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Report No: PPIAF000007

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL GRANT

IN THE AMOUNT OF SDR15.2 MILLION (US\$20 MILLION EQUIVALENT)

TO THE

REPUBLIC OF HAITI

FOR A

SECOND ADDITIONAL FINANCING FOR THE HAITI RENEWABLE ENERGY FOR ALL PROJECT

September 10, 2024

Energy and Extractives Global Practice

Latin America and Caribbean Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective June 28, 2024)

Currency Unit = SDR

US\$0.75 = SDR 1

FISCAL YEAR

January 1 - December 31

Regional Vice President:	Carlos Felipe Jaramillo
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ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
AM	Accountability Mechanism
ANARSE	National Energy Sector Regulatory Authority (<i>Autorité Nationale de Régulation du Secteur) Energétique</i>)
BESS	Battery Energy Storage System
COVID-19	Coronavirus Disease 2019
CTF	Clean Technology Fund
EDH	Electricity of Haiti (<i>Electricité d'Haïti</i>)
EIRR	Economic Internal Rate of Return
EPC	Engineering, Procurement, and Construction
E&S	Environmental and Social
ESMAP	Energy Sector Management Assistance Program
ESMF	Environmental and Social Management Framework
FM	Financial Management
GDP	Gross Domestic Product
GEAPP	Global Energy Alliance for People and Planet
GHG	Greenhouse Gas
GoH	Government of Haiti
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
IDA	International Development Association
IDB	Inter-American Development Bank
IFC	International Finance Corporation
IPF	Investment Project Financing
IRI	Intermediate Results Indicator
LITON	Lithium Ion
M&E	Monitoring and Evaluation
MTPTC	Ministry of Public Works, Transport and Communication (<i>Ministère des Travaux Publics, Transport et Communications</i>)
MV	Medium Voltage
NPV	Net Present Value
O&M	Operation and Maintenance
OGEF	Off-Grid Electricity Fund
OREPA	Regional Office for Water and Sanitation (<i>L'office régionale de l'eau potable et de l'assainissement</i>)
PDO	Project Development Objective
PIU	Project Implementation Unit
PV	Photovoltaic
RETF	Recipient-Executed Trust Fund
RISE	Regulatory Indicators for Sustainable Energy
SDR	Special Drawing Rights
SREP	Scaling Up Renewable Energy Program
TA	Technical Assistance
UNOPS	United Nations Office for Project Services
WBG	World Bank Group



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OPERATION INFORMATION

BASIC DATA - MAIN

Product Information - Haiti: Renewable Energy for All (P156719)

Operation ID P156719	Product/Financing Instrument Investment Project Financing (IPF)
Task Team Leaders Alassane Agalassou	
Beneficiary Country/Countries Haiti	Geographical Identifier Republic of Haiti
Requesting Unit LCC3C (451)	Responsible Unit ILCE1 (9262)
Approval Date 25-Oct-2017	Closing Date 31-Dec-2024
Practice Area (Lead) Energy & Extractives	Approval Fiscal year 2018
Is there collaboration between Bank and IFC? No	
Original EA Category Partial Assessment (B) (PAD Approval Package-28 Aug 2018)	Current EA Category
Implementing Agency Ministry of Finance	

IMPLEMENTATION MODALITIES – MAIN

Situations of Urgent Need of Assistance or Capacity Constraints

<input type="checkbox"/> Fragile State(s)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Small State(s)	<input type="checkbox"/> Conflict
<input type="checkbox"/> Responding to Natural or Man-made Disaster	



Other Situations

<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Series of Projects (SOP)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Alternative Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Expanded Implementation Support (HEIS)

OPERATION STATUS

Development Objective (DO)

(Approved as part of Approval package on 27-Aug-2018)

The Project Development Objective is to scale-up renewable energy investments in Haiti in order to expand and improve access to electricity for households, businesses and community services.

Key Information from Last ISR

Operation Ratings

NAME	IMPLEMENTATION				LAST ISR RATINGS
	03-May-2021	10-Jan-2022	03-Oct-2022	09-Jun-2023	08-Jan-2024
Progress towards achievement of PDO	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory
Overall Implementation Progress (IP)	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory
Overall Risk	● Substantial	● Substantial	● Substantial	● Substantial	● Substantial
Overall Safeguard Rating	● Satisfactory	● Satisfactory	● Satisfactory	● Satisfactory	● Satisfactory
Financial Management	● Moderately Satisfactory	● Satisfactory	● Satisfactory	● Satisfactory	● Moderately Satisfactory
Project Management	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory
Procurement	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory
Monitoring and Evaluation	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory	● Moderately Satisfactory

**Disbursement Summary (in USD million)**

Source of Funds	Net Commitment	Disbursed	Balance	% Disbursed
IBRD	--	--	--	0
IDA	4.00	2.40	1.60	59.99
Grants	22.52	12.06	10.46	53.57

BASIC DATA – ADDITIONAL FINANCING**Additional Financing No. 2**

Additional Financing Type

- The operation has incurred increased costs due to inflation, exchange rate changes, and factors that were not anticipated at appraisal (Cost-overflow)
- The operation has experienced shortfalls in co-financing, counterpart financing, or cost recovery that were anticipated at appraisal but did not materialize. (Financing gap)

Expected Approval Date

27-Aug-2024

Review Type/Corporate Review Level

Regular Decision Meeting (DM)

Will consulting services be required?

Yes

Is this an Urgent Need or Capacity Constraint request?

No

IMPLEMENTATION MODALITIES – ADDITIONAL FINANCING**Situations of Urgent Need of Assistance or Capacity Constraints** Fragile State(s) Fragile within a non-fragile Country Small State(s) Conflict Responding to Natural or Man-made Disaster**Other Situations** Financial Intermediaries (FI) Series of Projects (SOP) Performance-Based Conditions (PBCs) Contingent Emergency Response Component (CERC) Alternative Procurement Arrangements (APA) Hands-on Expanded Implementation Support (HEIS)



COSTS & FINANCING

Summary (Total Financing in US\$, Millions)

	Last Approved	Proposed		
		Additional	Cancellation	Total
Total Operation Cost	19.62	20.00	0.00	39.62
Total Financing	19.62	20.00	0.00	39.62
Of which IBRD/IDA	0.00	20.00	0.00	20.00
Financing Gap	0.00			0.00

Financing Details (in US\$, Millions)

Source	Last Approved	Proposed		
		Additional	Cancellation	Total
International Development Association (IDA)	0.00	20.00	0.00	20.00
IDA Grant ^{NEW}	0.00	20.00	0.00	20.00
Trust Funds	19.62	0.00	0.00	19.62
Strategic Climate Fund Grant	19.62	0.00	0.00	19.62
Total Financing	19.62	20.00	0.00	39.62

IDA Resources (in US\$, Millions)- Additional Financing

	Credit Amount	Grant Amount	SML Amount	Guarantee Amount	Total Amount



SYSTEMATIC OPERATIONS RISK- RATING TOOL (SORT)

Risk Category	Last Approved Rating (ISR Seq. 011) Package - 08 Jan 2024	Proposed Rating
Political and Governance	● High	● High
Macroeconomic	● Substantial	● Substantial
Sector Strategies and Policies	● Moderate	● Moderate
Technical Design of Project or Program	● Moderate	● Moderate
Institutional Capacity for Implementation and Sustainability	● Substantial	● Substantial
Fiduciary	● Substantial	● Substantial
Environment and Social	● Moderate	● Moderate
Stakeholders	● Moderate	● Moderate
Overall	● Substantial	● Substantial

CLIMATE

Climate Change and Disaster Screening

Has this operation been screened for short-term and long-term climate change and disaster risks?

Yes, it has been screened and the results are discussed in the Appraisal Document

Where risks exist, have potential resilience-enhancing measures been identified in the appraisal document?

No, significant risks were not identified

Does this operation address specific risks, vulnerabilities, gaps or needs with respect to Climate Change that are identified in the SCD or the CPF?

No

Greenhouse Gas Emissions Accounting and Shadow Price of Carbon

Net Emissions (economic lifetime, tCO2e)	Net Emissions (annual average, tCO2e/year)	Gross Emissions (economic lifetime, tCO2e)
Not Applicable	Not Applicable	Not Applicable

Explanation for Not Applicable

No

Has the operation applied the Shadow Price of Carbon in the Economic Analysis?



Yes

POLICY COMPLIANCE

Does the operation depart from the CPF in content or in other significant respects?

No

Does the operation require any waivers from Bank policies?

No

TEAM**Core Team**

Name	Role	Specialization	ADM Responsible?
Alassane Agalassou	Team Leader		Yes
Lydie Madjou	Financial Management Specialist	finance	Yes
Maurice Adoni	Procurement Specialist	procurement	Yes
Lisbet Kugler	Environmental Specialist	Environment	Yes
Bruce MacPhail	Social Specialist	Social Specialist	Yes
Hana Salah	Social Specialist	Social Specialist	No
Maria Laettitia Antoine	Procurement Team		No
Vladimir Mathieu	Procurement Team		No
Tafna Christine Blanc	Procurement Team		No
Rahmoune Essalhi	Procurement Team		No
Andrea Maria Castro Astudillo	Team Member	Portfolio Analyst	No
James Albert Knuckles	Team Member	Energy	No
Marie Christine Platel	Team Member	Team Assistant	No
Paula Genis	Team Member	Quality Assurance and M&E	No
Mark M. Njore	Team Member	Operations	No
Iris Teluska	Team Member		No



Elisabeth Maier	Team Member	Operations	No
Dana Rysankova	Team Member	Energy	No
Ashish Shrestha	Team Member	Energy Specialist	No



I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

A. Introduction

1. This Project Paper seeks the approval of the World Bank's Board of Executive Directors for an additional financing (AF) with an IDA grant in the amount of SDR15.2 million (US\$20 million equivalent) for the Haiti Renewable Energy for All Project (parent Project, P156719). Through a level 2 restructuring, the extension of the closing date of the parent Project by 18 months from December 31, 2024, to June 30, 2026, to align with the closing date of additional financing and revision of endline target dates for all indicators, and description and endline target values of select Project Development Objective (PDO) and intermediate results indicators (IRIs) of the Results Framework, is included. The component-wise allocations and disbursement projections are revised to reflect the AF and extended implementation timeframe. The parent Project is funded by three trust funds cumulating to US\$22.5 million and an IDA grant in the amount of US\$4 million. Additionally, amendment of the grant agreements for this Trust Fund financing, to substitute the term 'Escrow Account', which the Operations and Maintenance (O&M) contract under Component 1 of the project, with 'Dedicated Account', and extension of the closing dates of the grants is also included in the restructuring.¹ The AF will finance the cost overrun in implementing activities under the parent Project.

B. Country Context

2. **Haiti is one of the poorest, most fragile countries in the Western Hemisphere and has been experiencing a series of natural disasters and climate and political shocks which have negatively affected its development trajectory.** Despite a gross national income (GNI) per capita of US\$1430, about 58 percent of the 11 million Haitians live below the poverty line, with 24 percent living in extreme poverty. The 2010 earthquake destroyed the equivalent of 120 percent of its gross domestic product (GDP), while Hurricane Matthew in 2016 caused losses and damages amounting to 32 percent of GDP. The 2021 earthquake caused more than 2,000 deaths, with damage estimated at 10.9 percent of the 2019-2020 GDP. The impacts of climate change are catastrophic in Haiti due to the combined effects of natural hazards, institutional fragility and lack of resilience.

3. **Haiti has been driven by political violence and instability.** Over the past few decades, Haiti has experienced a significant number of economic and social crises resulting in increasing inequalities and territorial disparities. Limited institutional capacity and lack of trust in public institutions at different levels have over time restricted citizens' access to basic services such as electricity and fueled social unrest. The persistent legacy of political violence and economic elite capture, compounded by deficient institutional mechanisms and policy fundamentals essential to inclusive development, has resulted in extreme welfare inequality and socioeconomic exclusion of most Haitian people, fueling grievances and cyclical unrest and violence. The lack of security due to increased violence and gang activities has contributed to the current acute humanitarian and food crisis and created a difficult environment for implementing development programs.

C. Institutional and Sector Context

4. **The energy sector in Haiti is characterized by both public and private players.** The Ministry of Public Works, Transport and Communication (*Ministère des Travaux Publics, Transport et Communications*, MTPTC) is in charge of energy sector policy, planning and development. The Ministry of Economy and Finance manages the subsidies allocated to the National Energy Sector Regulatory Authority (*Autorité Nationale de Régulation du Secteur*, ANARSE), the state-owned vertically integrated utility *Electricité d'Haiti* (EDH), the Office of Mines and Energy and the Haitian Energy Institute. The

¹ Closing date extension of Grant No. TF0A5190 and Grant No. TF0A5191 from the Climate Investment Funds till June 30, 2026, Grant No. TF0B3955 under the Energy Sector Management Assistance Program [ESMAP] till December 31, 2025, and IDA Grant no. D-730HT till June 30, 2026, is included.

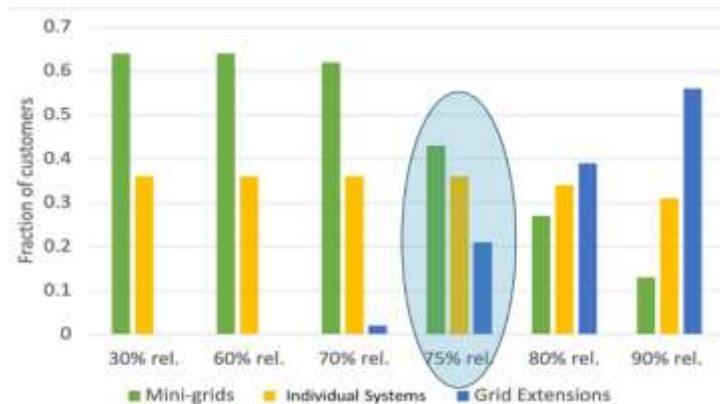


institutional arrangements are supported by (a) an adequate legal framework introduced through the 2016 sector law; (b) ANARSE, established in 2017, actively promotes private mini grids and concession of several EDH-isolated systems; and (c) private operators in on-grid generation, as well as off-grid initiatives to increase electricity access in isolated communities.

5. **The energy sector in Haiti is experiencing interlinked and self-reinforcing challenges exacerbated by recurrent fuel shortages and near collapse of the national utility EDH.** The current available generation capacity is about 230 MW against a demand which could be as high as 500 MW. Overall electrification rate in 2021 was 47.1 percent (Sustainable Energy for All, Sustainable Development Goal 7 tracking database). Key challenges include: (a) low electricity access; (b) high cost of (predominantly diesel-based) electricity generation; (c) high aggregated technical and commercial losses of 60 percent; (d) unreliable and inefficient electricity supply (outages of up to 12 hours per day in urban areas and up to 22 hours per day in rural areas; and (e) poor management and performance of the EDH, requiring budget support from the Government of Haiti (GoH), of almost 1.9 percent of GDP in 2019.

6. **The GoH plans to expand electricity access through solar photovoltaic (PV)-based mini grids with storage, micro-grids (mesh grids), and stand-alone solar PV systems under its national electrification strategy.** Various sensitivity scenarios as part of the national electrification strategy analysis confirm no single technology offers a clear solution for achieving universal access to electricity in Haiti. Given the current underperformance of the national grid, off-grid systems emerge as a viable option for most populations without access to electricity, until the grid reliability reaches more than 75 percent. In the event of enhanced grid performance with grid reliability of 75 percent, more than 20 percent of the unelectrified population may find grid extension as the least-cost solution. Haiti needs an integrated approach to technologies for achieving universal access, and mesh grid is a potential alternative option for electrification in remote areas. Altogether, an estimated investment of US\$1.3 billion to US\$1.6 billion would be necessary to cover costs of implementing these options. Figure 1 shows how electrification technologies have evolved with grid reliability in Haiti.

FIGURE 1. LEAST-COST ELECTRIFICATION OPTIONS WITH INCREASED GRID RELIABILITY



Source: REM, National electrification strategy Analysis of Haiti.



7. The World Bank has long-standing cooperation in the energy sector with the GoH (Box 1).

Box 1. Long-term Partnership in the Energy Sector with the World Bank Group (WBG) and Interventions for a Range of Public and Private Off-Grid Electrification Approaches

The WBG has been a long-term, strategic partner of Haiti’s energy sector, with a portfolio of projects and consistent support to the Government’s reform agenda. Over the past 40 years, the WBG approved US\$204.8 million financing activities shown in the adjacent table.

In addition, a Development Policy Financing program, supported the Government’s efforts to ensure the financial sustainability of the energy sector along the entire value chain and enhanced private sector confidence. The WBG has also been actively supporting private sector-led generation and distribution activities in Haiti. Specifically, the International Finance Corporation (IFC) has provided financing for the 30 MW fuel-fired plant in Port au Prince, which is a good demonstration of maximizing finance for development.

The WBG is also scaling-up its support to the GoH reform agenda through three separate financing windows: IDA](US\$4 million financing Scaling Up Renewable Energy Program (SREP)) and SREP (US\$19.6 million) for Haiti Renewable Energy for All (P156719) and Clean Technology Fund (CTF) (US\$16 million for the Modern Energy Services for All Project [P154351]). These investments jointly finance a range of public and private approaches to expand electricity access in both urban and rural areas. Together, IDA, SREP and CTF address the universe of electrification options, leveraging private sector in several on-grid and off-grid electrification segments, with IFC providing complementing support as needed.

	Year	USDm
Modern energy services for all	2017	15.65
Renewable energy for all	2017	19.6
Rebuilding Energy Infrastructure and Access	2012	51
Electricity loss reduction project (PREPSEL)	2006	11
Fifth Power Project	1989	27
Fourth Power project	1984	22.1
Third Power Project	1982	26
Second Power Project	1979	16.5
First Power Project	1976	16
Total		204.85

	IDA	SREP		CTF
Urban areas	WB	WB/IFC	IFC	
Rural areas	WB	WB	WB	WB
	Public sector approaches (Grant funding)		PPP (Grant funding)	Private sector approaches (loans)

8. **Coordination and collaboration of partners in the energy sector.** The energy sector continues to leverage the coordination of traditional partners such as Inter-American Development Bank (IDB), Caribbean Development Bank, IFC and the Global Energy Alliance for People and Planet (GEAPP). The IDB has been a strong partner and co-founder of the mini-grids program-- Program for Access to Solar Energy for Rural Communities² designed by the World Bank. IDB proposes to invest approximately US\$6.5 million in parallel to the World Bank in the first cohort of 10 mini-grid projects. The GEAPP has prioritized Haiti for the first phase of its investments, having already financed with US\$4.35 million, a pilot on productive uses of the energy, co-designed with the World Bank. The GEAPP is anticipated to help scale-up distributed renewable energy investments in Haiti, particularly for mini grids, health facility electrification and integration of renewables on EDH grids, following successful delivery of results by the current projects.

D. Parent Project Description and Implementation Performance Per Component

9. **The Haiti Renewable Energy for All Project was approved on October 25, 2017.** The Project is funded in the cumulative amount of US\$22.5 million by three grants from two trust funds, namely the SREP grant and the CTF grant from the Climate Investment Fund (Total: US\$19.6 million) and a grant from the ESMAP, in the amount of US\$2.9 million. The Project was declared effective on July 28, 2018, and the first disbursement was made on April 29, 2019. An IDA grant (IDA-D7300) in the amount of US\$4.0 million was approved as an AF on September 20, 2020 to support the COVID-19 response.

10. **The PDO is to scale-up renewable energy investments in Haiti in order to expand and improve access to electricity for households, businesses and community services.** This includes demonstrating the viability of integrating solar PV generation into the national utility grid and providing grant funding for mini-grids and off-grid electrification to accelerate market development, increase affordability and support rural development. The Project is implemented by the Energy Cell of the MTPTC. The project comprises two components, namely:

² Programme Haïtien d'Accès des Communautés Rurales à l'Énergie Solaire



11. **Component 1: Grid-Connected Distributed Renewable Energy (US\$12.90 million)** supports through financing and technical assistance (TA) scale-up of on-grid renewable energy investments in Haiti and developing a policy and regulatory environment for private sector-driven renewable energy investments. Specifically, the component supports the construction of 5–12 MW of renewable energy capacity (solar PV + battery), which is expected to hybridize 2–3 EDH-isolated grids currently running on diesel power. In addition, the component is financing solar PV and battery storage systems for four prioritized hospitals and two COVID-19 testing laboratories located on three EDH regional grids and solar water pumping systems for five high-priority water systems.

12. **Component 2: Off-grid Distributed Renewable Energy (US\$13.62 million)** aims at extending access to clean and modern energy services to households, communities, and enterprises that are not served by EDH by deploying a wide range of off-grid electrification options, including renewable energy mini grids, larger stand-alone systems for productive and community uses, smaller solar home and pico-PV systems for households and micro-enterprises. The component provides capacity building and TA to (a) carry out feasibility studies, consumer awareness campaigns, and monitoring of the Project, (b) improve energy access policies and planning (for example, least-cost geospatial electrification plans and regulatory framework for mini grids), and (c) communication and consensus building activities to promote clean energy and access.

13. The Project received an AF in the amount of US\$2.9 million grant from ESMAP (approved September 17, 2020) to scale up the activities of the parent project and contribute to the GoH's response to COVID-19 pandemic. The project has been restructured five times to effect the following changes:

- (i) Restructuring 1 approved on August 12, 2020 to clarify eligible investments under Component 1 of the project, reallocate proceeds between disbursement categories and merge two disbursement categories.
- (ii) Restructuring 2 approved on March 21, 2023 to extend the closing date of the ESMAP Recipient Executed Trust Fund (RETF).
- (iii) Restructuring 3 approved on August 16, 2023 to create new disbursement categories and reallocate proceeds between disbursement categories.
- (iv) Restructuring 4 approved on November 2, 2023, to extend the closing date of the ESMAP RETF, in anticipation of the extension of the closing date of parent trust fund to align with the Project's closing date.
- (v) Restructuring 5 approved on November 29, 2023, to extend the closing date of ESMAP RETF, in anticipation of the extension of the closing date of parent trust fund to align with the Project's closing date.

14. **Progress toward the achievement of the PDO is rated as Moderately Satisfactory.** Project implementation has advanced albeit slower than expected, while the overall residual risk is rated Substantial. As of July 26, 2024, the overall disbursement rate of the Project is 55 percent (IDA resources and RETF).³ The undisbursed balances are committed in signed contracts and identified sub-projects, the latter including (a) mini-grid activities for which procurement processes are underway ; (b) Off-Grid Electrification Fund (OGEF) grants and investments; and (c) Project management by the Energy Cell of the MTPTC--the Project Implementation Unit (PIU) of energy projects implemented in Haiti. Component-wise implementation progress is provided below.

³ The IDA Grant no. D-730HT is 60 percent disbursed while the CIF (SREP and CTF grants) and ESMAP is Grants have disbursed 62.5 percent and 57 percent, respectively.



15. **Component 1: Grid-Connected Distributed Renewable Energy.** About 2.5 MW of the targeted 5 MW of generation capacity of energy is installed. The rehabilitation of the 1.5 MW mini hydro plant in Drouet is completed and able to supply clean and reliable electricity to 53,000 households in the Artibonite region. The plant is currently shut down for security reasons. Installation of solar PV systems/storage of 1 MW/0.9 MWh for five priority hospitals is finalized. Procurement of design and installation of 1.2 MW of solar PV with 480 kWh of battery storage on the EDH regional grid in Jacmel will be relaunched as proposals received were significantly above the approved budget. ANARSE with support from the Project and other partners has developed and almost finalized a regulation for isolated mini grids under 2.5 MW. As part of the development of mini grids in municipalities, concession agreements and tripartite agreements are drafted and approved by the *Commission Nationale des Marchés Publiques*. A survey on consumers' ability and willingness to pay for energy is being finalized.

16. **Component 2: Off-Grid Distributed Renewable Energy.** The Project is pursuing an innovative approach for provision of clean and reliable electricity in areas not served by the national utility, leveraging solar home systems and micro- and mini-grids. As of date, 0.8 MW of the targeted 10 MW of electricity generation capacity is deployed. Over 107,000 people have access to electricity, of which around 53,500 are females. In addition, six new enabling policy and regulatory frameworks for clean energy and access are enacted and the Regulatory Indicators for Sustainable Energy (RISE) score is now 22.07 compared to the baseline of 11 in 2017. Approximately US\$16 million in private investment and other commercial financing is leveraged. Other achievements include (a) signing of concession contracts for mini grids, (b) successful deployment of mesh grids (micro-grids), and (c) results-based financing for off-grid solar systems and productive uses. In collaboration with the Modern Energy Services for All Project, P154351 (US\$15.65 million CTF grant), the OGEF, which invests in equity and provides loans to commercially viable off-grid energy businesses, is established.

17. **The FM performance was rated Moderately Satisfactory** as accounting records are up-to-date, and the interim financial reports and audit reports are of quality acceptable to the World Bank. The Project has acceptable procurement arrangements and capacity for the implementation of the proposed AF. The most recent Safeguard Performance Rating for the parent project is Satisfactory.

E. Rationale for Additional Financing and Restructuring

Additional Financing

18. **The local circumstances and conditions (such as security and business environment) of the Project have changed since 2017 when the parent project was approved.** These circumstances have made it more difficult to attract private sector funding into the renewable energy sector as anticipated during project design, particularly for on-grid renewable energy generation. Thus, providing renewable energy access in Haiti has become more expensive while the capacity to pay for electricity has deteriorated. Specifically, the reasons for increased costs are related to (a) delays in licensing mini-grid developers that has triggered delays in mini-grid development; (b) security conditions that are not allowing full supervision on the ground and implementation of the Project in some regions such as the southern peninsula of the country; and (c) fuel supply disruptions, increased risks of violence against fuel transporters, fuel theft, and security challenges that have increased the costs related to the logistics of traveling within Haiti, cost of insurance, and cost of doing business for the mini-grid developers and the distributors of solar lanterns and solar home systems participating in the Project.

19. **Also, in response to the COVID-19 pandemic, the Project was restructured on an exceptional basis to help the Government deal with the emerging health care crisis, exacerbated by the lack of reliable energy in hospitals.** The restructuring involved using a part of the resources under Component 1 for installing solar PV and battery storage systems for prioritized hospitals, testing laboratories, and water pumps to ensure reliable health care and service delivery. These



activities responding to the COVID-19 pandemic, were co-financed by the IDA Grant financed COVID-19 Response Project (P173811) and implemented with the support of United Nations Office for Project Services (UNOPS). This reallocation of resources to the COVID-19 health response resulted in a shortfall in available resources to fully finance the originally planned activities under Component 1 of the project.

20. **Consequent to the above, additional funds are required to achieve targets**, namely: (a) 5.5 MW of generation capacity of energy constructed or rehabilitated under Component 1; and (b) 10 MW of generation capacity of electricity constructed or rehabilitated from renewable energy under Component 2 of the project, through the activities indicated in Table 1 below:

TABLE 1. STATUS OF MAIN ACTIVITIES OF THE TWO COMPONENTS

Component/Activity	Status	Expected Completion /Comments
Component 1: Grid-Connected Distributed Renewable Energy		
1. Design and install 1.5 MWac of solar PV with 0.8 MW/2.38 MWh of battery storage on the EDH regional grid in Jacmel	Detailed design finalized and Request for Proposals (RFPs) under processing	January 2026 - additional funds needed for implementation
2. Rehabilitate 1.5 MW mini-hydro plant in Drouet	Completed	Warranty period concluded in June 2024
3. Design and install first 1 MW solar PV and 1 MWh battery storage system for first five top priority hospitals	Completed	Additional funds needed for O&M for one year
4. Design and install first 1 MW solar PV and 1 MWh battery storage system for remaining five priority hospitals not started yet		Additional funds needed
5. Design and install solar-powered water pumps at five water pumping sites	Four units completed	Additional funds needed for fifth unit
Component 2: Off-Grid Distributed Renewable Energy		
6. Design and construct five mini grids in municipalities under public-private partnerships	Concession awarded and subsidy committed	Mini grid constructed to be operational in April 2026
7. Results-based financing for off-grid solar systems and productive uses	120,000 of the targeted 350,000 beneficiaries have access	Additional funds needed for access to remaining 230,000 beneficiaries

Restructuring

21. The Component and Subcomponent-wise allocations will be revised upwards to reflect the availability of the AF.

22. The construction works of the on-grid solar/ Battery Energy Storage System (BESS) plant at Jacmel and the construction of the mini-grids need an estimated additional 18 months for completion.

23. Mindful of the security situation and deteriorated business environment which will likely take a longer period to stabilize, the ambition of 5 PDO and 10 IRIs of the Results Framework is realistically moderated.

24. The Escrow Account envisaged under the original financing is substituted by a Dedicated Account that is most suitable for domiciliating part of resources generated by the solar PV/BESS plant at Jacmel to pay for the O&M costs for the first three years post completion, to the private operator operating the plant. The term Escrow Account is reserved for the account that received project resources after completion to pay for audits and/or compensation for project-affected people, if needed.



II. DESCRIPTION OF ADDITIONAL FINANCING AND RESTRUCTURING

A. Additional Financing

25. The AF of an IDA grant in the amount of SDR15.2million (US\$20 million equivalent) will help: (a) complete some activities of the parent project and some activities introduced during the exceptional restructuring of September 2020; and (b) finance costs associated with Project management and TA. Specifically, the AF will support the completion of the following activities:

26. Component 1: Grid-Connected Distributed Renewable Energy (AF US\$12 million)

Subcomponent 1.a: Demonstration Pilot Solar PV Investments: The AF will finance:

- Design, supply and installation of a PV solar system 1.76 MWp/1.5 MWac with a fixed tilt mounting system at Mount Fleury.
- Design, supply and installation of 0.8 MW/2.38 MWh BESS at Jacmel and connection to the MV sub-transmission line through a step-up substation.
- Design and installation of an MV substation to collect MWac outputs from the Solar PV field or BESS and connection to the grid.
- Installation of a Supervisory Control and Data Acquisition system to supervise and monitor the power flow.
- 1 MW Solar PV and 1 MWh BESS for five remaining additional top priority hospitals (activity introduced during restructuring of September 2020).
- Installation of solar-powered water pumps at one additional site (activity introduced during restructuring of September 2020).

Subcomponent 1.b: Technical Assistance and Enabling Framework for Renewable Energy Scale-up: The AF will finance TA to supervise the construction of the PV power plant and BESS, as well as to ANARSE to develop the new energy policy, a national electrification strategy and plan, and establish a regulatory framework for mini networks.

27. Component 2: Off-Grid Distributed Renewable Energy (AF US\$8 million).

Subcomponent 2.a: Renewable Energy Municipal Grids: The AF will finance private sector-led mini-grid concession for five sites from a pipeline of 10 sites in rural areas (refer to Annex 1).

Subcomponent 2.c: Distributed Systems: The AF will finance distribution of solar lanterns and solar home systems in rural and peri-urban areas to reach additional 230,000 beneficiaries.

Subcomponent 2.d: Capacity building and Technical Assistance: The AF will finance continued capacity building and TA through the international fund manager.

28. Subcomponent wise revision in allocations over the life of the project is provided in Table 2 below.



Table 2. Component and subcomponent wise allocations over project life

Amounts in US\$ million

Component	Original Estimates (at Appraisal)	Revised Allocation at August 2020 Restructuring	Revised Allocation at September 2020 AF/Restructuring	Revised Allocation at August 2023 Restructuring	Allocation 2 nd AF	Total Revised Allocation
Component 1: Grid-Connected Distributed Renewable Energy	11.00	6.00	12.90	7.40	12.00	19.40
1.a: Demonstration Pilot Solar PV Investments	6.00	5.00	8.40	2.90	11.00	13.90
Original Subcomponent 1.a. ii has been cancelled through the completed SREP restructuring	4.50	0.00	0.00	-	-	-
Subcomponent 1.b: Technical Assistance and Enabling Framework for Renewable Energy Scale-up	0.50	1.00	1.50	1.50	1.00	2.50
Subcomponent 1.c: Completion of the rehabilitation of mini hydroelectric plant in Drouet	-	-	3.00	3.00	-	3.00
Component 2: Off-grid Distributed Renewable Energy	8.62	13.62	13.62	19.12	8.00	27.12
Subcomponent 2.a: Renewable Energy Municipal Grids	3.62	8.12	8.12	8.12	1.00	9.12
Subcomponent 2.b: Renewable Energy for Productive and Community Uses	1.00	1.00	1.00	1.00	-	1.00
Subcomponent 2.c: Distributed Systems	3.00	3.00	3.00	5.50	4.50	10.00
Subcomponent 2.d: Technical Assistance and Capacity Building	1.00	1.50	1.50	4.50	2.50	7.00
Total	19.62	19.62	26.52	26.52	20.00	46.52

B. Project Restructuring

29. The Component-wise allocations are revised as indicated in Table 3 below:

Table 3. Component and subcomponent wise revised allocations

Component/Subcomponent	Original Allocation (US\$ million)	AF Allocation (US\$ million)	Revised Allocation (US\$ million)
Component 1: Grid-Connected Distributed Renewable Energy	7.40	12.00	19.40
Subcomponent 1.a: Demonstration Pilot Solar PV Investments	2.90	11.00	13.90
Subcomponent 1.b: Technical Assistance and Enabling Framework for Renewable Energy Scale-up	1.50	1.00	2.50



Subcomponent 1.c: Completion of the rehabilitation of the mini hydroelectric plant in Drouet	3.00	-	3.00
Component 2: Off-Grid Distributed Renewable Energy	19.12	8.00	27.12
Subcomponent 2.a: Renewable Energy Municipal Grids	8.12	1.00	9.12
Subcomponent 2.b: Renewable Energy for Productive and Community Use	1.00	-	1.00
Subcomponent 2.c: Distributed Systems	5.50	4.50	10.00
Subcomponent 2.d: Capacity building and Technical Assistance	4.50	2.50	7.00

30. It is anticipated that all ongoing activities under the parent project and those proposed under the AF will be fully implemented by June 30, 2026. Therefore, the extension of the closing date of both the parent project and the AF by 18 months till June 30, 2026, is proposed. The closing date of the ESMAP Grant TF-B3955 is proposed for extension till December 31, 2025.

31. A ‘Dedicated Account’ instead of an ‘Escrow Account’ will be established upon completion of the Jacmel Solar PV/BESS under the administrative authority of EDH to facilitate payments under the O&M Contract and ensure sustainability of investments under Component 1 of the Project.

32. The endline target dates of all indicators of the Results Framework are revised to align with the proposed revised closing date of the project. Additionally, the targets for 5 PDO indicators and 10 IRIs are moderated to reflect the challenging implementation realities. Also, the description of some indicators has been revised for clarity (refer to Section VII: Results Framework and Monitoring).

33. The disbursement projections for the project are revised to accommodate the AF and additional 18-month implementation timeframe.

III. KEY RISKS

34. Even though this AF is part of a long-term engagement of the World Bank in the energy sector, the overall risk to the PDO is assessed as ‘Substantial’ on account of the component risks summarized in Table 4 below. The rationale for risk ratings and mitigation measures proposed for High and Substantial risks follows.

Table 4. Summary of Key Project Risk Ratings

Risks	Rating
Political and Governance	High
Macroeconomic	Substantial
Sector Strategies and Policies	Moderate
Technical Design of Project	Moderate
Institutional Capacity for Implementation and Sustainability	Substantial
Fiduciary	Substantial
Environmental and Social	Moderate



Risks	Rating
Stakeholders	Moderate
Other Risks: Security	High
Overall	Substantial

35. **Political and governance risk is High.** Haiti’s chronic political instability and volatile security situation may create bottlenecks and delays in the implementation of the Project. While it is difficult to mitigate this risk, the Project has adopted a ‘risk mitigation by design’ strategy adapting the scope of the Project activities and the World Bank’s supervision based on a continuous assessment of security risks. The risks are partially mitigated through dialogue and proactive engagement and close collaboration with the government and non-governmental entities as issues arise.

36. **Macroeconomic risk is Substantial.** The inherent risk is macroeconomic instability and its substantive impact on private sector investments in renewable energy in Haiti. The rapid currency depreciation and inflation increase has enhanced the risks for investments in mini-grid and off-grid by companies and investors, given that user fees are collected in local currency. This risk is being mitigated through regulatory measures (for example, formulas that allow tariff adjustments in the concession contracts) and by increasing engagement of local renewable energy companies in the Project.

37. **Institutional capacity for implementation and sustainability risk is Substantial.** In view of the continued emigration of skilled manpower from Haiti and overall capacity constraints in the GoH, this risk is substantive and is reflected in delayed administrative processes and approvals. The risk is mitigated by ensuring a fully staffed PIU, increasing the budget for project management and TA, and focused improvements in coordination between Energy Cell with the MTPTC through the AF.

38. **Fiduciary risk is Substantial,** reflecting weaknesses in FM and broader governance challenges faced by GoH. This affects the timely elaboration of fiduciary reports of the project. The risk is mitigated by augmenting the PIU with qualified procurement and FM staff with additional support through the AF.

39. **Other risks: security risks are High.** Given the dynamic nature of Haiti’s security situation and the multiplicity of subproject locations and activities, it is impossible to determine *a priori* a baseline for insecurity that applies universally across all project sites and for the duration of the Project. The Project is likely to be implemented in a context of continued high volatility, insecurity, and instability, with the occurrence of shocks, disruptions, and other destabilizing events almost a certainty. Security risks are factored into all elements of supervision and implementation. The main mitigation measures include the following: (a) adopting a ‘risk mitigation by design’ strategy based on a continuous assessment of security risks and adapting the scope of the Project activities and the World Bank’s supervision; (b) deploying a dynamic risk monitoring tool linked to Project monitoring and supervision that will inform decisions with respect to risk mitigation/response, including reorientation/reprioritization of activities and deployment of emergency measures based on security risk mapping at the commune level; (c) continually assessing the security situation in the country, informed by levels of insecurity—estimated according to the number of publicly available reported security incidents and open-source analyses of violence intensity and the degree of access for technical PIU staff, implementing partners, contractors, and NGOs; and (d) contracting United Nations agencies as implementation partners for critical Project activities, leveraging their in-country footprint, experience in fragility, conflict, and violence contexts, and track record over the past years under World Bank-financed operations in Haiti.



IV. APPRAISAL SUMMARY

A. Economic and Financial (if applicable) Analysis

40. The proposed AF will finance ongoing Project activities, for which the economic internal rate of return (EIRR) and the financial internal rate of return have been calculated at appraisal of the parent project.⁴ This analysis was also updated under the previous AF/restructuring of September 2020 to estimate specifically the EIRR for providing reliable electricity to hospitals under Component 1 to account for: (a) current technology and operating costs; (b) the hospitals’ grid and diesel consumption; and (c) hospitals’ energy usage, including the expected interim use of oxygen concentrators.

41. For this AF, the net economic benefits and an EIRR were calculated for the Jacmel PV plus battery storage system, which accounts for 50 percent of the AF. Economic costs include the capital costs of the PV system, BESS, the line and substation connecting the system to the grid, and the O&M costs. Economic benefits are the cost of the avoided thermal generation that would have been used in place of the system as well as the avoided associated Carbon-di-oxide emissions. In accordance with World Bank guidance on project economic analysis, discounting was done with the social discount rate calculated at 0.3 percent due to the low real GDP per capita growth rate forecast in Haiti. The cost of carbon was calculated for both the low-cost and high-cost scenarios starting at US\$44 and US\$87, respectively, in 2024. A project lifetime of 25 years with battery replacement every 10 years was assumed.

42. The economic analysis of the AF has a net present value (NPV) of US\$3.8 million, US\$6.0 million, or US\$8.1 million with no, low, and high cost of carbon emissions, respectively. The associated EIRRs are 4.9 percent, 7.0 percent, and 8.7 percent, well over the threshold social discount rate, which is 0.3 percent due to the low real GDP per capita growth rate forecasts. Annex 2 provides details of the economic analysis.

43. Table 5 shows the results of a sensitivity analysis, in which switching values were calculated for the key cost and benefit components, namely the engineering, procurement, and construction (EPC) costs and the avoided cost of diesel generation. The results show that EPC costs have to increase by just over 70 percent, and the cost of avoided thermal generation would have to drop below US\$0.20 per kWh, in the low cost of carbon scenario before the EIRR drops below the threshold value.

Table 5. Switching Values for Low Cost of Carbon Scenario

	Baseline	Switching Value
EPC costs of PV and BESS	US\$4.5 million	US\$7.8 million
Cost of avoided thermal generation	US\$0.33/kWh	US\$0.20/kWh

B. Technical

44. The technical analysis for the parent project continues to be relevant to this AF. The AF will be supporting proven and mature technologies in renewable energy--Solar PV and lithium ion (Lilon) BESS, which are used widely in recent World Bank-financed projects, including for hybrid PV and diesel systems.

45. Given the frequent recurrence of high-impact hurricanes and earthquakes in Haiti, the technical specifications of investments under the AF will go beyond international base-case standards regarding disaster resilience. The design of mini grids and Jacmel PV/BESS as well as the ‘Haiti Mini Grid Technical Specifications’ that the Project has drafted under

⁴ See Annex 6 of the original Project Appraisal Document, which has shown a robust EIRR between 11 percent and 54 percent for all the Project’s investment types, and an FIRR of 10 percent to 40 percent. Sensitivity analysis showed EIRRs to be sufficiently robust under a broad range of many analyzed scenarios, including a wide range of fuel prices.



Component 2⁵ will benefit from the latest international norms and standards for PV systems and BESS operating under extreme conditions. The system elements that will be included are: (a) PV modules and their mounting structures (which will rely on high-grade structures or stone-weighted mounting structures for ground-based installation); (b) the structural integrity of the buildings, especially the roofs in the case of roof-mounted arrays; and (c) an extremely safe placement of the Lilon BESS storage (especially to avoid fire incidents).⁶

46. The Project's Operations Manual (POM) will be updated before effectiveness of the AF to reflect the additional resources to complete the ongoing activities. The Energy Cell of MTPTC will be responsible for Project monitoring, including the AF, following the monitoring and evaluation (M&E) framework and reporting procedures established in the POM. Due to the increased security concerns, the M&E systems will apply innovative technologies, including remote monitoring, which will reduce the need for physical on-site inspections. For example, the mini-grid plants will include sensors, which will allow for remote monitoring. The Energy Cell will also expand the use of cell phone-based methods for consultations and monitoring, including for citizen engagement and grievance redress, building on the cell phone-based surveys of the parent project. In addition, the Energy Cell is in the process of contracting services of a local non-governmental organization to support local consultations. Given the continued fragile and volatile institutional context and security risks, the Project would include dedicated implementation support and continuous assessment of whether the changing circumstances in the national and local contexts call for adjusting project implementation arrangements and/or monitoring and supervision procedures.

C. Financial Management (FM)

47. FM arrangements for this AF will be the same as for the ongoing parent project. An FM assessment was conducted and finalized in January 2024, in accordance with OP/BP for Investment Project Financing (IPF) and in line with the FM Manual for World Bank IPF Operations. It concluded that as the proposed AF aims to fill the financing gap created by the cost overrun without any additional or new activities after the September 2020 exceptional restructuring, the same implementation arrangements for the parent project are still valid. The fiduciary responsibilities of the proposed AF would be managed using the existing capacity at PIU/CE-MTPTC managing the parent project that will need additional resources that the AF will procure. PIU composition includes FM staff adequate for the original project, as it has been assessed through its implementation. The AF will use the Project's existing staffing and FM arrangements, including planning, budgeting, accounting, internal control, and funds flows. Disbursement and flow of funds remain unchanged.

48. **The FM risk is rated as Substantial.** The latest FM performance for the parent project was rated Moderately Satisfactory as the accounting records were up-to-date, and the interim financial reports and audit reports are of quality acceptable to the World Bank. However, moderate shortcomings exist but do not affect the capacity to provide timely and reliable information required to manage and monitor the implementation of the Project.

D. Procurement

49. The Project has acceptable procurement arrangements and capacity for the implementation of the proposed AF. The existing staffing arrangements will continue. The AF will be executed in accordance with the World Bank's Procurement Regulations for IPF Borrowers, dated September 2023, and the provisions stipulated in the Procurement Plan and the Operations Manual. A streamlined Project Procurement Strategy for Development (PPSD) was drafted for

⁵ Specifications are drawing also on experiences of mini-grid companies in Haiti, including during hurricane Matthew. They require, for example, solar arrays to be installed to withstand 100 mph windspeeds and encourages solar arrays that can be disassembled and stored safely within 24-hour notice of an oncoming hurricane.

⁶ The BESS placement will be easier in the case of this Project because of the Project's modular, more granular approach to storage than is usual, such that highly secure placement (and even last-minute relocation if needed) of BESS is much easier than in comparable projects without such a modular approach.



the AF, and the Procurement Plan was submitted to the World Bank. The contract for Jacmel PV/BESS (US\$ 10m) is estimated to account for 50 percent of the total amount of the AF (US\$20m).

E. Environmental and Social

50. The most recent E&S Performance Rating for the parent project is Satisfactory. All sites specific environmental and social instruments have been prepared and reviewed by the Bank. Some sites specific instruments are pending revision and no-objection by the World Bank. On-the-ground implementation of these instruments is pending as field deployment on the ground is pending.

51. The potential environmental risks and impacts are the same as those identified and presented in the original safeguard instruments. These include production of waste (especially batteries) and potential impacts to the land, water, and natural habitats (from the siting of renewable energy generation sites and transmission lines). Mitigation measures include appropriate siting of generation units, distribution/transmission lines, and appropriate disposal/recycling of batteries. Regarding the safe disposal of batteries and other e-waste, Haiti (and the Caribbean, more broadly) has low capacity to manage this adequately. The Environmental and Social Management Framework (ESMF) and any site-specific Environmental and Social Management Plans will outline measures to ensure safe storage and disposal of e-waste, while the AF will also allow for the provision of TA activities to support the GoH to develop a national strategic plan to recycle and/or safely dispose of renewable energy-related e-waste. The Project is not expected to have a negative impact on biodiversity, although the ESMF includes screening criteria for any potential impacts as a precaution. The ESMF also outlines chance-find procedures for physical cultural resources.

52. Regarding OP 4.37, the ESMF includes provisions for small hydro plants that trigger OP 4.37, such as the Drouet mini hydroelectricity plant. The ESMF outlines the necessary steps to be taken if a subproject triggers this policy, including a review by a qualified engineer if the dam is less than 15 m high. Subprojects with dams higher than 15 m are not eligible under the Project.⁷ The Project will not finance pesticides (herbicides or insecticides). As the Project will not finance activities involving the use or potential pollution of the Artibonite River or the Massacre or Artibonite aquifers, considered international waterways by the World Bank, the World Bank's Safeguard Policies (OP/BP 7.50) are not relevant.

53. **Forced labor.** There are allegations of forced labor risks associated with the polysilicon suppliers. The Borrower will require bidders to provide two declarations: a Forced Labor Performance Declaration (which covers past performance), and a Forced Labor Declaration (which covers future commitments to prevent, monitor and report on any forced labor, cascading the requirements to their own sub-contractors and suppliers). In addition, the Borrower will include enhanced language on forced labor in the procurement contracts.

C. Gender

54. Following the parent project, the proposed AF retains the aim to close gender gaps in female employment, women's perception of insecurity and mobility/economic opportunities, as well as in the access of vulnerable population groups to electricity. Mini-grid and off-grid companies will be required and incentivized to increase female jobs within the Project through a series of relevant activities, such as information and communication campaigns; energy training, internship, and mentorship programs; establishing of appropriate human resources policies and hiring processes free of gender biases and such. These activities will affect both the off-grid electricity sector and the rest of the economy, through improved productive uses of energy. The Project will integrate approaches to tackling insecurity and improving safety in public spaces through mini-grid street lighting interventions, resulting in increased mobility and economic opportunities

⁷ Drouet is classified as a small dam under OP4.37 (as it is below 15 meters), thus dam safety measures included in the ESMF apply. These are consistent with measures included in Drouet's ESMP.



for both men and women. A estimated 200 new female jobs within the supply chain of mini grid / off-grid industry and an estimated 800 new female jobs on demand side productive uses will be created. The share of men and women ‘feeling safe to go out after dark/early morning’ will be tracked and any gender gap identified in a baseline survey will be reduced by up to 3 percentage points through project interventions. Finally, the Project will target vulnerable population groups with electricity provision, in particular mono-parental households (that is, households with a single adult and children under 14), who have been identified as the least likely to access electricity. Those households represent about 9 percent of the rural population in Haiti.

D. Climate

55. The activities to be financed under the parent project and AF will result in positive climate impacts, primarily related to mitigation. Just as the parent project, the proposed AF will finance renewable energy technologies and related TA, which will result in displacement of fossil fuels, primarily (a) diesel fuels consumed in EDH and municipal isolated grids, health care facilities, and other larger self-supplied consumers and (b) kerosene, consumed typically by rural households. Results are being (and will be) measured under the parent project and the proposed AF through three climate co-benefit indicators: (a) generation capacity constructed or rehabilitated (under both components), (b) annual electricity output from renewable energy (under both components), and (c) annual greenhouse gas emission reductions (under both components). Similar to the parent project, the proposed AF will support climate adaptation by incorporating climate-resilient design into the renewable energy investments, addressing vulnerability to climate change due to events such as hurricanes.

E. Citizen Engagement

56. The parent project includes two citizen engagement indicators, which will also continue to be applied to the AF, namely (a) users reporting mini-grid or off-grid electricity service provided according to the advertised performance (percentage) and (b) actions are taken in a timely manner in response to beneficiary feedback from phone surveys and household visits (yes/no). The data will continue to be collected through household surveys (by phone primarily and complementary home visits, when needed), and will cover both beneficiaries and non-beneficiaries to track (a) consumers’ satisfaction with electricity services, (b) performance/sustainability over time, (c) emerging impacts (for example, appliances used, income generating activities enabled, and so on), and (d) reasons for not having access for households not served by the Project. The feedback will also provide gender-disaggregated data to assess potential emerging gender issues and impacts.

F. Paris Alignment

57. The activities supported by the AF, including generation of electricity from solar resources, are universally aligned with the Paris Agreement, are consistent with Haiti’s climate commitments and therefore pose no mitigation risks. The Project supports Haiti’s Nationally Determined Contribution commitment to expand renewable energy generation in its generation mix and reduce the emission target by 25.5 percent by 2030 starting 2022.

58. No new adaptation risks for alignment with the Paris Agreement were identified given the AF finances cost-overruns of activities under the parent project. The inherent risks to ground power sector infrastructure including the PV system, BESS, substation, and power lines are cyclone, floods, and earthquakes. These risks will be mitigated during the conception and operation by: (a) choosing site locations less prone to extreme weather events and avoiding flood plains; (b) adhering to national and international standards for construction and operation of power sector infrastructure; (c) designing infrastructure that include reinforced structures, elevated platforms, or flexible components that can absorb shocks; (d) regularly inspecting and maintaining the assets to ensure they remain in good condition and can resist extreme



events; and (e) developing a comprehensive emergency response plan that includes procedures for operation shutdown, evacuation, and rapid repair.

G. Maximizing Financing for Development (MFD) and

59. This project is considered as a maximizing finance for development enabling operation, as it may lead to further investment by private operators in the access segment by removing binding constraints for private operators to sustainably finance renewable energy infrastructure to service populations in rural areas.

H. Private Capital Enabled (PCE)

60. The project is also ‘Private Capital Enabling (PCE)’ and supports private capital enabling policy reforms, specifically several reforms aimed at promoting equal access for and use of renewable energy technologies by women.

V. WORLD BANK GRIEVANCE REDRESS

61. **Grievance redress.** Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the Bank’s Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed to address project-related concerns. Project affected communities and individuals may submit their complaint to the Bank’s independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, because of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the Bank’s Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the Bank’s Accountability Mechanism, please visit <https://accountability.worldbank.org>.

VI. PROPOSED CHANGES

Operation Information	Proposed Changes	Operation Information	Proposed Changes
MFD/PCE	Yes	Loan Closing Date Extension	Yes
Results	Yes	Implementation Schedule	Yes
Disbursements Estimates	Yes	Loan Cancellations	No
Components	Yes	Reallocations	No
Development Objective	No	Financial Management	No
EA Category	No	Procurement	No
Safeguard Policies Triggered	No	Institutional Arrangement	No
Legal Covenants	No	Implementation Modalities	No



Conditions	No		
Implementation Modalities	No		
Disbursements Arrangements	No		
Clients	No		
Beneficiary Countries	No		

VII. DETAILED CHANGE(S)**COMPONENTS**

Last Approved			Proposed	
Component Name	Cost (USD)	Action	Component Name	Cost (USD)
Grid-connected distributed renewable energy	12,900,000.00	Revised	Grid-connected distributed renewable energy	19,400,000.00
Off-grid distributed renewable energy	13,620,000.00	Revised	Off-grid distributed renewable energy	27,120,000.00
TOTAL	26,520,000.00			46,520,000.00

COSTS & FINANCING**Private Capital Facilitation**

Is this an MFD-Enabling Project (MFD-EP)? Yes^{Under revision}

Is this project Private Capital Enabling (PCE)? Yes^{Under revision}

LOANS**Loan Closing**

Loan/Credit/Trust Fund	Status	Original Closing	Revised Closing(s)	Proposed Closing	Proposed Deadline for Withdrawal Applications
IDA-D7300-001	Effective	31-Dec-2024	31-Dec-2024	30-Jun-2026	30-Oct-2026
IDA-E3580-001	Not Effective			30-Jun-2026	30-Oct-2026



TF-A5190-001	Effective	31-Dec-2024	31-Dec-2024	30-Jun-2026	30-Oct-2026
TF-A5191-001	Effective	31-Dec-2024	31-Dec-2024	30-Jun-2026	30-Oct-2026
TF-B3955-001	Effective	31-Mar-2023	31-Dec-2024	31-Dec-2025	30-Apr-2026

DISBURSEMENTS

Operation Dates & Projection Details

Reasons to change the full Disbursement date and/or the projection

Implementation Start Date

25-Oct-2017

Operation Closing Date

31-Dec-2024

Projected Date for Full Disbursement

01-Oct-2026

Expected Disbursements (in US \$) (Absolute)

Year	Original Estimation at Preparation (Approval Package – 28 Aug 2018)	Revised Estimation	Actual
FY2018	0.00	0.00	0.00
FY2019	0.00	495,000.00	495,000.00
FY2020	0.00	0.00	0.00
FY2021	140,000.00	3,112,365.72	3,784,956.65
FY2022	260,000.00	1,518,027.18	2,357,543.25
FY2023	280,000.00	2,587,277.00	3,023,156.95
FY2024	550,000.00	5,547,485.85	4,558,095.92
FY2025	760,000.00	20,697,500.17	244,414.00
FY2026	1,030,000.00	10,562,344.08	0.00
FY2027	1,100,000.00	2,000,000.00	0.00



VII. RESULTS FRAMEWORK AND MONITORING

COUNTRY: Haiti

Haiti: Renewable Energy for All

Project Development Objective(s)

The Project Development Objective is to scale-up renewable energy investments in Haiti in order to expand and improve access to electricity for households, businesses and community services.

PDO Indicators by PDO Outcomes

Baseline	Period 1	Completion Period
Revised Scale-up renewable energy investments in Haiti in order to expand and improve access to electricity		
Revised People provided with new or improved electricity service (Number)		
Oct/2017	Dec/2021	Jun/2026
0.00	150,000.00	330,000.00
Rationale for Change	The target was reduced from 430,000 to 330,000 and the target date was extended to June 30, 2026.	
➤ Revised People served by facilities with new or improved electricity supply in response to COVID-19 (Number)		
0.00	600,000.00	1,000,000.00
Rationale for Change	Extension of closing period	
Revised Women and girls provided with new or improved electricity service (Number)		
Oct/2017	Dec/2021	Jun/2026
0.00	75,000.00	179,000.00
Rationale for Change	The target was revised and closing date extended to June 2026	
Revised Enterprises and community services with new or improved electricity service (Number)		



Oct/2017	Dec/2021	Jun/2026
0.00	1,300.00	300.00
Rationale for Change	The target was revised and closing date extended to June 2026	
➤ Revise of which prioritized healthcare and water facilities in the context of COVID-19 (Number)		
Aug/2020	Dec/2021	Jun/2026
0.00	30.00	30.00
Rationale for Change	The target was revised and closing date extended to June 2026	
Revise Enabling policy and regulatory framework for clean energy and access enacted (Number)		
Oct/2017	Jun/2020	Jun/2026
11.00	22.00	35.00
Rationale for Change	The closing period revised to June 2026	
Revise Private investment and other commercial financing leveraged (Number)		
Oct/2017	Dec/2021	Jun/2026
0.00	12.00	40.00
Rationale for Change	The target was revised and closing date extended to June 2026	

Intermediate Results Indicators by Components

Baseline	Period 1	Completion Period
Revised Grid-connected distributed renewable energy		
Revise Generation capacity of energy constructed or rehabilitated (Component 1) (Megawatt)		
Oct/2017	Dec/2021	Jun/2026
0.00	3.50	5.50
Rationale for Change	Extension of closing date	
Revise Annual electricity output from renewable energy, as a result of SREP interventions (Component 1) (Gigawatt-hour (GWh))		
Oct/2017	Dec/2021	Jun/2026



0.00	5.00	8.80
Rationale for Change	Extending closing date	
Revise Annual greenhouse gas emission reductions (Component 1) (Tones/year)		
Oct/2017	May/2021	Jun/2026
0.00	2,500.00	7,000.00
Rationale for Change	Extending closing date	
Revise People benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 1) (Number)		
Oct/2017	Dec/2021	Jun/2026
0.00	50,000.00	80,000.00
Rationale for Change	Extension of closing period	
Revise Women benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 1) (Number)		
Oct/2017	Dec/2021	Jun/2026
0.00	25,000.00	42,000.00
Rationale for Change	Extension of Closing period	
Revise People served by facilities with new or improved electricity supply in response to COVID-19 (Component 1) (Number)		
Aug/2020	Dec/2021	Jun/2026
0.00	560,000.00	900,000.00
Rationale for Change	Extension of closing date	
Revise Businesses and community services benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 1) (Number)		
Oct/2017	Dec/2021	Jun/2026
0.00	300.00	350.00
➤ Revise of which prioritized healthcare and water facilities in the context of COVID-19 (Component 1) (Number)		
Aug/2020	Dec/2021	Jun/2026
0.00	24.00	24.00



Rationale for Change	Extension of closing date	
Revise Increased public and private investments in targeted subsectors as a result of SREP interventions (Component 1) (Amount(USD))		
Oct/2017	Dec/2021	Jun/2026
0.00	5.00	13.50
Rationale for Change	The target was reduced due to slow activity triggered by security issues in the country	
Revised Off-grid distributed renewable energy		
Revise Generation capacity of energy constructed or rehabilitated (Component 2) (Megawatt)		
Oct/2017	Jun/2021	Jun/2026
0.00	3.00	5.00
Rationale for Change	Target was reduced and the closing date extended to June 2026	
Revise Annual electricity output from renewable energy, as a result of SREP interventions (Component 2) (Gigawatt-hour (GWh))		
Oct/2017	Jun/2021	Jun/2026
0.00	4.50	10.20
Rationale for Change	Target was reduced and the closing date extended to June 2026	
Revise Annual greenhouse gas emission reductions (Component 2) (Tones/year)		
Oct/2017	Dec/2021	Jun/2026
0.00	15,000.00	18,475.00
Rationale for Change	closing date extension	
Revise People, benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 2) (Number)		
Oct/2017	Dec/2021	Jun/2026
0.00	100,000.00	350,000.00
Rationale for Change	Closing date extension	
Revise Women with improved access to electricity and fuels, as a result of SREP interventions (Component 2) (Number)		
Oct/2017	Dec/2021	Jun/2026



0.00	50,000.00	178,000.00
Revise People served by facilities with new or improved electricity supply in response to COVID-19 (Component 2) (Number)		
Aug/2020	Dec/2021	Jun/2026
0.00	40,000.00	100,000.00
Rationale for Change	extension of closing period	
Revise Businesses and community services benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 2) (Number)		
Oct/2017	Dec/2021	Jun/2026
0.00	1,000.00	350.00
➤ Revise of which prioritized healthcare and water facilities in the context of COVID-19 (Component 2) (Number)		
Aug/2020	Dec/2021	Jun/2026
0.00	6.00	6.00
Rationale for Change	Extension of closing date	
Revise Increased public and private investments in targeted subsectors as a result of SREP interventions (Component 2) (Amount(USD))		
Oct/2017	Jun/2021	Jun/2026
0.00	20.00	64
Rationale for Change	Target was reduced and the closing date extended to June 2026	
Revise Enabling framework for mini-grids, including Tripartite Service Agreements in place (Component 2) (Yes/No)		
Oct/2017		Jun/2026
No		Yes
Rationale for Change	Extension of closing period	
Revise People trained in renewable energy (Component 2) (Number)		
Oct/2017	Jun/2021	Jun/2026
0.00	100.00	1,000.00
Revise Female jobs and female-headed (micro-) enterprises created (Component 2) (Number)		
Oct/2017	Dec/2021	Jun/2026
0.00	0.00	250.00



Revise Electricity access gap between mono-parental rural households and other rural households (Component 2) (Percentage)		
Aug/2020		Jun/2026
Baseline to be established based on a survey, to be completed within the first year of implementation after the approval of the AF		Baseline minus 5 pp
Rationale for Change	Extension of closing date	
Revise Gap between the share of men and women not feeling safe to go out after dark (Percentage)		
Aug/2020		Jun/2026
Baseline to be established based on a survey, to be completed within the first year of implementation after the approval of the AF		Baseline minus 3pp
Rationale for Change	Extension of closing date	
Revise Users reporting mini-grid or off-grid electricity service provided according to the advertised performance (Percentage)		
Oct/2017	Dec/2021	Jun/2026
0.00	60.00	80.00
Rationale for Change	Extension closing date	
Revise Actions are taken in a timely manner in response to beneficiary feedback from phone surveys and household visits (Yes/No)		
Oct/2017		Jun/2026
No		Yes
Rationale for Change	Extension of closing date	

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Monitoring & Evaluation Plan:

PDO Indicators by PDO Outcomes

PDO Outcome	Scale-up renewable energy investments in Haiti in order to expand and improve access to electricity
Indicator Name	People provided with new or improved electricity service (Number)
Description	The indicator measures the number of people that have received new or improved electricity service through the Project. This is measured by the number of household connections multiplied by the average household size. This is a CRI .
Frequency	Semi-annual
Data source	Progress report
Methodology for Data Collection	Energy cell calculates based on data from EDH, OGEF and the verification agent
Responsibility for Data Collection	Energy Cell
Indicator Name	People served by facilities with new or improved electricity supply in response to COVID-19 (Number)
Description	The indicator will measure the number of people who will make use of the health facility (in-patient + outpatient) or services (including community visits) and users of water systems, electrified through the Project's COVID-19 response. This includes the prioritized facilities which have received solar PV and battery systems, as well as those that are served by Drouet mini hydro plant and mini grids (Components 1 and 2).
Frequency	Semi-annual
Data source	This information is made available in regular health reports by each facility. Water system users are available from OREPA.
Methodology for Data Collection	Energy Cell, with support from the Ministry of Public Health and Population and OREPA will collect information from each facility.
Responsibility for Data Collection	Energy Cell
Indicator Name	Women and girls provided with new or improved electricity service (Number)



Description	The indicator measures the number of females that have received new or improved electricity service through the Project. This is measured by the number of household connections multiplied by the average household size and average ratio of women in a household. Includes Drouet mini hydro
Frequency	Semi-annual
Data source	Progress reports, based on household connection data, population statistics and surveys
Methodology for Data Collection	Energy Cell calculates, based on data from EDH and population statistics and surveys (reflecting the share of females in the populatoin)
Responsibility for Data Collection	Energy Cell
Indicator Name	Enterprises and community services with new or improved electricity service (Number)
Description	The indicator measures the number of enterprises and community services such as schools, health clinics, government offices, and community centers that have received new or improved electricity service through the Project.
Frequency	Semi-annual
Data source	Energy cell
Methodology for Data Collection	Energy cell calculates based on data from EDH, OGEF and the verification agent, and based on information from field and telephone surveys
Responsibility for Data Collection	Energy Cell
Indicator Name	of which prioritized healthcare and water facilities in the context of COVID-19 (Number)
Description	This sub-indicator measures number of public facilities (health care and water) that have been electrified through the Project to support COVID-19 emergency response. These are typically larger facilities than those otherwise supported under the Project. They includes the prioritized facilities which have received solar PV and battery systems, as well as those that are served by Drouet mini hydro plant and mini grids (Components 1 and 2).
Frequency	Semi-annual
Data source	Energy cell
Methodology for Data Collection	Energy Cell based on completed investments



Responsibility for Data Collection	Energy Cell
Indicator Name	Enabling policy and regulatory framework for clean energy and access enacted (Number)
Description	This indicator reflects Haiti's progress in enacting an enabling framework for clean energy and energy access. It is measured through the composite indicator for energy access, renewable energy and energy efficiency of the Regulatory Indicators for Sustainable Energy (RISE), a report published every two years by the World Bank (rise.esmap.org).
Frequency	Every two years
Data source	the RISE report (rise.esmap.org)
Methodology for Data Collection	The methodology for the index is captured in the RISE report.
Responsibility for Data Collection	World Bank
Indicator Name	Private investment and other commercial financing leveraged (Number)
Description	Private financing leveraged under the Project. This includes additional equity or lending to businesses supported by OGEF/SREP funding, as well as additional contributions to OGEF from financiers other than CTF and SREP.
Frequency	Annual
Data source	Energy Cell, OGEF, supported private sector companies, other development partners
Methodology for Data Collection	Energy Cell gathers information from the above sources and summarizes the total investments
Responsibility for Data Collection	Energy Cell, with support from OGEF



Monitoring & Evaluation Plan:

Intermediate Results Indicators by Components

Results Area	Grid-connected distributed renewable energy
Indicator Name	Generation capacity of energy constructed or rehabilitated (Component 1) (Megawatt)
Description	Installed capacity for power generation calculated in MW under the Project. This is a CRI. It includes capacity of renewable energy, as well as battery capacity installed by the Project
Frequency	Semi-annual
Data source	Progress report
Methodology for Data Collection	Reports from contractors and field supervision, with support from the Energy Cell's technical advisors.
Responsibility for Data Collection	Energy Cell
Indicator Name	Annual electricity output from renewable energy, as a result of SREP interventions (Component 1) (Gigawatt-hour (GWh))
Description	GWh of energy provided through the renewable energy generation investments, supported under Component 2. This is an SREP core indicator, which measures GWh of electricity generation. It is primarily focused on grid connected RE systems. However, it can include mini-grid or off-grid electricity generation as long as data are readily available..
Frequency	annual
Data source	Progres report
Methodology for Data Collection	It will be calculated by the MPTC Energy Cell, with data from EDH, hospitals and water systems, and support from its technical advisors



Responsibility for Data Collection	Energy Cell
Indicator Name	Annual greenhouse gas emission reductions (Component 1) (Tones/year)
Description	Annual greenhouse gas emission reductions (tons/year), based on annual generation from renewable energy investments supported under the project. This is an SREP core indicator.
Frequency	annual
Data source	Energy Cell calculation based on MWh reported and the methodology for calculating corresponding emission reductions.
Methodology for Data Collection	This indicator measures the amount of GHG emission displaced or avoided from the provision of renewable electricity annually, as well as over the CBA lifetime of the project-supported systems. Calculated based on the GWh and using GHG accounting methodology described in the SREP annex of the PAD.
Responsibility for Data Collection	Energy Cell with support from technical advisors
Indicator Name	People benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 1) (Number)
Description	Number of people that have received new or improved service thanks to the added renewable energy generation supported under Component 1. This is a SREP core indicator.
Frequency	Semi-annual
Data source	Report
Methodology for Data Collection	MTPTC Energy Cell calculates based on reports from contractors, EDH and with support from technical advisors
Responsibility for Data Collection	Energy Cell
Indicator Name	Women benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 1) (Number)
Description	Number of females that have received new or improved service thanks to the added renewable energy generation supported under Component 1. This is an SREP core indicator.
Frequency	Semi-annual



Data source	Progress report, population statistics, user surveys
Methodology for Data Collection	MTPTC Energy Cell calculates from the indicator on the number of people that have benefited from improved access to electricity under Component 1, based on the proportion of females in the targeted population.
Responsibility for Data Collection	Energy cell
Indicator Name	People served by facilities with new or improved electricity supply in response to COVID-19 (Component 1) (Number)
Description	The indicator will measure the number of people who will make use of the health facility (in-patient + outpatient) or services (including community visits) and users of water systems, electrified under Component 1. This includes the prioritized facilities which have received solar PV and battery systems, as well as those that are served by Drouet mini hydro plant.
Frequency	Semi-annual
Data source	This information is made available in regular health reports by each facility. Water system users are available from OREPA
Methodology for Data Collection	Energy Cell, with support from the Ministry of Public Health and Population and OREPA will collect information from each facility.
Responsibility for Data Collection	Energy Cell
Indicator Name	Businesses and community services benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 1) (Number)
Description	Number of businesses and community services benefitting from improved access to electricity through renewable energy investments supported under Component 1. This is an SREP core indicator. Community services includes healthcare facilities, water systems, schools, municipal and other government buildings, community centers and other public/community buildings provided with improved service.
Frequency	Semi-annaul
Data source	Report
Methodology for Data Collection	MTPTC Energy Cell calculates based on reports from contractors, EDH and with support from technical advisors.
Responsibility for Data	Energy Cell



Collection	
Indicator Name	of which prioritized healthcare and water facilities in the context of COVID-19 (Component 1) (Number)
Description	Th is sub-indicator measures number of public facilities (health care and water) that have been electrified to support COVID-19 emergency response, under Component 1. These are typically larger facilities than those otherwise supported under the Project. They includes the prioritized facilities which have receive solar PV and battery systems, as well as those that are served by Drouet mini hydro plant.
Frequency	Semi-annual
Data source	Progress report
Methodology for Data Collection	Energy Cell based on completed investments
Responsibility for Data Collection	Energy Cell
Indicator Name	Increased public and private investments in targeted subsectors as a result of SREP interventions (Component 1) (Amount(US\$))
Description	Increased public and private investments for implementation, as well as replication of Component 1 activities that have been mobilized (other than SREP funding), measured in million US\$. This is SREP core indicator that assesses how SREP interventions led to greater investments in renewable energy necessary for large scale replication. It is also a proxy indicator for changes in the enabling environment for investments in renewable energy.
Frequency	Annual
Data source	Progress report
Methodology for Data Collection	Progress report, with inputs from OGEF, supported private sector companies, Government, and development partners.
Responsibility for Data Collection	Energy Cell
Results Area	Off-grid distributed renewable energy
Indicator Name	Generation capacity of energy constructed or rehabilitated (Component 2) (Megawatt)
Description	Installed capacity for power generation calculated in MW under the Project. This is a CRI. It includes capacity of renewable energy, as well as battery capacity installed by the Project.



Frequency	annual
Data source	Progress report
Methodology for Data Collection	Reports from OGEF, verification agent, contractors and field supervision, with support from the Energy Cell's technical advisor
Responsibility for Data Collection	Energy Cell
Indicator Name	Annual electricity output from renewable energy, as a result of SREP interventions (Component 2) (Gigawatt-hour (GWh))
Description	GWh of energy provided through the renewable energy generation investments, supported under Component 2. This is an SREP core indicator, which measures GWh of electricity generation. It is primarily focused on grid connected RE systems. However, it can include mini-grid or off-grid electricity generation as long as data are readily available.
Frequency	Annual
Data source	Progress Report
Methodology for Data Collection	It will be calculated by the MTPTC Energy Cell, with data from OGEF and supported private sector companies, and with support from its Technical Advisors
Responsibility for Data Collection	Energy Cell with support from OGEF
Indicator Name	Annual greenhouse gas emission reductions (Component 2) (Tones/year)
Description	Annual greenhouse gas emission reductions (tons/year), based on annual generation from renewable energy investments supported under the project. This is an SREP core indicator.
Frequency	Annual
Data source	Energy Cell calculation based on MWh reported and the methodology for calculating corresponding emission reductions
Methodology for Data Collection	This indicator measures the amount of GHG emission displaced or avoided from the provision of renewable electricity annually, as well as over the CBA lifetime of the project-supported systems. Calculated based on the GWh and using GHG accounting methodology described in the SREP annex of the PAD.
Responsibility for Data Collection	Energy Cell with support from its Technical Advisors



Indicator Name	People, benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 2) (Number)
Description	The number of people that have received a new or improved service thanks to the added renewable energy generation supported under Component 2. This is an SREP core indicator
Frequency	Semi-annual
Data source	Progress Report
Methodology for Data Collection	MTPTC Energy Cell calculates based on reports from the verification agents technical advisors and OGEF.
Responsibility for Data Collection	Energy Cell
Indicator Name	Women with improved access to electricity and fuels, as a result of SREP interventions (Component 2) (Number)
Description	Number of females benefiting from new or improved access to electricity thanks to renewable energy generation build under Component 2. This is an SREP core indicator
Frequency	Semi-Annual
Data source	Project reports, population statistics and user surveys
Methodology for Data Collection	MTPTC Energy Cell calculates from the indicator on the number of people that have benefited from improved access to electricity under Component 2, based on the proportion of women in the targeted population.
Responsibility for Data Collection	Energy cell
Indicator Name	People served by facilities with new or improved electricity supply in response to COVID-19 (Component 2) (Number)
Description	The indicator will measure the number of people who will make use of the health facility (in-patient + outpatient) or services (including community visits) and users of water systems, electrified under Component 2.
Frequency	Semi-Annual
Data source	This information is made available in regular health reports by each facility. Water system users are available from OREPA.
Methodology for Data	Energy Cell with support from the Ministry of Public Health and Population and OREPA will collect information from each facility.



Collection	
Responsibility for Data Collection	Energy cell
Indicator Name	Businesses and community services benefitting from improved access to electricity and fuels, as a result of SREP interventions (Component 2) (Number)
Description	Number of businesses and community services benefitting from improved access to electricity through renewable energy investments supported under Component 2. This is an SREP core indicator. Community services includes healthcare facilities, water systems, schools, municipal and other government buildings, community centers and other public/community buildings provided with improved service.
Frequency	Semi-annual
Data source	Progress Report
Methodology for Data Collection	MTPTC Energy Cell calculates based on reports from the verification agent, with support from technical advisors, and OGFE
Responsibility for Data Collection	Energy Cell with support of OGF
Indicator Name	of which prioritized healthcare and water facilities in the context of COVID-19 (Component 2) (Number)
Description	This sub-indicator measures number of public facilities (health care and water) that have been electrified to support COVID-19 emergency response, under Component 2. These are typically larger facilities than those otherwise supported under the Project.
Frequency	Semi-annual
Data source	Progress report
Methodology for Data Collection	MTPTC Energy Cell based on completed investment.
Responsibility for Data Collection	Energy Cell
Indicator Name	Increased public and private investments in targeted subsectors as a result of SREP interventions (Component 2) (Amount(US\$))
Description	Increased public and private investments for implementation, as well as replication of Component 2 activities that have been mobilized (other than SREP



	funding), measured in million US\$. This is SREP core indicator that assesses how SREP interventions led to greater investments in renewable energy necessary for large scale replication. It is also a proxy indicator for changes in the enabling environment for investments in renewable energy.
Frequency	Semi-annual
Data source	Progress reports with inputs from OGEF, supported private sector companies, Government and development partners
Methodology for Data Collection	MTPTC Energy Cell compiles information from the sources identified above.
Responsibility for Data Collection	
Indicator Name	Enabling framework for mini-grids, including Tripartite Service Agreements in place (Component 2) (Yes/No)
Description	This indicator assesses whether an enabling framework to scale-up mini-grids, including the Tri-partite Service Agreements to be developed under Component 2, is in place.
Frequency	Sem-annual
Data source	Progress Report
Methodology for Data Collection	MTPTC Energy Cell reporting
Responsibility for Data Collection	Energy Cell
Indicator Name	People trained in renewable energy (Component 2) (Number)
Description	The number of people that have benefitted from renewable energy training (Government officials, university students, entrepreneurs, local technicians and other beneficiaries).
Frequency	Semi-annual
Data source	Energy Cell
Methodology for Data Collection	MTPTC Energy Cell, with support from OGEF. Will include gender disaggregated data



Responsibility for Data Collection	
Indicator Name	Female jobs and female-headed (micro-) enterprises created (Component 2) (Number)
Description	This indicator estimates the number of female jobs and female-headed (micro-) enterprises in the off-grid electricity sector that were created thanks to the Project support. The indicator measures the number of new jobs created and filled by females and/or female headed enterprises created through Component 2 interventions, either on supply-side - within the supply chain of mini grid / off-grid industry (with an estimated 200 new female jobs, corresponding to 33% - up from 29% of the baseline); or on demand-side - productive uses of electricity (with an estimated 800 new female jobs, corresponding to 57% - up from 47% of the baseline).
Frequency	Annual
Data source	Progress report
Methodology for Data Collection	Energy Cell will compile information based on reporting from the supported private sector companies, with inputs from OGEF and the verification agent, and complemented by telephone and field household surveys.
Responsibility for Data Collection	Energy Cell, with inputs from OGEF
Indicator Name	Electricity access gap between mono-parental rural households and other rural households (Component 2) (pp)
Description	The indicator and the targets capture the activities in the context of social inclusion. It measures the differential of electricity access rates between mono-parental rural households and rural households and other rural households. The access gap is measured in percentage points (pp).l
Frequency	Annual
Data source	Household survey
Methodology for Data Collection	The Baseline will be established within the first year and target values will be set accordingly
Responsibility for Data Collection	Energy Cell
Indicator Name	Gap between the share of men and women not feeling safe to go out after dark (pp)
Description	The indicator and the targets capture the activities in the gender context. It measures the differential between the share of men and women that do not



	feel safe to go out after dark. The gap is measured in percentage points (pp).
Frequency	Annual
Data source	Household surveys
Methodology for Data Collection	The Baseline will be established within the first year and target values will be set accordingly. A survey will be carried out at the end of the project to measure the end results
Responsibility for Data Collection	Energy cell
Indicator Name	Users reporting mini-grid or off-grid electricity service provided according to the advertised performance (Percentage)
Description	This is a citizen engagement indicator. This indicator measures a percentage of respondents among the new users of electricity services provided by the Project, based on a survey sample, that report that the electricity service responds to the advertized performance.
Frequency	Annual
Data source	Telephone and field surveys and Energy Cell data
Methodology for Data Collection	Based on the telephone or household survey, based on a sample of households that were electrified under the Project. This indicator measures a percentage of respondents among the new users of electricity services provided by the Project that report that the electricity service responds to the advertized performance.
Responsibility for Data Collection	Energy Cell
Indicator Name	Actions are taken in a timely manner in response to beneficiary feedback from phone surveys and household visits (Yes/No)
Description	This is a citizen engageement indicators which measures whether beneficiary feedback is collected and action taken
Frequency	Annual
Data source	Telephone and field surveys and Energy Cell data
Methodology for Data Collection	The project will carry out annual household surveys (by cell phones and follow up home visits where required), which will cover both beneficiaries and non-beneficiaries. The issues found in the phone/household surveys are communicated to service providers and if relevant to the Advisory Committee and FDI/the Fund Manager, which prepare and execute a plan to address them



Responsibility for Data
Collection

Energy Cell with inputs from OGEF and verification agent



Annex 1: Mini-grids Pipeline with Estimate CAPEX

COUNTRY: Haiti

Additional Financing: Haiti Renewable Energy For All

	Mingrids sites	Number of connections	PV system (kWac)	BESS(kWh)	estimation capex \$USD million
1	Anse à Galets	7,828.00	822.00	2,300.00	7.53
2	Pointe à Raquette	1,069.00	178.00	580.00	1.51
3	La Cahouane	239.00	58.00	119.00	0.60
4	Marfranc	233.00	84.00	130.00	0.85
5	Dame Marie	1,444.00	707.00	1,240.00	4.21
6	Anse d'Hainault	2,228.00	1,186.00	2,014.00	6.63
7	Beaumont	1,019.00	398.00	425.00	2.38
8	Chambellan	511.00	193.00	486.00	1.62
9	Carice	1,587.00	400.00	798.00	1.34
10	Genipailler	1,393.00	436.00	900.00	1.89
	Total	17,551.00	4,462.00	8,992.00	28.55



Annex 2: Summary of Economic Analysis

COUNTRY: Haiti

Additional Financing: Haiti Renewable Energy For All

Social discount rate	0.3%
Economic rate of return	
EIRR, no CO ₂ cost	4.9%
EIRR, low CO ₂ cost	7.0%
EIRR, high CO ₂ cost	8.8%
Costs (US\$, thousands)	NPV
EPC PV system	2,393
Line and substation	1,994
BESS	6,288
O&M costs	1,353
Total costs	12,029
Benefits (US\$, thousands)	NPV
Thermal fuel cost avoided	15,857
CO ₂ emissions avoided, low cost	2,170
CO ₂ emissions avoided, high cost	4,337
Net economic flows (US\$, thousands)	NPV
Net economic flows, no CO ₂ cost	3,828
Net economic flows, low CO ₂ cost	5,998
Net economic flows, high CO ₂ cost	8,165



Annex 3: Implementation Chart (for example, Gantt Chart) of Mini-grid Activities

COUNTRY: Haiti

Additional Financing: Haiti Renewable Energy For All

PHASES	ENTITES RESPONSABLES	ACTIVITES PROJET PHARES	EHEANCIER			Avril 24	mai 24	juin 24	juillet 24	aout 24	sept 24	oct 24	nov 24	dec 24	janv 25	fev 25	mars 25	avril 25	majs 25	juin 25	juil 25
			fait	a faire	Prédécesseurs																
PHASE 1 : ATTRIBUTION DE SITE		lancement PHARES Lot 1 PS	03.sept. 2020																		
		validation rapport d'évaluation (BID)	1er juill 2021																		
		validation rapport d'évaluation (BM)	28 juin 2021																		
		validation rapport d'évaluation (CNMP)	9 aout 2021																		
		Attribution de marché PI Phares lot 1: développeurs approuvés EarthSpark, FRIEM, SKDK	26 aout 2021	1.b ; 1.c ; 1.d																	
		lancement PHARES Lot 2 PS	nov 2020																		
		validation rapport d'évaluation (BID)	18 juillet 2022																		
		validation rapport d'évaluation (BM)	26 juillet 2022																		
		validation rapport d'évaluation (CNMP)	3-Nov-22																		
	Attribution de marché PI Phares lot 2: développeur approuvé ISTEAH	30 avril 2022	1.g ; 1.h ; 1.i																		
PHASE 2 : PRE CONSTRUCTION		début des négociations lot 1 : EarthSpark	7 sept 2021		1.e																
		début des négociations lot 1 : SKDK	8 sept 2021		1.e																
		début des négociations lot 2 : ISTEAH	11 nov 2022		1.g																
		fin des négociations Lot 1 : EarthSpark	12-Sep-23		2.a																
		fin des négociations Lot 1 : SKDK	1 er Juin 2022		2.b																
		fin des négociations Lot 2: ISTEAH	11 juillet 2023		2.c																
		transmission convention de concession pour validation CNMP (Earthspark)	11-Oct-23		2.d																
		transmission convention de concession pour validation CNMP (ISTEAH)	5-Oct-23		2.f																
		transmission convention de concession pour validation BID (EarthSpark/ISTEAH)	27 oct 2023		2.d																
		transmission convention de concession pour validation BM (EarthSpark)	6-Oct-23		2.d																
		Approbation convention de concessions BM/EarthSpark	9-Oct-23		2.j																
		Approbation convention de concessions CNMP/ EarthSpark	30 avril 24		2.g																
		Approbation convention de concessions CNMP/ISTEAH	30 avril 24		2.h																
		Approbation convention de concessions BID (EarthSpark-ISTEAH)	30 avril 24		2.i																
	retransmission convention de concession a la CSCCA (SKDK) *	30 avril 2024																			
	signature de la conventions (EarthSpark, ISTEAH)	30 mai 2024	2.k ; 2.l ; 2.m ; 2.n																		
	Signature accord tripartite (Concession de construction : EarthSpark, ISTEAH)	30 mai 2024	2.k ; 2.l ; 2.m ; 2.n																		
	Transmission convention de concession CSCCA (EarthSpark, ISTEAH)	10 juin 2024	2.n																		
PHASE 3 : CONSTRUCTION		Mise en vigueur accord tripartite /Ordre de service (Concession de construction : SKDK)	15 mai 2024		2.o																
		1er décaissement (20%) SKDK	15 mai 2024		3.a																
		Mise en vigueur accord tripartite/Ordre de service (Concession de construction : EarthSpark, ISTEAH)	15 juin 2024		2.r																
		1er décaissement (20%) EarthSpark, ISTEAH	15 juin 2024		3.c																
		soumission du plan final du projet/Ingénierie détaillée (SKDK)	15 juin 2024		3.a																
		soumission du plan final du projet/Ingénierie détaillée (EarthSpark, ISTEAH)	15 juillet 2024		3.c																
		approbation du plan final du projet/Ingénierie détaillée/début travaux construction (SKDK)	15 juillet 2024		3.e																
		approbation du plan final du projet/Ingénierie détaillée/début travaux construction (EarthSpark, ISTEAH)	15 aout 2024		3.f																
		fin des travaux de construction/mise en service/réception provisoire (SKDK)	15 mai 2025		3.g																
		fin des travaux de construction/mise en service/réception provisoire (EarthSpark, ISTEAH)	15 juin 2025		3.h																
		validation de mise en service (SKDK)	15 juin 2025		3.i																
		validation de mise en service (EarthSpark, ISTEAH)	15 Juillet 2025		3.j																
		Validation CNMP/CSCCA (EarthSpark, ISTEAH, SKDK) **	mai 2025	2.o ; 2.r																	
	Droit d'exploitation ANARSE, si retard dans validation CSCCA(SKDK)	15 juin 2025	3.i																		
	Droit d'exploitation ANARSE, si retard dans validation CSCCA (EarthSpark, ISTEAH)	15 juillet 2025	3.j																		

