Requisition Number:

National or International consultant: International Consultant

Description of the assignment (Title of consultancy): International Consultancy to provide the necessary technical support for the effective design, implementation, and validation of concentrated solar thermal project

Project Title: Country Entrepreneurship for Distributed Renewables Opportunities (CEDRO 5) - 00118152

Period of assignment/services: 18 months

Is this a LTA (yes/no): Yes

Terms of Reference

1. Background / Project Description

The United Nations Development Programme, in support of the Ministry of Energy and Water, has initiated the implementation of the CEDRO 5 project, co-funded by the European Union. The CEDRO 5 project is implemented in partnership with the Association of Lebanese Industrialists (ALI), The Lebanon Green Building Council (LGBC), and the International Renewable Energy Credits (I-REC) Institution.

The European Commission (EC) is encouraging innovation and entrepreneurship in Lebanon to support a clean energy transition. The overall aim of the EC is to address job creation and growth in support of Lebanon’s economy, in line with the priority sector of the Single Support Framework for EU Support to Lebanon (2017-2020), while supporting Climate Change Mitigation in Lebanon. The specific objective is to promote innovation, entrepreneurship, and job creation in support of Lebanon’s clean energy transition and Nationally Determined Contributions (NDCs) for the energy sector. The EC proposes the gradual shift towards a clean energy transition (gradual phasing out from fossil fuels by switching to renewable energy sources) and circular economy principles, paving the way for (1) tapping into the potential for green jobs and growth (in particular in the energy sector), (2) alleviating financial and economic burden of the current energy system on the various sectors and sub-sectors of Lebanon, (3) facilitating access to financing, and (4) improving the linkages amongst green entrepreneurship, small-and-medium sized enterprises (SMEs), industries and research/technology centers.

The CEDRO 5 project aims to achieve the above outlined objectives through enhancing innovation, entrepreneurship, and research, assisting in technology transfer and the creation of new value chains in the renewable energy and energy efficiency sector, supporting and initiating enabling policy, training and capacity building, and targeting effective awareness initiatives on renewable energy (RE) and energy efficiency (EE).

2. Scope of work, responsibilities and description of the proposed analytical work
The UNDP is seeking a long-term agreement (LTA) with a concentrated solar thermal Consultant (referred to as "Consultant" in the ToR) to provide the necessary technical support for the effective design, implementation, and validation of concentrated solar thermal project for the UNDP CEDRO 5 project.

The consultant will be tasked with the complete design, specification identification, procurement support, and monitoring of implementation for concentrated solar thermal systems for defined facilities as selected by UNDP CEDRO Project Manager.

3. Expected Outputs and deliverables

The objective of the international consultant is to provide the necessary technical support for the effective design, technical specifications drafting, monitoring of implementation of concentrated solar thermal activities, and technology transfer. The Consultant will prepare the full technical part of the tender documents for required sites for selected projects, including the full bill of quantifies (BOQ), technical specifications with respective diagrams required, and also assist the UNDP in the evaluation of the tender submissions in addition to supervision of installation of the equipment, and providing guidance in operation and maintenance.

The deliverables are to be submitted in stages of draft and final. Each deliverable is to be submitted in the form of a soft copy to the CEDRO Project Manager. The time needed by the Project Management for the review of each submitted deliverable is 5 working days. The Required Tasks under the terms of reference are:

**Task 1: Support in the design, technical specifications drafting concentrated solar thermal projects in various commercial and/or industrial facilities across the Lebanese Territory;**

*Up to 17 working days including 1 trip of 5 working days to Lebanon per site*

The consultant will be required to develop the **full technical specifications** for concentrated solar thermal plants identified by the UNDP CEDRO 5 team.

In order to develop the full technical specifications, the international consultant will be required to undertake the following:

1.1 Prepare the necessary concentrated solar thermal technical specifications and tender documents for the procurement of goods and services for all proposed works. The Tender documents and technical specifications will include: design and engineering specifications (complete with sizing notes); equipment specifications; installation requirements; testing and commissioning procedures; monitoring and verification methods; warranty arrangements, evaluation criteria, etc. for complete concentrated solar thermal systems;

1.2 Assist in replying to queries by prospective contractual bidders, and in the review and evaluation of the received bids/offers including the preparation of bid evaluation reports in line with UNDP requirements;

1.3 Assist in the establishment of general work procedures for contractors, including supply schedules, goods inspection and certification, quality control and assurance procedures and measures, receipt of goods procedures and arrangements, standard site work formats, etc.

Bidding documents will include the technical specifications for the identified concentrated solar thermal solution.
Task 2: Support in the supervision (monitoring of implementation) of end-use concentrated solar thermal projects in various commercial and/or industrial facilities across the Lebanese Territory;

Up to 25 working days including 2 trips of 15 working days (10 days for trip 1 and 5 days for trip 2) to Lebanon per site

The international consultant will be required to undertake the following:

2.1 Develop checklists for the following: site supervision; operation and maintenance (O&M) (taking into consideration suppliers' recommendations); performance monitoring, and data collection and evaluation – for each site;
2.2 Support the review of certificates of works, and provide advice to address problems that may arise during the execution of works; as well as advice on handover arrangements and spare parts arrangements;
2.3 Undertake selected and targeted site supervision and performance testing;
2.4 Follow-up with the UNDP team to support in the supervision of pilot sites and troubleshoot technical issues that may arise during implementation and/or operation;
2.5 Assist in capacity building on the operation and maintenance of concentrated solar thermal solutions for the facility teams of the selected sites (through guiding winning contractors that will be responsible for O&M training for the facilities respective staff)
2.6 Prepare commissioning report for all completed sites

Task 3: Support the process of technology transfer for the implemented concentrated solar thermal applications for Lebanon

Up to 16 working days including 1 trip of 5 working days to Lebanon

The process of technology transfer of the concentrated solar thermal technology will be achieved through two main tasks where the international consultant has to develop and deliver a capacity building program based on the concentrated solar thermal technology types. More specifically:

3.1 Technology Transfer Activities

The international consultant is to develop and deliver one technical workshop detailing the concentrated solar thermal technology deployed by the projects. The target audience will include: engineering professionals in the field, facility managers and engineers, and final year engineering students. The CEDRO 5 team will be in charge of organizing and covering the financial costs of the local logistics related to the capacity building workshop. The workshop will focus on the following:

- Introduction to the technology (general);
- State of the technology (from a technical / financial feasibility perspective);
- Design process (data collection, needs identification, sizing / process identification, developing specifications, implementation guidelines, testing and commissioning, operation and maintenance);
- Implementation procedures and case study examples;
- Questions and answers.
3.2 Guideline Report

The international consultant is to prepare a Guideline Report for the Lebanese context on applicable concentrated solar thermal technology types (linear Fresnel and parabolic trough for industrial use). The report will feature the following sections:

- Procedures for sizing and design;
- Recommended specifications for system components;
- Installation best-practices;
- Operation and maintenance standards and procedures, and;
- Financial appraisal of the systems.

The report shall be prepared in English and must be proof-read by English-writing editors for publication objectives. An executive summary is required.

4. Institutional arrangements

Under the framework of the present consultancy, the consultant will be supported by the CEDRO 5 team. The selected consultant will be working under the direct supervision of the UNDP / Energy and Environment Programme and in coordination with the CEDRO 5 team.

The work will be done partially remotely with the support of CEDRO 5 team from Lebanon, and there will be:

- 1 trip of 5 working days to Lebanon for task 1 per site
- 2 trips of 15 working days total (10 days for trip 1 and 5 days for trip 2) to Lebanon for task 2 per site
- 1 trip of 5 working days to Lebanon for task 3

In addition to that, CEDRO 5 team will be in charge of organizing and covering the financial costs of the local logistics related to the capacity building workshop.

5. Duration of work

The contract will be valid on an LTA basis for 18 months with a maximum of 100 working days for tasks 1, 2, and 3.

The time required for deliverable review is 5-working days. Work is expected to start immediate after Contract signature.

The approval of the submitted deliverables will be based on clearance and review of the CEDRO 5 project manager.

Payment will be issued upon satisfactory completion of the required outputs.

The awarded consultant has to comply with the terms of reference of this consultancy service, and to have all deliverables submitted and approved before/by the last working day of the consultancy period. Extensions, if deemed necessary, can only be granted through mutual agreement between the parties.
6. Duty station

This is a home-based assignment; the work will be done remotely with the support of CEDRO 5 team from Lebanon through site visits.

Site visits are expected over the course of the consultancy depending on the number of sites and tasks requested.

7. Requirements for experience and qualifications

7.1 Academic Qualifications

a. Bachelor’s degree in mechanical engineering, electrical engineering, renewable energy, or related field (required)
b. Masters’ degree in mechanical engineering or related field with focus on renewable energy (is a plus)

*Copy of degrees / certifications must be submitted for full evaluation grading.*

7.2 Years of experience:

- At least 5 years’ expertise in conducting feasibility studies and detail design of concentrated solar thermal systems technical experience
- Overall relevant experience in concentrated solar thermal sector of not less than 5 years - The bidder should submit proof of completed assignment.
- Experience in preparation of tender document and elaboration of technical specifications
- Experience in working with UNDP or other local or international non-governmental organizations on concentrated solar thermal design and/or implementation
- Experience in software related to solar thermal design

*List of completed projects (to be accounted for in the experience) should be provided listing: project name, nature of work completed, year of completion, description of type of facility. Failure to submit the here mentioned information, the criterion will not be considered.*

7.3 Competencies

- Ability to work with tight deadlines amending based on the CEDRO team’s feedbacks.
- Strong analytical and report-writing skills
- Excellent interpersonal and communication skills
- Commitment to team and cross-disciplinary work
- Emphasis on delivery of results and reacts well to constructive criticism
- Proficiency in English

8. Scope of Price Proposal and Schedule of Payments

Payment will be made against each requested and completed task and upon submission of certificate of payment based on working-days and submissions (tasks/deliverable, and payment request) shall be approved by the Project Manager.
Each task shall be priced separately where tasks 1 and 2 are done per site, and task 3 is done once for the contract:

- **Task 1**: up to 17 working days including 1 trip of 5 working days to Lebanon per site
- **Task 2**: up to 25 working days including 2 trips of 15 working days (10 days for trip 1 and 5 days for trip 2) to Lebanon per site
- **Task 3**: up to 16 working days including 1 trip of 5 working days to Lebanon (done once for the project)

The financial offer shall include 100 working days out of which 45 days in Lebanon with estimated 8 trips to Lebanon. The payment of each deliverable will include actual associated travel cost up to the ceiling indicated in the financial offer.