

Republic of Lebanon  
Ministry of Energy and Water



Call for Expression of Interest (EOI)  
to Participate in Proposal Submissions to Build  
Solar Photovoltaic (PV) Farms in Lebanon

January 2017  
Prepared by the Lebanese Center for Energy Conservation (LCEC)  
Beirut, Lebanon

## 1. Introduction

Lebanon relies essentially on oil imports as its main resource for energy production. During the 2010 baseline year, the total fuel imports to Lebanon (liquid gas, gasoline, gas oil, fuel oil, kerosene, and asphalt) amount to approximately 5,768 ktoe (5,768,269.94 toe) and are consumed in the different sectors in Lebanon.

In terms of electricity, the average available electricity production capacity in 2009 (including imports) was 1,500 megawatts (MW) while the average demand was 2,000–2,100 MW. The instantaneous peak demand in the summer of 2009 was estimated at 2,450 MW. The total energy demand in 2009 was 15,000 gigawatt-hours (GWh) although the total produced energy (including imports) was 11,522 GWh. Accordingly, the electric energy deficit in Lebanon was estimated to be 3,478 GWh.

In Lebanon, electricity is basically generated from thermal and hydroelectric power plants. Approximately 7.5% of the total electricity production in 2009 was purchased from Syria (589 GWh) and Egypt (527 GWh) through regional interconnections. In addition to the deficit in electricity supply, the Lebanese electricity sector was facing several problems such as load shedding, technical losses, and the aging of power plants. This situation resulted in technical and financial impacts on customers, the Government, and the entire economy.

The Lebanese end-users were forced to rely on diesel generators to overcome the electricity shortages. To overcome all these problems, MEW published a comprehensive energy policy (the 2010 *Policy Paper for the Electricity Sector*) that was approved by the Council of Ministers (COM) on June 21, 2010.

Hydroelectricity production by the different hydro power plants on the Lebanese territory amounts to approximately 836,537 MWh (equivalent to 180,909 toe). In addition, the amount of energy produced by solar water heaters installations amount to approximately 12,719 toe (Reference LCEC). Accordingly, the total consumption in 2010 amounts to 6,069,301 toe, out of which 96.8% were imported from outside Lebanon and the remaining (3.2% from hydro and SWH) was locally produced.

## 2. Policy Background

At the fifteen session of the COP to the United Nations Framework Convention on Climate Change (UNFCCC) meeting in Copenhagen, Denmark, the Lebanese Government made a pledge to develop RE production capacity to reach 12%. This political commitment was a major milestone of the Policy Paper for the Electricity Sector. Adopted as the national strategy for the electricity sector by the Government on June 21, 2010, the policy paper clarified the national target as being 12% of the total electricity and thermal supply by 2020.

The Policy Paper for the Electricity Sector clearly states “this policy commits to launching, supporting, and reinforcing all public, private and individual initiatives to adopt the utilization of renewable energies to reach 12% of electric and thermal supply”.

The Council of Ministers (COM) of Lebanon also adopted the National Energy Efficiency Action Plan (NEEAP) for Lebanon on November 10, 2011 (Decision Number 26). NEEAP 2011–2015 includes 14 initiatives that tackle energy efficiency and renewable energy.

The Second National Energy Efficiency Action Plan for the Republic of Lebanon (NEEAP 2016–2020) continues and builds on the energy efficiency initiatives proposed in the first NEEAP 2011–2015. On the other hand, the National Renewable Energy Action Plan for the Republic of Lebanon (NREAP 2016–2020) continues and builds on the renewable energy initiatives proposed in the first NEEAP 2011–2015.

The NREAP 2016–2020 includes only measures dealing with renewable energy and includes several scenarios in the development of RE in Lebanon. Given that the projected total electricity and thermal supply in 2020 is approximately 6,389 ktoe, the national objective of Lebanon would be to implement renewable energy projects that would actually produce approximately 767 ktoe in 2020 (767 ktoe is 12% of 6,389 ktoe). The NREAP 2016–2020 considers the 767 ktoe as the main objective for the whole country in 2020, leading practically to the achievement of 12% of renewable energies (RE).

There is currently only one PV farm in Lebanon (BRSS) with a capacity of 1 MW and directly connected to the electricity network. Another demonstration project of 1 MW developed in the Zahrani Oil Installations in South Lebanon is connected to the internal network of the Zahrani Oil Installations and feeds the electricity network through the net-metering scheme.

Given the existing high potential of development of solar PV farms in Lebanon, the NREAP 2016-2020 assumes that a target of 150 MW of solar PV installations by 2020 is very realistic. It is also important to note that the decreasing prices of solar PV farms installations is making this technology extremely appealing.

The achievement of the 150 MW solar PV farms’ objective needs to be done according to four main axes of development:

- Solar PV farms to be owned by EDL
- Solar PV farms to be owned by other public administrations
- Solar PV farms to be owned by the private sector (to be connected to the national grid)
- Solar PV farms to be owned by municipalities

The private sector could intervene to build large solar PV farms. The realistic scenario considers that approximately 120 MW of solar installations could be done by the private sector, with the possibility to be increased to 180 MW.

Since most regions of Lebanon offer high solar potential, solar PV installations could be divided according to the following approach:

- Mount Lebanon: 30 to 45 MW
- North and Akkar: 30 to 45 MW
- South and Nabatieh: 30 to 45 MW
- Bekaa and Hermel: 30 to 45 MW

### **3. Project Framework**

The Ministry of Energy and Water (MEW) is the main public party responsible for the country's electricity sector in terms of strategy, policy, and planning. EDL, on the other side, being a public institution under the supervision of MEW, is tasked with the management of the sector.

Law 288 (April 2014), further sidelined Law 462 by indicating that, for a period extending two years (i.e., from April 2014 to April 2016), the Council of Ministers (COM), upon joint recommendations from the Ministry of Energy and Water (MEW) and the Ministry of Finance can license IPPs pending the implementation of Law 462. Law 288 literally indicates that “temporarily and for a duration of two years and till the appointment of the Electricity Regulatory Authority (ERA) and assuming its mandate, permits and licenses are offered by a decision from the Council of Ministers based upon a proposal from the Minister of Energy and Water and the Minister of Finance” (2014).

Furthermore, the Lebanese Parliament approved law 54 (October 2015) extending the duration of law 288 until April 2018.

The proposed project relies on the application of the laws 288 (2014) and 54 (2015) to allow the private sector to generate electricity in the renewable energy sector solely and exclusively. This would mean allowing the private sector to produce electricity and export electricity to the national grid following the approval of the Council of Ministers and based on the recommendations of the Ministry of Energy and Water (MEW) and the Ministry of Finance.

### **4. Instructions to Potential Investors**

Private investors and companies interested to submit Expression of Interest (EOI) in reply to this call, are requested to take the following points into consideration:

- The objective of this call for EOI's is for the Government of Lebanon – MEW, on behalf of EDL, to procure RE utilizing a Power Purchase Agreement (PPA).
- The private sector entity will finance, develop, acquire land, design, build, own, operate, and maintain the RE plant, and in general be responsible for all other aspects of the operation. The RE farm will deliver electricity to the EDL network/grid.

- EDL with approval of MEW will contract to purchase the electrical energy for a period of 20 years subject to terms and conditions defined in the PPA agreement. MEW or EDL does not intend to purchase the RE assets.
- The contractor will deliver electricity to a location that is mutually agreed to by the contractor and MEW/EDL. The contractor will build the feeder line, substation (or upgrade an existing substation), and all other infrastructure required to deliver energy into an existing transmission line.
- The delivered energy will meet the quality standards and requirements as per the grid code for solar PV farms.
- The contractor will provide real-time energy production, forecasts and related data to EDL's national control center/dispatch center.
- Bidder shall submit unit price for each kilowatt-hour of electricity in USD, annual amount of minimum, average and maximum kilowatt-hours delivered to the grid, date of full operation of the RE plant, and other requested information.
- In each region of Lebanon, the minimum power capacity of one given solar farm is 10 MW and the maximum power capacity is 15 MW.
- Smaller solar farms (in the range of 3-5 MW) are encouraged to apply, especially in landmarks areas of the country where space is a major constraint.
- According to the previous points, a maximum of three solar farms per region could be selected.
- The proposed PPAs will be based on the lowest price received from the lowest bidder in all Lebanon.
- The call for proposals will cover all regions of Lebanon as per the following distribution for solar PV farms:
  - Mount Lebanon—a targeted minimum of 30 MW and a maximum of 45 MW
  - North and Akkar—a targeted minimum of 30 MW and a maximum of 45 MW
  - South and Nabatieh—a targeted minimum of 30 MW and a maximum of 45 MW
  - Bekaa and Hermel—a targeted minimum of 30 MW and a maximum of 45 MW

## **5. Submission of Expression of Interest (EOI)**

Submitted EOI's must focus on the following points:

- Clear description of the bidder: the bidder shall identify the lead developer, its relationship to a parent company (if any) and any other firms that comprise the consortium or joint venture. Each bidder shall provide a statement from each consortium member that the lead developer is authorized to act on their behalf.
- Project description: location with coordinates being displayed on a map, project capacity and estimated generation per year, technical specifications and electric grid integration plans at the proposed location.

- Technical capability and experience of the bidder: the bidder shall provide evidence of having the technical capability to manage the design, engineering, construction and operation of the solar PV farm project.
- Ability to raise debt and equity: the bidder must clearly demonstrate its ability to obtain sufficient funds to develop the project. The bidder must illustrate its previous successful experience in raising sufficient debt participation and substantial equity participation for renewable energy projects.

## 6. Application Form

Ref.	Subject	Proposal
1	Company Name	
2	Country	
3	Full Address	
4	Phone Numbers	
5	Official Email Address	
6	Official Representative Mobile	
7	Company Profile (add attachments if needed)	
8	Company Turnover (USD)	
9	Proposed Site Location (ownership or rental) (add attachments if needed)	
10	Grid Connections Requirements (presence of MV or HV) (add attachments if needed)	
11	Manufacturer(s) of Equipment (panels, inverters, and mounting structure)	
12	Total Proposed Capacity (MW)	
13	Minimum Proposed Generation (MWh/ year) (add attachments if needed)	
14	Availability of an Environmental Impact Assessment (EIA)	
15	Lead Time for Construction (Months)	
16	Lead Time for First Synchronization to the Grid (Months)	
17	Lease Duration (minimum and maximum, in years) (add	

	attachments if needed)	
--	------------------------	--

Note: the Ministry of Energy and Water reserves the right to request additional information to be added to the list.