



Upscaling Mini-grids for Least Cost and Timely Access to Electricity Services

SREP round table

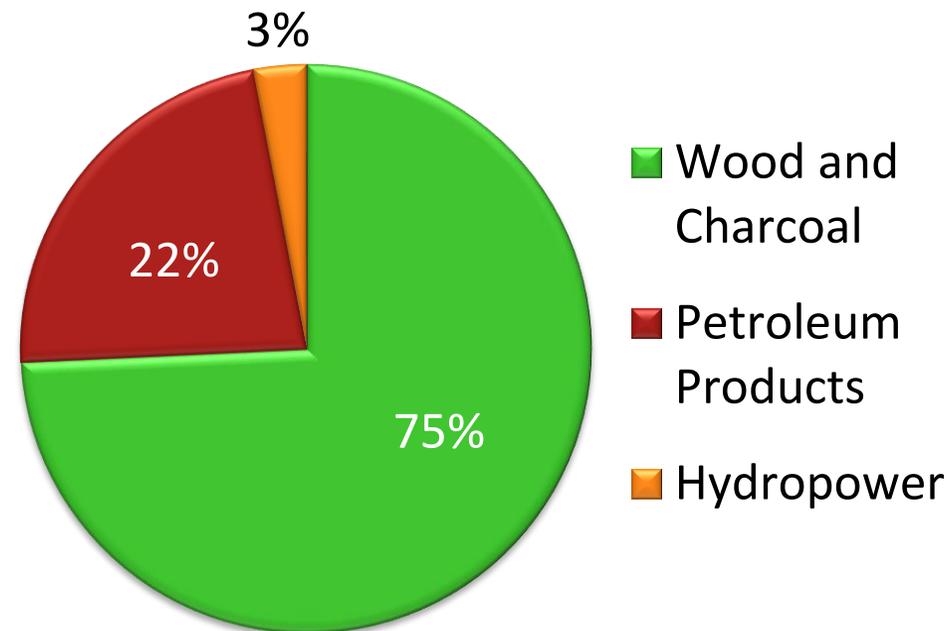
Haiti

Myanmar, Feb 6, 2017



Country background

- Caribbean island country
- Population: 10.9 million
- GDP per capita: US\$ 846 (2014)
- Widening poverty disparities between urban and rural areas
- **Electrification rate of 30% (5% in rural areas)**
- Intensive use of fuelwood and charcoal
- High dependence on fossil fuel-based electricity generation
- Aging and fragile infrastructure
- High technical and commercial losses
- Institutional, legal and regulatory framework limitations
- Economic and financial constraints
- Capacity and information constraints
- 5th Country most vulnerable to climate related disasters / Seismic risk

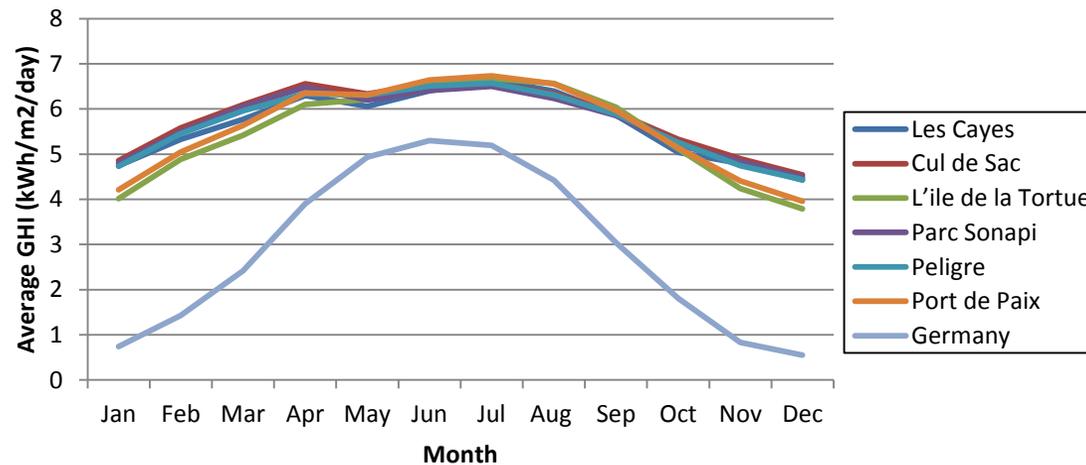
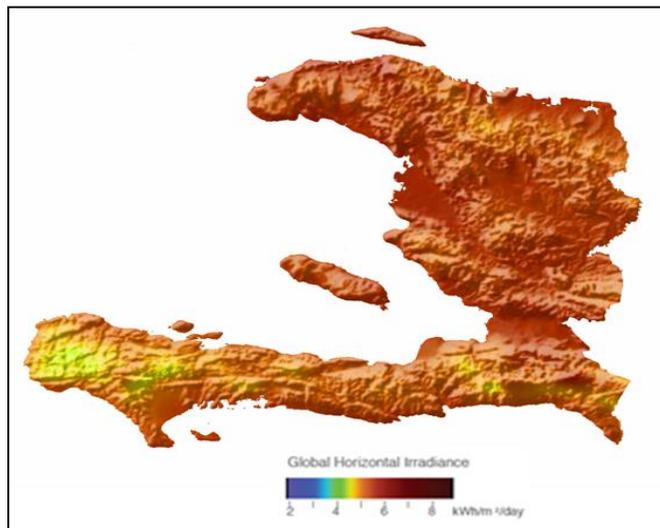
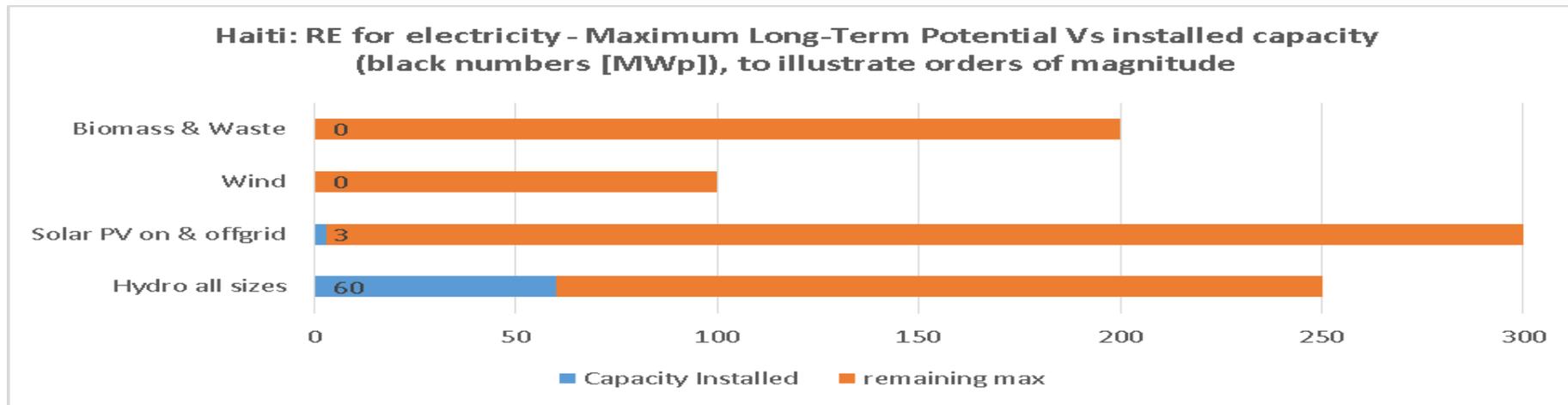




Country background

Energy access is very low

while Haiti has an excellent but largely untapped RE potential (hydro, wind, solar, and biomass)



Source: 3TIER, DWD, WWI



Country background – Mini-grids



Electric Cooperative – Hybrid Mini-grid

- Severely damaged by hurricane Mathew (both generation and grid)
- Before the hurricane:
 - 140 kW PV, 370 kW Diesel
 - Close to 1,000 customers with prepaid meters
 - Operating for 10 months
- Financed by grants from several donors (Norway, USAID, IDB and NRECA)

EarthSpark International Mini-grid

- Grid severely damaged by hurricane Mathew and generation slightly damaged
- Before the hurricane:
 - 93 kW PV, 30 kW Diesel (Mainly run on PV), 450 kWh storage capacity
 - Close to 500 customers with prepaid meters
 - Operating for 10 months
- Financed by grants from donors



Project outline

Project Development Objective

- Expand and improve the electricity services for Haitian households, businesses and institutions.
- Catalyze RE development and build local capacity in RE in order to fill the electricity demand gap reliably and cost-effectively— and to sustainably transform the country's oil-dependent energy mix.

Three components

- i. Grid-connected variable renewable energy
- ii. Off-grid electricity for productive, social, and household uses
- iii. Building an enabling environment, capacities, and skills for renewable energy scale-up

Component 1: Grid-connected variable renewable energy (SREP \$14 million)

- Deliver 10-20 MW of solar energy into the EDH grid on the South
- Bring solar PV for three isolated grids that were damaged by hurricane Mathew, making the infrastructure also more disaster resistance
- Support the country's first grid-connected solar project
- Use SREP financing to facilitate private investments or PPP by primarily reducing the risk exposure of private developers through a guarantee (covering the off-taker risk – payment default or payment delays or both)
- Use the experience to develop a suitable policy and regulatory framework to encourage larger investments (post-SREP scale-up)



Project outline

Component 2: Off-grid electricity for productive, social and household uses (SREP \$6 million)

- To scale up access to modern electricity services
- SREP support will be technology and business model neutral to incentivize private sector innovation
- Build upon current pilot projects
- Areas identified in the SREP investment plan as the most promising areas

Hybridization and expansion of diesel-run isolated grid

PPP for renewable energy mini-grids

Energy for agri-businesses and other rural productive uses

Energy for public institutions and community services

CTF: Establish a flexible Off-grid Electricity Fund (OGEF – \$ 12 million), consisting of equity, debt and grant financing modalities responding to different needs of the off-grid energy enterprises, serving different consumer segments.

Component 3: Building an enabling environment, capacities, and skills for renewable energy scale - up (SREP \$3 million)

- Support to develop an enabling regulatory framework for both on-grid and off-grid renewables, including development of quality assurance framework for PV products
- Capacity building – which will be gender-balanced and focus on three areas:
 - (i) professional education about RE (partnering with universities), e.g. improving curricula and supporting on-the-job training of RE professionals; (ii) vocational training, expanding on existing programs already in place; and (iii) provision of TA to the private sector entities involved in the implementation of the two investment components. .
- Development and implementation of gender-sensitive consumer awareness campaigns.



Status

- Project Concept Note finalized and endorsed (summer 2016)
- Hurricane Matthew (Oct. 4, 2016) highlighted opportunity for using RE in most affected areas, to build back more resilient energy infrastructure
- Project Document (PAD) of each component under preparation and close to be finalized
 - Financial and Economic Analysis
 - Environmental and Social
- (Submission for March 2017) WB Approval planned for end Q2-2017



Issues

- i. Ensure appropriation of the project at high level with upcoming new Haitian Government (March 2017)
- ii. Impact of public utility – and sole off taker - financial situation on project design (Modification in design to mitigate risk)
- iii. Missing or inadequate regulatory framework for grid-connected and off- grid renewables
- iv. Potential technical and financial risks inherent to pioneering projects



Questions on moving forward

- What complementary financing opportunities, for on-grid RE investment under the project and beyond, are available and how to involve them?
- What are approaches and methodologies to quickly build capacity of team who will be in charge of SREP project implementation? And how to scale-up this capacity along with RE market development?
- How to proactively remove barriers to implementation of the SREP project ? Arbitrage to be found between robustness of project design and innovative financial mechanism
- How to ensure constant support from high level decision makers?