current size and economic development on one hand, and distance to these grids. Remote communities are generally smaller, with little economic development.
- 1.13 High-density communities are typically within 2 km from these grids, have at least 5,500 households and schools, businesses and medical services. Those households and institutions which have some electricity typically attain Tier 2/3 levels (4 to 8 hours) and can attain Tier 3/4 service with improved (minigrid) electricity. About 100 communities have been identified totaling a population of about three million. Medium-density communities (at least 800 households) are typically more than 4 km away from the EDH grids. About 700 communities have been identified; the total population is estimated at 2.8 million. About 1 million people live in lower-density areas not near the grid (more than 2 km away). Those with some electricity typically attain Tier 1/2 levels (4 hours per day) from self-generation (solar home systems or diesel generators), which can power some lights and a few appliances. Low-density communities typically have 20 households, lack public services and are more than 6 km off the grid. About 1,000 communities have been identified with a total population of 90,000 people. The Navigant study estimates the total investment required to electrify the high-and medium-density segment at US\$1,600MM, reaching 95% of the rural population.
- 1.14 **RE systems for increasing access to electricity.** Falling capital costs of PV systems and technological advances for electricity storage, control systems and smart metering have opened opportunities for RE-based minigrids serving areas outside established utility grids.¹⁴ Worldwide over two million people now receive satisfactory electricity service from PV grids.¹⁵ SE4All acknowledges that supportive action is needed for market development as minigrids face challenges to reach the scale and revenues needed for break-even and long-term financial sustainability.¹⁶ The ESMAP commissioned an assessment of PV minigrids in Africa and Asia to understand where costs are incurred, where they can realistically be managed or reduced and where subsidies could be considered.¹⁷ Importantly, capital expenditures will depend on the offered service level, such as defined by the ESMAP/SE4All Energy Access Multitier framework.¹⁸ The Alliance for Rural Electrification (ARE) points out the need for further strengthening regulatory frameworks and financial de-risking, enabling a blend of investment

¹³ Haiti Minigrid Investment Business Case, Navigant Consulting Inc, Burlington USA, 2017.

¹⁴ The cost of key mini grid components fell 62-85% between 2010 and 2018. Mini Grids for Half a Billion People. ESMAP. June 2019.

¹⁵ PV minigrids grew from 11MW (2008) to 308MW (2017), serving 2.1 million in 2016. In comparison, Small hydro grew from 418MW (2008) to 509MW (2017), connecting over 6 million people. IRENA (2018).

¹⁶ SE4All Clean Energy Minigrids High Impact Opportunity - Strategic Action Plan, June 2015.

¹⁷ Benchmarking Study of Solar PV Minigrids Investment Costs, WB ESMAP, December 2017.

¹⁸ The Energy Access Dividend in Latin America (forthcoming 2019 IDB & Duke University).

capital in alignment with the (inevitable) mid-to-long-term timeframe for off-grid systems to generate adequate revenue streams.¹⁹

- 1.15 Initial initiatives in Haiti include Earthspark International, the National Rural Electric Cooperative Association and the *Cooperative Electrique de l'Arrondissement des Coteaux* NRECA International-CEAC grid, and Sigora Haiti.²⁰ In 2012 EarthSpark²¹ launched a microgrid in *Les Anglais*, which grew from 14 households to 54 customers plus some street lighting in 2013, and 449 households in 2015. Electricity is supplied 24h/day by a 93-kW PV system combined with 410-kWh battery storage and a small (30-kW) backup diesel generator. *Les Anglais* was devastated by hurricane Matthew in 2016, though the minigrid which did not suffer major damage and was rehabilitated with support from GOH. Unfortunately, the NRECA-CEAC grid was destroyed by the same hurricane. With IDB and the United Nations support, the minigrid is being rehabilitated.
- 1.16 Sigora Haiti, a subsidiary of U.S.-based Sigora International, built its first microgrid system in *Môle-Saint-Nicolas* in northwestern Haiti in 2016.²² The company has since expanded coverage to the municipalities of *Bombardopolis*, *Jean Rabel* and *Savanne Mole*, providing 24/7 electricity to around 4,300 active residential and commercial customers. The grid consists of 1.1 MW diesel, 0.27 MW solar, 120 km transmission and distribution lines, and smart meter software. Sigora Haiti has signed concessions with the municipalities to provide electricity service in an area with up to 27,000 potential connections serving 136,000 people. Since the area is characterized by extreme poverty, securing revenues is very challenging. The use of Pay-As-You-Go (PAYG) meters is an element in Sigora Haiti's business model. The collection of PAYG deposits is coordinated by a network of vendors, 90% of whom are women, and receive a 10-15% commission fee to incentivize sales. In January 2019, IDB Invest approved a US\$1.5 million Loan and a US\$8.0 million Clean Technology Fund (CTF) Loan with concessional terms to finance the replacement of diesel generation with wind power and an energy storage system in Sigora Haiti's existing grid, and to invest in new transmission and distribution infrastructure to allow the expansion of the minigrid through the addition of new connections.
- 1.17 The high tariffs required by private minigrids operators are a challenge for fast upscaling, given the very low-income levels in rural Haiti. To unlock the market potential for Distributed Energy Services Companies (DESCO) operating minigrids, the GOH has established the Off-Grid Electricity Fund (OGEF), which will invest equity and provide loans to Haitian off-grid electricity businesses with commercially viable and scalable business plans. OGEF is managed by an OGEF Fund Manager and will be a partnership between the *Fonds de Développement Industriel* (FDI), a Haitian financial intermediary operating under the auspices of the Haitian Central Bank, and Bamboo Capital Partners, a competitively selected International Fund Manager. Support is provided under the World Bank's (WB) SREP and the CTF funded "Modern Energy Services for All Project" (CTF Project

¹⁹ [High-profile bankruptcies in the off-grid sector: Where do we go from here?](#), ARE (2019).

²⁰ Others are Solar Electric Light Fund (SELF) and Haiti OK.

²¹ <http://www.earthsparkinternational.org/>.

²² <http://sigorahaiti.com/>.

– P154351), as well as the International Development Association -funded “Rebuilding Energy Infrastructure and Access Project” (PRELEN - P127203).²³ The tax exemptions for RE products and applications recently approved by Parliament also send a positive signal to the market.

- 1.18 **Risk profile of minigrids.** Several conditions must be met for the implementation of Clean Energy Minigrids based on solar PV: (i) sufficient, sustained electricity demand for financial sustainability; (ii) adequate support from community leaders and the GOH; (iii) availability of technical skills to install, operate and maintain the system; (iv) adequate managerial and business skills for successfully running a rural electricity company (DESCO); and (v) consumer capacity to pay for the service through innovative and robust payment mechanisms such as PAYG meters.
- 1.19 One of the largest challenges for minigrids is to match initial low electricity demand with the high upfront costs of project development and assets, and grid operation. While rural people spend significant money on kerosene and batteries, they do not have the financial means to purchase electric appliances; credit facilities in this regard do not exist. Indeed, the effective growth of energy consumption and end-user capability to pay is part of a business development process that may take more time. In a recent publication, ARE emphasizes the importance of carefully structured financing and de-risking of minigrid investments.²⁴ In this context, the currency risk must also be addressed, as investment is typically in hard currency while revenues are in Haiti Gourde. Mitigation measures foreseen include careful design, increasing cash flow, application of best practices to minimize commercial losses, tax benefits and direct incentives. The latter are critical for financial sustainability and should be designed as part of a broader supportive policy framework.²⁵
- 1.20 Globally, progress is being made to support countries with similar characteristics as Haiti, through the Minigrid Policy Toolkit prepared in collaboration by EUEI PDF, REN21, ARE and ESMAP.²⁶ Important lessons-learned were drawn from pioneering countries including Senegal, Tanzania and Kenya. In 2018, International Renewable Energy Agency (IRENA) published a series of case studies to assess policy and regulation in seven countries (Nigeria, Rwanda, Sierra Leone, Tanzania, Cambodia, Indonesia, India, and Peru).²⁷ A case-study including four EDH grids in Haiti shows that customers are willing to pay while the electricity is delivered with reasonable reliability.²⁸ The recent experiences by Earthspark and Sigora Haiti will also prove beneficial for assessing project risks. Valuable insights and recommendations for electrification of off-grid health and educational facilities

²³ WB-PAD 1704, October 2017.

²⁴ [High-profile bankruptcies in the off-grid sector: Where do we go from here?](#), ARE, 2019.

²⁵ [Guidance on policy design is provided in, for example, the Minigrid Policy Toolkit by the Africa-EU Renewable Energy Cooperation Programme.](#)

²⁶ [ESMAP](#), 2019.

²⁷ Policies and Regulations for RE Minigrids, IRENA, 2018.

²⁸ Microgrids for Rural Electrification: A Critical Review of Best Practices Based on Seven Case Studies, Carnegie Mellon University and University of California, SE4All Energy Access Practitioner Network, UN Foundation, 2014.

have been compiled under the SE4All initiative and can be applied by project developers and financiers in Haiti.²⁹

- 1.21 **Limited information for project design.** Availability of - and access to - reliable sector information is challenging in Haiti. Technical and socio-economic data underpinning EDH's minigrids are not made public, nor the expenditures for these grids, which could serve for benchmarking and cost analysis.³⁰ The tariff is set by the municipality. Revenues should cover operational costs as major repair and replacement is in theory, done by EDH. The operational performance of these grids is notoriously poor, although systematic monitoring (data logging) has not been done. By consequence, input information for the design of minigrids in Haiti must essentially be built from scratch.³¹ Sharing of data, lessons and practices between project developers, operators, and authorities will be critical for a fast uptake of the market.
- 1.22 **Limited in-country skills and experience.** Technical challenges include the lack of skilled workforce for installing and maintaining RE and minigrid equipment.³² Quality of RE equipment is also of concern as in the aftermath of the 2010 earthquake, large amounts of low-quality products (solar lanterns and solar home systems) entered the market undermining consumer confidence. Strict quality standards and effective warranties can help mitigate this perceived risk and encourage people to participate in electrification schemes.
- 1.23 **Gender inclusion in the sector.** Gender balance is another cross-cutting challenge for Haiti. As in many countries, women's access to higher decision-making levels remains a challenge in most if not all government and private sectors. Additionally, women encounter challenges such as lower education levels with limited employment opportunities, adding to their responsibilities for the establishment of their homes and care of their family and children. In Haiti most of the women are responsible for collecting water and charcoal, caring for children, sick and elderly, and cooking (all unpaid responsibilities), and they lack financial literacy skills. All these impacts their welfare and economic positions, making them less likely to be employed and participate in the labor market. This picture of gender dynamics implies that women are especially and disproportionately in disadvantage, thus gender considerations must be taken into account to improve their lives.
- 1.24 **The PIC.** The PIC is a mixed-use light manufacturing industrial free zone in the commune of Caracol in NE Haiti. It is among the largest and most modern ones in the Caribbean. The operational infrastructure of the PIC includes a dedicated 10 MW Thermal Power Plant (TEP), water supply, wastewater treatment plant,

²⁹ Lasting impact – Sustainable off-grid solar delivery models to power health and education, UN Foundation and SE4All, 2019.

³⁰ Ibidem, p. 61-5.

³¹ Relevant recent information sources include: (i) the large household survey ECVMAS (2012); (ii) a telephone survey carried out by Digicel/Development for preparation of the Haiti Investment Plan (2014); (iii) ongoing monitoring activities under the WB SREP Programme (started 2017); and (iv) experiences from current private minigrid developers.

³² The minigrid around the Caracol Industrial Park (Caracol Community Electrification program – CCEP) was erected with the aid of NRECA volunteers from the USA.

solid waste disposal, ambulances and a fire station. The PIC is owned by the GOH and responds to a GOH policy to foster economic development and job creation outside the PAP as laid out in the National Action Plan 2010. Construction started in 2012 under a Public-Private Partnership involving the GOH and the park's anchor corporate tenant SAE-A Trading Co. Ltd, Republic of Korea,³³ with funding and technical assistance from IDB and United States Agency for International Development (USAID). Investment by IDB since 2011 accrues to US\$215.8 M;³⁴ the current building area is 189,000 m² (Phases I-IV).

- 1.25 PIC economic output (exports and domestic sales) in 2018 was US\$205M, an increase of 284% compared to 2014 (US\$53M). As of 2018, PIC employs 13,491 people (direct tenant employees plus contractors), an increase of 153% compared to 2014 (5,329 jobs). Tenant employees are in majority women (61% of total, 2018). SAE-A is dedicated to garment manufacturing and accounts for over 80% of employment and energy use at the PIC. Output per worker grew 51% reaching US\$15,787 in 2018 and annual payroll increased 225% (from US\$9.07M to US\$29.45M) accumulating to US\$108.4MM over the same period. The annual payroll per job increased 28% from US\$1,700 (2014) to US\$2,180 (2018).
- 1.26 The TEP has delivered positive impacts among the population. Access to quality (24/7) electricity service at workers' homes rose from 49% (2014) to 72% (2018) totaling 9,748 connections. Mobile phone use among PIC workers in 2018 is 86%, and 56% of workers have dependents (children). The PIC offers stable jobs and a competitive salary for Haitian standards. Over 65% of the workforce comes from *Cap-Haitien*, *Trou Du Nord* and *Limonade*.
- 1.27 Notwithstanding the above achievements, the key stakeholders (tenants, GOH, IDB) have signaled a series of threats that undermine the position of the PIC, including park management, energy costs and increase in official minimum wages.³⁵ In response the GOH decided in July 2019 to transfer PIC management from the National Society of Industrial Parks to the *Unité Technique d'Execution* (UTE) of the Ministry of Finance (MEF) for a period of 24 months to draw upon UTE's extensive experience in developing the PIC.
- 1.28 **Electricity supply to the PIC.** Electricity supply to the PIC is provided by the TEP, brought online in 2012 under the USAID Pilot Project for Sustainable Electricity Distribution initiative. It consists of six 1.6 MW internal combustion diesel engines, converted to heavy Fuel Oil (HFO) in 2016. The TEP is operated by NRECA on behalf of USAID. Subsequently, the distribution network was expanded to the surrounding communes to serve residential, commercial, and industrial customers and public institutions and foster economic development.

³³ Which operates under the name S&H Global in Haiti.

³⁴ The following IDB projects funded construction of the PIC: 2552/GR-HA (approved July 2011, US\$55M); 2779/GR-HA, 2779/GR-HA-1, 2779/GR-HA-2 (approved Sept 2012, US\$50M); 3132/GR-HA (approved Dec 2013, US\$40.5M); 3384/GR-HA, 3384/GR-HA-1, 3384/GR-HA-2 (approved Dec 2014, US\$55M); and GRT/HR-15509-HA (approved Mar 2016, US\$15.3M).

³⁵ Global SAE-A, presentation April 2019.

- 1.29 With Capital Expenses (CAPEX) for the TEP and T&D infrastructure absorbed by a USAID grant and at variable costs of the order of 0.14 US\$/kWh, the PIC committed a competitive energy tariff of 0.16 US\$/kWh to its tenants. However, the cost structure changed radically when the TEP started serving consumers outside the PIC, due to commercial losses and investment in additional infrastructure to be covered from the operational budget. The industrial tariff was increased to 0.30 US\$/kWh in 2018.³⁶ In that year, total industrial electricity consumption was 9.8 GWh implying a cost of US\$29.43M. This tariff³⁷ threatens profitability and sustainable exploitation of tenants' production facilities and as such, employment, economic development, and the viability of the PIC itself.³⁸
- 1.30 As of 2019, the annual electricity delivered by the TEP is about 22 Gigawatt hours (GWh), 45% of which is consumed by the PIC and 55% by 14,758 customers in surrounding communities. With the planned ending of USAID's support, the GOH is shaping a private concession model to operate the TEP and deliver electricity to the PIC and the customers outside the PIC and incorporate the connections of the NE regional grid currently served by the Chevry diesel plant at *Fort Liberté*. The creation of a hybrid power system incorporating solar PV and the TEP provides an opportunity to reduce energy costs under the condition that CAPEX is again absorbed by grant funding. The entire population of the NE area is 648,000 people distributed over 13 communes. The GOH expects to incorporate about 38,000 connections to the NE.
- 1.31 **Problems identified.** Extending electricity access to the unserved population and fostering RE technologies proves challenging due to: (i) general difficulty of doing business in Haiti;³⁹ (ii) historically weak sector framework and low performance of EDH to deliver quality service; (iii) high investment and O&M costs for minigrids due to remoteness of unserved communities; (iv) limited information for project design; (v) limited in-country skills and experience for minigrid development and O&M; (vi) need of reinforcement of ANARSE's capacities; and (viii) low participation of vulnerable groups in the sector. In addition, high electricity tariffs also hinder long-term sustainability of the PIC.
- 1.32 The GOH has requested IDB's support to close the electricity access gap, promote deployment of RE technologies for power supply and strengthen ANARSE's regulatory function. In order to do so, IDB has proposed the preparation of the program "*Improving Electricity Access in Haiti*" aiming at: (i) increasing the deployment of minigrid with RE for rural electrification and with private sector contribution; (ii) installation of RE to reduce fossil fuel consumption and improve sustainability of the PIC; and (iii) strengthen sector regulatory and planning capacities.

³⁶ The tariff for residential consumers outside the PIC is 0.24 US\$/kWh. The privately-run Sigora Haiti minigrid charges approximately US\$0.50–US\$1.75 per kWh depending on the type of customer to be financially sustainable. Among other factors, this difference in tariffs reflects the cost of private capital for the Sigora minigrid and the contribution of grant resources for the TEP.

³⁷ Global SAE-A, presentation 2019.

³⁸ The industrial electricity tariff in Dominican Republic is 0.18 US\$/kWh.

³⁹ Haiti is ranked 182nd out of 190 in the 2019 Doing Business report issued by the WB.

- 1.33 **Sector knowledge.** The IDB has been a key partner for the GOH to finance the repair of damaged infrastructure after the 2010 earthquake and hurricane Matthews and has supported the reform and transformation of the sector through several investment operations in generation and T&D: GRT/HR-14830-HA⁴⁰ and 3413/GR-HA "Rehabilitation of the Peligre Transmission Line (US\$ 23.7 million) and 2684/GR-HA (US\$20 million), 2349/GR-HA "Rehabilitation of the Electricity Distribution System in Port-au-Prince" (US\$14 million), GEF-funded operation GRT/FM-12093-HA "Emergency Program for Solar Power Generation and Lighting" (US\$0.5 million) and the GRT/MC-12067-HA Sustainable Energy and Climate Change Initiative project "Emergency Program for Solar Generation" (US\$1 million) and budgetary operations: GRT/HR-13877-HA and 2953/GR-HA (2013, US\$ 25 million), 2735/GR-HA (2010, US\$12 million), 2548/GR-HA (2011, US\$35 million) and ATN/SF-12271-HA "Towards a Sustainable Energy Sector Haiti - White Paper" (2010, US\$0.1 million). Some lessons learned from these operations indicate: (i) more collaboration among government entities such as the MEF, the MTPTC and ANARSE taking advantage of their skills and experience to improve project's transparency and execution; (ii) increased coordination and collaboration of MDBs in the sector; and (iii) foster a more competitive and balanced environment for private sector participation in the sector.
- 1.34 **Strategic alignment.** The program contributes to the objectives of the IDB Group Country Strategy (CS) with Haiti 2017-2021 (GN-2904).⁴¹ Concretely it supports the technical dialogue in the energy area to foster sustainability of the energy sector by diversifying the electricity matrix, reducing generation costs and promoting inclusive and sustainable growth through sustained private and public investment and enhanced access to basic public services (¶3.1 of the CS). The program further promotes the dialogue with the GOH on supporting the continuous development of the PIC.
- 1.35 The program is aligned with the Bank's Updated Institutional Strategy 2010-2020 (UIS) (AB-3008) regarding: (i) Productivity and Innovation, by promoting deployment of clean energy solutions at the PIC, the development and use of the latest solar technologies and devices for minigrids; and (ii) Social Inclusion and Equality, through the provision of a basic service (electricity) in unserved communities and actively promoting women's participation in the program's activities. The program is aligned with the cross-cutting areas: (i) Gender Equality and Diversity, by empowering women through training on O&M of solar plants and developing inclusive guidelines for the sector; (ii) Climate Change and Environmental Sustainability, by investments pursuing the reduction of Greenhouse Gas (GHG) emissions; and (iii) Institutional Capacity, by strengthening the technical and managerial capacity of the sector regulator. The program is further aligned with the Corporate Results Framework (CRF) 2016-2019 (GN-2727-6) by reducing GHG emissions; and with the Strategy for Sustainable Infrastructure for Competitiveness and Inclusive Growth (GN-2710-5). It is responsive to the IDB's Integrated Strategy for Mitigation and Adaptation to Climate Change and Sustainable Energy by supporting sustainable and decentralized (off-grid) solutions. The program is aligned with the Energy Sector

⁴⁰ A project completion report, is under preparation, will include an analysis of program's results and its main execution lessons learned.

⁴¹ Approved in 2017.

Framework (GN-2830-8) as it focuses on sustainable rural electrification and deployment of RE technologies. It is also aligned with Gender and Diversity Sector Framework (GN-2800-9) since it contributes to the access to energy services, seeking to reduce the gap for vulnerable and marginalized groups. The program includes measures in accordance with the [General Framework of Sustainable Infrastructure](#),⁴² in particular regarding: (i) Economic and Financial Sustainability by generating positive net economic return on investments, and lowering operation cost and tariffs for electricity generation; and (ii) Environmental Sustainability, by implementing measures to reduce GHG emissions.

- 1.36 According to the [joint MDB approach](#) on climate finance tracking, 92.24% of total IDB funding for this operation result in climate change mitigation activities. This contributes to the IDBG's climate finance goal of 30% of combined IDB and IDB Invest operational approvals by year's end 2020.
- 1.37 **Innovation and technology.** The program contributes to: (i) the use of RE for industrial energy supply reducing electricity costs; (ii) building a new supply model with private participation to deliver RE-based electricity in remote and unserved areas; (iii) incorporation of ICT to increase payment collection rate from electricity consumers such as PAYG, as well as mobile money;⁴³ and (iv) streamlining of ICB procedures under WB project (P15435) with pursuant ¶3.13(a) of IDB's Procurement Policies (GN-2349-9) to accelerate program execution.
- 1.38 **Gender equality.** To contribute to improve their lives and make changes in gender equality and women's empowerment, this program is proposing to strengthen the sector by including concrete gender actions within ANARSE and gender guidelines in the energy sector expansion plan (¶1.39). Additionally, to contribute to the inclusion of more women in the energy sector, solar PV Operation and Maintenance (O&M) training will be provided for women and men in the Caracol Industrial Park (PIC) area. Finally, as an expected result of the work that will be done in the PIC, by fostering the supply of renewable energy in the industrial park, there will be better conditions to attract more industries to the park generating more employment for men and women (¶1.47).
- 1.39 **Consistency with the Public Utilities Policy (PUP) (GN-2716-6).** The program is consistent with the principles of the PUP and meets the conditions of: (i) economic evaluation by taking into consideration the expected benefits associated to the expansion of minigrids for rural electrification and the installation of solar PV plants at the PIC (¶2.3); and (ii) financial sustainability given that: (a) capital costs of the program will be funded through the IDB grant facility and USAID grant co-financing; (b) O&M costs will be covered through the electricity tariff paid by end-users and industrial tenants; and (c) the contribution of budgetary funds to subsidize the construction of minigrids will be transparent and based on International Competitive Bidding (ICB). In addition, the selection, execution and O&M of the program's activities comply with the scope of environmental and social sustainability of the PUP in alignment with its objectives, as the minigrids will

⁴² Technical note No. IDB-TN-1388. [A Framework to Guide Sustainability Across the Project Cycle](#).

⁴³ In 2017, the number of mobile subscriptions in Haiti was about 6.49 million ([Statista](#)).

increase electricity access to segments of population not served and offer higher quality and reliability levels to beneficiaries ([PUP](#)).

- 1.40 **Donors coordination.** The programme was designed in close coordination with: (i) the WB and IDB Invest for the activities considered under Component I. The WB and IDB Invest provided valuable inputs (data and information) for the design of the minigrid model. In addition, the program considers that qualified bids from the WB program not yet financed, may be eligible for funding under this program (§1.46). Similar coordination was done with USAID during the preparation of the technical and financial studies of the PIC power plants. Additional coordination with USAID will be required during the execution of the program. The Project Specific Grant (PSG) Administrative Agreement with USAID will establish the coordination mechanisms (§2.1).

B. Objective, Components and Cost

- 1.41 The general objective of the program is to increase reliable electricity access in Haiti that promotes economic development and the strengthening of the sector's governance. The specific objectives are: (i) development of decentralized electrical minigrids with private sector participation; (ii) foster the supply of electricity with RE in the PIC; and (iii) strengthening of the sector governance.
- 1.42 **Component I. Development of decentralized electrical minigrids with private sector participation (US\$12.55 MM).** This component will finance the construction of minigrids⁴⁴ with RE technologies in delimited areas not covered by EDH. The grids will be built and operated by private companies under long-term concessions. The concessions will be granted by ANARSE to qualifying developers through competitive bidding based on: (i) the committed RE generating capacity (MW to be installed); (ii) the proposed affordable and competitive electricity tariff for end-users; and (iii) proven technical and financial capacity for attracting external financing. The use of smart meters will be an asset for demand-side management and can help avoid theft.
- 1.43 The purpose of the subsidy per connection is to enable a robust cash flow for the minigrid investments and an acceptable financial return on investment.⁴⁵ The subsidy translates into a lower tariff for financial break-even, which is intended to be affordable for the end-users allowing a progressive increase in electricity demand. This offered tariff shall be competitive in comparison to the existing minigrids in Haiti.⁴⁶ In principle, the bidder offering the lowest tariff will be granted the concession. Each offeror must present a calculation showing the effect of the requested subsidy on the tariff level. The allocation of budgetary funds to minigrid operators will be transparent and consistent with the PUP (§1.39). The disbursement of subsidies will be done based on compliance with defined milestones to ensure end-users are actually connected to the minigrid.

⁴⁴ Including generation capacity, distribution lines, smart meters.

⁴⁵ See Component I's CBA (§2.3) for details about the economic and financial analysis.

⁴⁶ The only 100% private minigrid in the country (Sigora Haiti in NW Haiti), charges tariffs in the range of US\$0.30-US\$2/kWh; depending on the monthly consumption and consumer class, while the NRECA-operated Caracol grid, built with grant resources, charges around US\$0.30 for end-users.

- 1.44 Considering on community size (¶1.11) and sites where extension of the EDH T&D grid is economically and financially not feasible, the GOH prioritized 51 communities nationwide to benefit from the construction of a minigrid. Assuming the long-term commitment to ensure the electricity service in the concession area, the authorities have the right to purchase the assets at the end of the concession period. A first bidding round is currently being carried out for WB project [P15435](#) under ICB, which is aligned with ¶3.13(a) of the Bank's Procurement Policies (GN-2349-9). If the WB bidding proves successful, qualified bids not yet financed may be considered for funding under this program. To this objective, IDB closely monitors the WB tender through dialogue with GOH counterparts and the WB team.
- 1.45 MTPTC distinguishes in the first ICB 48 sites out of the 51 prioritized to be supported by development bank programs, including the WB's SREP under which US\$4.62M has been made available. Under the tender, a per connection-subsidy will be granted to the concessionaire of US\$350 for the "easier" sites and US\$500 for the more "difficult" ones, according to the ranking made by MTPTC and the WB.⁴⁷
- 1.46 After a new ICB is completed for the 48 sites and upon the availability of remaining resources, Component I envisages – among other options – offering a per connection subsidy to concessions in phase of construction by the time the operation is eligible for disbursement; according to IDB procedures. Eligible concessionaires must demonstrate: (i) application of a business model in line with the GOH concession model and the objectives of the current operation; (ii) having secured private equity for developing and construction of the minigrid assets; (iii) not being granted any parallel subsidy for the same project; (iv) have temporary concession granted by ANARSE; (v) demonstrate an equivalent reduction in end-user tariff after subsidy, as it resulted from new projects tendered in this Component; and (vi) comply with socio environmental standard as those governing the program. Such subsidy will help avoid potential misalignment in tariffs that could ultimately penalize such projects for being first mover and demonstrating the feasibility of minigrids in Haiti. These requirements will be included in the [Program Operation Manual \(POM\)](#).
- 1.47 **Component II. Fostering the sustainable operation of the PIC (US\$22.67 MM).** The objective of the component is to reduce unit electricity costs, thereby improving economic competitiveness and sustainability of the industries at the PIC. Specifically, the component will finance the design, supply, installation and commissioning of one 8MWp and one 4MWp solar PV plant; combined with a battery storage to bridge short-term power fluctuations. O&M will be done by a dedicated operator (Solar Operator) to manage the solar plants and the PIC distribution network, to be selected through an international competitive tender process following IDB procurement policies. O&M costs will be covered by the tariff paid by PIC customers and the TEP concessionaire for the energy consumed. The TEP, currently operated by NRECA on behalf of USAID, will therefore be transferred to the GOH and operated by an independent concessionaire selected under a separate international tender process led by ANARSE, with USAID contribution.

⁴⁷ Out of 48 sites preselected, 35 were tagged as challenging.

- 1.48 The 8MW PV plant will: (i) be connected to the PIC's internal grid providing RE-based electricity; (ii) sell surplus solar energy, when required by the concessionaire of the TEP; and (iii) enable reducing electricity costs for the PIC by partially replacing HFO with RE.⁴⁸ An industrial tariff will be implemented having two components: one solar, mainly reflecting the cost of O&M and one thermal reflecting the cost of fuel (see [Technical Evaluation](#)). GOH strives at offering a tariff of about US\$0.16/kWh for industrial consumers to keep the PIC attractive for the tenant companies and prospective investors in Haiti. The calculations made⁴⁹ based on current O&M conditions of the TEP, show that this tariff level is possible while ensuring financial robustness of PV power plant and a cost of the thermal fuel portion below US\$0.30/kWh.⁵⁰ As results it is expected the construction of new industrial buildings in the PIC which will generate more local employments and providing new jobs opportunities for women (¶1.25).
- 1.49 The 4-MWp PV plant will supply electricity to neighboring communities outside the PIC through the private concessionaire of the TEP. Meanwhile, the load factor of the TEP will be gradually increased by expansion of the regional minigrid. The PV power produced by the 8MWp PV plant and not consumed by the PIC will be bought by the TEP to act as a fuel-saver thereby reducing operational costs. After commissioning of the 4MWp PV plant and in the first year of the concession, an electricity tariff for Non-PIC customers between US\$0.19/kWh to US\$0.31/kWh is expected varying upon consumption.⁵¹
- 1.50 Both solar plants will have the same Solar Operator and a PPA with the TEP concessionaire. The TEP concessionaire will be responsible for O&M⁵² of the TEP and dispatch of electricity to non-PIC customers. He will purchase of all energy from the 4MWp PV plant, and any useful surplus energy from the 8MWp PV plant offered by the Solar Operator. The 8MWp PV plant will be connected to the TEP and operated as follows: (i) will provide electricity to the PIC at a single competitive price; (ii) will have priority to dispatch power to the PIC over the TEP; and (iii) will sell surplus solar energy to the TEP concessionaire at an agreed price under a PPA. A fixed tariff will be implemented for the industrial consumers.
- 1.51 **Component III. Strengthening sector regulatory and planning capabilities (US\$1.0 MM).** The objective of this component is to provide institutional support for strengthening of ANARSE. Funding will be used for activities that support the fulfilment of ANARSE's mandate and responsibilities *vis-a-vis* the concession contracts as well as: (i) the design of new instruments to regulate the sector and foster equitable access to electricity by all groups in society;⁵³ (ii) development of an operation manual for ANARSE; (iii) development of an electricity expansion

⁴⁸ The Financial Model shows that the PV plant generation cost is about US\$0.03, which is about half of production cost of the TEP under the assumption that prices of fuels are constants: 2.25 US\$/Gal HFO & 2.50 US\$/Gal diesel.

⁴⁹ Combined Financial Model of the PIC TEP-Solar plants.

⁵⁰ [PIC's PV Plants concessionaire diagram](#).

⁵¹ See main assumption in the [PIC-Financial Model](#).

⁵² O&M will be paid by PIC's endorers through the tariff.

⁵³ A sector institutional action plan for the inclusion of people with disabilities and gender equality will be developed.

plan;⁵⁴ and (iv) training to ANARSE's staff focused on financial models, design of PV and wind power systems, and power systems planning.

- 1.52 **Program management and monitoring (US\$1.45 MM).** This component will finance: (i) assistance to select the minigrid concessionaires (DESCOs), and of the Solar Operator. Resources will be allocated to finance the strengthening of the Project Executing Unit of the MEF for program execution. This component will further finance audits and monitoring and evaluation of the program. Will also cover technical training for locals on O&M of solar systems. A gender sensitive approach will be followed to address specific needs of women to ensure that the benefits of increased access to energy are maximized.

C. Key Results Indicators

- 1.53 The expected outcomes are: (i) affordable tariff level for residential customers outside EDH grid; (ii) increased capacity by households to meet latent energy demand; (iii) sustained electricity production from solar energy consumed at the PIC; (iv) newly connected end-users to the PIC grid; and (v) sector governance strengthened.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing Instruments

- 2.1 **Cost and financing.** The estimated cost of the program is US\$38,000,0000 of which US\$31,500,000 will be financed by the IDB Grant Facility for Haiti, and US\$6,500,000 million by USAID, subject to approval, for the financing of the 4MW solar plant of Component II through a PSG. The PSG is administered by the Bank according to the "Report on COFABS, Ad-Hocs and CLFGS and a Proposal to Unify Them as Project Specific Grants (PSGs)" (Document SC-114) in alignment with applicable procedures. USAID will issue a separate Administration Agreement under which the committed resources for this project will be administered by the Bank.⁵⁵ The Board is, therefore, requested to authorize the President, or such representative as he shall designate, to enter into such agreements, as may be necessary, with USAID and with the Republic of Haiti to receive, administer, and allocate to this operation the PSG resources aimed at supporting and executing Component II of this operation.

⁵⁴ The plan will consider electricity generation, T&D and rural electrification strategy.

⁵⁵ Under the PSG Administrative Agreement with USAID, the IDB will charge and deduct a non-reimbursable Administrative Fee of 5% of the contribution to defray administration costs. The Administrative Fee will be distributed to IDB departments as applicable, in relation to the workload due to preparation, execution and monitoring of the operation as well as administration of the PSG Agreement.

Table 1. Cost of the Program (US\$)

Components	FINANCING		
	IDB	USAID	Total
CI. Development of decentralized electrical minigrids with private sector participation	12,545,000	-	12,545,000
CII. Fostering the sustainable operation of the PIC	16,500,000	6,175,000	22,675,000
CIII. Strengthening of the sector regulatory and planning capabilities	1,000,000	-	1,000,000
Project Management and monitoring	1,455,000	-	1,455,000
PSG administration fee	-	325,000	325,000
TOTAL	31,500,000	6,500,000	38,000,000

- 2.2 The program is structured as an investment grant in the modality of specific investments. Projects in prioritized communities that will be funded with Component I have been identified with sufficient information to launch the ICB for concessions. Similarly, projects that will be financed in Component II have been identified and the scope of works evaluated. The expected disbursement period of the program is five years. Table 2 presents the expected disbursement schedule according to the [management tools](#) of the program. The duration of the program is based on the early preparation of tender documents for the concessions and possible recognition of anticipated procurement (see Annex III, section V). Detailed budget information covering the operation's main activities over the disbursement period is given in the [Pluriannual Execution Plan \(PEP\)](#) and [Annual Operational Plan \(AOP\)](#).

Table 2. Disbursement Schedule (US\$)

Fund	Year					Total
	2020	2021	2022	2023	2024	
IDB	2,828,743.60	13,715,527.60	10,128,447.04	3,634,263.92	1,193,017.84	31,500,000.00
USAID	18,525.00	4,266,925.00	1,889,550.00	-	-	6,175,000.00
Total	2,847,268.60	17,982,452.60	12,017,997.04	3,634,263.92	1,193,017.84	37,675,000.00
	7.6%	47.7%	31.9%	9.6%	3.2%	100%

B. Viability and Sustainability

- 2.3 **Economic viability.** A Cost Benefit Analysis (CBA) was performed for each component. The methodology calculated the economic benefit for each investment component separately. For Component I, the [CBA](#) concluded that the program consisting of grant resources, is economically sound. This Component finance several optimized, hybrid minigrid projects designed to ensure an Internal Rate of Return (IRR) of 12%. A sample of 48 communities previously selected by the GOH was considered in the analysis. Some of these communities will be beneficiaries of the program. In the baseline scenario, considering the principle of subsidy per connection with a budget of about US\$12 million (30,889 connections), and the contribution of at least 50% share of RE of the installed capacity, the analysis results in a tariff in the range of US\$0.323/kWh to US\$0.553/kWh⁵⁶ with an average monthly consumption of 59 kWh. The economic evaluation shows an Economic Net Present Value (ENPV) of US\$81 million and an IRR of 104%. A sensitivity

⁵⁶ In the baseline scenario of 48 communities the analysis results in a tariff rate between US\$0.324/kWh and US\$3.00/kWh. The ENPV is equal to US\$56.7MM.

analysis shows that the program is mostly sensitive to the cost per km of distribution network. Changes of $\pm 15\%$ results in variations of the tariff from +11% to -14% with an ENPV of $\pm 13\%$.

- 2.4 The [CBA](#) for Component II, shows that the two solar plants, 8 MWp and 4 MWp respectively, allow attaining the target average electricity cost level for PIC-Customers of about US\$0.16/kWh. Further residential rates are reduced by 6% and 1 million gallons of fossil fuel are off-set per year. The main cost drivers for electricity supply in the PIC under the target scenario are the TEP concessionaire's base tariff and the price of fuels. Variations of $\pm 15\%$ in each driver will result in changes in the average cost of electricity of $\pm 7.5\%$ and of $\pm 4.2\%$, respectively. The economic evaluation results in an ENPV of US\$11.4 million and an economic IRR of 20.9%. The ENPV shows considerable sensitivity to a variation in CAPEX of the PV systems and batteries, such that variation of $\pm 15\%$ in CAPEX translates into ENPV $\pm 26\%$.
- 2.5 **Technical viability.** Pre-selected beneficiary communities have been identified for electrification, with projects to be developed through concessions under Component I and following the experience of the WB financed project (§1.42). In Component II, preliminary studies have been completed for both solar plants. Sizable information is available for the preparation of the tender documents (§1.47).
- 2.6 **Sustainability of investments.** The GOH is committed to the sustainability of the investments under this program and has agreed to: (i) grant long-term concessions for private companies to build, own and operate local minigrids. O&M will be secured through the tariff level, according to provisions set in the contract between concessionaires and ANARSE (§2.3); and (ii) grant the design, supply, installation and operation of one 8MWp and one 4MWp solar PV plant to a dedicated "Solar Operator". O&M will be covered through the tariff paid by PIC Customers and by the purchases of PV-electricity by the TEP Concessionaire (§2.4).

C. Environmental and Social Safeguard Risks

- 2.7 The program is classified B in compliance with the Environment and Safeguards Policy (OP-703). The program could be implemented in various regions around the country and could have moderate environmental and social impacts that would influence the country's overall energy matrix. Therefore, a Strategic Environmental and Social Assessment (SESA) that defines the framework to be used in the ICB of Component I was prepared.
- 2.8 The SESA defines the possible nationwide impacts, institutional capacity, and all necessary mitigation measures. The SESA also includes important recommendations to consider as best practices on environmental and social matters for what needs to be considered in bidding documents. The issues presented in the SESA and the recommendations will be discussed and reviewed during the training activities for the Executing Agency (EA). The Solar Power plant will be built inside the PIC which is already for industrial purposes. Public consultations with stakeholders were carried out. As a result recommendations were formulated to be considered in the concession contracts, including

(i) awareness raising of local population to strengthen ownership; (ii) training of local population, especially women, in minigrid construction and O&M; (iii) integration of electricity supply with others services; and (iv) participation of local population in the design of maintenance plans. Additional information is presented in the [Environmental and Social Management Report \(ESMR\)](#).

D. Fiduciary Risk

- 2.9 Based on the Analysis of Institutional Capacities (PACI) assessment of the UTE, the Bank determines a medium average risk for the financial and procurement management of the program. The identified risks are: (i) bottlenecks due to administrative flows and delegation of authorities; (ii) delays due to increased workload for EA's personnel (including fiduciary); (iii) lack of experience in the preparation and evaluation of tender documents for concessions that increases the risk of failure; and (iv) low quality of the offers to the Request for Proposal (RFP) financed by the WB that hinders the possibility of awarding concession for financing with the program. To mitigate these risks, the program considers the following mitigation measures: (i) a [Procurement Plan \(PP\)](#) that covers the entire project life, allowing for a better planning considering possible bottlenecks; (ii) support the GOH to proceed with the preparation of the initial steps of procurement before the grant is approved by IDB; (iii) hiring of a procurement specialist and a financial specialist; (iv) early reinforcement of the EA with international consultants knowledgeable in the preparation of similar concessions; (v) at least two workshops with ANARSE, MTPTC and MEF/UTE, at the early stages of the program preparation, related to planning methodologies, preparation of management tools and the early preparation of bidding documents of projects proposed in the financing; (vi) technical support from ANARSE and MTPTC to MEF in the preparation and evaluation of tender documents following recent similar experience; and (vii) early preparation of a new international tender process for the award of concessions following IDB procurement policies. In collaboration with the WB, financing of additional studies of target communities to improve the quality of RFP.

E. Other Risks

- 2.10 The following governance risks have been identified as medium: (i) changes in political conditions that might shadow the current push to develop decentralized minigrids by concessionaires; and (ii) inadequate coordination between MEF-MTPTC- ANARSE and the municipalities slowing down program execution. The proposed mitigation measures are: (i) continued monitoring and dialogue with authorities regarding the approval and execution of the program; and (ii) the formation of a steering committee composed of a representative of ANARSE, the MTPTC and MEF to ensure high-level consensus between these institutions on project issues and alignment with GOH priorities.⁵⁷
- 2.11 The following development risks were identified as "medium": (i) slow growth of energy demand of the PIC that stresses the use of excess of energy for other purposes outside the PIC; (ii) low acceptance of proposed solutions by

⁵⁷ An agreement between ANARSE, the MTPTC and the MEF will specify the roles and responsibilities of the steering committee (¶3.3).

beneficiaries due to financial reasons that may delay the preparation of proposals by bidders and affect the sustainability of the O&M of the minigrids; (iii) low number of qualified local and international bidders due to lack of incentives (fiscal or others) and inadequate regulatory framework; and (iv) the inability to reach the breakeven point by incorporating new customers and fostering demand. The mitigation measures includes: (i) a thorough analysis of the WB's first tender round will be conducted to enhance program implementation mechanisms, and the adequate design of solar PV capacity for the PIC; (ii) early implementation of social awareness campaign by developers as part of the requisite for the evaluation of proposals; (iii) IDB Invest' support to promote the participation of private sector in the tender process; and (iv) establishing a subsidy that will enable the concessionaire to obtain an acceptable financial return on investment and operations, and helps reduce the end user tariff. Also, identified as a medium macroeconomic and fiscal sustainability risk, is the possibility of adverse political or macroeconomic events that may limit the successful awarding of new concessions. Mitigation measures include continued monitoring and dialogue with authorities regarding to the preparation and approval and execution of the program. The Bank approved in July 2019, the Technical Cooperation ATN/OC-17428-HA to support the program to advance in the early preparation of procurement packages of projects, and to implement mitigation measures for program's risks.

- 2.12 In addition, during the elaboration of the PACI, the project team consulted with the Office of Institutional Integrity (OII) to assess the level of integrity risk of the operation. OII assesses the integrity risk level associated to the activities under Component I and II as medium due to: (i) the level of coordination required among different actors; (ii) the dispersal of minigrid construction sites grids; and (iii) capacity weaknesses of the institutions involved. OII issued specific recommendations to mitigate integrity risks, through appropriate procedures to strengthen the capacity of the EA. These will be reflected in the [\(POM\)](#). Supervision will be exercised by the Program Team and the Country Office of Haiti.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of Implementation Arrangements

- 3.1 **Beneficiary and EA.** The Beneficiary is the Republic of Haiti. Following its mandate, ANARSE is playing a leading role in modernizing Haiti's electricity sector through the expansion of minigrids for rural electrification with private sector participation, and the upgrade of the seven regional EDH grids, including the NE system where the PIC is located. ANARSE's participation is fundamental in achieving the program's objectives, taking benefit from the experience gained by MTPTC's Energy Cell. While the MEF⁵⁸ will be the EA responsible for the fiduciary arrangements of the program,⁵⁹ ANARSE and the MTPTC, through its Energy Cell will lead the technical aspects of the execution of the program. The technical aspects will cover in the preparation of sector documents, tender documents and

⁵⁸ MEF has extensive experience in developing the PIC and in interinstitutional coordination with public entities and international donors.

⁵⁹ UTE/MEF, with technical support from ANARSE and MTPTC, will be responsible for all the activities related to Component II.

its publication, terms of references, permit approval, supervision and the selection of key technical personnel. The POM will include further coordination details.

- 3.2 **Special contractual clauses prior to first disbursement: The Beneficiary will provide evidence to the satisfaction of the Bank of: (i) the entry into force of the POM pursuant to the terms previously agreed upon with the Bank; (ii) the entry into force of regulations issued by the MEF and accepted by MTPTC and ANARSE, specifying the responsibilities and coordination between the parties for the execution of the program activities; and (iii) the hiring or appointment of program's key personnel, including a project coordinator, two electrical engineers, a monitoring and evaluation specialist, a procurement specialist, a financial specialist, an environmental specialist and a social specialist.** These clauses are considered essential to guarantee that the beneficiary will be prepared to begin the execution of the project with a qualified team as well as with guidelines on operational and coordination aspects.
- 3.3 **POM.** Implementation of the project will be governed by the provisions of the POM, which will cover the following other items: (i) detailed execution schedule; (ii) creation, membership, responsibilities and coordination mechanisms for the steering committee; (iii) specific recommendations from OII; (iv) rules and procedures for administrative and financial management; (v) procedures for monitoring and follow-up; (vi) procedures and instructions for developing the Environmental and Social Management Plan; and (vii) assignment of the key personnel to be hired or assigned in the different entities involved in the program. This document will be prepared by the EA in close coordination with ANARSE and Energy Cell of the MTPTC.
- 3.4 **Procurement policies.** All project related procurement activities will be performed by the Procurement Unit at UTE following IDB's Procurement Policies: Policies for the Procurement of Goods and Works Financed by the IDB (GN-2349-9) and Policies for the Selection and Contracting of Consultants Financed by the IDB (GN-2350-9), as applicable. In addition, prior to any procurement being initiated for this program, the EA will be required to prepare and submit to the Bank a draft General Procurement Notice for publication on the IDB's website and United Nations Development Business. Fiduciary arrangements are included in Annex III.
- 3.5 The UTE will follow procurement processes of the program as described in the PP and to be approved by the Bank, which will cover the entire duration of the program starting on the date the Grant Agreement for this program enters into effect. The PP will be updated semiannually with the semester report, or whenever necessary or as required by the Bank.
- 3.6 **Financial management and disbursement.** Financial management will be carried out in accordance with OP-273-2. Disbursements will be based on cash flow plans that will be sized according to the program's execution liquidity needs and with a rolling 12 months planning horizon. Disbursements for investment costs for Components I and II will be made via direct payment to suppliers for payments to be made in a currency other than the local currency (Gourdes). Other costs will be covered with advance of funds equivalent to four months of operational costs/expenses anticipated and will be subject to ex-post supervision.

- 3.7 **Audit.** During the disbursement period, MEF will submit the annual audited financial statements to the Bank within 120 days following the close of the respective fiscal year. The audit will be conducted by an independent firm of auditors acceptable to the Bank, to be selected in accordance with the Bank's policies and procedures. The determination as to scope and other related aspects will be governed in accordance with the Financial Management Policy for IDB - financed Projects (document OP-273-6) and the Guide for the Preparation of Financial Statements and External Audits. Audit costs will be financed with the proceeds of the grant, and MEF through the UTE, will be responsible for contracting the program audit.

B. Summary of Arrangements for Monitoring Results

- 3.8 **Monitoring.** The project will be monitored using the Bank's supervision instruments. The EA will be responsible for integrating and presenting the following: (i) the multiyear execution plan; (ii) the annual work plans; (iii) the PP and the schedule for compiling and preparing data for the results matrix; (iv) financial plans; (v) audited financial statements; (vi) environmental audits; and (vii) semiannual reports. The semiannual reports will include: (i) a description of the activities executed, including compliance with the contractual clauses agreed in the grant contract; (ii) progress towards fulfillment of the indicators in the results matrix; (iii) a summary of the project's financial situation; (iv) a cash flow estimate for the following six-month period; (v) in the year-end annual report/s, the updated annual work plan and the PP; (vi) an analysis of any problems encountered and the corrective measures adopted; and (vii) problems that might pose a risk to timely execution of the project. The detail of the monitoring is presented in the [Monitoring and Evaluation Arrangements](#).
- 3.9 **Evaluation.** MEF shall submit the mid-term evaluation report to the Bank 60 days after the date on which 50% of the grant has been disbursed or when 50% of the planned execution time has elapsed, whichever occurs first. The final evaluation report shall be submitted within 90 days after the last disbursement. These reports will adhere to the guidelines included in the Monitoring and Evaluation Arrangements. Upon completion of the program, a Project Completion Report (PCR) will be prepared to evaluate whether the program's objectives were met and to extract lessons. The PCR will include an ex-post economic analysis.

Development Effectiveness Matrix		
Summary		
I. Corporate and Country Priorities		
1. IDB Development Objectives		
Development Challenges & Cross-cutting Themes	<ul style="list-style-type: none">-Social Inclusion and Equality-Productivity and Innovation-Gender Equality and Diversity-Climate Change and Environmental Sustainability-Institutional Capacity and the Rule of Law	
Country Development Results Indicators	<ul style="list-style-type: none">-Reduction of emissions with support of IDBG financing (annual million tons CO2 e)*-Women beneficiaries of economic empowerment initiatives (#)*-Installed power generation from renewable energy sources (%)*-Government agencies benefited by projects that strengthen technological and managerial tools to improve public service delivery (#)*-Households with new or improved access to electricity supply (#)*-Electricity transmission and distribution lines installed or upgraded (km)*	
2. Country Development Objectives		
Country Strategy Results Matrix	GN-2904	Concretely it supports the technical dialogue in the energy area to foster sustainability of the energy sector by diversifying the electricity matrix, reducing generation costs and promoting inclusive and sustainable growth through sustained private and public investment and enhanced access to basic public services (¶3.1 of the CS). The program further promotes the dialogue with GOH on supporting the continuous development of the PIC.
Country Program Results Matrix	GN-2948-2	The intervention is included in the 2019 Operational Program.
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		
II. Development Outcomes - Evaluability		Evaluable
3. Evidence-based Assessment & Solution		7.1
3.1 Program Diagnosis		2.4
3.2 Proposed Interventions or Solutions		1.7
3.3 Results Matrix Quality		3.0
4. Ex ante Economic Analysis		8.0
4.1 Program has an ERR/NPV, or key outcomes identified for CEA		3.0
4.2 Identified and Quantified Benefits and Costs		3.0
4.3 Reasonable Assumptions		1.0
4.4 Sensitivity Analysis		0.0
4.5 Consistency with results matrix		1.0
5. Monitoring and Evaluation		8.5
5.1 Monitoring Mechanisms		2.5
5.2 Evaluation Plan		6.0
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood		Medium
Identified risks have been rated for magnitude and likelihood		Yes
Mitigation measures have been identified for major risks		Yes
Mitigation measures have indicators for tracking their implementation		Yes
Environmental & social risk classification		B
IV. IDB's Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)		
Non-Fiduciary		
The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions:		
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project	Yes	The Bank approved in July 2019, the Technical Cooperation ATN/OC-17428-HA to support the program to advance in the early preparation of procurement packages of projects, and to implement mitigation measures for program's risks.

Note: (*) Indicates contribution to the corresponding CRF's Country Development Results Indicator.

The objective of the project is to increase reliable electricity coverage in Haiti that promotes economic development and the strengthening of the sector's governance. The program diagnosis identifies the main problems and provides empirical evidence of the situation of the energy sector in the country, which in general backs up the proposed interventions. Neither the POD nor its annexes present empirical evidence about the effectiveness of this type of intervention based on rigorous impact evaluations. In general, the results matrix reflects the vertical logic described in the POD, covering the inputs, outcomes and results. The indicators in the results matrix meet the SMART criteria and include the sources and means of verification that will be used to measure them. For the economic analysis, the project proposes a cost-benefit analysis with the costs and benefits quantified for the life of the project. The economic benefits are adequate for this type of projects as in this case they are estimated as the reduction of CO2 emissions and the reduction of production costs of energy. The assumptions of the analysis are supported by references and a sensitivity analysis is included. However, the sensitivity analysis of component 1 did not consider different consumption values for kerosene and batteries, which is an important parameter in the economic analysis. Finally, the program will evaluate the results achieved using the before-after comparison without attribution.

RESULTS MATRIX

Objective:	To increase reliable electricity access in Haiti that promotes economic development and the strengthening of the sector's governance. The specific objectives are: (i) development of decentralized electrical minigrids with private sector participation; (ii) foster the supply of electricity with Renewable Energy (RE) in the <i>Parc Industriel de Caracol</i> (PIC); and (iii) strengthening sector regulatory and planning capabilities
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EXPECTED IMPACT

Indicators	Measure Unit	Baseline	Baseline Year	Year 1	Year 2	Year 3	Year 4	Year 5	End of Project	Verification Means / observations
Accumulated GHG emission reductions from electricity generation at the PIC	(tCO ₂ e/yr)	0	2019	0	11,738	12,732	12,942	13,040	50,452	Report of total energy sales from PIC Solar Operator (replacing fuel-based generation), divided by 16kWh/Gal, multiplied by 11.6 kgCO ₂ /Gal of HFO x10 ⁻³
Increase in electricity coverage rate among target population	(%)	0	2019	0	0.1	0.5	0.9	1.0	1.0	Based on total household beneficiaries (m, f) of 60,889 on a total of 5.8 million people.

EXPECTED OUTCOMES

Outcome Indicators	Measure Unit	Baseline Value	Baseline Year	Year 1	Year 2	Year 3	Year 4	Year 5	End of Project	Verification Means/ observations
Component #1– Development of Decentralized Electrical Minigrids with Private Sector Participation										
OUTCOME #1: Affordable tariff level for residential customers outside EDH grid										
Average electricity tariff for residential customers charged by concessionaires ¹	(US\$/kW h)	0.54 ²	2019	0.42	0.43	0.44	0.45	0.45 ³	0.45	Annual report -National Regulatory Agency (ANARSE).

¹ 10 selected sites (30,889 households).

² Average tariff in Haiti resulting from minigrid projects: SIGORA (1.06), CEAC (0.256 today), NORTHEAST-PIC (0.29 new concession), EARTHPARK (x).

³ A standard indexation rate of 2% per year is assumed as per inflation in US\$.

Outcome Indicators	Measure Unit	Baseline Value	Baseline Year	Year 1	Year 2	Year 3	Year 4	Year 5	End of Project	Verification Means/ observations
										Average tariff offered by the concessionaires
OUTCOME #2: Increased capacity by households to meet latent energy demand										
Annual average electricity consumption, per household connected to a minigrid system	(kWh/hh-yr)	0	2019	708	708	708	708	708	708	Total energy delivered yearly, divided by number of connected households.Annual progress report-MTPTC
Component #2– Fostering the Sustainable Operation of the PIC										
OUTCOME #3: Sustained electricity production from solar energy consumed at PIC										
Annual electricity consumption at PIC derived from PV system.	(GWh/yr)	0	2019	0	7.94	7.86	7.78	7.70	7.70	(i) Solar-based energy sold by Solar Operator to all PIC's Tenants. (ii) Fuel-Based energy sold by Northeast concessionaire to Solar Operator. (iii) Annual bill from Solar Operator to all PIC's tenants, divided by their total energy consumption. Annual Progress Report-MEF/UTE
Annual electricity consumption at PIC derived from the TP.	(GWh/yr)	9.1	2019	9.1	4.13	4.19	4.25	4.32	4.32	
Electricity tariff for PIC customers	(US\$/kWh)	0.30 ⁴	2019	0.28 ⁵	0.16	0.16	0.16	0.17	0.17	
OUTCOME #4: Newly connected end-users to the Caracol minigrid										
Cumulative number of newly served industrial buildings at the PIC	# beneficiaries	26	2019	26	29	29	29	29	29	Annual Progress Report-MEF/UTE

⁴ Average tariff for PIC customers, 2019.

⁵ Estimated PIC customer tariff at the beginning of the new concession of the Thermal Power Plant, and before commissioning of the solar plant.

Outcome Indicators	Measure Unit	Baseline Value	Baseline Year	Year 1	Year 2	Year 3	Year 4	Year 5	End of Project	Verification Means/ observations
expanding productive uses of electricity in the NE ⁶										
Woman employed at the PIC ⁷	# woman	8,229	2019	8,229	8,229	9,179	9,179	9,179	9,179	Annual Progress Report-MEF/UTE Gender Tracking
Component #3– Strengthening Sector Regulatory and Planning Capabilities										
OUTCOME #5: Planning and Management capacity of the electricity sector strengthened										
Concession contracts for minigrid systems granted by ANARSE	contract	0	2019	0	2	2	2	1	5	ANARSE's Annual report

OUTPUTS

Outputs	Unit of measure	Baseline Value	Baseline Year	Year 1 (2021)	Year 2 (2022)	Year 3 (2023)	Year 4 (2024)	Year 5 (2025)	End of project	Verification Means / observations
Component #1– Development of Decentralized Electrical Minigrids with Private Sector Participation										
New costumers connected to a minigrid systems and receiving electricity	#costumer	0	2019	5,335	6,106	8,829	10,619	0	30,889 ⁸	ANARSE's Annual report

⁷ PIC employs more than 13,000 people of which around 61% are woman. With a lower electricity tariff, it is expected new companies to be established at the PIC hat employ approximately 800 women.

⁸ About 10 communities.

Outputs	Unit of measure	Baseline Value	Baseline Year	Year 1 (2021)	Year 2 (2022)	Year 3 (2023)	Year 4 (2024)	Year 5 (2025)	End of project	Verification Means / observations
Component # 2– Fostering the Sustainable Operation of the PIC										
Total PV Installed capacity commissioned in the PIC	MWp	0	2019	0	12	0	0	0	12	Annual progress report-MEF-MTPTC
# Totalizer meters installed	#meters	0	2019	0	3	0	0	0	3	Annual progress report-MEF-MTPTC
Component #3– Strengthening Sector Regulatory and Planning Capabilities										
Operational manual development for ANARSE considering: (i) internal structure; (ii) internal procedures	# manuals	0	2019	0	1	1	0	0	2	Annual progress report-MEF-MTPTC
Development of procedures and regulations for: (i) the award and renewal of licenses and concessions; (ii) handling of unsolicited proposals; and (iii) inclusion of people with disabilities ⁹ and gender equality in the sector.	#	0	2019	0	1	1	0	0	2	Status report of procedures and regulations approved by ANARSE
Electricity, energy markets, and RE energy specialists hired.	#sector specialists	0	2019	2	3	0	0	0	5	Annual progress report-MEF-ANARSE

⁹ A diagnosis of the current situation and an institutional strategy along with an action plan for the inclusion of people with disabilities will be developed.

Outputs	Unit of measure	Baseline Value	Baseline Year	Year 1 (2021)	Year 2 (2022)	Year 3 (2023)	Year 4 (2024)	Year 5 (2025)	End of project	Verification Means / observations
Strengthening of technical capacities in: (i) financial models, (ii) design of photovoltaic (PV) and wind power systems, and (iii) Power Systems Planning.	# training	0	2019	1	1	0	1	0	3	Annual progress report-MEF-ANARSE
Development of the Electricity Expansion Plan (2020-2030)	#	0	2019	0	1	0	0	0	1	Annual progress report-MEF-ANARSE including approved Expansion.

FIDUCIARY ARRANGEMENTS

Project N°: HA-L1140; HA-G1045
Project Title: Improving Electricity Access in Haiti
Executing Agency: Ministry of Economy and Finance with technical support of the Sector Regulatory Authority (ANARSE) and the Ministry of Public Works, Transport and Communication (MTPTC)
Fiduciary Team: Ana González Vidales and Edwin Tachlian (FMP/CHA)

I. EXECUTIVE SUMMARY

- 1.1 The institutional assessment for the fiduciary management of the program was prepared based on: (i) the current country fiduciary context; (ii) results of the PACI evaluation and identification of main fiduciary risks; and (iii) working meetings between the IDB, UTE, MTPTC and ANARSE project teams. Resulting on the following fiduciary arrangements for financial management and procurement for the execution have been developed.
- 1.2 This program aims to increase reliable electricity access in Haiti through: (i) development (design, construction, operation and maintenance) of decentralized electrical minigrids with private sector participation; (ii) foster the supply of electricity in the PIC; (iii) strengthening sector regulatory and planning capabilities.

II. FIDUCIARY CONTEXT OF THE COUNTRY AND EXECUTING AGENCY

- 2.1 The latest evaluation of the public financial management systems of the Republic of Haiti is contained in the [PEFA assessment report](#) conducted in 2011 and published in February 2012. Country financial management systems and external control mechanisms, as evidenced by the latest diagnostic published, would require further improvements to conform to levels consistent with their utilization for the fiduciary management of Bank funded projects.
- 2.2 An evaluation of the National Procurement System (NPS) was performed in 2013, applying the Organization for Economic Co-operation and Development/ Development Assistance (OECD/DAC) methodology and indicators. An action plan to address identified weaknesses and enhance the NPS is pending implementation. Considering the current status, no country systems will be used. Instead, Bank's procurement policies will govern procurement activities foreseen under the program.
- 2.3 As of today, the Bank will continue to: (i) rely on special project execution units for the execution of all projects; (ii) implement special fiduciary arrangements for the implementation of its projects; and (iii) conduct close operational supervision of project execution units. External control will be exerted for all Bank operations by independent audit firms eligible to the Bank in accordance with the Bank's financial reporting and audit regulations.

A. UTE/MEF

- 2.4 The Ministry of Economy and Finance (MEF) through its Technical Execution Unit (UTE/MEF) will be responsible for the execution of the program. While the MEF will be the EA responsible for the fiduciary arrangements of the program, ANARSE and the MTPTC, through its Energy Cell will lead the technical aspects of the execution of the program. The technical aspects will cover in the preparation of sector documents, tender documents and its publication, terms of references, permit approval, supervision and the selection of key technical personnel. The MOP will include further coordination details. UTE/MEF was established by Ministerial circular within the MEF in January 2005 and is headed by an Executive Director (ED) who reports directly to the Minister. The ED seconded by: (i) an Assistant ED for Operations overseeing the Technical Direction of the UTE, the Environmental and Social Safeguards Unit, and monitoring and evaluation unit; and (ii) an Assistant ED for Fiduciary matters, overseeing the Procurement Direction, the Administrative Direction and the Financial Direction. The internal audit unit at UTE reports directly to the ED
- 2.5 UTE is regulated by a Manual of Operations which includes provisions regarding fiduciary matters. Additionally, UTE has specific financial management manuals defining roles, responsibilities and protocols.
- 2.6 UTE/MEF uses modified cash method for accounting purposes and the general ledger module of ACCPAC accounting software, which generates financial reports by project and funding sources, to record financial transactions.
- 2.7 UTE/MEF has extensive experience in executing Bank financed operations including large infrastructure projects in Haiti such as the Caracol Industrial Park (2552/GR-HA, 2779/GR-HA), road rehabilitation project 2383/GR-HA and school constructions for Education projects (2643/GR-HA and 2863/GR-HA). UTE's project portfolio as of today is composed by 11 projects, worth approximately US\$460 million.

III. INSTITUTIONAL CAPACITY, FIDUCIARY RISK EVALUATION AND MITIGATION ACTIONS

- 3.1 Based on the PACI assessment of the UTE, the Bank determines a medium fiduciary risk for this program and has identified the following mitigation measures:

Risks	Mitigation measures
Bottlenecks due to administrative flows and delegation of authorities	<ul style="list-style-type: none"> - The procurement plan covers the entire project life, allowing for a better planning considering possible bottlenecks. - GoH will proceed with the preparation of the initial steps of procurement before the grant is approved by IDB, provided that all the requirements are in accordance with those set out in the grant agreement
Delays due to increased workload for EA's personnel (including fiduciary)	<ul style="list-style-type: none"> - Hiring of a procurement specialist and a financial specialist
Lack of experience in the preparation and evaluation of tender documents for concessions that increases the risk of failure	<ul style="list-style-type: none"> - Early reinforcement of the EA with international consultants knowledgeable in the preparation of similar concessions; - At least two workshops with ANARSE, MTPTC and MEF at the early stages of the program preparation, related to planning methodologies, preparation of management tools and the early preparation of bidding documents of projects proposed in the financings
Low quality of the offers to the Request for Proposals (RFP) financed by the WB that hinders the possibility of awarding additional concession for financing with the program	<ul style="list-style-type: none"> - Technical support from ANARSE and MTPTC in the preparation and evaluation of tender documents following recent similar experience. - Early preparation of a new international tender process for the award of concessions following IDB procurement policies. In collaboration with the WB, financing of additional studies of target communities to improve the quality of RFP.

IV. ASPECTS TO BE CONSIDERED IN THE SPECIAL CONDITIONS OF CONTRACT

- 4.1 Special Accounts and authorized signatures: UTE will open separate bank accounts at the Central Bank of Haiti for the management of grant resources transferred under this program.
- 4.2 Financial Audit Reports will be prepared by MEF and submitted annually to the Bank, 120 days after the closing of fiscal year or the last disbursement date.

V. FIDUCIARY ARRANGEMENTS FOR PROCUREMENT AND FINANCIAL MANAGEMENT EXECUTION

A. Procurement Execution

- 5.1 The procurement fiduciary arrangements establish the conditions applicable to all procurement execution activities in the project.
- 5.2 Procurement for the proposed project will be carried out in accordance with the Policies for the Procurement of Works and Goods financed by the Bank (GN-2349-9 or as amended from time to time) and the Policies for the Selection and Contracting of Consultants financed by the Inter-American Development Bank (GN-2350-9 or as amended from time to time).
- 5.3 **Procurement of works, goods and non-consulting services.** Goods and Works requiring international competitive bidding (ICB) will be contracted using the standard bidding documents (SBDs) issued by the Bank. Procurement subject to national competitive bidding (NCB) will be undertaken using national bidding documents agreed upon with the Bank or satisfactory to the Bank in the absence of an agreement.
- 5.4 **Procurement of non-consulting services.** For these contracts, the Executing Unit will use the standard procurement document prepared and agreed with the Bank for this type of services.
- 5.5 **Selection and Contracting of Consultants.** The selection and recruitment of consulting firms required by the project subject to any of the methods provided in the Policies for the Selection and Employment of Consultants financed by the Bank (GN-2350-9) will be executed applying the Standard Documents of Request for Proposals (RFP) issued by the Bank. Terms of reference review for the selection of consulting services is the responsibility of the project sector specialist.
- i. **Selection of Individual Consultants:** Individual consultants, national and international will be selected according to Annex V of the GN-2350-9.
 - ii. **Single Source Selection:** Procedures to request proposals (firms) and to evaluate professional capacity (individuals) shall apply. Also, must be duly justified and consistent with paragraphs 3.9 through 3.13 of GN-2350-9.
- 5.6 **Recurrent Expenses.**¹ The following recurrent expenses will be financed by the Bank: (i) all expenses required and agreed with the Bank for the execution of the project,² (ii) all executing unit individual consultants contracts required for the execution of the project; and (iii) per diem (if any) and if agreed with the Bank. Operational costs do not include the salaries of public workers.
- 5.7 All contracts (regardless of their type and value) will include the necessary provisions regarding integrity and prohibited practices.
- 5.8 **Advance contracting.** The GoH has requested to proceed with the preparation of the initial steps of procurement before the grant is approved by IDB, provided that

¹ Exceptionally, personnel incremental costs are financed when the executing agency incurs cost specifically related to the execution of the project ([GN-2331-5](#) Annex I 1.7. C.c.1.22).

² Office rent, automobile rent to perform supervision tasks, public service expenses and communication, translations, bank charges, office supplies, advertisement, photocopies mail, etc.

all the requirements are in accordance with to those set out in the grant agreement, in order for the eventual contracts to be eligible for Bank financing, and the Bank shall review the process used by the EA, pursuant section 1.9 of the procurement policies (GN-2949-9).

5.9 **Procurement under BOO/BOT/BOOT, Concessions, and Similar Private Sector Arrangements:** The use of one of the methods described in the Procurement Policies GN-2349-9 under section 3.13 (a), Procurement under BOO/BOT/BOOT, Concessions, and Similar Private Sector Arrangements section 3.13 (a) is foreseen for the selection of mini grid operator under Component I as well as for the PIC solar plant system under Component II.

5.10 **For the selection of mini-grids operators³,** complying with section 3.13 (a) of the procurement policy, the project may finance contracts awarded to firms selected under the abovementioned World-Bank-financed RFPs for the selection of mini-grid operators, provided that the performance of such process is deemed satisfactory to the Bank. In such case, contracts will use IDB standard contract, including provisions related to prohibited practices and eligibility, and payments to the concessionaire associated with subsidy per connection will be disbursed against deliverable duly approved.

5.11 **Project procurement thresholds (in US\$, thousands):**

Works			Goods			Consulting	
ICB	NCB	PC	ICB	NCB	PC	International	100% National Short List
>1,000	100 -1,000	<100	=>100	25 - 100	<25	>200	<100

5.12 **Main procurement activity:**

Activity	Procurement method	Estimated date	Estimated amount US\$
WORKS			
PV plant	ICB (concession: (Design, Build, operate, maintain)	8/10/2020	\$21,985,000.00
Mini grids	ICB (concession: (Design, Build, operate, maintain)	12/18/2020	\$12,168,650.00
Minigrid Supervision Systems	QCBS	12/18/2020	376,350.00
PV plants: Supervision	QCBS	11/24/2020	495,000.00

³ Two separate contracts are envisioned for Component I: (i) the contract for the construction and development of the minigrids that will be entered between the MEF, through UTE and the winning firms; and (ii) the contract for the operation of the minigrids that will be entered between the winning firms and the MTPTC and corresponding municipality. The bids, when awarded, will include both contracts

- 5.13 **The procurement plan** covers the entire project life. The Executing Unit will update this procurement plan at least semiannually, or as necessary or as required by the Bank. See [Procurement Plan](#).
- 5.14 **Procurement supervision.** Procurement activities foreseen under this operation will be subject to ex ante review by the Bank.
- 5.15 **Records and files.** The Executing Units will keep records in an orderly and safe manner. All project procurement should be classified by contract, including all relevant documents of its procurement process.

B. Financial Management

- 5.16 **Programming and Budget.** The UTE prepares, for each operation, annual operations plans together with its annual budget. This preparation is done by each program coordinator under the supervision of the Executive Director and with the inputs from the procurement and financial management units.
- 5.17 **Accounting and Information Systems.** The general accounting module of ACCPAC financial management system is currently used by the UTE to record financial transactions and produce reports and financial statements.
- 5.18 **Disbursements and Funds Flows.** The UTE will prepare annual planning of the project cash flow and will update it quarterly. The projected cash flow of the project will be based on activities planned, the procurement plan and payment terms agreed with suppliers and project beneficiaries. The projected annual cash flow will be the basis for determining the advances of funds to be disbursed by the Bank to the UTE. The UTE will open at the Central Bank of the Republic of Haiti (BRH) a bank account in gourdes and a bank account in dollars exclusively for the management of advances of funds to be received from the IDB.
- 5.19 **Internal Control and Audit.** The UTE has a unit responsible for the Internal Audit and the Financial Management unit at UTE is responsible for establishing and adequate structure of internal control for project execution.
- 5.20 **External Control and Reporting.** External financial audits will be performed in accordance with the Bank's policy. The annual project financial statements will correspond to the fiscal year and will be audited by an independent firm eligible to the Bank. The firm will also conduct ex-post verification disbursement requests on the basis of specific terms of reference to be agreed between the UTE and the Bank. Ex-post verifications will be held annually and might be concurrently performed with the annual audit of the financial statements of the project. However, reporting process will be done separately as per the objectives of this review.
- 5.21 **External Audit.** Will be conducted in accordance with the requirements contained in the financial reporting and external audit of IDB-financed projects handbook. The UTE will keep the responsibility of hiring the auditing firm applying the hiring handbook for external audits and will use the terms of reference agreed with the Bank.

- 5.22 **Financial Supervision Plan.** Bank Fiduciary staff will perform at least two supervision visits as part as he supervision plan for the operation.
- 5.23 **Execution Mechanism.** It is expected to disburse through advances of funds. Each advance of funds will cover the financial needs for 4 months based on the updated financial plan and needs required for the execution of project's activities planned as approved in the AOP and updated on the procurement plan. The use of direct payments might be accepted by the Bank to pay to suppliers on behalf of the UTE when required.
- 5.24 **Program Operation Manual (POM) will include at least the following dispositions:**
- i. Guidelines for the assessment and confirmation of the technical and financial capacity of bidders;
 - ii. Regulations for the management of conflicts of interest;
 - iii. Irregularity reporting channels;
 - iv. The obligation for EA's staff to report possible prohibited practices to the Bank.
 - v. Mitigation and verification mechanisms regarding key personnel as well as the use of agents and politically exposed persons.
 - vi. UTE-MEF internal Audit will review the program, and will be included in the MOP

IMPROVING ELECTRICITY ACCESS IN HAITI

HA-G1045

CERTIFICATION

I hereby certify that this operation will be authorized for financing through a Project Specific Grant (PSG) administration agreement or agreements for an amount of up to **US\$6,500,000** to finance the activities described and budgeted in this document.

Donor's commitment does not have validity until the PSG administration agreement between the IDB and the donor is agreed upon and signed for this operation. Therefore, this certification will remain conditional until the corresponding PSG administration agreement or agreements are signed and effective.

Certified by:

Original Signed

10/8/2019

Sonia M. Rivera

Date

Chief

Grants and Co-Financing Management Unit
ORP/GCM

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-____/19

Haiti. Nonreimbursable Financing ____/GR-HA to the Republic of Haiti
Improving Electricity Access in Haiti

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, as Administrator of the IDB Grant Facility (hereinafter referred to as the "Account"), to enter into such contract or contracts as may be necessary with the Republic of Haiti, as beneficiary, for the purpose of granting it a nonreimbursable financing to cooperate in the execution of the program "Improving Electricity Access in Haiti". Such nonreimbursable financing will be for an amount of up to US\$31,500,000, which form part of the Account, and will be subject to the Terms and Financial Conditions and the Special Contractual Conditions in the Project Summary of the Grant Proposal.

(Adopted on ____ 2019)

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/19

Haiti. Nonreimbursable Financing ____-HA
Improving Electricity Access in Haiti

The Board of Executive Directors

RESOLVES:

1. That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreement or agreements as may be necessary with the Republic of Haiti, for the purpose of granting it a nonreimbursable financing for a sum of up to US\$6,500,000 chargeable to the resources granted by the United States Agency for International Development (USAID), pursuant to the agreement or agreements specified in paragraph 2 below, and to adopt any other measures as may be pertinent for the execution of the project proposal contained in document PR-_____.

2. That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such agreement or agreements with the United States Agency for International Development (USAID) as may be necessary to receive and administer resources for the purposes described in the project proposal specified in paragraph 1 above, and to adopt any other measures as may be pertinent for the execution of said agreement or agreements.

3. That the authorization granted in paragraph 1 above will be effective once the Bank and the United States Agency for International Development (USAID) have entered into the corresponding agreement or agreements to which reference is made in paragraph 2.

(Adopted on ____ 2019)