



This project is funded by  
the European Union



# Innovation through Community Net

## Metering in Lebanon

**Hassan Harajli**

ESCWA/RSS/NERC

“Access to Finance for Municipalities – Nexus Thinking and Decentralization of Subnational Governments”  
Amman, Jordan – 29-30 January 2020

## UNDP CEDRO & Satellite Projects (2007-2023)

Since 2007, approximately **\$41.4 million** have been and will be directly disbursed for advancing sustainable energy for Lebanon.

CEDRO 1,2,3	Spanish Funded via LRF	9.9 million USD	2007-2013
ENPI-MEDSOLAR	European Union	\$0.98 million	2013-2016
CEDRO 4	European Union	\$3.3 (EU) + \$0.7 (private finance)	2014-2016
Host community projects - German Fund	German Gov. Financed	\$1.42 million	2014- 2015
Host communities – Saudi Fund for Development	Saudi Dev. Fund funded & UNHCR	\$1.6 million	2014-2015
Host communities - Dutch Fund	Dutch Fund	\$1.4 million	2016
GSHP	Lebanese Gov.	\$0.92 million	2016
Host Communities	UK DFID	\$4.0 million	2017-2018
Lebanon Recovery Fund	South Korea	\$0.5 million	2017-2018
Host communities - Dutch Fund	Dutch Fund	\$4.0 million	2017-2019
Sustainable Energy for Security - Leb. Army	European Union	\$4.0 million	2019 - 2021
CEDRO 5	European Union	\$6.6 (EU) + \$2.1 (private finance)	2019 - 2023

## UNDP CEDRO & Satellite Projects (2007-2023)

<b>Market Initiation</b>	Solar PV	Biomass & biogas	EE in industry	Solar thermal	Heat pumps	<a href="http://cedro-undp.org/projects/7/Renewable%20Energy">http://cedro-undp.org/projects/7/Renewable%20Energy</a>
<b>Crisis response &amp; resilience</b>	SHS (DC)	Winter support	Solar street lighting	Solar PV for social institutions	Electricity network intervention	
<b>Studies &amp; Assessments</b>	Wind Atlas	Bioenergy Strategy	S. Strategy of the LAF	GSHP guideline report	EE in industrial sector	<a href="http://cedro-undp.org/Publications/National%20Studies">http://cedro-undp.org/Publications/National%20Studies</a>
<b>Policy Advocacy</b>	De-risking support	Grid code	Net metering	<b>Virtual net metering</b>	Sustainable forestry	
<b>Outreach &amp; capacity building</b>	Contractors & consultants	Students & researchers	Policy makers	Stake-holders	General public	<a href="http://cedro-undp.org/Media/capacity%20building">http://cedro-undp.org/Media/capacity%20building</a>



Army Fayadieh 14,000 Liters



Jezzine Gov. Hos. 3,000 Liters



Hermel Gov. Hos. 4,000 Liters



Tripoli Gov. Hos. 14,000 Liters



Sibline Gov. Hos. 6,000 Liters



Keserwen Gov. Hos. 6,000 Liters



Ehden Gov. Hos. 500 Liters



Ab. El Rassi Gov. Hos. 4,000 Liters



Ab. El Rassi Gov. Hos. 6,000 Liters





Ain Deleb Public Sch. 1.8 kW



Akoura Municipality 1.8 kW



Hosh Omara community center 1.8 kW



Kfour Public Sch. 2 kW



Khelweet Public Sch. 1.1 kW



El Hakoar Public Sch. 1.1 kW



Aley Prison; 3.3 kWp & SHW 600 liters



Aana Intermediate Public Sch. 1.8 kW



Ein Ebel Municipality 1.2 kW





## Solar photovoltaic (PV) systems



Gem. Freres – Cardboard – 300 kWp



LibanJus – F&B – 135 kWp



Libanlait – F&B – 215 kWp



USEK – 212 kWp



ISF – 42 kWp



Tahrir Institute – 117 kWp



Souk Akkar – 120 kWp



RMF - 135 kWp



AUB Bechtel - 142 kWp





## Solar photovoltaic (PV) systems



Orphan Welfare Society - 300 kWp



Nabatieh Market - 200 kWp



Hammana WWTP - 45 kWp + storage



Karagheussian Ass. Child Welfare - 25 kWp



Dar Al Salam - 70 kWp



Southern Suburbs Federation - 105 kWp



Kfarroumane Public School - 30 kWp + storage



Tebnine Public School - 40 kWp



Jdeidet EL Chouf WWTP - 90 kWp + storage





August 02, 2019  
PRIORITIZATION AND  
ASSESSMENT OF VALUE CHAINS  
WITHIN THE RENEWABLE  
ENERGY SECTOR IN LEBANON



January 28, 2019  
VALUE CHAIN ASSESSMENT OF  
RENEWABLE ENERGY SECTOR  
IN LEBANON



October 02, 2018  
SUSTAINABLE ENERGY FOR  
LEBANESE VILLAGES AND  
COMMUNITIES: THE VILLAGE 24  
INITIATIVE



February 21, 2019  
THE IMPACT OF THE SYRIAN  
CRISIS ON THE LEBANESE  
POWER SECTOR AND PRIORITY  
RECOMMENDATIONS



January 10, 2017  
GUIDELINES ON NET -  
METERING: THE CASE OF  
LEBANON



December 06, 2016  
BIOMASS BRIQUETTING  
PROCESS



September 04, 2018  
ENERGY EFFICIENT HOME  
APPLIANCES



September 26, 2017  
LEBANON: DERISKING  
RENEWABLE ENERGY  
INVESTMENT



September 20, 2017  
WIND ENERGY GRID  
INTERCONNECTION CODE FOR  
LEBANON



November 29, 2016  
FOREST INVENTORY AND  
MANAGEMENT PLANS OF  
BKESSINE AND ANDKET  
FORESTS IN LEBANON



November 29, 2016  
LEBANON'S NATIONAL  
BLUEPRINT FOR A  
SUSTAINABLE FOREST BIOMASS



November 29, 2016  
WILD PINE FOREST  
MANAGEMENT PLAN FOR THE  
MUNICIPALITY OF ANDKET



September 20, 2017  
GROUND SOURCE HEAT PUMP  
GUIDELINE REPORT



September 20, 2017  
SOLAR PV GRID  
INTERCONNECTION CODE FOR  
LEBANON



May 25, 2017  
SUSTAINABLE ENERGY  
STRATEGY OF THE LEBANESE  
ARMED FORCES



November 29, 2016  
FRUITFUL PINE FOREST  
MANAGEMENT PLAN FOR THE  
MUNICIPALITY OF BKESSINE



August 05, 2016  
SOLAR PHOTOVOLTAIC HYBRID  
POWER PLANTS



July 27, 2016  
ENERGY EFFICIENCY IN THE  
LEBANESE INDUSTRIAL  
SECTOR: A GUIDELINE REPORT



December 30, 2015  
TECHNO-FINANCIAL  
APPRAISAL OF ROOF - TOP  
PHOTOVOLTAIC SYSTEMS: THE  
CASE OF LEBANON



December 02, 2015  
ASSESSMENT OF SUSTAINABLE  
STREET LIGHTING FOR  
LEBANON



October 29, 2015  
INDUSTRIES AND JOBS



May 01, 2015  
HYDROPOWER



February 28, 2015  
ENERGY FROM WASTEWATER  
TREATMENT PLANTS



October 28, 2012  
CSP



October 01, 2015  
WILLINGNESS TO PAY



September 09, 2015  
BENEFICIARIES' BOOKLET



March 24, 2014  
GEOTHERMAL



March 05, 2012  
BIDENERGY



September 08, 2011  
EIA OF WIND FARM  
DEVELOPMENT



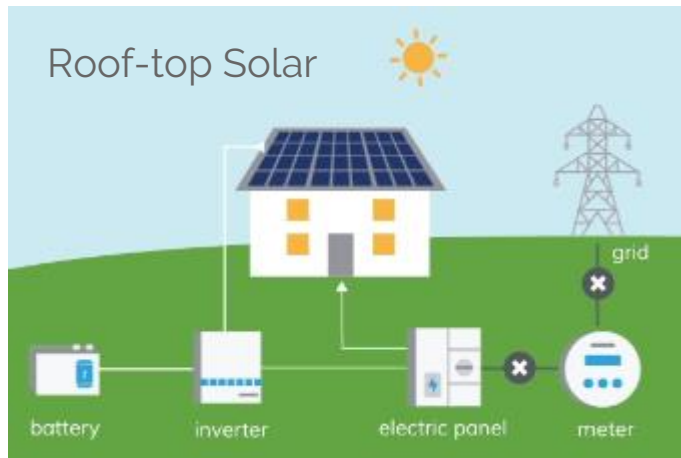
January 25, 2011  
WIND ATLAS



# V24 Scheme – Objective

## Objective:

Can a Lebanese community come together and decide to invest in a community initiative to produce electricity from clean renewable resources and benefit from economics of scale?



OR



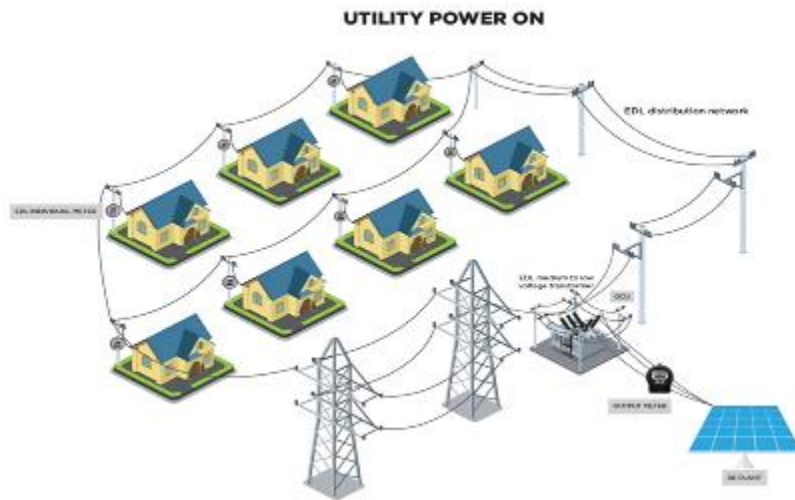
Which is better?

- Cost-wise per unit or capacity? With/without storage & Network considerations...
- Which is technically viable under current conditions?
- Space and shading considerations?
- What flexible contractual models are in place?
- Utility stance?

# V24 Scheme – Operation – the Lebanese Case

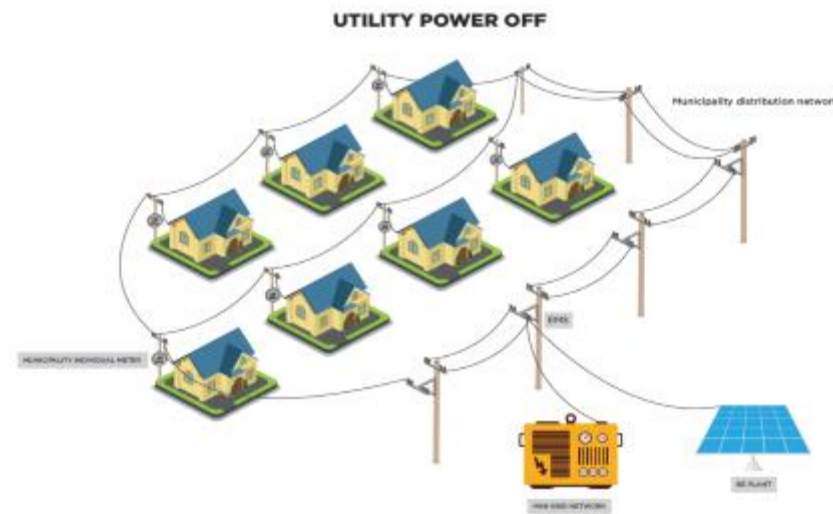
The V24 Scheme must allow for two modes of operation;

Mode 1: When Utility Power is off



Condition: Diesel gensets have to be centralized with separate network

Mode 2: When Utility Power is on



Micro-grid condition

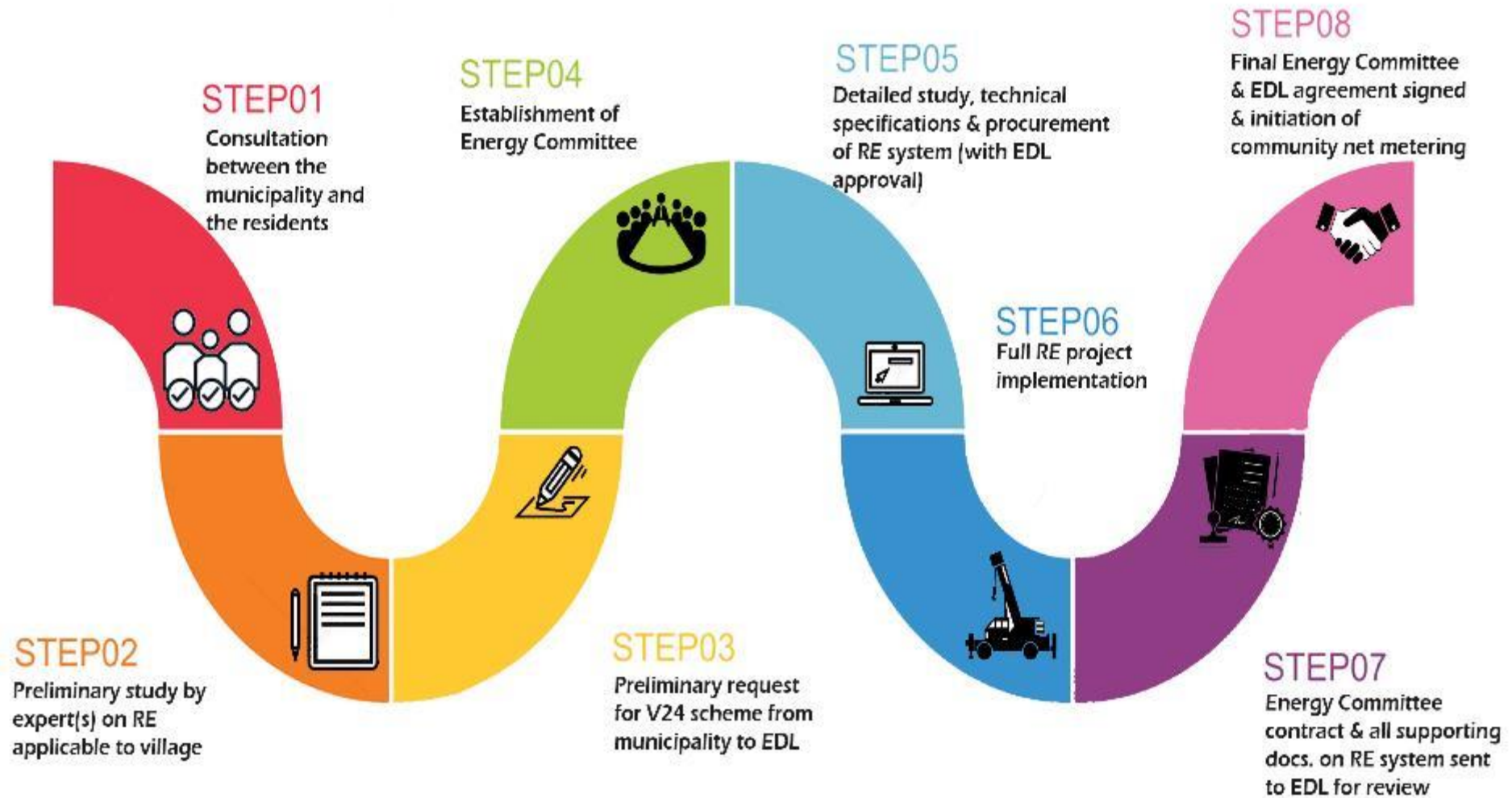


## V24 Scheme – Operation – the Lebanese Case



An EU financed community 250 kWp Hybrid PV – Diesel system has been installed serving as a pilot project based on which the V24 scheme has been developed and is being tested

# V 24 Scheme – Process (a recommendation)





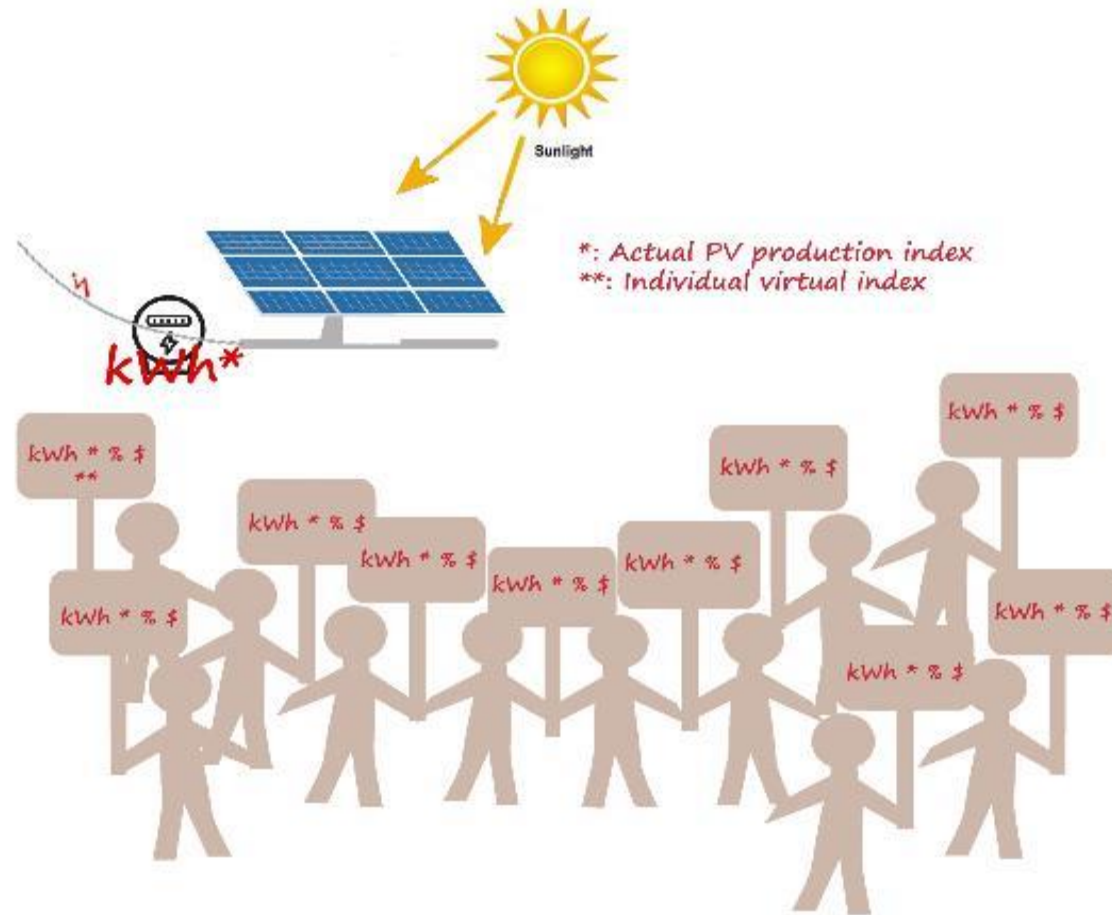
# V 24 Scheme – VNM subscription model



Forming the Community Net – Metering Scheme

Based on the EDL decision No. 318-32 / 2011 for single net - metering

And introducing the 'virtual index' concept



# EDL Online Net Metering Application Platform – Application Form

EDL has single net metering and the EU financed CEDRO program has helped make the net metering process digital through the net metering application form.

Therefore adjusting for VNM stems from the background of single net metering

The screenshot displays the 'THE NET METERING PROCESS & APPLICATION' section of the website. It features a blue header with a mountain background. Below the header, there is a white box containing text explaining net metering: 'NET-METERING ALLOWS A RENEWABLE ENERGY PLANT OWNER TO EXPORT EXCESS RENEWABLE ENERGY TO THE UTILITY GRID AND BENEFIT FROM A LIKEWISE DEDUCTION FROM THE CUSTOMER'S ELECTRICITY IMPORT/CONSUMPTION BILL. THE NET-METER TRACKS BOTH ENERGY CONSUMED FROM THE UTILITY GRID AND THE ENERGY EXPORTED BY THE RENEWABLE ENERGY SYSTEM AND ALLOWS THE UTILITY TO BILL THE CUSTOMER BASED ON THE 'NET' ELECTRICITY CONSUMED DURING THE BILLING PERIOD SET BY EDL.' Below this text is a white button labeled 'APPLY NOW'. To the right of the button is a vertical list of six expandable FAQ items, each with a downward arrow icon. The first item is 'WHAT ARE THE ELIGIBILITY CRITERIA TO APPLY?'. To the right of the list is a 'FAQS' section with a horizontal line. Below the line, there are three paragraphs of text: 'THE COMPONENTS OF MY SYSTEM DO NOT HAVE ALL THE REQUIRED CERTIFICATES AND STANDARDS; CAN I STILL APPLY?', 'IT IS MANDATORY THAT ALL THE REQUIRED CERTIFICATES ARE PRESENTED FOR THE COMPONENTS IN ORDER TO OBTAIN AN APPROVAL FOR A NET METER INSTALLATION.', and 'I SUBMITTED MY APPLICATION AND I RECEIVED AN EMAIL ASKING FOR ADDITIONAL DOCUMENTATION, WHAT SHOULD I DO?'. Below the third paragraph is a line of text: 'REPLY TO THE SAME EMAIL WHILE ATTACHING THE NEEDED DOCUMENTS.'

THE NET METERING PROCESS & APPLICATION

NET-METERING ALLOWS A RENEWABLE ENERGY PLANT OWNER TO EXPORT EXCESS RENEWABLE ENERGY TO THE UTILITY GRID AND BENEFIT FROM A LIKEWISE DEDUCTION FROM THE CUSTOMER'S ELECTRICITY IMPORT/CONSUMPTION BILL. THE NET-METER TRACKS BOTH ENERGY CONSUMED FROM THE UTILITY GRID AND THE ENERGY EXPORTED BY THE RENEWABLE ENERGY SYSTEM AND ALLOWS THE UTILITY TO BILL THE CUSTOMER BASED ON THE 'NET' ELECTRICITY CONSUMED DURING THE BILLING PERIOD SET BY EDL.

APPLY NOW

WHAT ARE THE ELIGIBILITY CRITERIA TO APPLY?

HOW DOES A RENEWABLE ENERGY PLANT OWNER BENEFIT FROM NET METERING?

HOW TO APPLY FOR A NET METER?

HOW CAN I TRACK MY APPLICATION?

HOW LONG DOES THE PROCESS TAKE?

WHAT IS COMMUNITY BASED NET-METERING AND HOW CAN IT BE IMPLEMENTED?

FAQS

THE COMPONENTS OF MY SYSTEM DO NOT HAVE ALL THE REQUIRED CERTIFICATES AND STANDARDS; CAN I STILL APPLY?

IT IS MANDATORY THAT ALL THE REQUIRED CERTIFICATES ARE PRESENTED FOR THE COMPONENTS IN ORDER TO OBTAIN AN APPROVAL FOR A NET METER INSTALLATION.

I SUBMITTED MY APPLICATION AND I RECEIVED AN EMAIL ASKING FOR ADDITIONAL DOCUMENTATION, WHAT SHOULD I DO?

REPLY TO THE SAME EMAIL WHILE ATTACHING THE NEEDED DOCUMENTS.

<http://www.edlnetmetering.com/>



# V 24 Scheme –billing tool




Committee



## COLLECTIVE NET METERING BILLING PORTAL



THIS PROJECT IS FUNDED BY THE EUROPEAN UNION



CEDRO

Admin

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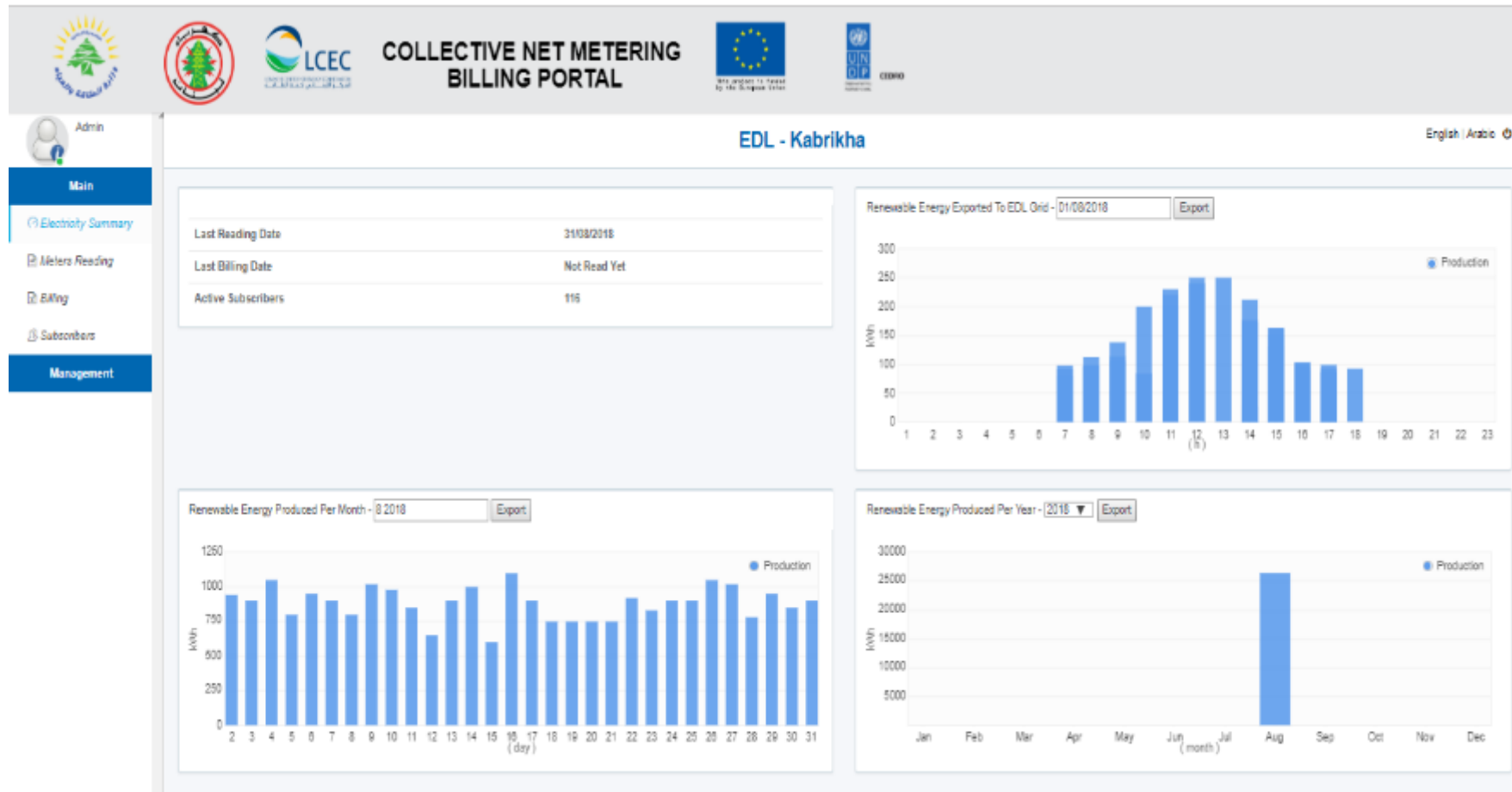
Total Shares: **100.0%** Active Subscribers: **116**

#	Name	Branch Number	Shares / Status
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2	زيد احمد حجازي	13437	0.862 ✓
3	علي يوسف حجازي	10820	0.862 ✓
4	عبدالصن درويش	15594	0.862 ✓
5	فيهد محمود حجازي	214943	0.862 ✓
6	محمد حجازي	8758	0.862 ✓
7	ابراهيم احمد فخر	15030	0.862 ✓

# V 24 Scheme – billing tool



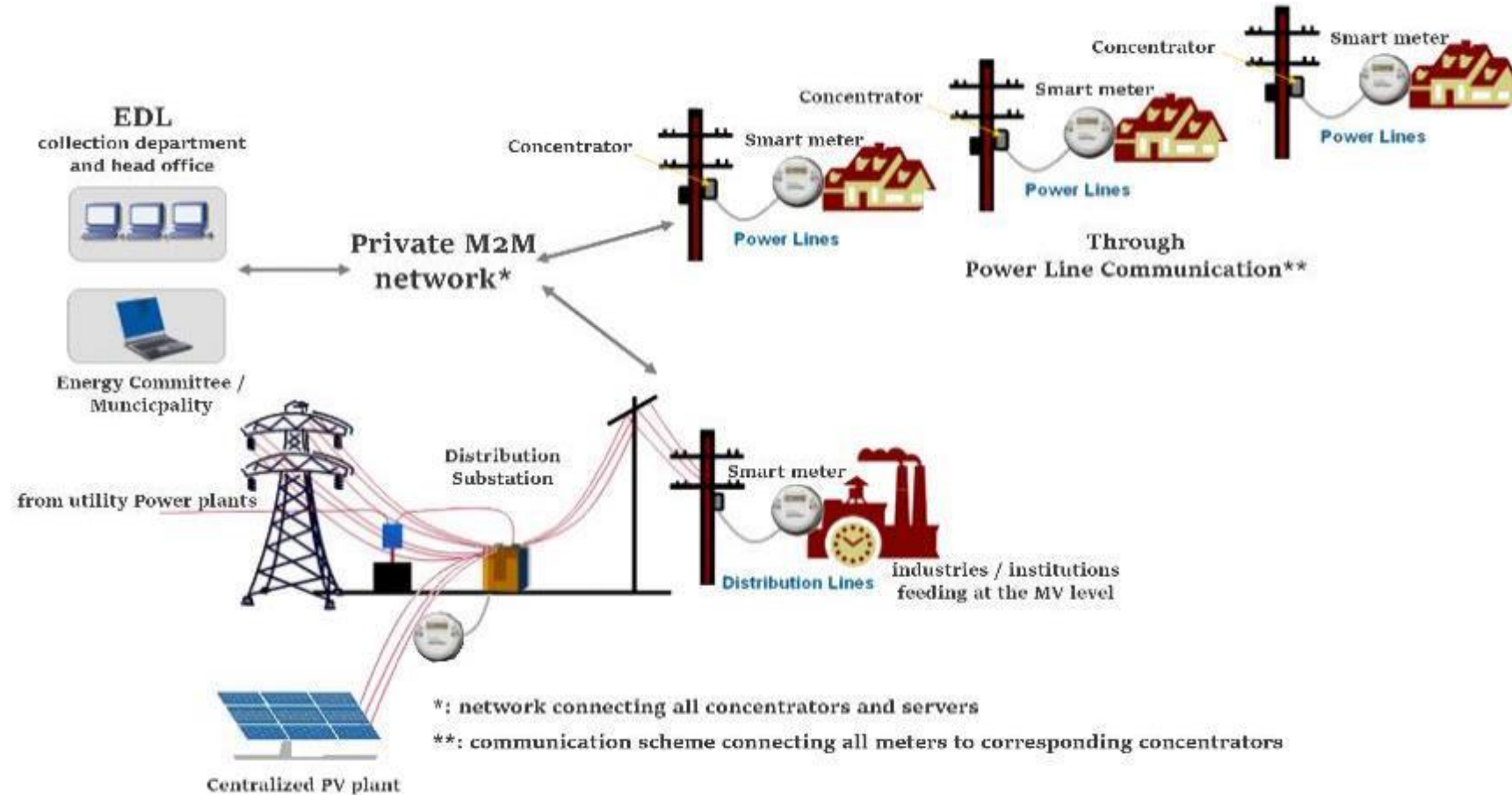
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# V 24 Scheme –



## Communication hardware





## Lebanon





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# Thank you

**Please contact CEDRO at:**

T/F: +961-1-981944  
[www.cedro-undp.org](http://www.cedro-undp.org)  
Beirut, Maarad Street,  
Building 287B, 1<sup>st</sup> floor