## **Terms of Reference**

National or International consultant: National Description of the assignment (Title of consultancy): Solar Water Heaters Design Engineer

Project Title: Sustainable Energy for Security Period of assignment/services: 25 Working days

## 1. Background / Project Description

The <u>2003 European Security Strategy</u> and the 2005 European Consensus on Development acknowledge that "there cannot be sustainable development without peace and security, and that without development and poverty eradication there will be no sustainable peace". Furthermore, the Lisbon Treaty indicated that its objective is "to preserve peace, prevent conflicts and strengthen international security, in accordance with the purposes and principles of the United Nations Charter". The <u>Council of the European Union conclusions of 2007 on security and development</u> state that "conflict prevention should be pursued as a priority goal in particular by fostering and strengthening development cooperation".

The European Neighborhood Policy EU – Lebanon Action plan sets out the cooperation guidelines between the EU member states and Lebanon on various levels, of which is "the field of Justice, Freedom and Security". The latter expands the sub-activities for co-operation, mainly "border management". In addition, the program aims at making multilateral institutions and conventions more effective, so as to reinforce global governance; strengthen coordination in combating security threats and address related development issues.

The European Union funded, UNDP implemented, 'Renewable Energy for the Lebanese Armed Forces' project focuses on strengthening the security and well-being of the Lebanese Armed Forces (LAF), specifically the LAF stationed in the North-Eastern border region of Lebanon. The aim of the project is the provision of sustainable energy solutions that, first and foremost, increase the LAF's energy autonomy in the region and enhance the general energy services that achieve a higher ability to observe and carry out the respective security-based operations. These actions build, secondly, on the Lebanese Armed Forces Sustainable Energy Strategy of 2017 (EU-UNDP CEDRO 4, 2017), endorsed by the Ministry of Defense and the LAF.

#### 2. Scope of work, responsibilities and description of the proposed analytical work

The objective of this call for a national consultant is to provide a general design for standard 700 L, 1,200 L and 15,000L Solar Water Heater (SWH) systems. These systems will be installed as follows:

- Sixteen (16) 700 liter SWH systems (each) installed in 16 typical platoon outposts;
- Six (6) 1,200 liter SWH systems (each) installed in 6 company commands
- One (1) 15,000 liter SHW system installed in 1 regiment base

Annex 1 provides a brief description of these facilities located across the Lebanese North – Eastern border.

The consultancy will include the following tasks:

# Task 1: Data collection of the existing systems in the army facilities and parameters for the preliminary design

The consultant will develop a survey document with the required information per facility for the data collection process pertaining to the water plumbing system and the existing / foreseen water heating arrangements.

The consultant will conduct a 2-day site visit with teams from the UNDP and the LAF during which data will be collected along with the teams from at least 1 facility per type (1 platoon outpost, 1 company command and the single base). The LAF team will be in charge of collecting data from all 23 facilities based on the detailed walkthrough conducted with the consultant on the sample of each site type. A detailed description of the facilities in question are provided in Annex 1.

## Task 2: General design complete with technical specifications, sizing calculation and drawings

Based on the data collected in Task 1, the consultant will be completing the SWH system design complete with technical drawings for:

- The standard 700L SWH system to be installed in 16 typical platoon outposts featuring the same architectural, electrical and water / space heating networks' designs;
- The standards 1,200L SWH system to be installed in 6 typical company command featuring the same architectural, electrical and water / space heating networks' designs;
- The 15,000L SWH system to be installed in the 2<sup>nd</sup> Infantry Guards Border Regiment base in Ras Baalback.

Furthermore, the consultant will assist the Project Management Unit (UNDP) and LAF in drafting the complete systems' components technical specifications in addition to the specifications of an adequate data collection and monitoring system.

#### 3. Expected Outputs and deliverables

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 Project Manager Unit. The time needed by the Project Management Unit for the review of each submitted deliverable is 5 working days. All other deliverables are to be submitted in the English Language. The Required deliverables under the terms of reference are:

	Deliverables/ Outputs	Estimated Duration to Complete	Target Due Dates	Review and Approvals Required
1	Questionnaire / data collection sheet & site visit	5 working days	3 weeks after contract signature	Project Management Unit (PMU)
2	Complete technical specifications with system description, sizing	7 working days	5 weeks from contract signature	Project Management Unit (PMU)

	calculation and drawing (700L)			
3	Complete technical specifications with system description, sizing calculation and drawing (1,200L)	5 working days	7 weeks from contract signature	Project Management Unit (PMU)
4	Complete technical specifications with system description, sizing calculation and drawing (15,000L)	5 working days	9 weeks from contract signature	Project Management Unit (PMU)
5	1-day technical training workshop on data collection and design of SHW systems	3 working days	12 weeks from contract signature	Project Management Unit (PMU)

#### 4. Institutional arrangements

Under the framework of the present consultancy, the consultant will be supported by teams from:

- The client; in this case the UNDP team

- The beneficiary; in this case the Lebanese Armed Forces (LAF)

All deliverables will be reviewed and closely coordinated by the Project Management Unit and the LAF.

Site visits logistic and organization will be handled by the Project Management Unit. However, the consultant will undertake his tasks from his own premises and using his own equipment/logistics.

## 5. Duration of work

The present assignment is expected to last for 25 working days over a span of 3 months. Deliverables are expected as detailed in section 3 above. The time required for deliverable review is 5-working days.

## 6. Duty station

The consultant is expected to be available for a 2-day site visit to the beneficiary's facility (at the beginning of the assignment (only transportation to and from the beneficiary site will be arranged by the PMU).

A one-day workshop at the end of the assignment is expected at the beneficiary's facility (transportation is to be arranged by the consultant).

Also the consultant is expected to attend meetings with the PMU on needs basis (transportation is to be arranged by the consultant).

The remaining tasks will be home-based.

## 7. Requirements for experience and qualifications

<u>I. Academic Qualifications:</u> Master's degree in mechanical or electrical engineering, or equivalent.

# II. Years of experience:

Minimum of 10 years' expertise in end-use energy efficiency or renewable energy applications.

## III. Technical experience:

Number of projects in the design and implementation of Solar Water Heaters in Lebanon, experience in the Bekaa area is an asset.

## IIV. Competencies:

- Knowledge of SWH sizing tools and design software such as T\*SOL (Thermal Simulation Software), Valentin or other.
- Knowledge of AutoCAD for detailed drawings
- Team work
- Good communication skills
- Good presentation skills

## 8. Scope of Price Proposal and Schedule of Payments

The payments will be lump sum based and issued as per the following, upon submission and approval of deliverables, along with the certificate of payment:

1 80% of contract value upon Deliverables 1 to 4: 9 week	
approval of Deliverables 1, 2, 3 and 4 - Questionnaire / data collection sheet & site visit signatu   Complete technical specifications with system description, sizing calculation and drawing (700L) - Complete technical specifications with system description, sizing calculation and drawing (1,200L) - Complete technical specifications with cutom	eks from contract ature

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		descritpion, sizing calculation and drawing (15,000L)	
2	20% of contract value upon approval of deliverable 5	Deliverable 5: 1-day technical training workshop on data collection and design of SHW systems	12 weeks from contract signature