UNITED NATIONS FOUNDATION

REQUEST FOR PROPOSALS

OFF-GRID PV SYSTEMS FOR PUBLIC INSTITUTIONS

DELIVERY MODELS FOR SUSTAINABILITY AND SCALE

Date Issued: September 17, 2018
Deadline: October 8, 2018

1 SUMMARY

The UN Foundation is accepting proposals to carry out a study to evaluate different delivery models for deploying off-grid photovoltaic (PV) systems in public institutions (schools and health facilities) in countries with high electricity access deficits. The study will assess the models in terms of their sustainability and scalability and should take the form of a report that can assist government planners and development practitioners in designing sound off-grid electrification projects for rural community institutions.

The study is being commissioned under the auspices of UN Foundation's *Powering Health Care* initiative, which works to bring about the systemic changes needed to scale-up sustainable energy access solutions for improved health service delivery.

2 BACKGROUND

Access to electricity is vital to the provision of social services. In rural schools and health clinics, for example, electric lighting provides public security and allows facilities to remain open in the evenings. Housing facilities with electricity often attract the most qualified staff members. Beyond lighting, electricity is used to power an array of appliances, such as vaccine refrigerators, and other specialized equipment; pump water; and run a host of communication devices - from radios and television sets to computers and videocassette players - linking rural people to information and urban centers.

In developing countries, many rural community education and health facilities lack access to electricity. For example, among 11 African countries assessed by the World Health Organization in 2013, an average of 26% of health facilities did not have any access to electricity.[1] It is estimated that, globally over 291 million children go to primary schools without any electricity, 188 million of who live in sub-Saharan Africa, South Asia and Latin America.[2]

Photovoltaic systems offer the most practical and least-cost way to access electricity for many public facilities in remote areas beyond the reach of the national grid. However, to realize the potential of off-grid PV for social institutions, several challenges need to be addressed. These challenges are exemplified by the many reported cases in developing countries of poor sustainability/longevity of PV installations, many of which become inoperative after 3-5 years. For example, in a 2015 review by the Malawi Renewable Energy Acceleration Programme, 80% of surveyed community facilities' PV systems had failed at least once with 38% having lost all service. Anecdotal evidence

[1] Adair-Rohani H, Zukor K, Bonjour S, Wilburn S, Kuesel A, Hebert R, et al. Limited electricity access in health facilities of sub-Saharan Africa: a systematic review of data on electricity access, sources, and reliability. Global Health Science Practice. 2013;1(2):249-26

[2] https://sustainabledevelopment.un.org/content/documents/17553PB11.pdf

suggested that 50% of PV systems in Malawi were not operational within their first year. These examples are not isolated cases and have contributed to a poor perception of PV technology in many areas.

Experience reveals that one of the key determinants of the sustainability of an off-grid solar PV system is the type of delivery model used to supply and manage the system over the long run. And yet, little knowledge exists about which models are successful and necessary.

3 SCOPE OF WORK

The UN Foundation is seeking the services of a Consultancy to carry out a study to evaluate different delivery models for deploying off-grid photovoltaic (PV) systems as well as hybrid systems (e.g. diesel/solar) in public institutions (schools and health facilities) in countries with high electricity access deficits. The analysis should compare and evaluate the models in terms of their scalability and sustainability, particularly their ability to support the long-term operation and maintenance (O&M) of off-grid solar PV systems. While there are several factors that contribute to the sustainability of off-grid PV systems, the study should focus on the technical[3], organizational[4] and economic[5] pillars of sustainability.

The analysis is intended to help government planners (principally Ministries of Health and Rural Energy Agencies) and their development partners design sound off-grid electrification projects for rural schools and health clinics by helping them evaluate the most effective and appropriate delivery model and financing mechanism for their specific country context. The study is also meant to encourage innovation in the way off-grid PV solutions are delivered to public institutions.

Scope

The study should evaluate:

- Public-led[6], private-led[7] and hybrid delivery models[8] for the provision of…
- Stand-alone solar PV systems (and hybrids) for powering…
- Publicly-owned schools and health centers/clinics in resource-constrained environments in…
- Countries with large energy access deficits (namely those in sub-Saharan Africa and South Asia).

The study should address the following key questions, among others:

[3] For the purposes of this assignment, 'technical sustainability' refers to the quality of the system design and installation as well and the ongoing functionality of the sub-components.

[4] For the purposes of this assignment, 'organizational sustainability' refers to the ability of relevant human and institutional actors to support the energy systems' maintenance over their lifetime. (e.g. degree of ownership, accountability, capacity).

[5] For the purposes of this assignment, 'economic sustainability' refers to the availability of funding/financing to cover capex and the operation and maintenance of the system in the long-run.

[6] For the purposes of this assignment, public-led models refer to those in which governments are channel leaders. Financing is typically obtained through loans from multilateral development banks or grants from foreign development institutions. Variations of this approach may also be structured as multi-party partnerships, where governments enter into agreements with international development agencies or private sector firms to develop off-grid PV projects for social institutions. In both cases, projects are typically executed based on tendering for the procurement and installation of capital equipment.

[7] For the purposes of this assignment, private-led models refer to those in which private sector firms sell their products or services, on a commercial basis, directly to public institutions, or their associated government agency.

[8] For the purposes of this assignment, 'delivery model' is defined as the combination of technology, finance, payment, ownership, and institutional arrangements that go into supplying energy to a group of users.

- What delivery models are currently and commonly being used to deploy, operate and maintain stand-alone systems for public institutions in sub-Saharan Africa and South Asia?
- Who are the main stakeholders involved and what is their role in the delivery model?
- What new models could be developed/used to improve the scalability and sustainability of interventions (addressing human resource and financial resource gaps)?
- What are the key characteristics of each model and how do they contribute to (or hinder) scalability and sustainability (particularly O&M)?
- In what contexts is each model appropriate?
- What may be needed (in the way of policies, finance, capacities, institutions, etc.) to make a model more viable or successful in the long term?

To help contextualize the study and the answers to the above-mentioned questions, the Consultancy shall also:

- Clearly explain, through examples and supporting narrative, the rationale for not including mini-grids within the study's scope of work.
- Examine the conditions under which publicly-owned schools and health centers/clinics may be able to contribute to the cost of O&M, and how they might be incentivized to do so over the long term. This includes examining (i) the levels of spending on inefficient fuels (kerosene, diesel) before installation and potential for savings; and (ii) revenue being generated by public facilities that could be used to contribute to the cost of solar installation and/or ongoing O&M.

These and other contextual discussions/analyzes should be presented in the form of a 'Background' section within the final report.

Approach

The study should draw on both primary research (principally stakeholder interviews and focus groups) and secondary data/information sources.

Case studies should be used to illustrate the strengths, weaknesses and applicability of each delivery model. The Consultancy should identify case studies in consultation with the UN Foundation. Possible case studies include:

- **Chhattisgarh, India - Chhattisgarh Renewable Energy Development Agency**: The Chhattisgarh State Renewable Energy Development Agency (CREDA) and the State Health Department have collaborated to install, operate and maintain solar PV systems in 900 health centres across the State. The program is an example of a public-driven model.
- **Uganda** – **Energy for Rural Transformation (ERT):** ERT is a Government of Uganda and World Bank program, and includes components on health facility electrification and school electrification, the implementation of which is led by the MoHealth and MoEducation, respectively. The program is currently in its third phase, and has already electrified several hundred health facilities and schools in previous phases. It includes 5-year contracts with private sector actors for the procurement, deployment, and maintenance of the solar PV solutions.
- **Kenya – Off-Grid Solar Access Project (KOSAP**): In this project, the World Bank is funding the supply and installation of stand-alone solar systems in 1,097 community facilities while Kenya Power and Lighting Company (KPLC) is taking responsibility for their long-term maintenance. KPLC is covering the cost of maintenance services through revenues collected from the beneficiary facilities. The project also includes a payment risk mechanism.
- **Malawi – Renewable Energy Acceleration Programme (MREAP):** MREAP was a coordinated multi-objective development program funded by the Scottish Government. It commissioned a solar PV

sustainability study in 2015 to provide quantitative evidence in the sustainability challenges facing existing community energy projects in Malawi.

- **Sierra Leone - The Rural Renewable Electrification Project**: Implemented by the United Nations Office for Project Services and grant funded by the UK's Department for International Development, this project is involving the private sector in the operation and maintenance of 54 solar mini-grid systems connected to health facilities through a public-private partnership arrangement.
- **Africa-wide - Facility-based micro-enterprise approach**: Several NGOs working in Africa, such as Innovation: Africa, are using a system whereby health clinics that receive a PV solar system donation simultaneously set up a micro-business at their facility to power mobile phones for the community using a portion of the solar power generated. Earnings from the phone-charging service are banked to pay for replacement of light bulbs, batteries and other parts.
- **Kenya – Philips' Community Life Center (CLC)**: The CLC uses a public-private partnership to deliver holistic primary and community care, including the provision of solar power and energy efficient medical equipment.

In addition to these and other case studies, the study should explore new, emerging models (for which there may not be a real-world case study), especially those involving the mobilization of the private sector for providing energy as a service to public institutions (e.g. **West Africa – World Bank Regional Off-Grid Electrification Project)**. A notional design for these newer and more private-sector-driven models should be proposed and evaluated alongside the case studies. The study should also highlight why these models may not have been tested to date, and include a gap analysis for these models to become more commercial.

Deliverables and Milestones

Once complete, the study should take the form of a professional report to be published by the UN Foundation for public use. The Consultancy will be responsible for ensuring the report is fully drafted, professionally-edited, and visually engaging. The Consultancy should also work with the UN Foundation to incorporate/address feedback from both internal and external peer reviewers. Once complete and approved, the UN Foundation will professionally design and print the report (this is out of scope).

The report will be shared/disseminated at an inter-sectoral energy/health conference that the UN Foundation is organizing in Q2 2019. The report will be subsequently presented at international events in both the energy and the health sector, including the SEforALL Forum and the World Health Assembly.

The selected Consultancy is expected to be under contract and commence work the week of October 29th, 2018, and conclude its work by or before March 1, 2019. The Consultancy should adhere to the following schedule of deliverables:

Deliverable	Week
Inception report, including a detailed methodology/approach	By or before November 7, 2018
Draft report #1 (annotated outline)	By or before January 7, 2019
Draft report #2 (for peer view)	By or before January 21, 2019
Draft report #3 (for peer view)	By or before February 11, 2019
Final report and accompanying Powering Point presentation	By or before March 1, 2019

In addition to the above, the Consultancy will also be expected to provide monthly updates via emails and/or conference calls.

4 BUDGET

This assignment will be carried out through the provision of a lump-sum contract with an expected value in the range of US$ 75,000-90,000.

5 APPLICATION CRITERIA

The UN Foundation is seeking applications from organizations with:

- Demonstrated knowledge of and experience working on electricity access issues, particularly:
  - The design and/or evaluation of off-grid business/delivery models;
  - Those relevant to the health and/or education sectors within developing countries
- Demonstrated experience working with international development institutions and government agencies;
- A presence in sub-Saharan Africa and/or South Asia;
- Strong analytical skills/experience;
- Strong written and oral communications skills; proficiency in written and oral English required;
- Demonstrated experience producing knowledge products;
- Demonstrated experience managing complex projects;
- Demonstrated independence from political or any other type of influence that could jeopardize the objectivity of the study;

6 FORMAT FOR PROPOSALS

Applications must include the following:

- Cover page, including the organization's name, address and contact information
- Your organization's understanding of the assignment, including any proposed changes to the scope of work
- Brief background about your organization
- Relevant experience
- Project plan, including your proposed approach and methodology
- Management plan, including information about key personnel and roles of partners, where applicable.
- Budget (see template below)
- An explanation of any conflicts of interest, if any;
- References (at least 3)

The budget must cover all expenses, and should be itemized according to the following categories:

- Personnel (name / position / daily rate / estimate level of effort - # days)
- Fixed costs

7 APPLICATION PROCESS AND DEADLINES

Applications are due Monday October 8, 2018 by 9am EDT. Applications received after the deadline will not be considered.

All applications should be emailed to Luc Severi, Manager, Energy Access (lseveri@unfoundation.org) with "Application: Delivery Models for Public Institutions" as the subject line.

Any questions should be directed to Luc Severi by no later than September 26th, 2018. Replies will be provided by September 28th.

This Request for Proposals (RFP) does not commit the UN Foundation to select any firm, award any work order, pay any costs incurred in preparing a response, or procure or contract for any services or supplies. The UN Foundation reserves the right to accept or reject any or all submittals received, cancel or modify the RFP in part or in its entirety, or change the RFP guidelines, when it is in the best interests of the UN Foundation to do so.