

Request for Proposals (RFP) for Implementation of Renewable Energy & Energy Efficiency (REEE) Measures in Four (4) Local Communities and One (1) Agricultural Association in Lebanon

“Implementation of Renewable Energy Measures in Agrifood Sectors and Communities” Project - funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by the Lebanese Center for Energy Conservation (LCEC) through a Grant Agreement signed between LCEC and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH under the framework of the GIZ project “Strengthening the Resilience of Smallholder Farms, Micro and Small Enterprises, and Local Communities (ACE).”

Annex 3: Preliminary Design

May 2025

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Beirut, Lebanon

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I. General Notes

1. The sections of this Annex describe the contractor's scope of work in each site of each lot.
2. The presented images are indicative only. The contractor shall propose its own layout of the listed solutions.
3. The contractor shall be responsible of the electrical and structural designs of each system based on the below mentioned systems sizing.
4. The contractor shall abide by the locations specified for the installation of the REEE measures.
5. All obstacles affecting the performance of the PV systems shall be taken into consideration in the contractors' design, as they might affect the guaranteed performance ratio mentioned in Form 6 of the RFP.
6. All PV systems shall be equipped with a bypass component for maintenance purposes.

II. Lot 1 - Preliminary Design

7. The REEE measures to be installed in sites of Lot 1 are the following:

Table 1: Lot 1 REEE measures

Site	Type of System	Size of PV System	Size of Battery Bank	Notes:
Ammatour	Solar pumping	≥ 52.2 kWp	NA	<p>PV system to be installed on three different canopies as indicated in the below images. Lowest point of PV structure installed on the unbuilt land to be 3 meters, and highest point to be ≤ 4.5 meters.</p> <p>Connection point is around 300 meters away from the location of PV system.</p> <p>Solar pumping inverter to be installed in a well vented prefabricated room at the same location of PV panels. Total solar pumping inverter(s) size to be 50 kW.</p>
Gharifeh	Solar pumping	≥ 97.2 kWp	NA	<p>System to be installed in the yard and on the municipal building's upper rooftop as indicated in the below images.</p> <p>PV panels connected to solar pumping system include all PV panels of the yard's canopy, in addition to 54 out of 72 PV panels of</p>

				<p>the roof's structure. All PV strings to be connected to solar pumping inverter through trenching at a depth of 20 to 30cm</p> <p>System to be connected with existing electrical network in diesel generator room. Solar pumping inverter to be installed in a well vented prefabricated room next to diesel generator room. Total solar pumping inverter(s) size to be 100 kW.</p>
	Solar PV + Storage	≥ 10.8 kWp	≥ 20 kWh	<p>System to be installed on the municipal building's upper roof as indicated in the below images.</p> <p>PV panels connected to municipal building's system include 18 out of 72 PV panels of the roof's structure.</p> <p>System to feed the municipal building. Inverter and batteries to be installed on the ground floor in a secure room with limited access.</p>
	LED lights	NA		LED lighting fixtures to be installed in the municipal building.
Ainab / Green Hand	Solar PV + Storage	≥ 12.6 kWp	20 kWh	System to be installed on building's roof as indicated in the below images. System to feed the post harvesting center located on the ground floor of the building.

				<p>The inverter and battery bank to be installed outdoor on the wall next to the center where a louvered door shall be installed. Inverter size to be 12 kW.</p>
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8. Indicative images of Ammatour site in Lot 1:

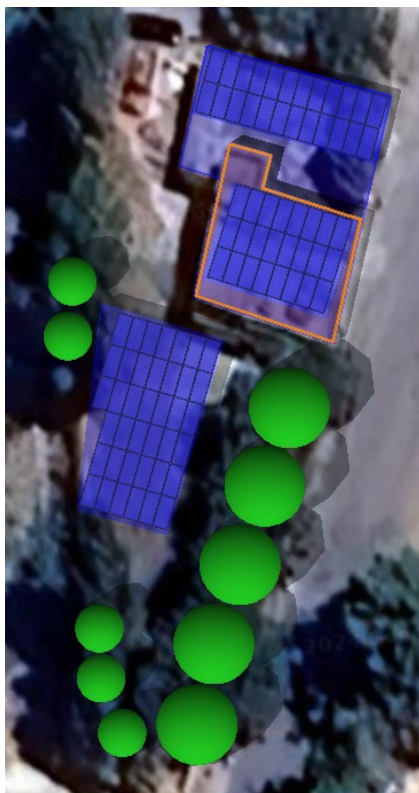


Figure 1: Ammatour Site – Indicative Top View

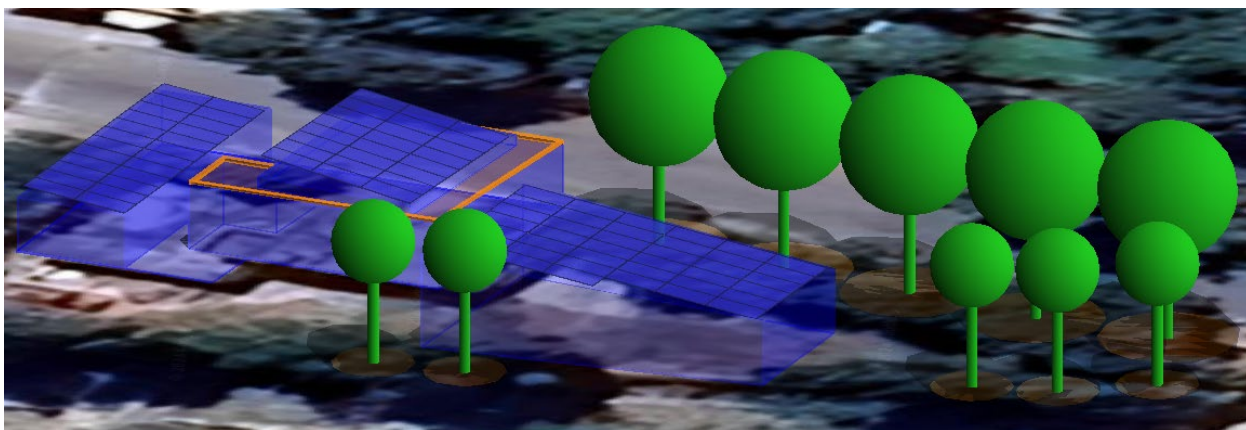


Figure 2: Ammatour Site – Indicative Side View

9. Indicative images of Gharifeh site in Lot 1:

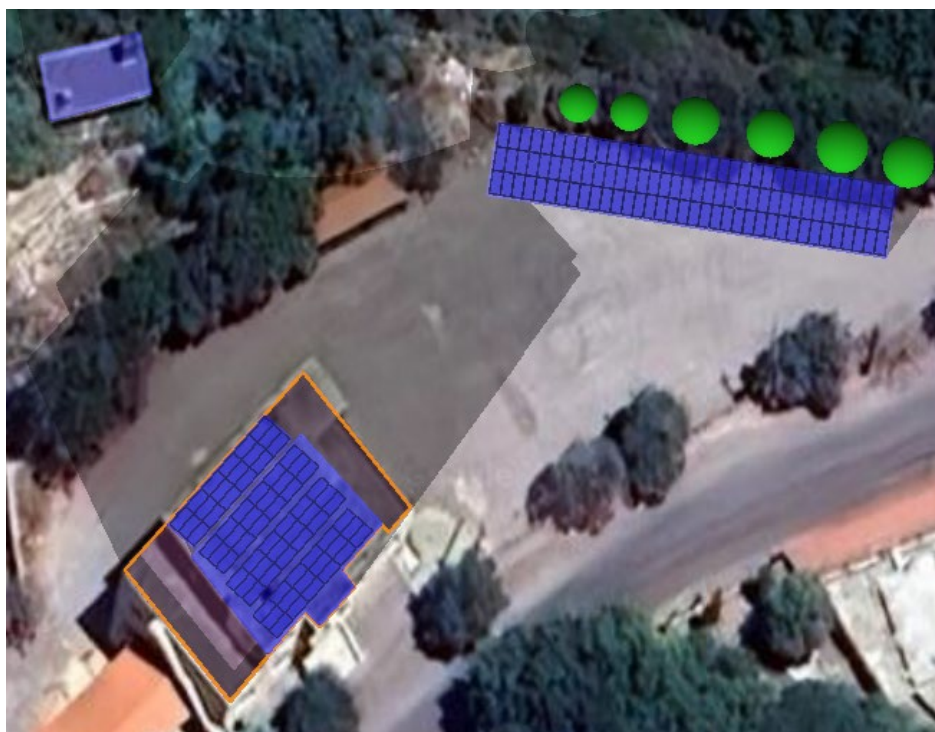


Figure 3: Gharifeh Site – Indicative Top View

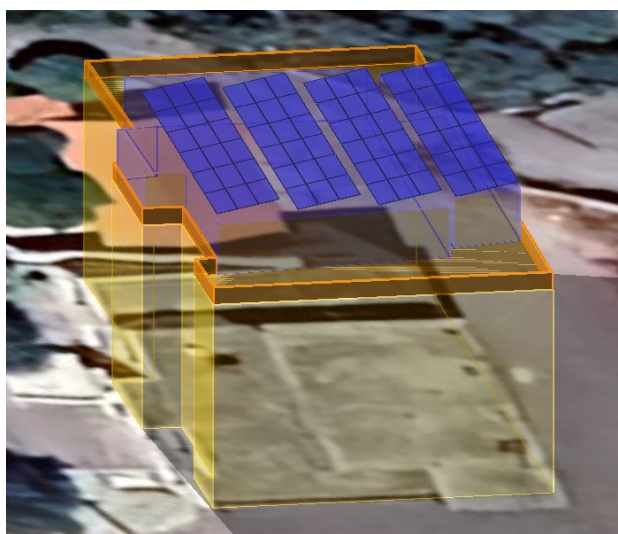


Figure 4: Gharifeh Site – Indicative Roof Side View

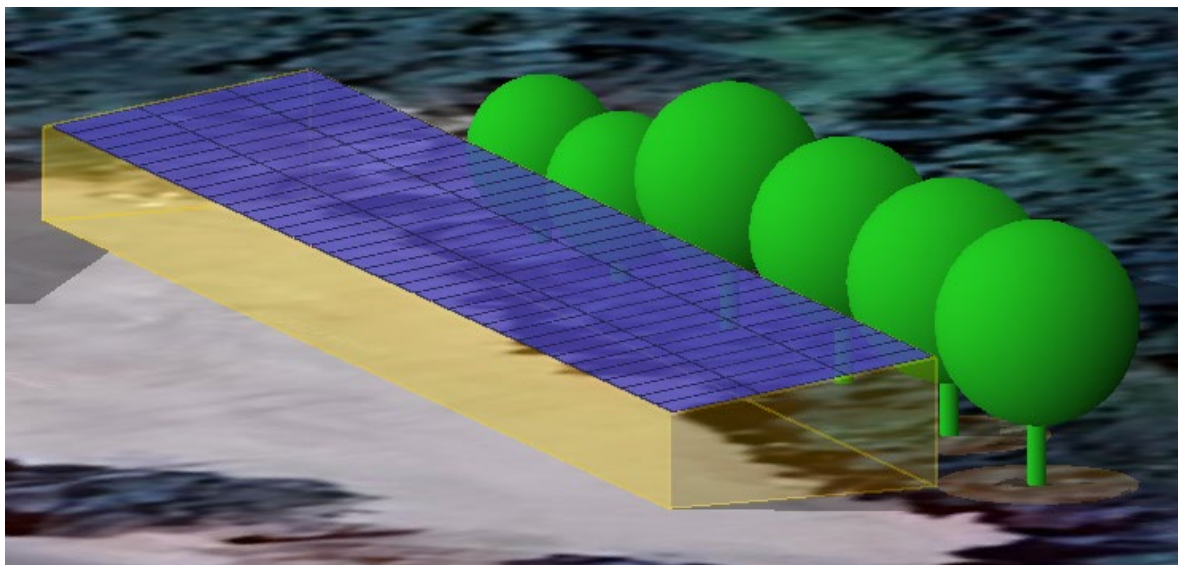


Figure 5: Gharifeh Site – Indicative Canopy Side View

10. Indicative images of Ainab site in Lot 1:

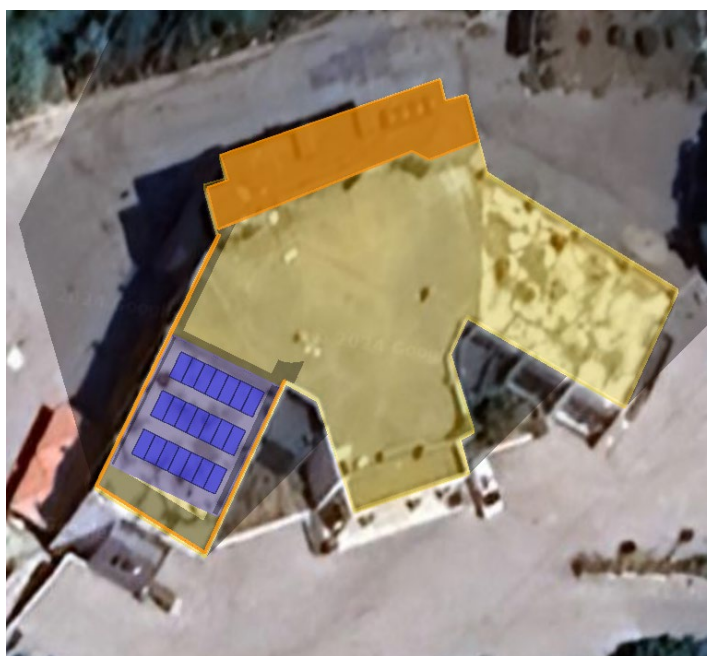


Figure 6: Green Hand Center – Indicative Roof Top View

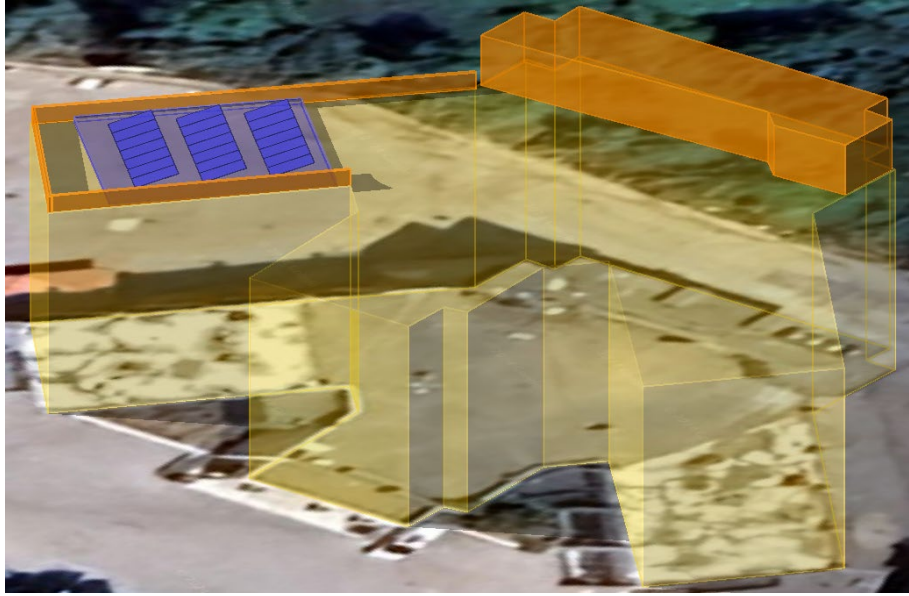


Figure 7: Green Hand Center – Indicative Roof Side View

III. Lot 2 - Preliminary Design

11. The REEE measures to be installed in sites of Lot 2 are the following:

Table 2: Lot 2 REEE measures

Site	Type of System	Number of Systems	Size	Notes:
Mtein	Solar street lighting	≥ 125	≥ 360 Wp PV panel $\geq 1,800$ Wh Lithium battery	All systems to be installed on existing poles. Batteries to be integrated within lighting fixtures. Lighting fixtures to be dimmable. Contractor to replace the existing lighting fixtures with the solar street lighting fixtures.
Mreijat	Solar street lighting	≥ 125	≥ 360 Wp PV panel $\geq 1,800$ Wh Lithium battery	All systems to be installed on existing poles. Batteries to be integrated within lighting fixtures. Lighting fixtures to be dimmable. Lighting fixtures to be installed next to the existing fixtures.