

### QUESTIONS AND ANSWERS REPORT (4)

<b><u>To:</u></b>	Bidder
<b><u>From:</u></b>	UNDP Lebanon
<b><u>Subject:</u></b>	CALL FOR EXPRESSIONS OF INTEREST: DESIGN, SUPPLY AND INSTALLATION OF DECENTRALIZED RENEWABLE ENERGY SYSTEMS
<b><u>Reference:</u></b>	EOI/CO/56/15
<b><u>Date:</u></b>	18 May 2015

UNDP Lebanon Procurement Unit has received several questions regarding the subject Tendering Procedure. All questions received to-date are documented below with respective answers.

Questions and Answers		
1	Q.	We presently do not have a presence in Lebanon. Can you please help us by informing of a good local partner who could do some of the local scope of work like the civil, shed etc.?
	A.	<b>Unfortunately UNDP cannot provide this type of support.</b>
2	Q.	Who will invest into the project? Do we need to invest?
	A.	<b>Please refer to section 1 of the EOI which provides more information in this regard. You can also find more general information about the UNDP DREG project online:</b>  <b><u><a href="http://www.lb.undp.org/content/lebanon/en/home/operations/projects/environment_and_energy/small-decentralized-renewable-energy-power-generation.html">http://www.lb.undp.org/content/lebanon/en/home/operations/projects/environment_and_energy/small-decentralized-renewable-energy-power-generation.html</a></u></b>
3	Q.	Are there extra fees to apply to the EOI?
	A.	<b>No Extra Fees for application.</b>
4	Q.	Can the system be fitted with batteries?
	A.	<b>No as this defeats the purpose of the pilot project in terms of reducing GHG as a whole and being eco-friendly.</b>
5	Q.	But if there are no batteries then the system will be off whenever the grid is down.
	A.	<b>No the system will still be operational as the diesel genset will kick in and replace the grid as soon as it goes down.</b>
6	Q.	Then what is the benefit of such a system if a diesel genset is still required?
	A.	<b>This project takes into consideration the Lebanese case of recurrent interruptions. This is why being realistic imposes the use of PV-Diesel systems for instance, as diesel</b>

		<b>generators are unavoidable for the foreseeable future. The benefit of such systems lies in the reduction in fuel consumption and the emission of GHG.</b>
7	Q.	What happens if the facility's load drops on some days, like in the week-end for instance? This will be a problem since generators shouldn't operate under 30% of their rated power.
	A.	<b>This is where controllers come in. Should the system have a high penetration, a controller is required to regulate the flow of RE-generated power such that diesel consumption is reduced without bringing the diesel genset's operation to a critical stage.</b>
8	Q.	I do have some additional comments to your Q & A before I send over all our support documentation for interest in this bid. I have designed several off grid/ decentralized systems and I have some operational concerns on your point 4 and 5 firstly: -If you have only PV and genset there is no "buffer" between when you lose solar power and the genset is started. If you have a cloud passing over your panels this will shut down the power supply, and trigger the genset to start. There is some time required before the genset is up and running and can supply the load meaning there will be a power cut to your load if the system is operated in this manner. Also there will be a lot of stop/start action on the genset, and many interruptions in power if it is a cloudy day and the sun is shining intermittently. Only some types of gensets can power on and supply power to all your utilities simultaneously. If these types are not used there needs to be a staggered schedule of which loads to power on first etc. A battery will take care of all these variations for clouds, and also ensure smooth transition to a genset. If environment is a concern you can specify the use of Li-Ion batteries as these are environmentally friendly so to say, however they are quite costly.
	A.	<b>As per the 4<sup>th</sup> paragraph on the first page of the EOI, the system is not "only PV and genset". The system is a mix of national grid, diesel gensets, and renewable energy/PV as per the below": When the grid is ON, all renewable energy generated will be consumed thereby offsetting the consumption from EDL. When the grid is OFF and the existing diesel genset(s) turn on, the renewable energy generated will reduce the diesel consumption while preserving operational stability and continuity of service.</b>
9	Q.	6 and 7: -If you do add on Solar PV to a diesel genset circuit it is challenging to supply more than 30% of the total power of the load. If the PV and genset is running together to be on the safe side the genset should supply at least 70% of the power as there are dangers if PV and the variations clouds etc. incur to the stability of the grid if PV has dominance. Also in case of a load disconnect the PV can damage the genset if the power flows into it. Also gensets running at loads outside the recommended 75-95% area of operation burn fuel very inefficiently and pollute more. A PV-Battery-Genset system where all parts work together can ensure the genset always operates in its best operating region, increasing the power you get from your fuel and polluting less.

	A.	<b>When the grid is OFF and the existing diesel genset(s) turn on, the renewable energy generated will reduce the diesel consumption while preserving operational stability and continuity of service.</b>
10	Q.	Are you looking for a renewable energy system that adds on some power to an existing grid to reduce diesel usage? Typically if this is a 50 kW RE installation the genset should be delivering 200 kW or more.
	A.	<b>Yes. We are looking for an RE system that offsets energy consumption of an existing national grid and diesel genset system.</b>  <b>When the grid is ON, all renewable energy generated will be consumed thereby offsetting the consumption from EDL.</b>  <b>When the grid is OFF and the existing diesel genset(s) turn on, the renewable energy generated will reduce the diesel consumption while preserving operational stability and continuity of service.</b>
11	Q.	If you are looking at a system to supply a 50 kW load and you want RE to work when available, and genset to support when not, I think it will be impossible to implement properly without energy storage. Can this then be an option?
	A.	<b>Please refer to the response provided above.</b>
12	Q.	Specifically point 3.1 of the evaluation criteria, please confirm if solar water heating experience is relevant for this clause.
	A.	<b>Solar water heating experience is not relevant for this clause.</b>
13	Q.	We still have a question: How and by whom will the RE company be remunerated for its work.
	A.	<b>The RE company will be remunerated for its work by the commercial bank from the NEEREA loan the bank granted to the beneficiary.</b>
14	Q.	What is the added benefit of working with the project as compared to applying for NEEREA directly?
	A.	<b>On top of the NEEREA loan, which DREG will facilitate, DREG will also provide a grant of 25% (capped at \$150,000 per project) of the total project cost.</b>