

# PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC21399

<b>Project Name</b>	Haiti Modern Energy Services For All (P154351)
<b>Region</b>	LATIN AMERICA AND CARIBBEAN
<b>Country</b>	Haiti
<b>Sector(s)</b>	Other Renewable Energy (70%), Transmission and Distribution of Electricity (10%), Hydropower (10%), Energy efficiency in Heat and Power (5%), General energy sector (5%)
<b>Theme(s)</b>	Rural services and infrastructure (90%), Climate change (10%)
<b>Lending Instrument</b>	Investment Project Financing
<b>Project ID</b>	P154351
<b>Borrower(s)</b>	The Republic of Haiti
<b>Implementing Agency</b>	MTPTC - UCE
<b>Environmental Category</b>	B-Partial Assessment
<b>Date PID Prepared/ Updated</b>	25-Feb-2015
<b>Date PID Approved/ Disclosed</b>	27-May-2015
<b>Estimated Date of Appraisal Completion</b>	24-Jul-2015
<b>Estimated Date of Board Approval</b>	30-Oct-2015
<b>Concept Review Decision</b>	Track II - The review did authorize the preparation to continue

## I. Introduction and Context

### Country Context

Haiti is located on the island of Hispaniola in the Caribbean, which it shares with the Dominican Republic. It has a population of about 10.4 million people on a territory of 27,750 km<sup>2</sup>, which makes it one of the most densely populated countries in the Latin America and Caribbean (LAC) Region. In addition, at least 2.5 million Haitians are estimated to live abroad. The Haitian diaspora is an important source of remittances, which is estimated to amount to over \$1.8 billion annually. This is comparable in magnitude to one third of Haiti's GNP.

Haiti is the poorest country in the LAC region and one of the poorest in the world, with significant needs in basic services. GDP per capita stood at \$820 in 2013 - compared to a LAC average of close to \$12,000 (PPP, 2011). According to the latest household survey (ECVMAS 2012), almost 60% of the population is poor (living under the national poverty line of \$2 per day) and almost a

quarter of the population is extreme poor (below \$1 a day).

Haiti's development has historically been hampered by fragility and characterized by social fracture. Deep social and economic inequities, intense concentration of wealth and power in the hands of a few, and a lack of social justice and of the rule of law have repeatedly led to spikes of violence. Longstanding lack of transparency and the absence of service delivery have led to citizens' low trust in government. Governance challenges - including rule of law, the absence of clear rules for market-based competition and corruption - have been major constraints on growth and investment.

In addition to the internal structural issues, Haiti's development has been affected by its vulnerability to external shocks, including food and fuel price fluctuations and natural disasters. The most devastating impact was registered from the magnitude -7 earthquake on January 12, 2010, which killed 230,000 people and displaced 1.5 million in Haiti's capital and nearby towns, making it one of the deadliest natural disasters on record. It resulted in damage and losses of around \$8 billion (120% of GDP). One third of the country's civil service and most of government buildings were destroyed in the earthquake. Although most of the official reconstruction efforts have been completed, much remains to be done to ensure sustainable development and improvements in living standards of the Haitian population.

Despite these setbacks, there has been some modest progress since 2000. At the national level, the extreme poverty rate fell from 31% to 24% between 2000 and 2012. Access to some basic services, especially education and sanitation, has also improved during this period. Other infrastructure services, including electricity, however, remain highly inadequate and have not registered much progress in the past decade.

Haiti is also the most unequal country in the LAC region. The richest quintile holds over 64% of the total country income, while the poorest quintile holds less than 1%. As of 2012, the Gini coefficient was 0.61, the highest in the region. There are also strong disparities between urban and rural areas.

The poverty reduction of the last decade have been almost exclusively driven by improvements in urban areas, thanks to their better access to non-agricultural employment opportunities, larger private transfers, narrowing inequality, and generally better access to goods and services.

In rural areas, where half of the Haitian population lives, there has been practically no progress in reducing poverty in the last 10 years. Still today, 38% of the population in rural areas are unable to satisfy their nutritional needs and almost 70% of rural households are considered chronically poor (both below poverty line and lacking access to basic goods and services), which makes it especially difficult for them to emerge from poverty. Of those classified as extremely poor, 80% live in rural areas. (World Bank: Creating Opportunities for Poverty Reduction in Haiti, 2015).

### **Sectoral and Institutional Context**

Haiti has the lowest electrification rate in the region – with an official electrification rate of 30%. However, estimates vary due to unreliable statistics. The per capita consumption is more than 80 times lower than the average for the LAC region, reflective of the very low income levels, low access to electricity and supply constraints. The distribution of electricity access is also highly unequal. While about 40% of people in Port au Prince have grid electricity (although many of them only for a few hours a day), only an estimated 5% of rural residents are estimated to have access to

electricity (estimates vary due to lack of reliable data and increasing access to off-grid electricity which is typically not accounted for in official statistics).

#### Institutional framework

The institutional structure of the power sector is very weak, characterized by fragmented leadership, an unclear regulatory framework and severe capacity constraints. There is no specific agency or department for rural electrification/energy access. Some expertise in that area exists but is scattered among different institutions/departments. Official oversight of such activities are intended to be handled by the offices of the MTPTC through the 'Energy Cell ' that was created in late 2012.

#### Grid electricity

The main official provider of electricity services in Haiti is the national, Government-owned utility Electricité d'Haiti (EDH), which has a monopoly over the purchase, transmission and distribution of electricity. EDH operates 6 separate grids, serving about 240,000 customers (1). Most of these customers are on the main grid covering Port-au-Prince and the surrounding areas. Five smaller grids are serving other parts of the country with power mostly supplied intermittently by diesel units and some hydro power, both with severe O&M problems.

EDH owns 100% of the transmission and distribution networks (with the exception of a few municipal grids and individual systems for self-supply – see below), but generates only about 15% of the energy produced in Haiti, with the balance coming from IPPs and Tripartite Cooperation (Haiti-Venezuela-Cuba). Generation capacity is at 212 MW, of which only about 160 MW is available. This is insufficient to meet the estimated peak load demand of more than 250 MW in the metropolitan area, resulting in frequent load-shedding and service interruptions. Most of the power is supplied through oil-based thermal generation (85%), with hydropower contributing 15%. The average tariff is 31c/kWh (\$).

EDH faces considerable technical, managerial and financial challenges. Technical and commercial losses amount to 66%. In addition, the collection rate is 65% which translates into EDH recovering only 22% of the value of electricity it supplies. Consequently, EDH faces difficulties to pay for fuel, basic maintenance services and other operating costs, and remuneration to IPPs. To bridge this gap EDH is heavily relying on Government subsidies. In 2012 alone, budgetary transfers to support the sector were above \$200 million, which equals 4% of the national budget.

The lack of reliable power is also costly for households and businesses, as they typically have to resort to alternative sources of power to cover their needs – either as a back-up or as the main power source. It is estimated that the cumulative capacity of individual diesel gen-sets in the country is more than 200 MW - much more than the 160 MW capacity supplied through EDH. Poorer households typically use kerosene or candles as their main lighting source. More recently, solar power has started to emerge as a new alternative to fossil fuel generation – with various companies supplying systems ranging from a few Wp (e.g. solar lanterns for rural households) to hundreds of kWp scale (e.g. for commercial and industrial clients).

The Rebuilding Energy Infrastructure and Access Project is assisting the Government and EDH to improve EDH performance – including rehabilitation of electricity grids in order to reduce technical losses, deployment of meters and management systems and other improvements in commercial

performance. Progress, however, has been slow, and even if all activities are successfully implemented, it will take a long time before EDH is able to embark on a large-scale expansion in rural areas, considering the unmet demand in the metropolitan areas and surroundings.

### Off-grid electricity

Investments in rural electrification in Haiti have remained scarce overall in the last 30 years, resulting in a rural electrification rate kept more or less constant at around 5%. With EDH absent throughout most of the rural areas, local governments and users have been left on their own to find solutions to their electricity needs. Up until recently, individual diesel systems and kerosene were the only available lighting/power solutions for most people and businesses in rural areas. Over 30 smaller towns have diesel-powered mini-grids built by the municipal governments, but only a few of those are still in regular operation. For most people living in rural areas, a diesel gen-set is not affordable, and they rely on kerosene and candles for lighting, and charge their phones at commercial charging stations.

In the framework of the project preparation, a telephone survey of 1,400 households was conducted in collaboration with Digicel, Haiti's cell phone provider. The 2014 WBG/Digicel phone survey confirmed a fairly high level of electricity-substitutable expenditure of Haitian households (with at least one mobile phone). The survey found that these households spend more than 20\$ per month on average on electricity or electricity-substitutable expenditures such as lighting, cell phone charging and batteries (compared to 7\$ per month on cell phone payments). (2) This is in line with less robust energy expenditure estimates made by Haiti's private sector players.

More recently, renewable energy technologies, especially solar PV, have taken off as a new alternative for off-grid energy access. This reflects global trends, including falling costs of the solar PV technology, availability of more efficient LED lighting, and emergence of new business models aiming at serving the base of the pyramid customers (more details are given in the Technical Annex).

Paradoxically, the earthquake served as the catalyst for this new development in Haiti. With much of the electricity infrastructure destroyed, solar lanterns were brought into the country as a part of the post-earthquake assistance (including through an earlier World Bank project). Many of these lanterns, originally used by displaced people in the camps, have eventually found their way to rural areas and have in effect triggered demand for similar products. The four leading lantern distributors alone (mostly local SMEs) have cumulatively distributed well over 150,000 Lighting Global quality-certified lanterns, providing basic electricity services to more than half a million people. According to the 2014 WBG/Digicel phone survey of 1,400 households, the penetration of solar lanterns and small kits is extremely high in international comparison, at well over 20%. (3)

The post-earthquake assistance by the donor community has also triggered above-standard investments in solar street lighting. Originally started as a post-earthquake reconstruction effort, the program has eventually been expanded to rural areas, and has actively been supported by the Government. There are about 13,500 solar street lights installed in 140 'communes' of Haiti's 10 'departments'.

In addition, various donors and NGOs have been supporting electrification of schools, clinics and other public institutions (mostly with solar PV systems). The IDA Rebuilding Energy

Infrastructure and Access Project also includes an off-grid electrification component (\$7.83 million), which is primarily used to electrify schools and provide street lighting.

The increased involvement of the diaspora, NGOs and the private sector has led to the development of new, innovative approaches to support provision of sustainable energy services in off-grid areas. The Technical Annex describes examples of these Haiti-grown innovative business models – which range from micro-finance for women retailers of solar lanterns, to leveraging mobile payments platforms for providing off-grid energy services, to deployment of smart village micro-grids. Many of these diverse initiatives meet key attributes for replicability and scalability - but all suffer from the absence of supportive regulatory and financing frameworks that would allow them to grow faster and ultimately scale-up significantly.

The recent Haiti Rural Energy Forum, organized on November 24 and 25, 2014 by MTPTC, with support from the World Bank and IADB, gathered approximately 200 of the key governmental, private and NGO stakeholders involved in the planning, financing and provision of rural energy services. Participating energy experts commented on the unusually and remarkably high quality of stakeholder discussions during this event; and several real-time polls allowed efficient tracking of current stakeholder views. Amongst the findings, participants agreed on principal requirements for scaling up rural energy activities in Haiti (Technical Annex provides details) and indicated the following priority needs:

- i. Establish a conducive regulatory framework and an institutional set-up with clear roles and responsibilities for rural energy,
- ii. Facilitate access to ‘less risk-averse’ and commercial finance,
- iii. Develop a National Electrification Strategy/Plan and provide other necessary ‘doing business’ information, and
- iv. Support capacity building, including the creation of a pool of skilled technicians in rural areas.

### **Relationship to CAS**

The proposed Project is fully consistent with the current World Bank Group's Haiti Interim Strategy Note for FY13-FY14 (Report No. 71885-HT) that was discussed by the World Bank (WB) Executive Directors on September 27, 2012. The Strategy defines the program of the second tranche of the \$500 million allocated to Haiti in response to the 2010 earthquake from the IDA16 Crisis Response Window. Its overarching objective is to support the GOH in implementing sustainable post-earthquake reconstruction and shift from emergency response to development, with a focus on: (i) reducing vulnerability and increasing resilience; (ii) encouraging sustainable reconstruction; (iii) building human capital; and (iv) promoting inclusive growth.

The proposed Project will in particular help set conditions supporting the objective (iv) of inclusive growth in rural areas. In addition, under the strategic objective (iii), the proposed Project will also strengthen the capacity of both the Government and the off-grid electricity providers in rural areas.

## **II. Proposed Development Objective(s)**

### **Proposed Development Objective(s) (From PCN)**

The Project Development Objective is to jump-start renewable off-grid electricity market in order to facilitate the scale-up of access to modern energy services for rural households, enterprises and institutions.

Renewable energy-based off-grid electricity services will comprise a variety of technologies and business models, including individual systems, such as solar lanterns and solar home systems, and community-based systems, such as mini- and micro-grids, powered by renewable energy or hybrid sources (renewables with a diesel back-up and/or battery storage).

This objective will be achieved primarily through assisting the Government with the creation of an enabling regulatory framework and the provision of funding to the private sector (including NGOs and cooperatives) for commercially viable off-grid electrification investments with a potential for replicability and scale-up.

-

### **Key Results (From PCN)**

The PDO indicators would include

Number of enterprises that started and/or scaled up their off-grid electrification activities with assistance of the project

People provided with access to electricity under the project by household connections- Other Renewable Energy – Off-grid (#)\*

Enterprises provided with access to electricity under the project- Other Renewable Energy – Off-grid (#)

Number of direct beneficiaries of which are female

Jobs created

Financing leveraged through CTF funding (\$ million)\*\*

Installed capacity for power generation (MW)\*\*

Tons of GHG emissions reduced or avoided\*\*

\* Core sector indicator; \*\* CTF core indicator

The intermediate outcome indicators will be developed during project preparation, but would include among others the enactment of the regulatory framework, progress in the development of the investment pipeline, progress in awarding and disbursing loans, and outputs of market development and capacity building activities.

The project will also apply the Multi-Tier Framework (as introduced by the SE4ALL Global Tracking Framework, World Bank, 2013) for measuring access to reflect different service levels provided by different off-grid electricity technologies and business approaches.

-

## **III. Preliminary Description**

### **Concept Description**

The project will have the 4 following components which are summarized hereafter:

- (i) Enabling environment and program oversight

- (ii) Access to finance facility
- (iii) Quality premium grants
- (iv) Technical support and capacity building

Component 1: Enabling environment and program oversight  
(CTF \$0.5 million)

The lack of a clear regulatory environment is considered the main bottleneck to scaling up rural energy activities. The legal framework is currently unclear, with several legislations contradicting each other. The component will contribute to GOH's effort to clarify the legislation, facilitate permitting process and work towards creating a level playing field between fossil fuels and renewable energy options in rural areas. In addition, this component will provide support to MTPTC to strengthen not only the existing structure but also to create a well-functioning supervisory structure – in order to oversee the investments channeled through the financial intermediary. MTPTC is currently expanding its capacity to manage the sector, and the project will provide further support to do this effectively.

Component 2: Access to finance facility  
(CTF: \$10 million)

The component will be managed by a competitively selected financial intermediary (FI), and will consist of a credit line or other access to finance facility channelling funds to private sector providers of renewable energy services and products (including NGOs, cooperatives, rural retailers and MFIs) for investment in off-grid renewable energy projects. The details of the credit line are under development with the assistance of a highly qualified consultancy team of financial experts.

To be eligible, the projects will need to demonstrate that

- the project uses renewable energy (including hybrid systems),
- the project will expand access to power to rural households, businesses and/or public institutions in rural areas (which will be subject to verification)
- the project has a viable business plan, demonstrating sustainability of investments, clear and workable O&M arrangements, and showing replicability and/or scale-up potential,
- the renewable energy equipment and the system meets minimum technical standards, and
- the project sponsor is a legal entity and passes a credit risk assessment carried out by the financial intermediary (to be developed with the financial intermediary).

In addition, the credit line clients will be obliged to provide users with readily understandable information on the service levels provided by the solutions they offer, and make costs transparent upfront. Detailed eligibility criteria and procedures will be developed in Operating Guidelines.

Component 3: Quality premium grants  
(CTF: \$1 million)

High quality lanterns and other pico/micro PV products are currently facing significant regulatory and market constraints, which are threatening to reverse the recent Haiti market progress. Not only are these products facing unfair competition from the subsidized fossil fuels (kerosene and diesel) -

increasingly, they have also been threatened by an influx of very low quality off-grid lighting products, which are often channeled through the informal economy (thus mostly un-taxed), while the formal pico PV enterprises are subject to import duties and taxes that can be as high as 36%. There is a consensus that the current situation is contributing to market spoilage: uneducated users choose lower cost products, which turn out not to work as expected, creating a negative impression for other solar and off-grid renewable products. This worrying trend (which confirms the rationale behind early Lighting Global and GIZ quality assurance measures) seems to already affect 2014 Haiti sales of high quality solar lanterns, as per stakeholder reports during the 2014 Forum. To level the playing field for the products of appropriate quality, the project would consider offering quality premium grants for high quality off-grid products (Lighting Global certified or equivalent).

Component 4: Technical support and capacity building  
(CTF: \$1 million)

This component will provide technical support, capacity building and market development services to the various nascent off-grid renewable energy markets described in the Technical Annex. This component will finance a dedicated technical team to set up at the financial intermediary level; and will include:

- i) setting up and enforcing quality standards required for accessing credit line funding for different system types and business models;
- ii) TA to the FI credit officers for the evaluation of proposals;
- iii) TA to service providers and users including TA for energy efficient use of off-grid electricity (including the use of smart technology, dissemination of energy efficient appliances, intelligent user communication and simple demand-oriented tariff solutions in village grids) and support for productive applications;
- iv) verification of service provides
- v) development and implementation of consumer awareness campaigns;
- vi) promoting gender-sensitive approaches in off-grid electrification sub-projects;
- vii) further pipeline development for credit line financing, including awareness building about the credit line opportunities among the potential local SMEs.
- viii) implementation of South-South knowhow exchange for fast diffusion of emerging lessons on PAYG and similar disruptive business innovations.

#### IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	x		
Natural Habitats OP/BP 4.04			x
Forests OP/BP 4.36		x	
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11		x	
Indigenous Peoples OP/BP 4.10		x	
Involuntary Resettlement OP/BP 4.12	x		
Safety of Dams OP/BP 4.37		x	
Projects on International Waterways OP/BP 7.50		x	
Projects in Disputed Areas OP/BP 7.60		x	



**V. Financing (in USD Million)**

Total Project Cost:	12.00	Total Bank Financing:	0.00
Financing Gap:	0.00		
<b>Financing Source</b>			<b>Amount</b>
Borrower			0.00
Clean Technology Fund			12.00
Total			12.00

**VI. Contact point****World Bank**

Contact: Frederic Verdol  
 Title: Sr Power Engineer  
 Tel: 473-6566  
 Email: fverdol@worldbank.org

Contact: Dana Rysankova  
 Title: Senior Energy Specialist  
 Tel: 458-9514  
 Email: drysankova@worldbank.org

**Borrower/Client/Recipient**

Name: The Republic of Haiti  
 Contact: Jacques Russeau  
 Title: Minister of Public Works, Transport, Energy and Communicatio  
 Tel: 50937270414  
 Email: hubejack@gmail.com

**Implementing Agencies**

Name: MTPTC - UCE  
 Contact: Jacques Russeau  
 Title: Minister MTPTC  
 Tel: 50937270414  
 Email: hubejack@gmail.com

**VII. For more information contact:**

The InfoShop  
 The World Bank  
 1818 H Street, NW  
 Washington, D.C. 20433  
 Telephone: (202) 458-4500  
 Fax: (202) 522-1500  
 Web: <http://www.worldbank.org/infoshop>