DRAFT TERMS OF REFERENCE

SHS Installation Verification and Quality Control

[Sindh Solar Energy Project: Component 3]

1 BACKGROUND

Accurate estimates of the electricity access rate in Pakistan presents several hurdles, but it can reliably be said that there are significant access gaps, especially in rural areas. The most recent census, in 2017, indicates that there are over 32 million households in the country, and NEPRA reports just under 23 million household connections[1]—which implies an electricity access rate of just over 70 percent. In Sindh Province, however, the rate is much lower, at 39.6 percent[2]. Efforts to bridge the gap in electricity access have been conducted primarily through grid extension, which is uneconomic in some rural areas because of low population density, high dispersion among rural settlements, and revenue collection issues. Provision of off-grid solutions have relied on small hydropower in the northern provinces of the country, and there have been limited attempts to provide solar home systems (SHSs) in the southern provinces. However, government-provided solar home systems (SHSs) have often suffered from high rates of system failure and abandonment, usually due to a lack of long-term operation and maintenance (O&M) support and limited engagement of the targeted households. In the absence of a decent electricity service, Pakistani households spend an estimated $2.3 billion annually on alternative lighting products/services such as kerosene, gas lights, and battery-powered torches[3].

With a likely access deficit in both the availability and quality of electricity supply, Pakistan has the potential to be a large market for SHSs at a time when commercial provisioning of such systems is starting to take off. [4] However, Pakistan's SHS market is characterized as early-stage, with the only limited adoption of high quality systems and pay-as-you-go technology, despite a potential market size of 22 million households.

Sindh Province is key to increasing the share of renewable energy generation in Pakistan and to developing new ways of providing electricity access. With excellent solar resources, the remoteness of off-grid villages, the inability of many consumers to afford grid connections, and the erratic provision of power argue in favor of expanding the SHS market, with technically and commercially sustainable product solutions.

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[1] NEPRA. 2016. "State of Industry Report 2016." http://www.nepra.org.pk/Publications/State%20of%20Industry%20Reports/NEPRA%20State%20of%20Industry%20Report%202016.pdf.

[2] NEPRA in 2017, reported a total number of domestic connections of 3,400,260 in Sindh. This translates into an electricity access rate of 39.6% for Sindh, with roughly 5,185,350 households without electricity connections.

[3] IFC. 2015. "Pakistan Off-Grid Lighting Consumer Perceptions: Study Overview." http://lightingasia.org/Pakistan/market-intelligence/.

[4] WBG. 2018. "Global Off-Grid Market Trends Report: 2018." Washington, DC. https://www.lightingglobal.org/2018-global-off-grid-solar-market-trends-report/.

Sindh Energy Department (SED, or the "Client") has obtained financing and technical support from the World Bank to expand solar power and increase access to electricity under the Sindh Solar Energy Project (SSEP).[5] Component 3 of SSEP targets the second of these objectives, and includes the target of providing SHSs to 200,000 households within the five year project timeline. Under Component 3 SED will identify target districts with low levels of electricity access and provide partial grants to households to assist them in purchasing a SHS from private sector SHS suppliers. Interested households shall then enter into a voluntary contractual arrangement with qualified SHS suppliers for installation of an SHS system that complies with the product specifications, with the balance (majority) of the cost paid by them either up-front or in installments, according to the pricing and contractual arrangements available from each supplier. The SHS supplier would be responsible for ongoing operations and maintenance according to the warranty and the terms of their contractual obligations to the household.

To support implementation of this component, SED will issue two services contracts covering: i) A consumer awareness and social mobilization campaign; and ii) An installation verification and quality control process. A different firm shall be contracted for each assignment, and the present terms of reference (TOR) refers to the second assignment listed. However, the two contracted firms shall be expected to work closely together, and in partnership with SED as the responsible agency for the project.

Finally, to support the implementation of SSEP, and in particular the targeting of districts (and households within each district), design of the consumer awareness and social mobilization campaign, the appropriate level of the grant to be offered to households, and evaluation of the final outcomes from the project, SED will separately commission two household energy surveys in Sindh Province, at the start and end of SSEP, using the recently established Multi-Tier Framework (MTF) for measuring energy access. The MTF has been developed by the Energy Sector Management Assistance Program (ESMAP) within the World Bank, in consultation with other international agencies and experts, and has already been deployed in 15 countries.[6] The first household energy survey is expected to be completed during the first half of 2020, thereby providing data to inform the scale-up phase of Component 3 activities, including this assignment.

2 OBJECTIVES OF THE ASSIGNMENT:

The objective of the assignment is to design, develop and implement a robust framework for verification and quality control of SHS installations to ensure that:

- Participating households are provided with a high quality electricity service that meets their needs and is sustainably operated and maintained;
- Public funds (in the form of grants to households, paid to SHS suppliers) are efficiently deployed, and the risk of misappropriate and fraud is minimized;
- Private sector SHS suppliers are treated fairly, grant funding is properly monitored for verified installations, and there is a transparent process for dealing with transgressions or other identified issues;

[5] Refer to Project Appraisal Document for further details of SSEP: http://projects.worldbank.org/P159712?lang=en
[6] http://www.worldbank.org/en/topic/energy/publication/energy-access-redefined

- Accurate data is obtained on where SHS are being installed, the demographic profile of households, and the effectiveness of the component, to inform interim and final monitoring and evaluation procedures;
- The SHS component of SSEP is flexibly managed, incorporates continuous learning and experience sharing, and is widely viewed as a success both within and outside of Sindh and Pakistan.

3 SCOPE OF WORK

The contracted firm ("Consultant") shall be responsible for achieving the objectives listed above, and shall act as the independent verification agency and submit recommendations for partial grant payments made to qualified SHS suppliers to PMU. The assignment comprises 11 key activities/deliverables, as follows:

1. SHS supplier qualification, registration and notification;
2. Preparation, publishing, and regular updating of a Grant Implementation Manual;
3. Management of household grant application and award system;
4. Management of an installation verification procedure;
5. Provide information to SED for management of regular payment of grants to SHS suppliers for verified installations;
6. Operation of a web-based platform to track SHS installations and performance;
7. Management of a grievance address system for households;
8. Management of a quality control system including spot checks on installations and SHS products being supported under the scheme;
9. Implementation of a procedure for reprimanding and penalizing non-compliant SHS suppliers, including an appeals process;
10. Preparation of regular Progress Reports, including recommendations to SED on scheme modifications;
11. Preparation of a Mid-Term Evaluation Report, and a Project Completion Report.

The SHS scheme shall be implemented in 10 target districts in Sindh, as follows:

- Badin
- Ghotki
- Jacobabad
- Kashmore
- Khairpur
- Qambar Shahdadkot
- Sajawal
- Sanghar
- Tharparkar
- Umerkot

Initially the scheme will target just 1-2 of these districts in the initial pilot phase. The Consultant shall be expected to provide a comprehensive service covering all districts, with field-based resources focused according to where there is strong demand from households and corresponding activity from SHS suppliers. The targets for SHS uptake are as follows:

Milestone	**Number of SHS deployed**
Jul 2020	10,000
Dec 2020	20,000
Jul 2021	30,000
Dec 2021	30,000
Jul 2022	45,000
Dec 2022	45,000
July 2023	20,000
TOTAL	**200,000**

In the situation where these targets are exceeded then SED may seek additional financing from the World Bank to expand the component and the overall project in terms of number of households and/or number of districts targeted. The firm shall therefore put in place mechanisms and systems that are easily scalable, although any increase in the number of households or districts to be targeted would need to be dealt with through a contract modification, or a new procurement process.

4 ACTIVITIES AND DELIVERABLES

Further details and requirements are provided below on each of the activities/deliverables outlined in Section 3.

4.1 SHS supplier qualification, registration and notification

SED shall issue a public call to SHS suppliers to register with the scheme, with the following selection criteria:

- Certification of being a registered business (with the Securities & Exchange Commission of Pakistan and the Alternative Energy Development Board as an approved solar provider);
- Experience in solar installations;
- Financial capacity;
- Existence of a business plan for provision of SHS under the scheme;
- Evidence of management capacity;
- Details of product composition and quality.

The Consultant shall assess the submission received by the Client, and make a recommendation to SED on which firms qualify for the scheme. Regarding product composition and quality, the Consultant shall assess each supplier's submission against the "Technical Requirements for SHS", provided as Annex X.

Following concurrence by SED, the Consultant shall notify the registered SHS suppliers of their successful registration individually and through publication of the final results. The Consultant shall then make arrangements for periodic registration procedures for inclusion of new suppliers, or suppliers that failed to qualify under previous rounds. These shall take place at least every six months, and more frequently when needed. The Consultant shall also ensure that the details held for each SHS supplier remain up-to-date, and shall implement a streamlined process for re-qualifying each supplier on an annual basis to ensure compliance with the scheme.

4.2 Preparation, publishing, and regular updating of a Grant Implementation Manual

The Consultant shall prepare, public and regularly update a Grant Implementation Manual that shall be published on the Client's website, and shall detail the procedures for implementation of the grant award process and grant disbursement (see 4.5 below), including the procedure for reprimanding and/or penalizing non-compliant SHS suppliers (see 4.9 below). The Manual shall be updated as needed, following the concurrence of the Client, with any updates to the grant amount offered to SHS suppliers implemented with a minimum 60-day notice period. The Consultant shall hold a consultation meeting with all registered SHS suppliers during development of the first version of the Manual to obtain their feedback, followed by further consultation meetings on at least a bi-annual basis. Meetings shall be held in a physical location in Sindh, but with the option to join by telephone or videoconference.

4.3 Management of household grant application and award system

The Consultant shall develop and implement a grant application and award system that allows household members to apply for a grant, which would be linked to their personal identification number (PIN). The grant shall be awarded as an SMS-based e-voucher, triggered by the household member sending a request to a special SMS number and answering a number of follow-up questions via SMS. Each grant shall have a unique ID number, and be irrevocably associated with an address and personal identification number (PIN). Grants for female-headed households, and potentially in certain lower income districts, shall have a higher value, as determined by SED. The household shall provide the grant ID number to their selected SHS supplier, who may then redeem the value from the Consultant upon verified installation of the SHS.

4.4 Management of an installation verification procedure

The Consultant shall design and manage a process for remote verification of each SHS installation by multiple SHS suppliers, for triggering of grant payments. SHS suppliers shall be required to submit evidence of the completed installation, including name, ID, PIN and contact details of the customer, address of household, size of the household, gender of each member of the household, type of system installed, date of commissioning, GPS coordinates of the installation, GPS-tagged photographs of each installation (minimum of four photographs, covering both inside and outside the home), type and length of contract agreed with the customer, total value of the contract, and nearest service location. The Consultant shall verify the information, and contact the customer to get their confirmation that the SHS is installed and working. A second verification process may be required (e.g. SMS sent to the householder to check that the SHS is still functioning properly) if the grant is split to provide a performance-based incentive to the SHS supplier (see below).

4.5 Provide SED Information for management of regular payment of grants to SHS suppliers for verified installations

The Consultant shall be responsible for verification of SHSs and recommend PMU information to make regular grant payments to each qualified supplier, corresponding to the total number of verified installations carried out during the preceding period. Grant amounts may be split into two payments, with the second payment provided after successful verified operation of the SHS after three, six or 12 months, to provide a performance-based incentive. Grants for flagged or disputed SHS installations shall be delayed until the issue is resolved.

4.6 Operation of a web-based platform to track SHS installations and performance

The Consultant shall develop and operate a web-based platform to manage the processes detailed in 4.3, 4.4 and 4.5 above, which shall also allow for real-time tracking of SHS installations and performance. There are currently two envisaged options for development of the web-based platform, as follows:

i) Developed by the Consultant, or a sub-Consultant, under this assignment;

ii) Procured as a service by the Consultant from an existing international company offering this software solution, or something similar.

4.7 Management of a grievance address system for households

The Consultant shall provide a comprehensive grievance address system to allow households to register complaints regarding SHS installations, or any other issue relating to implementation of the scheme. This shall comprise a telephone and SMS-based helpline, and website with chat and email contact options. Households shall first be required to contact their SHS supplier for any issues with their installation, with the grievance address system coming into play when they are unable to get the issue resolved through their supplier. The grievance address system shall be operated in close coordination with items 4.8 and 4.9 below to ensure that systematic issues with one or more supplier are quickly identified and addressed. For more serious cases, or where additional evidence is required, the Consultant shall carry out field visits to households or communities where issues have been raised, and shall meticulously record and catalogue any transgressions. The Consultant shall also be vigilant in monitoring possible cases of gaming or fraud by households or other agents, and take appropriate actions including through local community leaders and the police.

4.8 Management of a quality control system including spot checks on installations and SHS products being supported under the scheme

The Consultant shall implement a quality control system covering the entire scheme, including spot checks on verified installations, and on products being marketed by SHS suppliers under the scheme. This shall include random testing of products in a certified laboratory, and field testing of verified installations to ensure they comply with the product quality and warranty conditions on which each supplier's registration was awarded. The Consultant shall be required to procure the required laboratory services in Sindh. All testing equipment and procedures must conform to international standards, and allow the laboratory services firm to test SHSs and related products/components against the product quality criteria provided. The Consultant shall also put in place a notification system for alerting the Client of any systematic or serious instances of non-compliance or fraud so that these may be quickly

dealt with at the appropriate level. More minor issues can be included as part of the regular Progress Reports under 4.10.

4.9 Implementation of a procedure for reprimanding and penalizing non-compliant SHS suppliers, including an appeals process

The Consultant shall implement a procedure, outlined in the Grant Implementation Manual, for reprimanding and penalizing non-compliant SHS suppliers. The procedure and penalties applied shall be proportionate to the seriousness of the transgression(s) identified, the scale/number of the transgression(s), and whether the issues identified were deliberate/malicious in terms of intent, or accidental/malign. An appeals process shall also be provided, with more serious issues brought to the attention of SED for final decision.

4.10 Preparation of regular Progress Reports, including recommendations to SED on scheme modifications

The Consultant shall prepare quarterly Progress Reports summarizing the status of the scheme in terms of implementation progress, the activities they have carried out, and the status of payments, penalties, and appeals. The report shall include recommendations on potential modifications or improvements to the scheme, including those following feedback by the SHS suppliers, households, or other stakeholders, as well as results from the quality control system and spot checks.

4.11 Preparation of a Mid-Term Evaluation Report, and a Project Completion Report

The Consultant shall prepare a Mid-Term Evaluation Report (currently scheduled for delivery by November 30, 2020, although this may be adjusted) and a Project Completion Report (to be delivered by June 30, 2023). The former provides an evaluation of the first half of the contract, including lessons learned and recommendations for improvements; the latter provides an overview of the activities performed, findings, achievements, lessons learned, recommendations and contract closure.

5 TEAM COMPOSITION & QUALIFICATION REQUIREMENTS

The selected Consultant shall be a firm with a track record of relevant work in Pakistan incorporated for at least past ten years in this business. They should have successfully completed at least two assignments of similar scale and complexity. The firm shall demonstrate the content and implementation strategy of the two assignments, and the result of the assignments.

The selected Consultant shall have excellent expertise in developing monitoring tools and systems and tracking of implementation of similar assignments to the one mentioned in project background. Experience in dealing with technology/products that are comparable to SHSs shall be accorded due weightage.

The Client expects that the selected Consultant shall put its best creative and implementation staff on the assignment. Team composition and qualifications shall reflect key skills needed to undertake each proposed component activity area. The team must have a Team Leader shall be the primary person responsible for the technical work and shall manage the assignment design and implementation process. At least 15% of the project team members hired by the firm/s shall comprise of female and/or disabled staff. The Team Leader shall be the point of contact for staff at PMU. Strong local staff with

fluency in Urdu, Sindhi and other local languages in the target districts in addition to fluency in English is required (the requirement of Sindhi and local languages is for staff handling on-the-ground execution, the essential staff described above needs to be fluent in English and Urdu only, though knowledge of Sindhi or any local language will be an added advantage). Essential staff for the assignment shall include:

1. Team Leader: Technical Staff with at-least 10 years' experience; Master's degree in Business Administration, Project Management, or any other relevant qualification.
2. Grants Specialist: Should have experience in dispersion of grants and implementation of systems, at-least 10 years' experience; Master's degree in Business Administration, Development Studies, or any other relevant qualification.
3. Monitoring & Evaluation Specialist: Should have experience in setting up monitoring and evaluation frameworks; at-least 10 years' experience; Master's degree in Development Studies, Business Administration, Public Administration or any other relevant qualification.
4. Statistician: Should have experience in sampling and surveys, and analysis of data that support monitoring and evaluation frameworks; at-least 10 years' experience; Master's degree in Statistics, Mathematics, or any other relevant qualification.
5. IT Specialist: Should have experience in developing of computerized systems for tracking implementation activities, at-least 10 years' experience; Master's degree in I.T., Computer Science, or any other relevant qualification.
6. Solar PV Engineer: Should have experience in working with small scale Solar Home Systems, and is familiar with IEC standards and technical specifications; at-least 5 years of experience: Master's Degree in Power Engineering or any other relevant qualification.

6 REPORTING REQUIREMENTS AND TIME SCHEDULE FOR DELIVERABLES

The assignment is expected to begin in July 2019 with the roll-out of the project expected in October 2019. The total contract is for a period of forty-five (45) months (ending on July 2023) from the signing of the agreement. Upon award of the contract, a detailed timeline and reporting schedule shall be determined between the Consultant and the Client.

6.1 Deliverables and submission schedule

Deliverables	Submission schedule
1. SHS supplier qualification, registration and notification	3 weeks after the award of the contract
2. Preparation, publishing, and regular updating of a Grant Implementation Manual	Preparation and publishing 3 weeks after the award of the contract. Regular updating for the entire duration of the contract, as needed.
3. Implementation of a grant application and award system for households	6 weeks after the award of the contract
4. Installation verification procedure in place	6 weeks after the award of the contract

5. Regular information to SED on grant payments to be made to SHS suppliers for verified installations	For the entire duration of the contract, once each verified installation is completed, and based on the grant payments schedule as per 4.5.
6. Delivery of a web-based platform to track SHS installations and performance	8 weeks after the award of the contract
7. Delivery of a grievance address system for households	8 weeks after the award of the contract
8. Quality control system including spot checks on installations and SHS products being supported under the scheme	On a regular basis for the entire duration of the contract
9. Design of a procedure for reprimanding and penalizing non-compliant SHS suppliers, including an appeals process	Procedure designed 3 weeks after the award of the contract as part of the Grant Implementation Manual. Implementation for the entire duration of the contract, as needed.
10. Preparation of regular Progress Reports	For the entire duration of the contract, on a quarterly basis
11. Preparation of a Mid-Term Evaluation Report	After twenty-two (22) months
12. Project Completion Report	At the end of the contract, after forty-five (45) months

7 SELECTION METHOD

The Consultant will be selected through Quality & Cost-Based Selection ("**QCBS"**) in accordance with the procedures set out in the World Bank Procurement Regulations for Borrowers, 2016 (revised November 2017 and August 2018).