

TERMS OF REFERENCE

IC-072/15

Short Term Project Engineer (Solar)

Date: 23 June, 2015

Type of Consultancy: Short term Project Engineer (Solar)

Duty Station: Baghdad, Iraq

Period of assignment/services: 6 months

Estimated Starting Date: 15th July 2015

1. Background

UNDP the Energy, Environment and Climate Change sub-cluster (EECC) have initiated a Project, **'Catalyzing Use of Solar Photovoltaic Energy'**, funded by the Global Environmental Facility (GEF). It is envisaged to recruit a national consultant for conducting the monitoring of the existing PV applications to identify capacity needs and assessment of suitable solar PV technologies and building the foundation of investment environment in solar photovoltaic technologies in Iraq.

2. Objective

The UNDP/GEF project is designed to address institutional and technical barriers to catalyse the development of solar power in Iraq and will advance the work done to date in Iraq with regard to solar power technologies and related baseline initiatives.

It will facilitate the most practical and affordable range of solar power options that can meet the operational conditions in Iraq through addressing the most critical electricity demands, conducting the comparative technology assessments, creating the required policy and regulatory environment to catalyze the adoption of solar energy. It also includes support of the procurement and assembly of parts (or complete units), and promotion of the PV installations and monitoring of further effectiveness.

The project will act at two distinct scales, in support of (i) small-scale PV that can operate both on- and off-grid, providing particular technical and investment support to the innovative, first-of-its-kind 5 MW (in aggregate) Bytti development in Najaf; and (ii) utility-scale PV plants for grid supply, providing particular support to Ministry of Electricity in development of the solar plant projects.

Overall objective of Project "Catalyzing Use of Solar Photovoltaic Energy" assists Iraq in the reduction of GHG emissions through demonstrating the application of solar power to meet the energy needs of offices, small businesses, residences and town services.

3 .Scope of Work

Under the direct supervision of the Project Manager, the Project Engineer (Solar) will be required to coordinate with the national and international consultants, the project partners and will provide technical support in producing a set of deliverables as mentioned below:

- A- Complete the technical analysis to support the evaluation of crystalline (mono and poly), thin-film technology PV modules, suitable inverters, required grid connection equipment and calculation of the most suitable performance ratios for each for small PV systems taking into consideration grid disturbance in absence of a grid code and reliable grid.
- B-
 - 1. Design of local mounting structures, security measures and cleaning procedures to avoid dust-related performance reduction procedures,
 - 2. Design of electrical connections to integrate with home electrical systems and the grid, to form a mini-grid for the Bytti project, which can help support the Bytti project during power outages and
 - 3. Undertake technical training on inverters, isolators and compliance with the grid code (developed with the assistance of the project) for appropriate operation and management of the rooftop PV systems and mini-grid.

In addition to above tasks, the Short term Project Engineer (Solar) is required to assist the project manager and/or the national consultant in organizing field events during the period of the contract.

| Key outputs | Deliverables |
|---|--|
| A. Data collection and technical analysis in support of evaluation of equipment of solar system | <ul style="list-style-type: none">- Technical report on data collection and analysis- Final Evaluation report |
| B1. Solar System and infrastructure designed and installed for Solar PV system and effective maintenance | <ul style="list-style-type: none">- Engineering design of solar PV system and necessary component- Field monitoring report- Installation completion report |
| B2. Technical design completed Grid connectivity of solar PV system | <ul style="list-style-type: none">- Engineering design on Solar PV |
| B3. Successfully completed grid connection of bitty solar PV | <ul style="list-style-type: none">- Report on success grid connection of solar PV |
| B3. Training materials developed for effective O&M of Solar PV systems under the project | <ul style="list-style-type: none">- Training report |
| C Support to the Project Manager, International and national consultant on any technical/engineering matters under the project. | <ul style="list-style-type: none">- Technical reports |

5. Time and Method of payment

Payment will be made on monthly basis based on satisfactory accomplishment of the tasks/deliverables as per agreed work plan. On signing the contract, the short term Project Engineer (Solar) will prepare and submit a detailed work plan in consultation with the Project Manager.

6. Contract and Reporting

The Project Engineer (Solar) shall report directly to Programme Manager, EECC (Environment, Energy and Climate Change).

7. Travel Plan

The Project Engineer (Solar) will be based in Baghdad. However, in undertaking this consultancy, the Project Engineer needs to travel to the field sites in Najaf and elsewhere, particularly Baghdad, Basra, Erbil and Sulaimanya.

| Location | No. of trips | No. of days |
|------------------------------|--------------|-------------|
| Najaf/Erbil/Basra/Sulaimanya | 10 | 30 |

8. Qualifications of the Consultant:

- College degree in Engineering, Science, or a related field; M.SC. Degree or Ph.D. Degree is preferable.

9. Work Experience:

- University degree and at least 7 years of professional experience or graduate university degree with 5 years in engineering or science.
- Familiarity with the key characteristics of implementing solar PV installations, including grid-connected, off-grid, and hybrid installations with and without battery storage;
- Demonstrated experience and success in the engagement of, and working with, the private sector;
- Good analytical and problem-solving skills and the related ability to adaptively manage with prompt action on the conclusions and recommendations coming out of the project's regular monitoring and self-assessment activities;
- Ability and demonstrated success to work in a team, to effectively organize it, and to motivate its members to effectively work towards the project's objective and expected outcomes;
- Proven experience of working in solar PV initiatives in Iraq

10. Language

- Fluency in English and Arabic, highly developed communication and advocacy skills, including the ability to write concisely and clearly in English

11. Computer Skills:

- Familiarity with the MS Office suite of applications, particularly MS Word, Excel and PowerPoint.

