

TERMS OF REFERENCE

Individual Contractor

Assignment Information

Assignment Title:	Consultancy on Solar Home System guideline development for Cambodia (Residing in Phnom Penh, Cambodia)
Cluster/Project:	Policy and Innovation Unit
Post Level:	Specialist
Contract Type:	Individual Contractor (IC)
Duty Station:	Home-based
Expected Place of Travel:	Phnom Penh, Cambodia
Contract Duration:	20 days from 1 November 2019 to 29 February 2020

1. Project Description

Cambodia is endowed with one of the strongest levels of solar radiation in the world, averaging an estimated 5.8 hours of peak sunlight a day. The abundance of solar resources in the country is an opportunity to meet the rapidly growing electricity demand, which is predicted to increase at an annual average of 15% up to 2030.¹ There has been a widespread recognition of this opportunity, and the Royal Government of Cambodia (RGC) prioritized an uptake in the use of solar energy in the Rectangular Strategy Phase-IV.

Over the last decade or so, the RGC has made remarkable progress on expanding grid electrification, going from 26.8% in 2007 to 71.5% by 2017. However, reliability of access remains a challenge as nearly two thirds of households connected to the grid experience frequent power shortages. Moreover, there are remote communities that are located too far for the grid to ever reach without incurring significant economic losses.

As the price of solar energy continues to fall year-over-year, it continues to become a valuable component in bringing reliable electricity access to the most remote communities in Cambodia. Today, more than half of Cambodia's off-grid households use solar home systems (SHS) as one of their primary sources of electricity.²

Cambodia's off-grid solar market currently exists without a set of guidelines that detail technological, financial, management and regulatory principles which support both consumers and businesses to procure, install, operate, and maintain solar home systems, specifically for the Cambodian context.

Under the project '*Building an Enabling Environment for Sustainable Development in Cambodia*' (BESD), UNDP and Ministry of Mines and Energy (MME) are looking for an international consultant to support the drafting of a guideline for the installation and application of solar home systems for Cambodia's off-grid households and communities.³

2. Scope of Work

Under the project '*Building an Enabling Environment for Sustainable Development in Cambodia*' (BESD), the output of this assignment is to draft a guideline and leaflet⁴ for the installation and application of solar home systems in Cambodia's off-grid households and communities.

¹ Ministry of Mines and Energy, 2017

² World bank 2018

³ The international consultant will closely work together with a national consultant.

⁴ As part of another activity, a video might be produced with simple guidance on how to use a SHS. This is not part of this TOR, however information from the leaflet might be used in the video.

The consultant shall carry out the following tasks:

Task 1: Data gathering, consultations and drafting guideline

- Gather data and lessons learned from past projects in Cambodia, implementation experiences from solar companies selling and installing solar home systems, development partners, NGOs and government agencies (including MME, REF (EdC)) involved in the solar sector⁵;
- Data shall be gathered in various views, including via meetings, workshops, interviews and related documentation. The international consultant shall focus on international lessons learned, while the national consultant shall focus on lessons learned from Cambodia;⁶
- The draft guidelines must include (but not limited to) the following sections:
 - *Equipment*: technical standards for solar home systems⁷;
 - *Community engagement*: best practices for engaging communities prior to installation of solar systems as well as during and after installation. Including best ways to align with user's behavior;
 - *Installation processes*: best practices for installation, including roof structural capacities (to support load of modules and racking)
 - *Durability and system quality*: including minimum specifications
 - *Procedural/legal*: includes procedural or legislative practices Cambodia should include in the guidelines (For example, should it be required that solar companies & EPCs must become certified to sell or install solar equipment?)
 - *Operation and Maintenance*: best practices on how to operate and maintain each listed solar technology
- The draft guideline shall be submitted to UNDP and MME for review and comments.
- The guideline shall be written in easy-to-understand simple English.

Task 2: Validation process and finalisation of guideline and leaflet

- After incorporation of feedback from UNDP and MME, the consultant shall organise the first validation workshop, inviting relevant stakeholder to discuss and provide inputs to further improve the guideline;⁸
- Besides the guideline, the consultants shall prepare a leaflet explaining how to use a SHS for villagers in rural areas. The leaflet shall contain infographics and clear explanations in very simple language on how to use correctly and maintain the systems. The draft leaflet shall also be shared during the first validation workshop for feedback;
- After incorporating the feedback received from the workshop as well as written comments afterwards, the consultant shall organise a second validation workshop.
- After incorporating the feedback from this workshop, the consultants shall finalise the guideline and conduct a final quality control check on language use, formatting, sources and data;
- The final English version of the guideline as well as English leaflet shall be submitted to UNDP and MME for review and to make sure that all comments are addressed sufficiently.

3. Expected Outputs and Deliverables

No	Deliverables/Outputs	Target Due Dates	Review and Approvals Required
----	----------------------	------------------	-------------------------------

⁵ For instance, experienced from and work done under the Good Solar Initiative shall be included.

⁶ On-site visits in rural areas are not foreseen under this assignment

⁷ It shall include all related equipment, including batteries, mounting structure, (if relevant), etc. SHS with a panel capacity between 10 Wp and 200 Wp shall be considered (consultant to propose revised capacity thresholds as appropriate for Cambodia).

⁸ Cost of venue and catering for the 2 validation workshops will be paid by UNDP and thus don't have to be included in the quotation.

1.	Workplan Deliverable 1: Workplan	2 weeks after contract signed	Technical Advisor on Energy
2.	Task 1: Data gathering, consultations and drafting guideline Deliverable 2: Draft guideline	6 weeks after contract signed	Technical Advisor on Energy
3.	Task 2: Validation process and finalisation of guideline Deliverable 3: Final guideline and leaflet in English	12 weeks after contract signed	Technical Advisor on Energy

4. Institutional Arrangement

The international consultant shall work together with the national consultant and both be responsible for preparing the SHS guideline. The international consultant shall focus on bringing in the international experiences, while the national consultant shall focus on experiences from Cambodia, as well as the translation into Khmer.

The assignment will be performed under the supervision of the Technical Advisor on Energy, UNDP Cambodia, in close cooperation with Ministry of Mines and Energy (MME, GDE).

5. Duration of the Work

The assignment is expected to be performed within 20 days (from 1 November 2019 to 29 February 2020).

6. Duty Station

The duty station of this assignment is home based (international consultant to reside in **Phnom Penh**, Cambodia).

Selected individual contract(s) to undertake the assignment in the country (Cambodia) is required to undertake the *BSAFE Training* through: <https://training.dss.un.org/course/category/6> prior to travelling. CD ROMs must be made available for use in environments where access to technology poses a challenge.¹

7. Minimum Qualifications of the Individual Contractor – International Consultant

Education:	<ul style="list-style-type: none"> Master of Electrical Science, (renewable energy or environmental) engineering or related field.
Experience:	<ul style="list-style-type: none"> At least 7 years of international experience on renewable energy systems, especially related to off-grid systems including SHS Familiar on energy access issues in Cambodia Experience liaising with government representatives, private sector companies and developmental partners in Cambodia Experience working with/for development partners, such as UN agencies, an asset
Competencies:	<ul style="list-style-type: none"> Strong analytical skills and exceptional ability in communication and networking, negotiations and writing. Flexibility and ability to operate in different cultural settings and with a variety of stakeholders; culturally and gender sensitive. Proven ability to professionally write on energy topics in English

Language Requirement:	<ul style="list-style-type: none"> Fluency in English is required. Ability to understand/speak basic Khmer would be an asset.
------------------------------	--

8. Criteria for Evaluation of Level of Technical Compliance of Individual Contractor – International consultant

Technical Evaluation Criteria	Obtainable Score
Master of Electrical Science, (renewable energy or environmental) engineering or related field.	20
At least 7 years of international experience on renewable energy systems, especially related to off-grid systems including SHS	20
Familiar on energy access issues in Cambodia	20
Experience liaising with government representatives, private sector companies and developmental partners in Cambodia (understanding/speaking basic Khmer would be an asset)	20
Proven ability to professionally write on energy topics in English	20
Total Obtainable Score:	100

Payment Milestones

The consultant will be paid on a lump sum basis under the following installments. The consultant will be responsible for the local travel expense, including travel to rural areas.

No	Outputs/Deliveries	Payment Schedule	Payment Amount
1.	Workplan Deliverable 1: Workplan	2 weeks after contract signed	10%
2.	Task 1: Information gathering, consultations and drafting guideline Deliverable 2: Draft guideline	<i>6 weeks after contract signed</i>	45%
3.	Task 2: Validation process and finalisation of guideline Deliverable 3: Final guideline in English	12 weeks after <i>contract signed</i>	45%

Approval

Signature:

Name: Technical Advisor on Energy

Title/Unit/Cluster: Policy and Innovations Unit

Date:

ⁱ POPP: <https://intranet.undp.org/global/popp/cap/Pages/administration-of-travel-of-ic.aspx>